3.1 EXISTING WASTEWATER FACILITIES OVERVIEW

The City of Ione currently operates two wastewater treatment and disposal facilities, the City of Ione WWTP and the Castle Oaks Water Reclamation Plant (COWRP). The City of Ione WWTP, otherwise known as the City secondary WWTP is located directly south of Sutter Creek at the corner of Marlette Street and Old Stockton Road. The original facility was constructed in 1958 and modified and expanded multiple times in succeeding years. The City's wastewater, as well as the backwash water from the Ione Water Treatment Plant owned and operated by Amador Water Agency (AWA) is treated at the secondary WWTP.

The second wastewater facility is the COWRP, otherwise known as the City tertiary WWTP. The tertiary WWTP treats wastewater to Title 22 Standards before it is used for irrigation at the Castle Oaks Golf Course. The tertiary WWTP is located approximately 600 feet to the northwest of the City's secondary WWTP, across Sutter Creek. The tertiary plant serves ARSA, wastewater from the communities of Sutter Creek, Amador City, and portions of Martell, as well as a portion of flow from the Mule Creek State Prison per an agreement with ARSA and the City. Wastewater from ARSA is sent from the City of Sutter Creek's secondary WWTP in the north to the Henderson Reservoir and then to the Preston Reservoir where it combines with secondary treated wastewater from Mule Creek State Prison. From the Preston Reservoir, the secondary treated wastewater either travels to the City tertiary WWTP for tertiary treatment and land disposal on the Castle Oaks Golf Course or is sent to the City secondary WWTP percolation ponds. Additional discussion is contained in the following paragraphs.

Figure 3.1-1 (Existing City of Ione Wastewater Treatment and Disposal Facilities) is an illustration showing the existing wastewater treatment and disposal facilities for the City of Ione. A flow diagram showing the existing sources and treatment and disposal processes for wastewater in the region of the City of Ione is shown in Figure 3.1-2 (Existing Wastewater Treatment Flow Chart).

3.2 CITY'S SECONDARY WWTP

Wastewater enters the City secondary WWTP at the headworks where flow is diverted into one (or both) of two open concrete channels. In the channel, a portion of the sand and gravel in the wastewater is removed via gravel traps. Downstream of the channel are communitors, which grinds and shreds any solids. The untreated wastewater is then pumped to ponds for further treatment and disposal.

There are a total of seven ponds. Four of the ponds (Ponds 1 – 4) are aerated wastewater treatment ponds and the remaining three (Ponds 5 – 7) are percolation ponds. The untreated wastewater from the headworks arrives at Pond 1 where two surface aerators supplies the required oxygen required to produce an aerobic zone. Gradually, the wastewater moves to Pond 2, where oxygen is also supplied by one surface aerator. The aerators in Pond 3 and Pond 4 help to maintain a minimum dissolved oxygen concentration. By Pond 4, the wastewater has completed its cycle and is considered secondary treated wastewater that is in compliance with regulations for effluent evaporation and percolation.

FIGURE 3.1-1: EXISTING CITY OF IONE WASTEWATER TREATMENT AND DISPOSAL FACILITIES

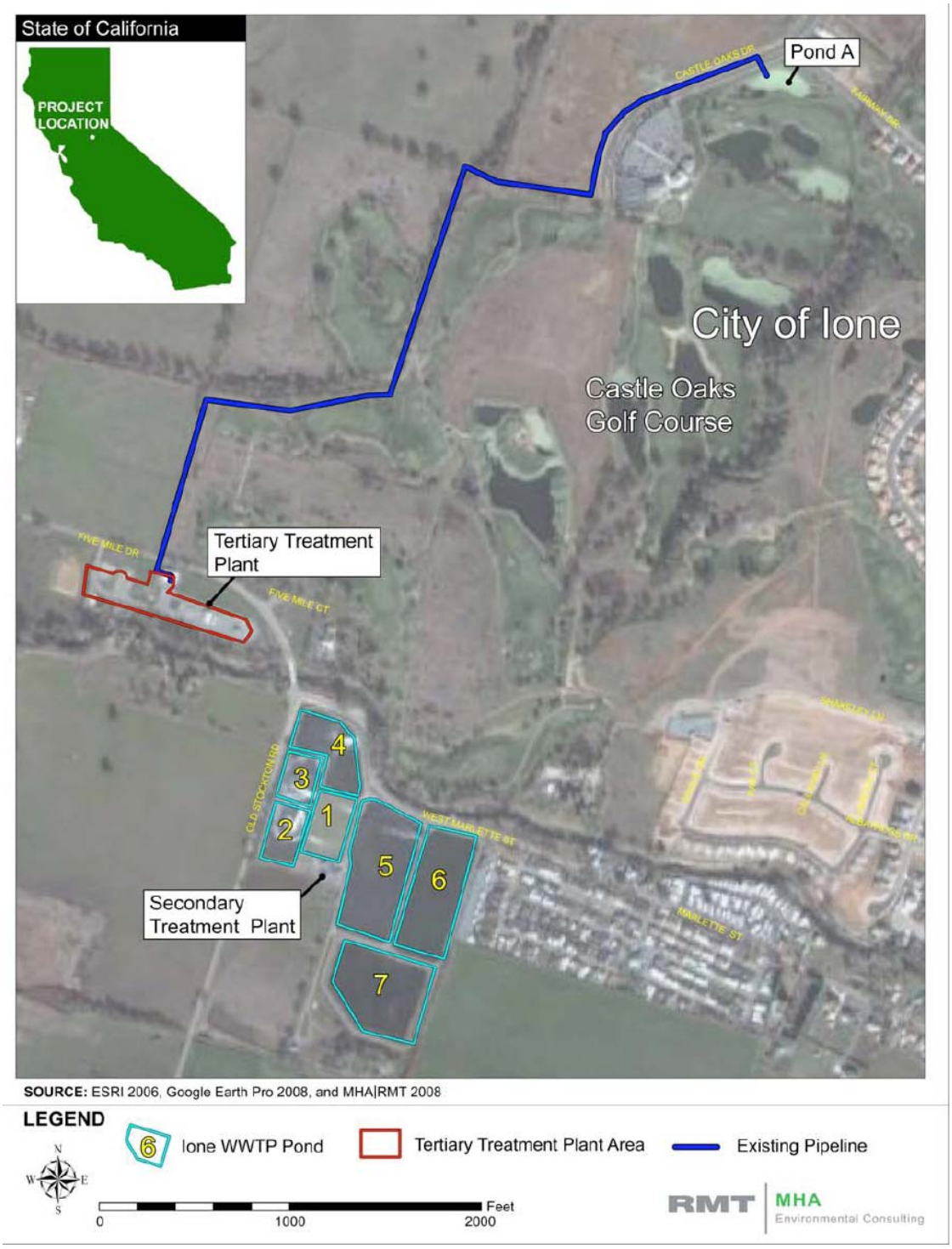
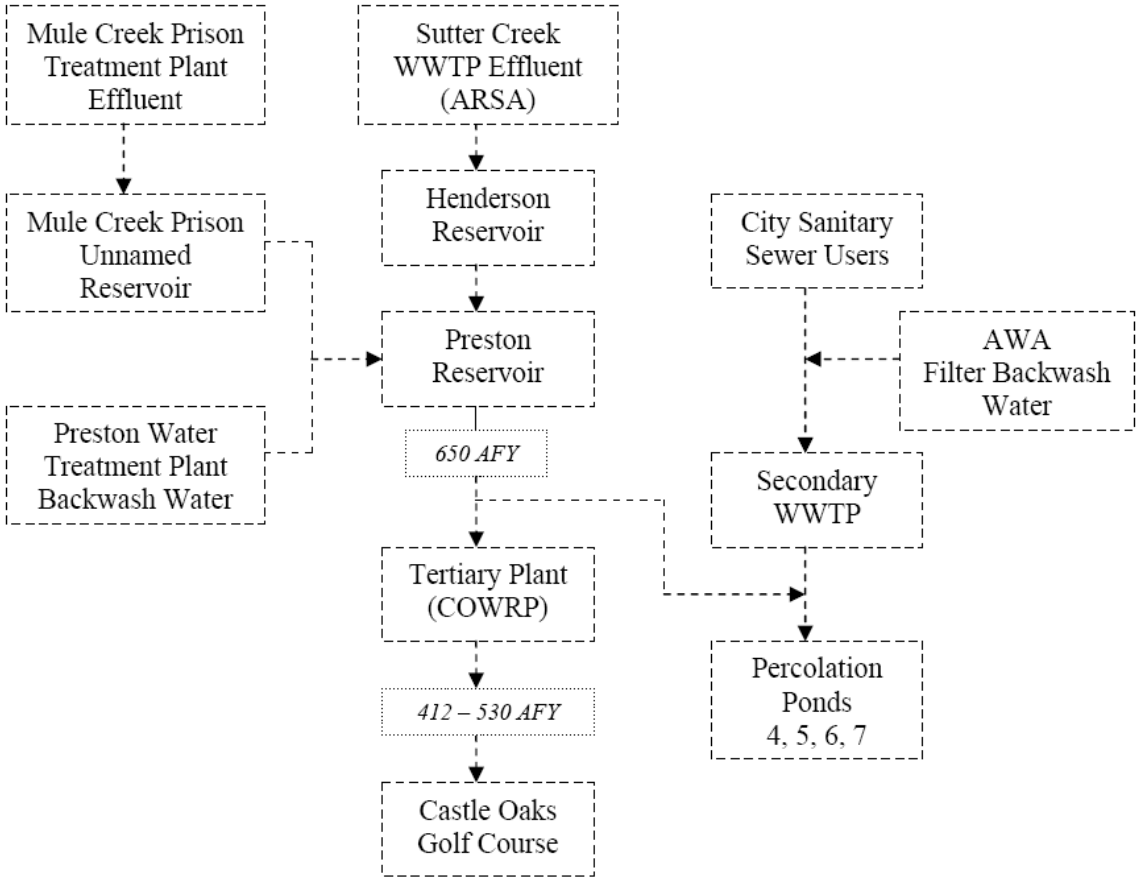


FIGURE 3.1-2: EXISTING WASTEWATER TREATMENT FLOW CHART



Note: A volume of one million gallons is equivalent to 3.07 acre-feet (AF)

The three remaining ponds (Ponds 5 – 7) are percolation ponds, which use a combination of evaporation and percolation to provide final treatment and disposal of the secondary treated wastewater. Pond 5 receives secondary treated wastewater. Pond 6 is typically only utilized for ARSA wastewater during the wet months of the year when the Castle Oaks Golf Course does not require irrigation, however during the dry months, the ARSA wastewater is sent to the City tertiary WWTP for tertiary treatment and disposed as irrigation water for the golf course. The final pond, Pond 7 was intended to accommodate excess wastewater from Ponds 5 and 6. Since the secondary WWTP is currently at or near capacity, Pond 6 and sometimes Pond 7 may contain treated secondary wastewater throughout the year and not just during the wet months. Additional discussion concerning the secondary WWTP facilities, capacity, and operation are contained in Technical Memorandum dated May 4, 2007 provided in **Appendix 7.4**.

EXISTING WASTEWATER FLOWS AND LOADS

The existing wastewater flow and load conditions at the secondary WWTP are provided in Table 3.1-1 (Existing Wastewater Flow). The hydraulic, treatment and disposal capacity of the City's secondary WWTP is a maximum of 0.55 MGD for average dry weather flow conditions.

TABLE 3.1-1: EXISTING WASTEWATER FLOW[1]

Condition	Flow (MGD)
Average Dry Weather Flow (ADWF)	0.41
Maximum Daily Flow	0.75
Peak Hourly Flow	1.60

Components contributing to the existing dry weather wastewater flow consist of residential wastewater, limited commercial development from the downtown area of Ione, groundwater infiltration, and a single industrial user, AWA. AWA operates the Ione Water Treatment Plant (IWTP) and discharges backwash water from the plant's filters to the City sanitary sewer system on a daily basis. The backwash water averaged approximately 87,000 gallons per day (gpd) in 2007. However, due to changes in operations the backwash water volume is currently around 30,000 gpd. While historical backwash water volume represents approximately 20 percent of the volumetric portion of the total wastewater treated at the City's secondary WWTP, it is not a strong waste stream (no appreciable BOD_5 loading). A summary of the components contributing to the existing wastewater flow is estimated as follows for the ADWF condition (Table 3.1-2: Existing Wastewater Flow Components):

TABLE 3.1-2: EXISTING WASTEWATER FLOW COMPONENTS[1]

Wastewater Flow Source	Flow (MGD)
Municipal (residential and commercial)	0.32
AWA Backwash (industrial discharge)	0.09
Total (ADWF Condition)	0.41

Flows have decreased since 2004 and average flow measured from July through October 2009 is 0.36 MGD. In addition to flow, organic and solids loading is another principal design criteria. Existing organic and solids loading conditions at the City's secondary WWTP are provided in the following Table 3.1-3 (Existing Wastewater Concentration and Loading).

[1] Source: ECO:LOGIC 2004 Master Plan Table 4-1

TABLE 3.1-3: EXISTING INFLUENT WASTEWATER CONCENTRATION AND LOADING – JULY-OCTOBER 2009

Condition	Concentration (mg/L)	Loading (lbs/day)
Biochemical Oxygen Demand (BOD_5)	281	832
Suspended Solids (SS)	247	731

Biochemical oxygen demand and suspended solids concentrations in Table 3.1-3 (Existing Wastewater Concentration and Loading) were measured from July through October 2009. BOD and TSS concentrations measured July through October 2009 are higher than historically measured from 2002 through 2008.

EXISTING DISPOSAL CAPACITY

Currently, wastewater from ARSA is sent from the City of Sutter Creek's secondary WWTP in the north to the Henderson Reservoir and then to the Preston Reservoir where it combines with secondary treated wastewater from Mule Creek State Prison. From the Preston Reservoir, the secondary treated wastewater either travels to the City's tertiary WWTP for tertiary treatment and land disposal on the Castle Oaks Golf Course or is sent to the City's secondary WWTP percolation ponds. Current disposal capacity of the entire pond system, Ponds 1 through 7, including evaporation is approximately 0.85 MGD.

In the fall of 2007, the City of Ione entered into a three party agreement with the State of California and ARSA. This agreement replaced an earlier court settlement between ARSA and the City in 1990 and subsequent amendments, the most recent of which was in 2004. The significant impact of the 2007 agreement is that the disposal of ARSA wastewater to the City's secondary WWTP percolation ponds was reduced from their current obligation of 900 acre-feet per year (AFY) to a maximum 650 AFY (0.58 MGD), a reduction of 250 AFY. Wastewater from Mule Creek State Prison is included in the 650 AFY limit.

The Central Valley RWQCB issued Cease and Desist Order No. R5-2003-0108 on July 11, 2003, due to concern that seepage of subsurface water observed along the southern back of Sutter Creek may be effluent from the City's secondary WWTP percolation ponds. In order to remediate the potential contamination of Sutter Creek from the secondary-treated wastewater in the nearby percolation ponds, the City submitted a 2004 Facility Guidance Document to the RWQCB. This document proposed the lining of any ponds within 200 feet of Sutter Creek as a means to comply with the Cease and Desist Order and to avoid imposition of a National Pollutant Discharge Elimination System (NPDES) permit on the potential seepage. RWQCB has not accepted this proposed mitigation and has requested additional hydrogeologic investigation. This investigation is being performed as part of the companion EIR to this Master Plan. The EIR will evaluate and determine existing impacts, if any, and the appropriate mitigations. For planning purposes, closure of Ponds 1-4 and filling of the northern 200 feet of Ponds 5 and 6 has been assumed. Shown in Table 3.1-4 (Existing Percolation Pond Capacities and Character tics) are the areas, storage volume, and disposal capacity of existing Percolation Ponds 5, 6, and 7. The existing secondary treatment plant water balance for a 100 year precipitation occurrence is contained in **Appendix 7.5**.

TABLE 3.1-4: EXISTING PERCOLATION POND CAPACITIES AND CHARACTERISTICS

Condition	Units	Existing Ponds 5, 6 and 7
Disposal Capacity (Annual)	MGD	0.60
Gross Area	acres	18.2
Water Surface	acres	14.4
Bottom Surface	acres	10.5
Maximum Water Depth	feet	8 to 14
Storage Volume	million gallons	38.5

3.3 CITY'S TERTIARY WWTP

The COWRP is located on Five Mile Drive, north of Sutter Creek. Tertiary water from the plant is delivered to the 18-hole Castle Oaks Golf Course (approximately 200 acres) for landscape irrigation and use in a series of decorative ponds. COWRP provides all the water for the golf course during the dry season and does not operate continuously.

COWRP is allowed to use reclaimed water (Title 22) for irrigation purposes by the State of California under jurisdiction of the Central Valley RWQCB and permitted by Water Reclamation Requirements (WRR) 93-240. COWRP has a permitted capacity of 1.2 MGD, which is roughly equal to the peak seasonal irrigation demand of the Castle Oaks Golf Course. Major components of the COWRP are summarized below. Basic design criteria for the tertiary treatment plant are presented in **Appendix 7.6**.

- Tertiary Flocculation/Headworks (sized for a peak hydraulic capacity of 1.9 MGD with average flows of 1.2 MGD)
- Tertiary Sand Filters (four filter cells with a total loading capacity of 2.5 MGD)
- Chlorine Mix Tank and Contact Basin (total capacity of 200,000 gallons and a detention time of 120 minutes at a design flow of 1.2 MGD)
- Effluent Pump Station (two vertical turbine pumps that deliver reclaimed water to Pond A at the Castle Oaks Golf Course and two plant water pumps that supply plant water and filter backwash water)
- Solids Handling Facility (drying and storage area for solids produced during the tertiary treatment process)
- Electrical Service (400 amp service)
- Control and Chemical Building

- Chemical Storage (storage tanks for sodium hypochlorite and polymer)
- Sewerage Lift Station and Forcemain, Maintenance Building, and Storage Area (these facilities are located on the site of the tertiary WWTP, but are not part of the function of the facility)

Currently the COWRP is not able to accept treated secondary effluent from the City. Instead the treatment plant treats raw water and secondary effluent from the ARSA system.