### Potential Alternatives

<table>
<thead>
<tr>
<th>Description</th>
<th>Additional Treatment</th>
<th>Better Quality in Estuary</th>
<th>Lower Volume in Estuary</th>
<th>Habitat Creation</th>
<th>Financial Return (e.g., Sale of RW)</th>
<th>Water Supply</th>
<th>Regional</th>
<th>Funding Potential</th>
<th>Technically/Feasible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Wetlands on TNC Property</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<td>Floodplain</td>
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<td>Wetlands at Wildlife Ponds</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Limited Space, convert habitat</td>
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<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Limited Space</td>
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<td>Wetlands on Upland</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Land purchase, No river access</td>
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<tr>
<td>Wetland with Perched Recharge</td>
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<tr>
<td>East of 101</td>
<td>RO?</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Land availability, Brine?</td>
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<tr>
<td>West of 101</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Land availability</td>
</tr>
<tr>
<td>Wetlands for Brine treatment/disposal</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>?</td>
<td>Regulations?</td>
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<tr>
<td>Reuse</td>
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<tr>
<td>Expand Urban Reuse</td>
<td>N</td>
<td>N</td>
<td>2.2 mgd</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Extensive piping</td>
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<tr>
<td>Agricultural Reuse from VWRF – no blending</td>
<td>RO</td>
<td>N</td>
<td>4.6 mgd</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Brine disposal</td>
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<tr>
<td>Agricultural Reuse from VWRF – with blending</td>
<td>N</td>
<td>N</td>
<td>4.6 mgd</td>
<td>N</td>
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<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Lower WQ than currently use</td>
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<tr>
<td>Scalping Plant to North - Ag and Urban Reuse</td>
<td>New Plant, RO?</td>
<td>N</td>
<td>2.2 mgd</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Brine disposal</td>
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<tr>
<td>Scalping Plant to East/Saticoy – Ag and Urban Reuse and Recharge</td>
<td>New Plant, RO?</td>
<td>N</td>
<td>3.7 mgd</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Brine disposal</td>
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<tr>
<td>Direct Potable Reuse</td>
<td>RO</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Regulations, Brine disposal</td>
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<tr>
<td>Recharge</td>
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<tr>
<td>Recharge Mound Groundwater Basin</td>
<td>RO</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Injection, Brine</td>
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<tr>
<td>Recharge Oxnard Forebay Basin</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>Limited locations</td>
<td></td>
</tr>
<tr>
<td>Recharge with United</td>
<td>RO?</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Brine disposal</td>
</tr>
<tr>
<td>Recharge at United with blended waters from Oxnard Plain</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Extensive pumping/piping</td>
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<tr>
<td>Oxnard WWTP</td>
<td>N</td>
<td>N</td>
<td>13 mgd</td>
<td>N</td>
<td>?</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>Pumping/piping</td>
</tr>
</tbody>
</table>

1. Approximate maximum month demands
2. Does not include Oxnard Golf Course
3. Demand will depend on an acceptable blended water quality
WETLANDS ALTERNATIVES

Wetlands on TNC Property

Description:

- VWRF effluent routed to treatment wetlands on one of the TNC parcels located east of the golf course. This alternative would potentially provide effluent with reduced nutrient concentrations. The wetlands would discharge to the Santa Clara River.

Challenges:

- TNC has plans to purchase the 5 parcels east of the golf course.
- These parcels are in the 100 year floodplain and TNC plans to remove levees and let the parcels flood.
- Constructing wetlands in the floodplain would not be a technically sound decision for the City.

Discussion/Comments:
Wetlands at Wildlife Ponds

Description:

- VWRF effluent routed to treatment wetlands located on the existing site of the Wildlife Ponds. In this scenario, the Wildlife Ponds would be reconfigured to enhance treatment. This alternative would potentially provide effluent with reduced nutrient concentrations. The Wetlands would discharge to the Estuary via the existing discharge channel.

Challenges:

- Limited area available.
- Lower treatment ability due to short detention time (limited area)
- Loss of open water habitat in existing wildlife ponds due to vegetation required for treatment.

Discussion/Comments:
Wetlands on Other City Property

Description:

- VWRF effluent routed to treatment wetlands on existing City property near VWRF. This alternative would potentially provide effluent with reduced nutrient concentrations. The wetlands would discharge to the Santa Clara River.

Challenges:

- Adequate area for a treatment wetlands
- Potentially limited treatment ability due to short detention time

Discussion/Comments:
Wetlands on Uplands

Description:

- VWRF effluent routed to treatment wetlands on upland area on the north side of the parcels to be purchased by TNC. The wetlands would likely be constructed to discharge to the lower elevation TNC parcels via overland flow, with ultimate discharge to the Santa Clara River.

Challenges:

- Adequate area for a treatment wetlands
- Land acquisition (>80k/acre)
- Coordination with TNC on overflow onto TNC land or outfall to the river
- Availability of land for purchase

Discussion/Comments:
Wetlands with Perched Recharge to River – East of 101

Description:

• VWRF effluent routed to treatment wetlands located east of 101 along the river. The wetlands will likely recharge the Mound Basin.

Challenges:

• Land acquisition given TNC plans for purchases along the river corridor
• This area readily percolates. Potential issues with antidegradation.
• Availability of land for purchase.

Discussion/Comments:
Wetlands with Perched Recharge to River – West of 101

Description:

- VWRF effluent routed to treatment wetlands located west of 101 along the river. Depending on the exact location, the wetlands will contribute to shallow subsurface recharge and in-stream flow into the Santa Clara River.

Challenges:

- Land acquisition given TNC plans for purchases along the river corridor
- Availability of land for purchase
- Characterizing subsurface hydrogeology and assessing feasibility of shallow subsurface recharge and recharge to the river.
- Issues with antidegradation of shallow groundwater.

Discussion/Comments:
Brine Wetlands

Description:

- Brine generated from RO (various alternatives) would be routed to wetlands for treatment and discharge.

Challenges:

- Location of brine wetlands. City owned parcels near the VWRF or other sites?
- Regulatory and public perception issues with discharge from wetlands to estuary

Discussion/Comments:
REUSE

Expand Urban Reuse

Description:

- VWRF effluent would be routed to various reuse customers in the City (primarily for irrigation purposes)

Challenges:

- Average and max month demands are approximately 1.3 mgd and 2.2 mgd, respectively.
- The total potential demand is low and would require an extensive pipe network
- There are few “significant” individual users

Discussion/Comments:
Agricultural Reuse from VWRF – No blending

Description:

- VWRF effluent would be routed to growers in the vicinity of the VWRF. Effluent would be treated for TDS and chloride removal (e.g. RO).

Challenges:

- Acceptance and agreement with growers to take recycled water
- Developing infrastructure that is simple and reliable
- Agreement on crop specific water quality requirements
- Treatment for TDS and chloride
- Brine treatment/disposal
- Demand for agricultural reuse ranges from an average of 2.5 mgd to 2.8 mgd, depending on areas served. Maximum monthly demands range from 4.1 to 4.6 mgd, depending on areas served.

Discussion/Comments:
Agricultural Reuse from VWRF – With blending

**Description:**

- VWRF effluent would be routed to growers in the vicinity of the VWRF. Wastewater effluent would be blended with groundwater supplies for irrigation

**Challenges:**

- Acceptance and agreement with growers to take water that is a blend of groundwater and effluent
- Acceptance of a lower quality groundwater (i.e. water quality that meets crop specific limits but is of lesser quality than is currently used).
- Developing infrastructure that is simple and reliable
- Issues with blending waters due to differences in chemical characteristics
- Water quality requirements:

<table>
<thead>
<tr>
<th>Constituent</th>
<th>VWRF Effluent, mg/l</th>
<th>Agricultural Water Quality Target, mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS</td>
<td>1,498</td>
<td>1,000</td>
</tr>
<tr>
<td>Sodium</td>
<td>258</td>
<td>100</td>
</tr>
<tr>
<td>Chloride</td>
<td>290</td>
<td>100</td>
</tr>
</tbody>
</table>

**Discussion/Comments:**
Scalping Plant to North with Ag and Urban Reuse

Description:

- Raw wastewater would be diverted from the collection system for treatment and reuse. This diversion would occur on the north side of the city.

Challenges:

- Construction and operation of a remote treatment facility
- Flow volume available for diversion. Seaside pump station flows ~2.6 mgd.
- Water quality requirements and the need for TDS/chloride removal if use for agricultural irrigation
- Urban irrigation market in the vicinity of the scalping plant. Average demands range from 0.23 mgd to 0.28 mgd depending on extent of piping network. Max month demands range from 0.33 mgd to 0.39 mgd depending on extent of piping network.
- Agricultural irrigation market in the vicinity of the scalping plant. Average and max month demands are approximately 1.1 mgd and 1.8 mgd, respectively.

Discussion/Comments:
Scalping Plant to the East with Ag and Urban Reuse

Description:

- Raw wastewater would be diverted from the collection system for treatment and reuse. This diversion would occur on the east side of the city.

Challenges:

- Construction and operation of a remote treatment facility
- Flow volume available for diversion. Flows depend on location and range from ~0.3 mgd to ~1.4 mgd, plus potential flows, ~0.5 mgd, from Saticoy Sanitary District
- Water quality requirements and the need for TDS/chloride removal if use for agricultural irrigation
- Urban irrigation market in the vicinity of the scalping plant. Average and max month demands are approximately 0.24 mgd and 0.44 mgd, respectively.
- Agricultural irrigation market in the vicinity of the scalping plant. Average and max month demands are approximately 2.0 mgd and 3.3 mgd, respectively.
- Issues with diverting flow from the Saticoy system (volume, timing, political/institutional issues)

Discussion/Comments:
**Direct Potable Reuse**

**Description:**
- VWRF effluent would be treated to a higher level (RO) then conveyed to drinking water treatment facilities where additional advanced treatment and blending with other water supplies would occur.

**Challenges:**
- Would require advanced treatment on effluent including for salt removal (RO)
- Would require advanced treatment at water treatment facilities including advanced oxidation
- Brine Treatment/Disposal
- Regulatory uncertainty and treatment requirements

**Discussion/Comments:**
RECHARGE

Recharge Mound Groundwater Basin (IPR)

Description:

- VWRF effluent would be routed to injection wells for recharge to the Mound Basin. This alternative would reduce the discharge, augment the City’s water supply, and potentially improve groundwater quality (salts and hardness).

Challenges:

- Injection wells are necessary due to limited percolation capacity in Mound Basin
- Would require advanced treatment for salt removal (RO) to for the purposes of IPR and antidegradation
- Brine Treatment/Disposal
- Potential injection well sites (parcels available, groundwater aquifer capacity, proximity/travel time to wells)

Discussion/Comments:
Recharge Oxnard Forebay Basin (IPR)

Description:

- VWRF effluent would be routed to a location to recharge the Oxnard Forebay via spreading basins. This alternative would reduce the discharge and augment the City’s water supply.

Challenges:

- Determining the best approach to recharge and recharge sites
- Capacity of forebay
- Target water quality
- Coordination/involvement with UWCD
- Antidegradation issues

Discussion/Comments:
Recharge at UWCD Facilities (IPR)

Description:

- VWRF effluent would be routed to UWCD facilities (spreading grounds) for groundwater recharge

Challenges:

- Target water quality
- Likely additional treatment to remove TDS and chloride
- Available capacity on a monthly basis.
- Coordination/involvement with UWCD
- Brine Treatment/Disposal

Discussion/Comments:
Recharge at United with Blended Water from Oxnard Plain (IPR)

Description:

- VWRF effluent would be blended with groundwater extracted from the Oxnard Plain in order to meet quality requirements for recharge at UWCD facilities without additional RO treatment of the VWRF effluent.

Challenges:

- Coordination/involvement with UWCD
- Extensive pipeline and pumping from both the VWRF and extraction sites in the Oxnard Plain to UWCD facilities.
- Issues with blending wastewater and groundwater
- Quality and quantity of water available for extraction on Oxnard Plain

Discussion/Comments:
Oxnard WWTP

Description:

- VWRF effluent would be routed to Oxnard for advanced treatment and subsequent reuse and recharge

Challenges:

- Coordination/involvement with Oxnard and possibly UWCD
- Extensive pipeline to treatment plant
- Available capacity for VWRF effluent
- Costs for buying into Oxnard facilities

Discussion/Comments: