Section 9
Design Criteria
Non-Potable Water Facilities

9.1 Background

For the purposes of this section, non-potable water means reclaimed wastewater (recycled water), Colorado River water (canal water) or a blend of recycled water and canal water.

CVWD has provided non-potable water in the form of recycled water to golf courses and large greenscape areas since 1968 when it acquired Water Reclamation Plant No. 9 (WRP 9). Currently, CVWD has 16 water customers that use recycled water or a blend of recycled water and canal water from WRPs. Table 9.1 gives the statistics for the 3 WRPs that provide recycled water for non-potable water customers.

Table 9.1 Water Reclamation Plants (WRPs) and Non-Potable Water

<table>
<thead>
<tr>
<th>Facility</th>
<th>Plant Capacity (mgd)</th>
<th>Tertiary Treatment Capacity (mgd)</th>
<th>Number of Non-potable Water Customers</th>
<th>Non-potable Pumping Capacity*</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRP-7(^2)</td>
<td>5.0</td>
<td>2.5</td>
<td>2</td>
<td>6.62 (mgd)</td>
</tr>
<tr>
<td>WRP-9(^1)</td>
<td>0.4</td>
<td>0.0</td>
<td>1</td>
<td>4.3 (mgd)</td>
</tr>
<tr>
<td>WRP-10(^3)</td>
<td>18.0</td>
<td>15.0</td>
<td></td>
<td>16.20 (mgd)</td>
</tr>
<tr>
<td>High-Pressure</td>
<td></td>
<td></td>
<td>3</td>
<td>17.28 (mgd)</td>
</tr>
<tr>
<td>Low-Pressure</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>33.4</td>
<td>17.5</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

*Limited capacity based on existing demand

\(^1\)WRP-9 provides secondary treated wastewater to irrigate portions of the golf course at Palm Desert Country Club irrigation.

\(^2\)WRP-7 is located near the Coachella Canal and canal water is blended with tertiary treated wastewater to serve 3 golf courses.

\(^3\)WRP-10 is the endpoint for the Mid-Valley pipeline where canal water is blended with disinfected tertiary recycled water to serve 10 golf courses.

CVWD also provides canal water to 28 golf courses in the East Valley via the Coachella Canal and associated Irrigation Distribution System. Requirements for golf course connection to the Irrigation Distribution System is defined in Section 7.
The Non-Potable Water System includes 4 pump stations and 26.5 miles of distribution system piping. Non-Potable Water System statistics can be found in the most recent edition of CVWD’s Annual Report located in the inside pocket of this manual.

The Non-Potable Water System design/construction standards and regulations for service are governed by the following documents:

- Sanitation System Standard Specifications-Appendix I
- Section 6-Design Criteria-Sanitation Facilities
- California Regional Water Quality Control Board of Colorado River Basin Region Board Order No. 97-700, General waste discharge requirements for discharge of recycled water for golf course and landscape irrigation
- California Department of Public Health Statutes and Regulations Related to Recycled Water, including those found in Titles 17 and 22 of the California Code of Regulations, and excerpts from the Health and Safety Code and the Water Code
- Green Book
- AWWA Standards
- CVWD’s Ordinance No. 1302.1 Landscape and Irrigation System Design Criteria
- State Water Resources Control Board Resolution No. 2009-0011 (Recycled Water Policy) and subsequent amendments to this policy.

9.2 Water Code Sections 32600 - 32603

Water Code Sections 32600 - 32603 declares that the use of potable water for non-potable uses in the CVWD service area is a waste and unreasonable use of water. If a suitable non-potable water source is available and complies with the conditions found in this section, then person or local public agency using the potable water may be ordered to use non-potable water or to cease using potable water. Non-potable water can be recycled water, canal water or a combination of both. A copy of Water Code Sections 32600 - 32603 is located in Appendix L. The provisions of Water Code Sections 32600 - 32603 are summarized below:

- Applies to cemeteries, parks, highway landscape areas, new industrial facilities (after 2010) and golf courses
- The CVWD Board will enforce the use of non-potable water when following conditions are met:
  - Non-potable source is of adequate quality for the proposed use
  - Non-potable water can be provided at a reasonable cost
  - Use of non-potable water will not adversely affect groundwater rights, degrade water quality or be injurious to plant life, fish and wildlife
- California Department of Public Health determines that non-potable use will not be detrimental to public health
- California Regional Water Quality Control Board determines that the non-potable source will comply with the water quality control plan
CVWD strongly supports Water Code Sections 32600 - 32603 and will work with developers to ensure compliance. CVWD is also supportive of dual water systems in which the landscape irrigation needs of the development are served by a separate non-potable water system.

9.3 Non-Potable Demand Criteria

In cases where developments are proposing dual piping systems (a potable water distribution system and a non-potable water distribution system), the on-site and off-site non-potable water infrastructure shall be sized to meet the Peak Daily Demand (PDD) of the proposed development in accordance with the following design criteria:

<table>
<thead>
<tr>
<th>Component</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipelines</td>
<td>PDD + Fire Flow (if allowed)</td>
</tr>
<tr>
<td>Storage</td>
<td>PDD + Fire Flow (if allowed) + Emergency Storage</td>
</tr>
<tr>
<td>Pump Station</td>
<td>PDD + Fire Flow (if allowed)</td>
</tr>
</tbody>
</table>

CVWD is located in a hot desert environment and peak demands are significant. CVWD will work with the developer/engineer to establish a PDD allowance to ensure adequate service during the hot summer months. CVWD may adjust this factor depending on the location of the project, type of development and proposed landscaping. Non-potable water customers are required to maintain and have available a back up source of water equal to one hundred percent of its peak irrigation water demands, as the non-potable water delivery is an interruptible supply.

9.4 Non-Potable Pipeline Sizing Criteria

The Non-Potable Water Pipeline requirements will be the same as those for Domestic Water Pipelines, as presented in Section 5 with the following exceptions:

Table 9.2 provides the non-potable water pipeline exceptions to the domestic water design criteria to be utilized for all hydraulic analyses.

**Table 9.2 Non-Potable Water Pipeline Design Criteria**

<table>
<thead>
<tr>
<th>Design Criteria</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Velocity</strong></td>
<td></td>
</tr>
<tr>
<td>12 inch and larger</td>
<td>7.5 ft/sec</td>
</tr>
<tr>
<td><strong>Maximum Head loss</strong></td>
<td></td>
</tr>
<tr>
<td>12” and larger</td>
<td>7 ft /1,000 feet of pipeline</td>
</tr>
</tbody>
</table>

Pipelines shall be 12, 18, 24, 30, 36 or 42 inches in diameter. Pipelines larger than 30 inches in diameter may be required for projects with high demand requirements. No pipe smaller than 12 inches in diameter shall be permitted. A Hazen-Williams Coefficient (C) for new CML ductile iron shall be $C = 120$. 

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### 9.5 Connection to CVWD Non-Potable Water System

All connections to the existing CVWD non-potable water system will be made by CVWD at the Developer’s expense. The Contractor may connect to an existing valve when approved by CVWD under CVWD inspection.

1. Obtain coverage under the general waste discharge requirements for discharge of recycled water for golf course and landscape irrigation Order No. 97-700 or equivalent version of this permit from the California Regional Water Quality Control Board of the Colorado River Basin Region (Regional Board) by submitting a Notice of Intent to the Regional Board and paying application/annual fees.

2. Enter into an agreement with CVWD for receiving non-potable water for golf course and landscape irrigation. The agreement between discharger and CVWD must be provided to the Regional Board within 90 days of receiving coverage under the permit referenced above in item #1.

3. Landscape and Irrigation system plans must meet regulatory requirements of Order 97-700 or equivalent version of this permit, the State Board’s Recycled Water Policy, and California Department of Public Health (CDPH) Statutes and Regulations related to recycled water, such as the Health and Safety Code, the Water Code, Title 17 and Title 22 Code of Regulations. These requirements include but are not limited to the following:

   - An air-gap separation, a vertical measured distance between supply pipe and receiving vessel must be present and meet the required distance for the size of the supply pipe.
   - The appropriate type of backflow protection is to be installed for auxiliary water supplies and recycled water.
   - The required separation distance between recycled water lines and impoundments and application area; and domestic wells and water lines is maintained and approved by CDPH.
   - The design of the irrigation system shall not cause the occurrence of ponding anywhere in the reuse area, and overspray or mist around dwellings, outdoor eating areas and/or food handling facilities is eliminated. Irrigation runoff shall be confined to the recycled water use area unless authorized by CDPH.
   - Drinking fountains will be protected from spray, mist or runoff by use of a drinking fountain cover or shelter approved for this purpose.
   - Hose bibs are not allowed on portions of the recycled water systems accessible to the general public. Quick couplers that differ from those used on the potable water system are allowed.
• Signs are posted in areas that the public has access to that are no less than 4 inches high by 8 inches wide and include “RECYCLED WATER – DO NOT DRINK” and the international do not drink symbol as indicated in CCR Title 22 Division 4 Chapter 3 Article 4 Section as figure 60310-A. The number and locations of these signs will be approved by CDPH.

• The recycled water irrigation system is able to be operated during a time of day that will minimize contact with the public.

• All pipes installed above or below ground on or after June 1, 1993 designed to carry recycled water are to be colored purple or wrapped in purple tape.

• Golf course pump houses utilizing recycled water are appropriately tagged with warning signs with proper wording of sufficient size to warn the public that recycled water is not safe for drinking. All new and replacement at grade valve boxes shall be purple or appropriately tagged for water reuse purposes. All other appurtenances and equipment used for recycled water must be identified as used for recycled water distribution per the recommendations of CDPH.

4. Prior to construction, landscape and irrigation system plans must be submitted for approval to the following agencies (please allow for a 30 day comment period):
   • Regional Board Water Quality Control Board
   • California Department of Public Health, and
   • CVWD.

5. Upon approval from the Regional Board and CDPH, the discharger shall provide notification that recycled water will be used for irrigation to people who reside adjacent to the recycled water use area and to golf course patrons though a method approved by the Regional Board’s Executive Officer and CDPH at least 30 days prior to use of recycled water.

6. A Use Site Supervisor must be designated and his or her name and contact information must be provided in writing to CVWD and the Regional Board 30 days prior to discharge of recycled water. This person will be available to be contacted and receive periodic education and training on the uses and restrictions of recycled water.

7. A cross-connection control test will be performed on the irrigation and domestic systems prior to the discharge of recycled water and at least once every four years thereafter. This test is to be conducted by an American Water Works Association (AWWA) certified cross-connection control program specialist or equivalent. The results of these tests are to be submitted to CVWD, CDPH, and the Regional Board within 30 days of test completion.
8. “As-Built” plans and specifications showing the domestic and irrigation systems, location of all potable and recycled water connections and location of all on-site and nearby wells to CDPH, as per the CDPH requested time frame.

9.6 Booster Pump Stations and Pressure Reducing Valve (PRV) Stations

All Booster Pump Stations and Pressure Regulating Valves shall conform to the requirements in Section 5.8.

9.7 Emergency Standby Power Facilities

All Emergency Standby Power Facilities shall conform to the requirements in Section 5.9.

9.8 Services & Meters

Services and meters shall conform to the requirements in Section 5.13.

9.9 Pipe Material, Valves, Combination Air and Vacuum Relief Valves and Blow-off Assemblies

All materials must meet California Department of Public Health statutes and regulations related to the use of recycled water. Pipe Material, Valves, Combination Air and Vacuum Relief Valves and Blow-off Assemblies Pipe material shall conform to Sections 5.13, 5.14, 5.15 and 5.16, respectively. All above ground infrastructure shall be painted Pantone 512 and marked “Non-Potable Water Do Not Drink” with the universal symbol.

Non-Potable Water Pipeline Requirements will be the same as those for Domestic Water Pipelines as presented in Section 5 with the following exceptions:

- All piping shall be in accordance with the color-coding, and labeling requirements per Section 116815, California Health and Safety Code of Regulations.
- Separating distances shall be the same as Sewer Pipelines (See Section 6)

Please see documents in Appendix N for reference (Pipe Materials for Non-Pressurized Pipeline Projects and Pipe Materials for Pressurized Pipeline Projects).