

## FACILITY PLANNING, CONSTRUCTION AND MANAGEMENT

P.O. Box 942883

Sacramento, CA 94283-0001



June 1, 2020

Andrew Altevogt, Assistant Executive Officer  
Central Valley Regional Water Quality Control Board  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670

Dear Mr. Altevogt:

In compliance with correspondence dated December 9, 2019 from the Central Valley Regional Water Quality Control Board (CVRWQCB), the Facility Planning, Construction and Management Division (FPCM) of the California Department of Corrections and Rehabilitation (CDCR) has completed the preparation of a Report of Waste Discharge (RoWD) for the Mule Creek State Prison (MCSP) Wastewater Treatment Plant (WWTP). A copy of the subject RoWD is enclosed.

As requested, the MCSP RoWD addresses the CVRWQCB's compliance issues including the need to update the existing Waste Discharge Requirements (Order R5-2015-0129) to confirm the WWTP does have the capacity to properly dispose of the annual volume of secondary disinfected effluent generated by operation of this correctional facility. The enclosed RoWD also addresses the CVRWQCB's concerns that industrial contaminants are potentially being discharged from the WWTP.

A key finding presented in the enclosed RoWD is the historical reduction since approximately 2007 in the volume of secondary disinfected effluent requiring treatment by the MCSP WWTP. Because of the reduction, CDCR is requesting a change in the permitted treatment capacity of the existing permit from 0.74 million gallons per day (MGD) to 0.57 MGD. The modification of the permitted capacity reflects three significant changes at MCSP, including the stabilization of the inmate population, the success of prison-wide water conservation efforts, and the improved operation of the WWTP since its recent renovation.

With the historically lower annual effluent volumes, MCSP is projected to meet its disposal obligations through a combination of the remaining 200 acres of on-site land application areas and the continued conveyance each irrigation season of approximately 350 acre feet of effluent to the Castle Oaks Water Reclamation Plant (COWRP). The attached RoWD also documents the change in the conveyance of treated effluent from the WWTP to the COWRP pipeline. Because of the installation of a bypass connection in 2017, the WWTP no longer transfers treated effluent to Preston Reservoir for interim storage.

Andrew Altevogt, Assistant Executive Officer

Page 2

FPCM looks forward to the preparation of a revised Water Discharge Requirement that will be responsive to the changes that have occurred in the past five years to wastewater generation and disposal at MCSP and is ready to address any questions.

Sincerely,

A handwritten signature in blue ink that reads "Dean L. Borg". The signature is written in a cursive, flowing style.

DEAN L. BORG

Director

Facility Planning, Construction and Management

cc: Chris Lief, Deputy Director, FPCM  
Tamer Ahmed, Associate Director, FPCM  
Todd Poston, Project Director III, FPCM  
Chris Hudgens, Correctional Plant Manager, MCSP  
Terry Bettencourt, Regional Manager, FPCM

Enclosure



**State of California  
Regional Water Quality Control Board  
APPLICATION/REPORT OF WASTE DISCHARGE  
GENERAL INFORMATION FORM FOR  
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT**

**I. FACILITY INFORMATION**

**A. FACILITY:**

Name California Department of Corrections and Rehabilitation (CDCR)--Mule Creek State Prison  
 Address 4001, Highway 104  
 City/County/State/Zip Code lone/Amador/CA/995640  
 Contact Person Patrick Covello, Warden (A)  
 Telephone Number 209-274-4911 Email Patrick.Covello@cdcr.ca.gov

**B. FACILITY OWNER:**

Name CDCR--Mule Creek State Prison  
 Address 4001, Highway 104  
 City/State/Zip Code lone/CA/95640  
 Contact Person Patrick Covello, Warden (A)  
 Telephone Number 209-274-4911 Email Patrick.Covello@cdcr.ca.gov  
 Federal Tax ID \_\_\_\_\_  
 Owner Type (Mark one):  
 Individual  Corporation  Governmental Agency  Partnership  
 Other: \_\_\_\_\_

**C. FACILITY OPERATOR (The agency or business, not the person):**

Name SAME AS OWNER  
 Address \_\_\_\_\_  
 City/State/Zip Code \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Telephone Number \_\_\_\_\_ Email \_\_\_\_\_  
 Operator Type (Mark one):  
 Individual  Corporation  Governmental Agency  Partnership  
 Other: \_\_\_\_\_

**D. OWNER OF THE LAND**

Name SAME AS OWNER

Address \_\_\_\_\_

City/State/Zip Code \_\_\_\_\_

Contact Person \_\_\_\_\_

Telephone Number \_\_\_\_\_ Email \_\_\_\_\_

Owner Type (Mark one):

- Individual  Corporation  Governmental Agency  Partnership
- Other: \_\_\_\_\_

**E. ADDRESS WHERE LEGAL NOTICE MAY BE SERVED**

Address 4001 Highway 104

City/State/Zip Code lone/CA/95640

Contact Person Christofer Hudgens

Telephone Number 209-274-4911 Email christofer.hudgens@cdcr.ca.gov

**F. BILLING ADDRESS**

Address P.O. Box 409099

City/State/Zip Code lone/CA/95640

Contact Person Christofer Hudgens

Telephone Number 209-274-4911 Email christofer.hudgens@cdcr.ca.gov

**II. TYPE OF DISCHARGE**

Check Type of Discharge(s) Described in this Application:

- Waste Discharge to Land**  **Waste Discharge to Surface Water**

Check all that apply:

- Animal or Aquacultural Wastewater  Land Treatment Unit
- Animal Waste Solids  Landfill (see instructions)
- Biosolids/Residual  Mining
- Cooling Water  Storm Water
- Domestic/ Municipal Wastewater Treatment and Disposal  Surface Impoundment
- Dredge Material Disposal  Waste Pile
- Hazardous Waste (see instructions)  Wastewater Reclamation
- Industrial Process Wastewater  Other, please describe \_\_\_\_\_

**III. LOCATION OF THE FACILITY**

Describe the physical location of the facility:

1. Assessor's Parcel Number(s)

Facility: 005-070-008

Discharge Point: 005-070-008

2. Latitude

Facility: 38.373301

Discharge Point: 38.377217

3. Longitude

Facility: -120.947230

Discharge Point: -120.945568

**IV. REASON FOR FILING**

Check all that apply:

- New Discharge or Facility
- Change in Design or Operation
- Change in Quantity/Type of Discharge
- Changes in Ownership/Operator (see instructions)
- Waste Discharge Requirements Update or NPDES Permit Reissuance
- Other: \_\_\_\_\_

**V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

Name of Lead Agency N/A - No project, only update to WDRs

Has a public agency determined that the proposed project is exempt from CEQA?

- Yes
- No

If yes, state the basis for the exemption and the name of the agency supplying the exemption on the line below:

There is no project talking place, only update to WDRs

Has a "Notice of Determination" been filed under CEQA?

- Yes
- No

If Yes, enclose a copy of the CEQA document, Environmental Impact Report (EIR), or Negative Declaration. If No, identify the expected type of CEQA document and expected date of completion.

Expected CEQA Documents:  EIR  Negative Declaration

Expected CEQA Completion Date: N/A - No project, only update to WDRs

**VI. OTHER REQUIRED INFORMATION**

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to, design and actual flows, a list of constituents and the discharge concentration of each constituent, a list of other appropriate waste discharge characteristics, a description and schematic drawing of all treatment processes, a description of any Best Management Practices (BMPs) used, and a description of disposal methods.

Also include a site map showing the location of the facility and, if you are submitting this application for an NPDES permit, identify the surface water to which you propose to discharge. Please try to limit your maps to a scale of 1:24,000 (7.5' USGS Quadrangle) or a street map, if more appropriate.

**VII. OTHER**

*Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:*

MCSP Report of Waste Discharge - June 1, 2020

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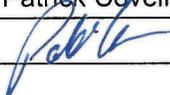
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You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your Application/Report of Waste Discharge, pursuant to Division 7, Section 13260 of the California Water Code.

**VIII. CERTIFICATION**

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name Patrick Covello Title Warden (A)  
Signature  Date 5/20/2020

**FOR OFFICE USE ONLY**

Date Form 200 Received:	Letter to Discharger:	Fee Amount Received:	Check #:
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**REPORT OF WASTE DISCHARGE: TECHNICAL REPORT**

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VOLUME 1 OF 3

CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION

MULE CREEK STATE PRISON

IONE, CALIFORNIA

PREPARED FOR:

CALIFORNIA DEPARTMENT OF  
CORRECTIONS AND REHABILITATION:  
MULE CREEK STATE PRISON

AMADOR COUNTY

PREPARED BY:

KJELDSSEN, SINNOCK & NEUDECK, INC.  
CIVIL ENGINEERS & LAND SURVEYORS

1550 HARBOR BOULEVARD, SUITE 212  
WEST SACRAMENTO, CALIFORNIA 95691  
TELEPHONE NUMBER: (916) 403-5900

June 1, 2020

June 1, 2020

Dean Borg, Director  
Facilities Planning, Construction and Management  
California Department of Corrections and Rehabilitation  
9838 Old Placerville Road, Suite B  
Sacramento, CA 95827

Re: Report of Waste Discharge for Update of Order R5–2015–0129 for the Mule Creek State Prison Wastewater Treatment Plant

Dear Mr. Borg,

Please find enclosed the above-referenced Report of Waste Discharge (RoWD) technical report for the Mule Creek State Prison (MCSP) Wastewater Treatment Plant (WWTP). This technical report has been prepared pursuant to the requirements of the Regional Water Quality Control Board (RWQCB) for technical reports to support a RoWD. Since the MCSP WWTP has seen a consistent reduction in annual wastewater influent flows, and there have been documented changes in facility land application operations, this RoWD has been prepared to request a reduced permitted flow. We believe the basis for reducing the permitted capacity of the WWTP is well supported by the data in Chapter 2 of the report.

In addition to addressing these changes in the existing system, this RoWD has also been prepared to address two items that the Compliance and Enforcement Unit of the RWQCB asserted were compliance issues as contained in the December 9, 2019 Water Code Section 13260 letter. In summary, this includes (1) discharge of effluent they believe should be characterized as industrial wastewater, and (2) the overloading of existing sprayfields (Land Application Areas) to the point that effluent was pooling in the lower reach of Mule Creek. The enclosed RoWD, among other reports and documents requested by and submitted to the RWQCB<sup>1</sup>, addresses these assertions as follows:

1. KSN believes that operations of the MCSP WWTP have been consistent with the requirements of Order R5-2015-0129. However, the December 9, 2019 letter indicated a compliance issue with industrial wastewater and related industrial contaminants asserting that the wastewater treatment plant is not designed to treat for these constituents.

The MCSP WWTP was designed to treat domestic wastewater originating from the institutions it serves: the MCSP, Mule Creek Infill Complex, California Department of Forestry and Fire Protection Academy, and the limited wastewater flows from the

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<sup>1</sup> Documents requested by and submitted to the RWQCB already include, but are not limited to:  
Technical Report Update dated October 15, 2018 in response to August 13, 2018 Notice of Violation;  
Engineering Feasibility Study, dated December 28, 2018;  
VOC Monitoring Data and Treatment Report dated August 1, 2019, and attached to the enclosed RoWD;  
Land Application Area Soil Evaluation Report dated November 26, 2019; and  
Updated Land Application Area Management Plan dated November 26, 2019

Preston Youth Correctional Facility. As with any small community generating domestic wastewater, the area served by the MCSP has a combination of wastewater sources contributing to the influent flow to the WWTP. The particular mix of wastewater sources within the area served by the MCSP WWTP are consistent with the variety and typical characteristics that could be expected from a typical small mixed land-use community in California.

Substantial additional detail has been prepared in this RoWD to present the specifics of the range and types of activities occurring within the area served by the MCSP WWTP. Based on our review of these operations they are not generating industrial wastewaters that would require separate and additional treatment that is not already provided by the MCSP WWTP. Our review of recent monitoring data for the MCSP WWTP, including volatile organic compounds (VOCs) monitored as requested by the RWQCB, demonstrates that the existing facilities have been effective at removing what incidental VOCs have been present in the influent, and those limited and infrequent detections of VOCs not generated as disinfection byproducts have been at low levels and below water quality objectives in the MCSP WWTP effluent.

As a result of our review of this data, we have recommended a program to monitor for and confirm the lack of consistent presence of a limited set of constituents that might be of concern, and to further assess their presence in the groundwater monitoring network.

2. In the December 9, 2019 letter from the RWQCB it is noted that RWQCB observed stagnant water in the creek and surrounding lowlands during their July 25, 2019 inspection of the facility. The letter further concludes with only a superficial consideration of site conditions that the source of the observed stagnant water is from hydraulic loading of the LAAs and seepage in to the creek. It is KSN's opinion that such a conclusion does not consider the complex hydrology and hydrogeology of this reach of Mule Creek and multiple sources of water known to exist, including longitudinal flow occurring sub-surface within this reach of Mule Creek. Factors known to contribute to surface and/or subsurface flow in Mule Creek include, but are not limited to:
  - a. Rainfall within the Mule Creek approximately 5,300 acre watershed, including significant travel time via surface and subsurface means along a nearly 7 mile travel path. This watershed size and travel path can result in surface and subsurface flow in Mule Creek several months after the last rain, which occurred as late as May 27, 2020 with a total of almost 28 inches of precipitation falling in the watershed over the rainy season prior to the observed conditions<sup>2</sup>;
  - b. Multiple on-channel storage ponds on Mule Creek above the MCSP with likely subsurface flow occurring from water known to be retained late into the year, past July;

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<sup>2</sup> Precipitation based on DWR CDEC Station CF1 at the Cal Fire Academy site.



- c. Groundwater levels in monitoring wells nearest to Mule Creek showing clear response to seasonal rainfall and typically a decline in elevation through the LAA season into early fall;
- d. Known groundwater seepage and spring source entering the Preston Reservoir diversion ditch and originating from groundwater seepage in the MCIC area; and
- e. Land scape irrigation and surface storm water drainage that occurs near the MCSP administration building and parking area.

As documented in the enclosed RoWD, and as presented in multiple reports submitted to the RWQCB, the MCSP LAA operations are conducted consistent with applicable RWQCB policies and requirements, including land application being conducted at agronomic rates, LAAs setbacks to surface drainage courses including Mule Creek meeting applicable criteria, LAA operations ceasing application before and after precipitation events, and waiting between applications to allow adsorption and evapotranspiration to occur to avoid overloading. This operation is consistent with LAA practices conducted by multiple communities in the Sierra Nevada Foothills and at higher elevations throughout the Central Valley region.

The enclosed report has been prepared based on compiling a combination of information from various existing report sources, information as maintained by CDCR in the monthly and annual monitoring reports for the MCSP WWTP, site visits and interviews with staff most knowledgeable of the subject wastewater treatment facilities, and as supported by information contained in the March 12, 2015 MCSP Report of Waste Discharge prepared by KSN, the March 14, 2018 revised Title 22 Engineering report prepared by KSN, and the various documents prepared in response to the August 13, 2018 Notice of Violation issued by the Regional Water Quality Control Board. If this document is acceptable to CDCR, it should be submitted electronically to the Regional Water Quality Control Board for review and approval.

If you have any questions, please contact me at [ncolwell@ksninc.com](mailto:ncolwell@ksninc.com) or (916) 403-5900.

Sincerely,  
KJELDTSEN, SINNOCK & NEUDECK, INC.

---

Neal T. Colwell, RCE 59437

w/enclosures

cc: Christofer Hudgens, CDCR Mule Creek State Prison via e-mail  
Miles Bettencourt, CDCR FPCM, via e-mail  
Gregor Larabee, CDCR FPCM via e-mail

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## ENGINEER'S SEALS AND SIGNATURES

	<p>I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.</p> <p>Neal T. Colwell <span style="float: right;">6/1/2020</span></p> <p>My license renewal date is 12/31/2021</p>
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## CONTRIBUTORS TO REPORT OF WASTE DISCHARGE: TECHNICAL REPORT

<u>Elisabeth A. Beckensten</u>	<u>KSN, Inc.</u>	<u>CA RCE: 88222</u>
<u>Thomas W. Butler II</u>	<u>Stantec</u>	<u>CA PG 7653</u>
<u>James H. Witty</u>	<u>Stantec</u>	<u>Certified Professional Soil Scientist</u>
<u>Steven E. Whittlesey</u>	<u>KSN, Inc.</u>	<u>CA E.I.T. 163119</u>

## TABLE OF ABBREVIATIONS

Abbreviation	Definition
AAF	Average Annual Flow
ADWF	Average Dry Weather Flow
ARSA	Amador Regional Sanitation Authority
AWA	Amador Water Agency
AWHC	Available Water Holding Capacity
BGC	Background Concentration
BOD	Biochemical Oxygen Demand
BPTC	Best Practicable Treatment or Control
CAL FIRE	California Department of Forestry and Fire Protection
CDCR	California Department of Corrections and Rehabilitation
CIMIS	California Irrigation Management Information System
CIP	Cast Iron Pipe
COWRP	Castle Oaks Water Reclamation Plant
DCB	Disinfection Contact Basin
DDW	Division of Drinking Water of the State Water Resources Control Board
DPB	Disinfection By-Product
DSOD	Division of Safety of Dams
Eto	Evapotranspiration
FEMA	Federal Emergency Management Agency
gpd	gallons per day
gpid	gallons per inmate per day
HDPE	High Density Poly Ethylene
I&I	Inflow and Infiltration
ITRC	California Polytechnic State University Irrigation Training and Research Center
LAA	Land Application Area
LCL	Lower Confidence Level
MAD	Management Allowed Depletion
MCIC	Mule Creek Infill Complex
MCL	Maximum Contaminant Level
MCSP	Mule Creek State Prison
MEC	Maximum Effluent Concentration
Mgal/d	Million Gallons per Day
MPN	Most Probable Number
MRP	Monitoring and Reporting Program
MSDS	Material Safety Data Sheets
NRCS	Natural Resources Conservation Service
O&M	Operation and Maintenance
PMF	Peak Month Flow

<b>Abbreviation</b>	<b>Definition</b>
PIA	Prison Industry Authority
PVC	Polyvinyl Chloride
PYCF	Preston Youth Correctional Facility
ROWD	Report of Waste Discharge
RPA	Reasonable Potential Analysis
RWQCB	Regional Water Quality Control Board
SDWIS	Safe Drinking Water Information System
SSGL	Site Specific Groundwater Limitation
SSMP	Sewer System Management Plans
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
VCP	Vitrified Clay Pipe
VOC	Volatile Organic Compound
WY	Water Year
WDRs	Waste Discharge Requirements
WWTP	Waste Water Treatment Plant

## Section 1

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# General Information

This Technical Report has been prepared as the technical document to support a Report of Waste Discharge for the California Department of Corrections and Rehabilitation's (CDCR) update of current Waste Discharge Requirements (WDRs) Order R5-2015-0129 for the Mule Creek State Prison (MCSP) Wastewater Treatment Plant (WWTP). This Report of Waste Discharge has been requested by the Central Valley Regional Water Quality Control Board's (RWQCB) December 9, 2019 Water Code Section 13260 Order, Request for a Report of Waste Discharge, and Summary of Site Inspection letter. The Technical Report, along with the completed Form 200 attached to this report, constitutes a Report of Waste Discharge (ROWD) pursuant to California Water Code Section 13260. This Technical Report is based on monitoring and reporting information collected by CDCR and from information and technical reports prepared by others as referenced in this document.

### 1.1 BACKGROUND

The State of California owns, and CDCR operates, MCSP which includes the Mule Creek Infill Complex (MCIC), and the MCSP WWTP in Lone, California. MCSP operates the on-site WWTP that provides wastewater treatment, storage, and disposal for MCSP and MCIC, including operations of the Prison Industry Authority (PIA), as well as for wastewater from the closed Preston Youth Correctional Facility (PYCF), and the California Department of Forestry and Fire Protection Academy (CAL FIRE) facilities. The MSCP WWTP currently operates under WDR Order No. R5-2015-0129, issued by the Central Valley RWQCB on December 11, 2015.

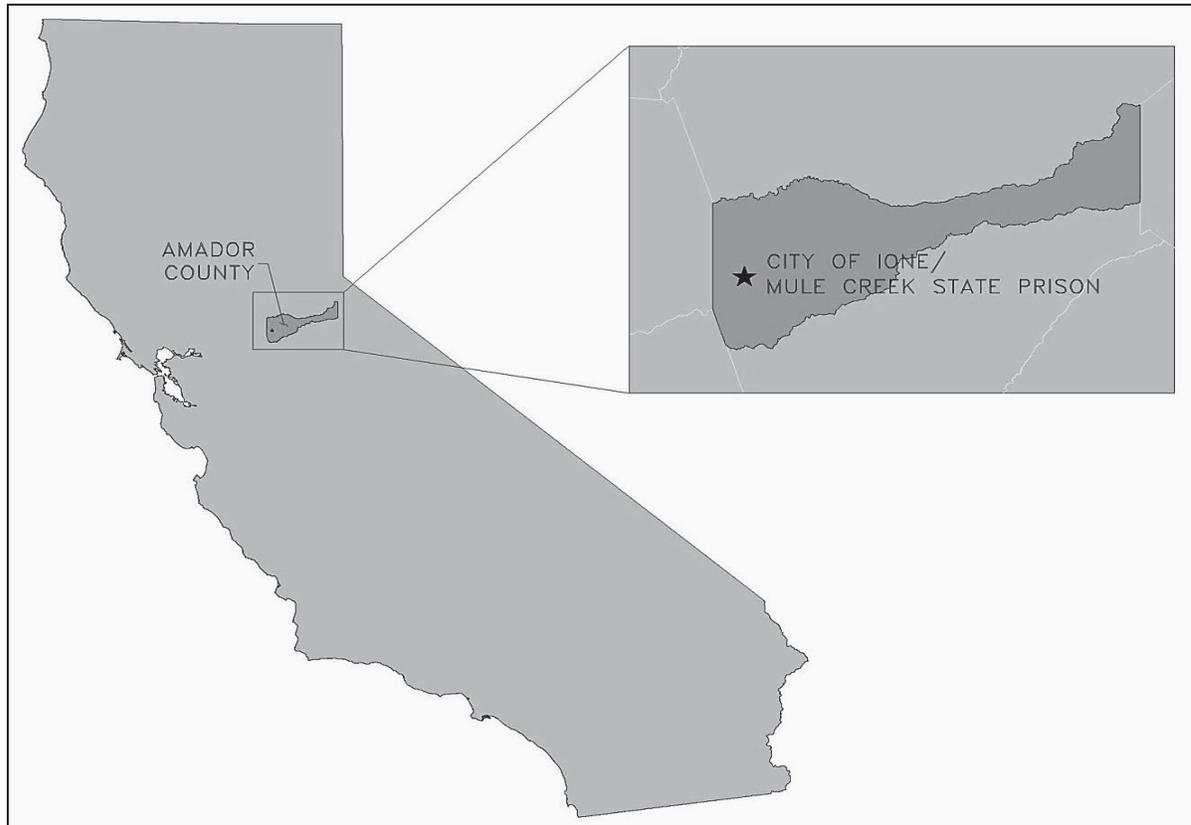
In 2016 CDCR completed construction of the MCIC, a level II Infill Correctional Facility, on the existing MCSP site. The construction footprint for the MCIC included a portion of the area of on-site spray fields historically used by the MCSP WWTP for land application of secondary treated effluent (Land Application Areas, or LAAs). The MCIC project, and related supporting improvements at MCSP, permanently retired approximately 58 acres of existing LAAs. Approximately 200 acres of existing LAAs remain within MCSP state property.

#### 1.1.1 FACILITY LOCATION

The MCSP, MCIC, and MCSP-related wastewater treatment and disposal facilities are located immediately north of the City of Lone in Amador County, California. The MCSP and MCIC facility address is 4001 Highway 104, Lone, California. CAL FIRE and PYCF facilities served by the MCSP WWTP are located at 4501 Highway 104, Lone, California, and 201 Waterman Road, Lone, California, respectively. The MCSP wastewater treatment and disposal facilities are located on six parcels at MCSP as listed in Table 1-1. The general location of the existing facilities are depicted in Figure 1-1.

**Table 1-1  
Facilities Location**

<b>Street Address</b>	4001 Highway 104 Ione, CA 95669
<b>Latitude</b>	38.37
<b>Longitude</b>	-120.95
<b>Township</b>	T.6.N.
<b>Range</b>	R.9.E.
<b>Section</b>	13
<b>Assessors' Parcel Numbers</b>	004-290-004, 004-290-005, 004-290-006, 005-070-007, 005-070-008, 005-070-011



**Figure 1-1  
Facility Locations**

**1.1.2 EXISTING WASTE DISCHARGE REQUIREMENTS**

The existing MCSP WWTP operates under WDR Order No. R5-2015-0129, adopted December 11, 2015. Previous to December 2015, MCSP operated under WDR Order No. 5-00-088. This technical report is intended to provide an update for the facility description and operations as described in Order No. R5-2015-0129. Key provisions of Order No. R5-2015-0129 that are still applicable to the MCSP WWTP are summarized as follows:

1. Based on the MCSP WWTP providing service to the MCSP, MCIC, PYCF, and CAL FIRE;
2. WWTP storage reservoir will have sufficient capacity to contain wastewater effluent, design seasonal precipitation, and seasonal ancillary inflow and infiltration during the wet season, for a design season precipitation using a return period of 100 years;
3. On or about 1 October of each year, available storage capacity will be sufficient to meet the above storage requirements;
4. Effluent discharged to the storage reservoir will meet the following limits summarized in Table 1-2:

Table 1-2  
**Effluent to Storage Water Quality Limits**

Constituent	Units	Limit	Basis of Compliance
Total Coliform Organisms	MPN/100ml	23	7-day Median
Total Coliform Organisms	MPN/100ml	240	Monthly Max
Total Dissolved Solids (TDS)	mg/L	450	Annual Average
Nitrate Nitrogen	mg/L	30	Annual Average
BOD <sub>5</sub>	mg/L	40	Monthly Average
BOD <sub>5</sub>	mg/L	80	Monthly Max

5. Wastewater will be applied at agronomic rates such that there is no standing water in the irrigated area 48 hours after spray irrigation;
6. Spray irrigation with wastewater will be prohibited when wind speed (including gusts) exceeds 30 mph;
7. Discharge to LAAs during rainfall or when the ground is saturated will be prohibited; and

Key changes from existing WDRs, for which details are provided in this report include:

- Average dry weather discharge flow rate is proposed to change from the current limit of 0.74 Mgal/d to 0.57 Mgal/d, for the reasons described herein;
- Expansion of on-site LAAs as previously described in Order R5-2015-0129 is not planned;
- Total annual influent flow is proposed to change from the current limit of 274 Mgal to 223 Mgal due to reduced average dry weather discharge flow rate above; and
- Disposal capacity requirements are planned to be met by discharge to on site LAAs and Castle Oaks Water Reclamation Plant (COWRP).

### 1.1.3 OTHER WASTEWATER DISPOSAL PERMITS AND AGREEMENTS

In addition to discharging to on-site LAAs, the MCSP WWTP also has a direct connection to the COWRP, which provides tertiary treated recycled water used for irrigation of the Castle Oaks Golf Course. There are two connections to COWRP, one is through Preston Reservoir and the Preston Outfall and the second is through a direct connection to the Preston Outfall located on the MCSP site consisting of piping and a bypass valve installed in 2017. Since the construction of the bypass valve in 2017, MCSP has delivered effluent directly through this pipeline, and has not sent any water to Preston Reservoir. The MCSP Effluent Storage Reservoir provides storage for MCSP WWTP effluent until it is discharged to either the on-site LAAs or the COWRP. Secondary disinfected effluent is conveyed to the COWRP based on an existing agreement among the Amador Regional Sanitation Authority (ARSA), CDCR, and the City of Ione. The ARSA agreement was first approved in September 2007 by the three parties. This agreement specifies the amount of effluent that ARSA and CDCR have the right to convey for treatment at the COWRP. The 2007 agreement was supplemented with the execution by the three parties of the 2009 lease for the storage and conveyance facilities utilized by ARSA. The 2007 and 2009 lease agreement are herein referred to as the "2009 Lease Agreement" (see Appendix A). This agreement provides for an allowable total annual discharge of effluent by CDCR to COWRP of 350 acre-feet, which is counted against the allowable annual ARSA discharge of 650 acre-feet. MCSP typically does not discharge to COWRP between October and April; all winter discharges from the prison's WWTP are conveyed for storage in the MCSP Effluent Storage Reservoir or are irrigated in conformance with the 2015 WDRs to on-site LAAs.

In a letter to ARSA from the City of Ione's City Council dated July 19, 2017, the City Council indicated that their relationship with ARSA would be drawing to a close by July 31, 2022. This letter is included as Appendix B. At this time neither the City of Ione and/or CDCR have taken action as a result of the City's decision to withdraw from the existing 2009 Lease Agreement to modify the water transfer aspect of the agreement (see Table 1-2). Accordingly, CDCR believes discharge to this system by the MCSP WWTP would not be affected for the foreseeable future.

## Wastewater Facilities and Discharge

### 2.1 WASTEWATER SOURCES AND TYPE

The MCSP WWTP provides treatment for wastewater generated within the prison including MCSP and MCIC, as well as wastewater generated at the PYCF, and CAL FIRE facilities. Wastewater from these sources is of an institutional nature, with a mixture of domestic-type wastewater generated from inmate and staff occupancy, including food preparation, laundry, sanitary needs, CDCR vocational activities, and support facilities. Wastewater from MCSP also includes sources from industrial-type activities associated with the PIA production of various commodities such as:

- On-site meat packing operations;
- Laundry service, including laundry service to other CDCR institutions such as Northern California Youth Correctional Center and Deuel Vocational Institution; and
- Dry industries such as coffee roasting and packaging, and garment assembly.

CDCR currently monitors influent flow at the existing MCSP influent pump station. CDCR-recorded influent flow includes wastewater generated at the MCSP, MCIC, CAL FIRE, and the PYCF. Table 2-1 presents the general current characteristics of the influent sources to the MCSP WWTP. Please note that all of the remaining State-owned properties that constitutes the PYCF have been formally declared surplus. CDCR anticipates that these properties will be disposed of through sale to a local agency and/or private parties that will eventually modify the facilities for non-correctional uses. At the time of development by a new owner, CDCR anticipates that all wastewater flows currently originating from the PYCF will be directed to the lone sewer system. These discharges will no longer be conveyed to the MCSP WWTP. The timing of this change is not known and therefore this ROWD accounts for continued discharge of limited wastewater flow from PYCF.

Table 2-1  
Existing Wastewater Source Characteristics

Category	Type	Number of Connections	Equivalent Population Served
MCSP <sup>(1)</sup>	Institutional & PIA	One	2,400 inmates
MCIC <sup>(1)</sup>	Institutional & PIA	One	1,584 inmates
CAL FIRE	Institutional	One	Seasonal
PYCF	Institutional	One	None <sup>(2)</sup>

1. Flow basis includes incidental flows from PIA activities and CDCR vocational activities.
2. PYCF is currently in a warm-shutdown state with no inmate/ward occupancy; however, maintenance and extraneous (infiltration and inflow) flows continue to be collected from this facility.

### 2.1.1 EXPECTED WASTEWATER SOURCES AND TYPES

The MCSP WWTP expects to receive wastewater associated with a total of approximately 4,100 inmates from both MCSP and MCIC institutions. The general character of wastewater from existing sources is anticipated to largely remain the same with the same general mixture of domestic-type wastewater generated from inmate and staff occupancy, including food preparation, laundry, and sanitary needs, vocational activities, and PIA industrial-type activities. No additional flow from CAL FIRE is anticipated because no expansion of the CAL FIRE facility has been identified within the agency's five-year capital improvement plan. Table 2-2 presents the anticipated types and sources of wastewater to the MCSP WWTP.

Table 2-2  
Anticipated Wastewater Sources and Types

Category	Type	Number of Connections	Equivalent Population Served
MCSP <sup>(1)</sup>	Institutional & PIA	One	2,500 inmates
MCIC <sup>(1)</sup>	Institutional & PIA	One	1,584 inmates
CAL FIRE <sup>(2)</sup>	Institutional	One	Seasonal
PYCF	Institutional	One	None <sup>(3)</sup>

- (1) Flow basis includes incidental flows from PIA activities.
- (2) No occupancy data available for CAL FIRE.
- (3) PYCF is currently in a warm-shutdown state with no ward occupancy; however, maintenance and extraneous (l/l) flows continue to be collected from this facility. As noted earlier, CDCR anticipates that the PYCF property will be transferred to non-state ownership in the next few years. Once the sale of the property is completed, wastewater and storm water flows will be re-directed to the City of Lone's service system.

## 2.2 WASTEWATER FLOWS

Recent monthly influent flow and site-recorded precipitation totals are presented in Table 2-3 and are based on the MCSP WWTP Self-Monitoring Monthly Reports in Appendix C. Because of the significant changes in site occupancy and construction activities at the MCIC, influent flow data prior to 2016 is not representative of recent and expected near-term wastewater flows. The influent flow data presented in Table 2-3 reflects the recent gradual increase in site population since 2016, resulting in increased year over year site flows. Using the data from Table 2-3, this section discusses the current Average Dry Weather Flow (ADWF) and the expected near-term ADWF to serve as the basis for updated WDRs.

Table 2-3  
Monthly Total Influent Flow and Precipitation

Year	Monthly Totals	Month												Annual Totals
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2016	<i>Inf. Flow (Mgal)</i>	10.7	8.8	12.3	9.6	9.8	10.3	10.3	10.8	10.1	10.8	10.9	12.0	126.2
	<i>Precip. (in)</i>	4.1	0.9	6.4	1.9	0.0	0.0	0.0	0.0	0.0	6.0	3.1	3.5	25.9
2017	<i>Inf. Flow (Mgal)</i>	16.4	14.9	16.9	12.6	12.7	12.0	11.4	11.7	11.0	11.4	12.0	11.9	155.0
	<i>Precip. (in)</i>	12.0	9.8	3.3	3.2	0.3	0.2	0.0	0.0	0.0	0.2	4.9	0.5	34.2
2018	<i>Inf. Flow (Mgal)</i>	13.5	12.1	21.7	16.0	14.9	13.9	14.2	14.2	13.7	14.4	13.9	14.2	176.7
	<i>Precip. (in)</i>	4.1	0.7	7.7	3.4	0.5	0.0	0.0	0.0	0.0	0.6	5.2	2.5	24.7
2019	<i>Inf. Flow (Mgal)</i>	15.4	18.0	18.4	15.2	15.9	14.7	15.8	15.8	15.1	15.5	15.6	17.6	192.9
	<i>Precip. (in)</i>	4.1	8.5	4.7	1.5	3.2	0.0	0.0	0.0	0.7	0.0	0.7	5.1	28.4

The flow totals listed in Table 2-3 include some MCSP storm water that was directed to the WWTP under direction by the RWQCB. Since January 19, 2018, only low dry-period stormwater flows from the MCSP have been diverted to the WWTP, accounting for approximately 1% of the ADWF basis during 2018 and 2019. Because this dry period flow is a small fraction of the total ADWF, no further reduction has been incorporated into the ADWF basis that is calculated from flows for the years 2016 to 2019. As is appropriate for a municipal wastewater treatment facility, it is assumed that storm water will not be discharged to the MCSP WWTP.

### 2.2.1 RECENT REDUCTIONS IN WASTEWATER

The Annual Average Flow (AAF) to the MCSP WWTP has consistently decreased over the period of 2005 through 2014 as presented in Table 2-4. The reduction in flows to the MCSP WWTP over this period were a result of a decreased average inmate population since 2005, particularly an approximate 1,100 inmate population reduction over the period 2008 through 2012 (from an average of approximately 3,860 in 2008 to 2,750 in 2012) and closing of the PYCF in 2011. Additional reductions in flow to the MCSP WWTP occurred as a result of water conserving efforts as seen by the continued decrease in flows since 2007 outpacing the reduction in inmate population. Since activation of the MCIC, the inmate population at MCSP has decreased while the inmate population at MCIC has increased, which has newer and more efficient water fixtures and lower rates of I/I. Recent historical wastewater flows since the stabilization of the MCIC inmate population are discussed in Section 2.2.2.

Table 2-4  
Historical MCSP WWTP ADFW Flow Summary

Facility	Flow Characteristic	Water Year											
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MCSP	ADWF (Mgal/d)	0.793	0.803	0.591	0.452	0.480	0.458	0.442	0.415	0.340	0.313	0.286	0.283
MCIC	ADWF (Mgal/d)	N/A <sup>(2)</sup>	0.077										
PYCF and CAL FIRE	ADWF (Mgal/d)	-- <sup>(1)</sup>	-- <sup>(1)</sup>	-- <sup>(1)</sup>	0.123	0.081	-- <sup>(1)</sup>	-- <sup>(1)</sup>	0.001	0.009	-- <sup>(1)</sup>	0.004	0.01
Total of Combined Facilities	ADWF (Mgal/d)	0.793	0.803	0.591	0.575	0.561	0.458	0.442	0.415	0.349	0.313	0.338	0.371
	AAF (Mgal/d)	0.801	0.869	0.661	0.636	0.557	0.512	0.452	0.449	0.379	0.325	0.331	0.420

(1) Data unavailable

(2) Not applicable, MCIC was not activated until January 2016.

Since approximately 2010, CDCR has reported a reduction in the influent discharges to the MCSP WWTP both at a total influent volume but more recently on a per-inmate basis. Influent flows to the MCSP WWTP have decreased from 202 Mgal/d at 148 gallons per inmate per day (gp/d) in 2010 to 193 Mgal/d at 121 gp/d (combined MCIC and MCSP inmate populations) in 2019. The following four main factors have contributed to this per-inmate flow reduction:

1. CDCR has reduced inmate crowding in the main prison population;
2. MCSP has implemented water conservation projects within the main correctional complex that resulted in significant reductions to overall water use;
3. Improvements to the existing WWTP with the renovated treatment facilities have eliminated the previous additional 0.04 Mgal/d effluent flows by including an effluent-based utility water pumping system instead of a potable water system; and
4. Activation of the new MCIC has demonstrated that conformance with more recent Title 24 State Building Codes results in the substantial reduction in domestic water usage because of high-efficiency water-use fixtures and improved controls.

### 2.2.2 POPULATION BASED FLOW ASSESSMENT

Although CDCR has increased water use efficiency, the recent WWTP flows have increased due to the gradually increasing site population due to the addition of the MCIC. The monthly inmate population at MCSP and MCIC since activation of MCIC in January 2016 is presented in Figure 2-1. Beginning in 2016, the population of MCSP was reduced from 2,747 inmates to 2,538 inmates by April 2016. Since then, the population of the MCSP facility has been maintained at an occupancy of approximately 2,500 inmates. The occupancy of the MCIC facility has incrementally increased for two years since opening in 2016. By December 2017, MCIC had reached an inmate population of 1,536. Since January 2018, the population of MCIC has been consistently around 1,550, and has not exceeded 1,568. The maximum capacity of the MCIC is 1,584 inmates, and is used in this analysis as the basis for future occupancy-based flows. The near-term MCSP facility population is expected to remain similar to the recent occupancy of 2,500 inmates. The current total inmate population of MCSP and MCIC combined is approximately 4,100 inmates.

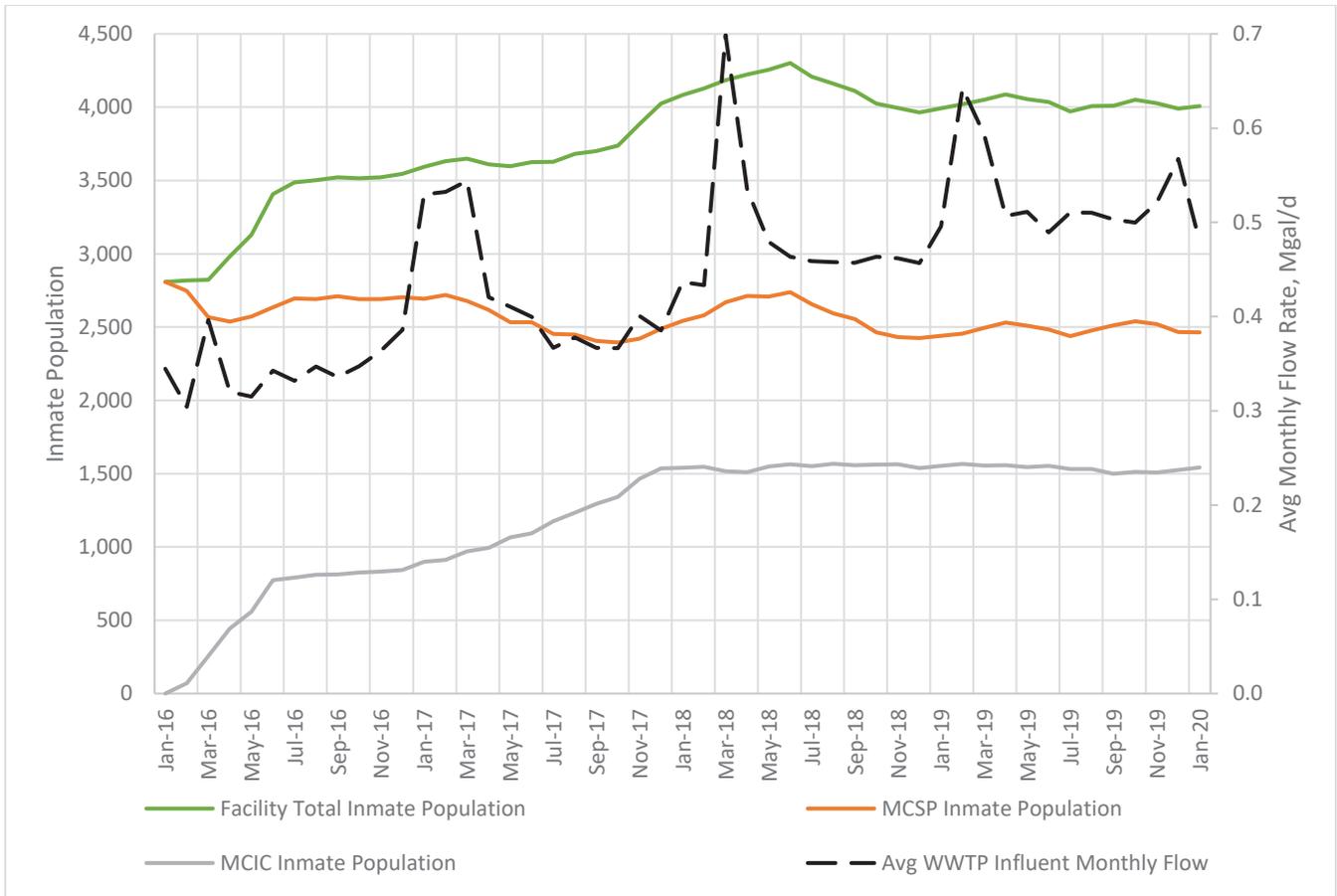


Figure 2-1  
**Facility Inmate Population & Influent Flow**

Table 2-5 summarizes the inmate population at MCSP and MCIC since activation of the MCIC beginning in 2016. The populations shown in Table 2-5 are consistent with the population increase as the MCIC was being incrementally occupied after activation. After nearly reaching the operational capacity of 1,568 inmates in December 2017, the MCIC inmate population has been consistently between 1,498 and 1,567 throughout 2018 and 2019. The gradual increase during 2016 and 2017 in total population of facilities being served by the MCSP WWTP and the increase in the average monthly flow seen in Figure 2-1 is predominantly attributed to activation of MCIC and equalization of inmate population at the MCSP.

Table 2-5  
2016 Through 2019 MCSP Inmate Population Summary

Month	2016		2017		2018		2019	
	MCSP	MCIC	MCSP	MCIC	MCSP	MCIC	MCSP	MCIC
January	2,808	0	2,692	900	2,541	1,541	2,441	1,552
February	2,747	71	2,718	913	2,581	1,546	2,455	1,566
March	2,567	255	2,678	970	2,669	1,516	2,495	1,556
April	2,538	444	2,617	994	2,713	1,510	2,531	1,557
May	2,572	557	2,532	1,065	2,708	1,548	2,509	1,545
June	2,635	773	2,533	1,093	2,738	1,563	2,483	1,552
July	2,695	791	2,453	1,175	2,657	1,551	2,439	1,531
August	2,691	811	2,448	1,233	2,594	1,567	2,477	1,531
September	2,710	812	2,406	1,294	2,554	1,557	2,511	1,498
October	2,690	825	2,395	1,342	2,464	1,561	2,540	1,511
November	2,690	832	2,421	1,464	2,432	1,563	2,520	1,507
December	2,703	842	2,488	1,536	2,426	1,537	2,465	1,524

Influent flows to the MCSP WWTP have been evaluated based on flow meter data available from October 2017 through September 2019. This corresponds to the time that MCIC reached operational capacity. Influent flows from the Preston Youth Correctional Facility (PYCF), CAL FIRE facilities, MCSP, and MCIC were examined.

Data from the past two water-years (October 2017 through September 2019) indicates that MCSP contributes about 74% of the influent flow to MCSP WWTP, MCIC contributes approximately 22%, CAL FIRE and PYCF contribute a combined 4%. For the most recent water year (2018 water-year, October 2018 through September 2019), MCSP contributed an ADWF (evaluated from July through September) of 0.38 Mgal/d, an AAF of 0.371 Mgal/d, and a Peak Month Flow (PMF) of 0.462 Mgal/d. For the 2018 water-year, the MCIC contributed an ADWF of about 0.122 Mgal/d, and AAF of 0.112 Mgal/d and a PMF of 0.124 Mgal/d.

During the 2018 water year CAL FIRE and PYCF combined ADWF was approximately 0.015 Mgal/d, and the AAF was approximately 0.029 Mgal/d. Additionally, the combined CAL FIRE and PYCF facilities' PMF during this period occurred in March 2018, and was approximately 0.08 Mgal/d. The variability in influent contribution from CAL FIRE and PYCF is likely influenced by seasonal variability in CAL FIRE occupancy, and increased seasonal flows associated with infiltration and inflow (I/I) during the winter wet months. The AAF for the MCSP WWTP has decreased from a value of 0.915 Mgal/d from water year 2006, when MCSP alone had an inmate population of about 4,000. For the period of October 2012 through September 2013, the AAF dropped to 0.365 Mgal/d due to the decreased average inmate population at MCSP of 2,831. However, based on an average of the influent flow rates for October 2018 through September 2019 the current AAF has risen to 0.512 Mgal/d at an average inmate population of approximately 4,000. The ADWF during this same period is 0.513 Mgal/d. Flow data for the recent 2017 and 2018 water years are presented in Table 2-6.

Table 2-6  
Recent MCSP Facility Flow Conditions

Facility	Flow Characteristic	WY 2017 (Oct 2017 – Sep 2018)	WY 2018 (Oct 2018 – Sep 2019)
MCSP	AAF, Mgal/d (Oct – Sep)	0.342	0.371
	ADWF, Mgal/d (Jul – Sep)	0.340	0.376
	Dry Weather Inmate Population (Jul – Sep)	2,602	2,476
	Dry Weather Inmate Flow, gpid (Jul – Sep)	131	152 <sup>(2)</sup>
MCIC	AAF, Mgal/d (Oct – Sep)	0.102	0.112
	ADWF, Mgal/d (Jul – Sep)	0.109	0.122
	Dry Weather Inmate Population (Jul – Sep)	1,558	1,520
	Dry Weather Inmate Flow, gpid (Jul – Sep)	70	80
PYCF and CAL FIRE	AAF, Mgal/d (Oct – Sep)	0.021	0.029
	ADWF, Mgal/d (Jul – Sep)	0.014	0.015
	Dry Weather Inmate Population (Jul – Sep)	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
	Dry Weather Inmate Flow, gpid (Jul – Sep)	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<b>Annual Total of Combined Facilities</b>	<b>AAF, Mgal/d (Oct – Sep)</b>	<b>0.465</b>	<b>0.512<sup>(3)</sup></b>
	<b>ADWF, Mgal/d (Jul – Sep)</b>	<b>0.463</b>	<b>0.513</b>

(1) No occupancy data available for CAL FIRE.

(2) Data may be influenced by MCSP stormwater diversion requested by the RWQCB.

(3) October through December 2018 flows were lower than normal therefore reducing the AAF for this water year.

Based on an average of the influent flow rates for October 2018 through September 2019 the current AAF has risen to 0.512 Mgal/d at an average inmate population of approximately 4,000. The ADWF during this same period is 0.513 Mgal/d, slightly higher than the AAF due to dry conditions in 2018 for the normally wet October through December period.

Division of the respective MCSP and MCIC ADWF (0.376 and 0.122 Mgal/d) by each site's population yields the average gpid rates of approximately 150 and 80. Because MCSP population has stabilized, no increase in influent flow from this facility is anticipated. To account for flow variability as the population of MCIC increases, a per-inmate flow basis of 80 gpid is recommended for prediction of flows from this institution. Additionally, to account for increasing wastewater flow rates as the facility ages, the near-term average flow rates per inmate at MCIC were increased by approximately 10%. MCIC population is expected to maintain no more than 1,584 inmates, making the combined projected population of MCSP and MCIC approximately 4,100 inmates, which is consistent with CDCR's projected population. It is anticipated that CAL FIRE will not generate increasing future flows because no expansion of the CAL FIRE facility has been identified within the agency's five-year capital improvement plan. To account for year-to-year variability in future flows, it is recommended that a minimum safety

factor of 5% be used. The resulting projected total influent ADWF under these expected future operating conditions is 0.57 Mgal/d as summarized in Table 2-7.

Table 2-7  
Occupancy Based Average Dry Weather Flows

Contributing Facility	Flow Basis	Flow Criteria (gpid)	ADWF (Mgal/d)
MCSP	Near-term Inmate Pop of 2,500 <sup>(1)</sup>	150 <sup>(2)</sup>	0.38
MCIC	Max. Inmate Pop. of 1,600	88 <sup>(2)</sup>	0.14
PYCF <sup>(3)</sup> and CAL FIRE	15,000 gpd ADWF	-- <sup>(3)</sup>	0.02
<b>Subtotal (Mgal/d)</b>			<b>0.54</b>
<b>Recommended 5% Safety Factor (Mgal/d)</b>			<b>0.03</b>
<b>Future Projected Total</b>			<b>0.57</b>

(1) Near-term population presented in Figure 2-1.

(2) Flow per inmate based on recent MCSP WWTP influent flow and inmate population records plus 10% to account for facility aging.

(3) PYCF is closed and is not likely to be reactivated by CDCR.

## 2.3 FACILITIES GENERATING WASTEWATER

In addition to the mixture of domestic-type wastewater generated from inmate and staff occupancy, wastewater from MCSP and MCIC also includes industrial-type wastewater associated with activities of PIA. PIA facilities served by the WWTP include meat packing, laundry, sewing and garment assembly, coffee roasting, and lunch packaging. In addition to the PIA activities, CDCR has several vocational training facilities on-site which include; janitorial training; welding and fabrication; vehicle maintenance; warehouse operations; and building maintenance which includes painting, carpentry, Heating, Ventilation, and Air Conditioning (HVAC) maintenance; and mechanical maintenance products. General chemical use across the MCSP site also takes place using general solvents and maintenance. This section discusses the typical chemicals used in each of these facility operations.

### 2.3.1 GENERAL CLEANING AND MAINTENANCE PRODUCT USE

Across the MCSP site there are a variety of products and chemicals used for degreasing, cleaning, maintenance, and personal hygienic uses. Use of these products can be expected to have a nominal effect on wastewater characteristics overall. The products in each facility yard are typically kept in containers between 2 to 20 gallons at a time, and are regularly inventoried either on a monthly basis or each time the chemicals are replaced. The typical quantity, type of use and chemical components for each product are presented in Table 2-8. Material Safety Data Sheets (MSDS) are contained in Appendix D for further reference of chemical handling and composition details.

Table 2-8  
**Summary of General Cleaning and Maintenance Product Characteristics**

Product	Gallons Stored	Typical Uses	Chemical Components	Concentration
Aterra Hand Soap	20 Gallons	Hand Washing	1. Sodium Lauryl Sulfate	1-10%
Cell Block 64	2	Disinfectant & Deodorant Cleaner	1. Didecyltrimethylammonium Chloride; 2. Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides 3. N,N-Dimethyloctylamine N-oxide 4. Ethanol	2-3% 1.5-2% 0.5-1% 0.1-1%
California Green Glass Cleaner Concentrate	2	Glass Cleaner	1. D-Glucopyranose, oligomeric, decyl octyl glycosides 2. D-Glucopyranose, oligomeric, C10-16-alkyl glycosides	3-7% 1-5%
Kitchen Power Degreaser & Floor Cleaner	12	Degreaser & Floor Cleaner	1. C9-11 Alcohols Ethoxylated 2. Caprylyl/capryl glucoside 3. Lauryl glucoside 4. D-Limonene	5-10% 1-5% 1-5% <1%
Powerhouse Floor Finish	2	Floor Finisher	1. Styrene Copolymer Emulsion Ethanol 2. Diethylene Glycol Monoethyl Ether	40-70% 3-7%
California Green, Restroom Cleaner Concentrate	6	Disinfectant Sanitizer	1. Sodium lauryl sulfate 2. Alcohols, C9-11, ethoxylated	1-5% 0.5-15%
Sani-Guard 24-7	12	Food-service Sanitizer	1. Quaternary ammonium compounds, di-C8-10-alkyldimethyl, Chlorides 2. Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides 3. Ethanol	5-10% 2-5% 0.5-2%

Other chemicals, besides the regular soaps and degreasers, are used for general maintenance activities across both MCSP and MCIC sites. These chemicals are used for general vehicle fueling/maintenance, building painting, and plumbing, carpentry, or HVAC maintenance. The chemical MSDS information is included in Appendix D, and are listed as follows:

- Paints and Primers, both Cans and Sprays;
- Paint Thinner;
- Motor Oil
- Pneumatic Tool and Cutting Oils
- WD-40;
- Petroleum Gasoline; and
- Oxygen Gas.

### **2.3.2 DRY INDUSTRY-TYPE AND VOCATIONAL ACTIVITIES**

Several dry PIA industrial-type or CDCR vocational activities take place at the MCSP and MCIC. These activities are operated without generating high wastewater flows during normal operations. A majority of wastewater flows produced from these practices are created during floor mopping and general housekeeping. The typical products or chemicals used per PIA industrial-type or CDCR vocational activity is summarized in Table 2-9. Detailed manufacturer MSDSs are contained in Appendix D for further reference.

Table 2-9  
Summary of Dry-Type Industry Activity Chemicals

PIA Industrial-type or CDCR Vocational Activity	Chemicals Used	Locations
PIA Coffee Roasting	Compressor Oil Antifreeze Battery Cleaner Degreaser Concrete Floor Epoxy Food Grade Machine Oil Engine, Pump & Hydraulic Oils Paint, Can Brake Fluid	MCSP Yard A
PIA Lunch Packaging	General Chemicals	MCIC Yard E
PIA Garment Assembly	Compressor & Machine Oils Ink Cleaner/Remover Silicone Sealant & Spray Spray Paint Dust Spray Adhesive Spray Equipment Cleaning Fluid Rust Oleum Rust Cleaner WD-40 Fire-Resistant Fabric and Polymer (Non-PFAS/PFOS)	MCSP Yards A, B
PIA/CDCR Warehouses	General Product and Foodstuff Storage	MCSP Outside Perimeter
CDCR Building Maintenance/Vocational HVAC	Acetone Muriatic Acid Spray Adhesive Contact Cleaner Solder Flux Bearing Grease Heat Sink Paste Pump oil Refrigerant 22 Refrigerant R-134 Refrigerant R-404 Refrigerant R410A	MCSP Yard A/B
CDCR Vocational Medical/Clinic Training	General Chemicals	MCSP Yard B
CDCR Vocational Welding/Fabrication	Tap Magic PROTAP Machining/Cutting Liquid Multi-purpose Grease Gas Leak Detector (Propylene Glycol) Acetylene Argon Gas Welding Wire Carbon Dioxide Resinoids & Metallic Oxides Welding Rods Paint, Spray	MCSP Yards B, Outside Perimeter MCIC Yard D, E

### 2.3.3 WET INDUSTRY-TYPE WASTEWATER SOURCES

Two PIA wet industrial-type of activities at the MCSP are operated and discharge wastewater to the MCSP WWTP including: a meat packing operation and a laundry service. The historical total combined water use for these two operations has been estimated to be approximately 130,000 gpd (based on average monthly 2014 water use of 510,000 cubic feet<sup>1</sup>), and based on water meter records.

#### 2.3.3.1 Meat Packing

A meat packing operation is managed by the PIA at the MCSP Yard A site consisting of production and packaging of primarily raw beef, chicken and sausage products. The meat packing operation consists of meat trimming, washing, grinding and slicing, and seasoning of certain products with liquid smoke and spices. No animal holding, slaughtering, rendering, or product brining are conducted on-site. Wastewater generated from this operation is from facility and equipment cleaning. The annual production of this operation is approximately 7,000,000 lbs. of product per year. Normal operating hours are Monday through Friday 7:00 am to 1:00 pm. Table 2-10 lists typical products with annual volumes for cleaners used in the operation.

Table 2-10  
Existing Meat Packing Cleaner Products and Use

Product	Annual Volume Used (gallons)
MX 815 Degreaser	1,900
Foaming Chlorinated Degreaser	2,300
Caustic Cleaner	1,000
HASA Bleach	800

Meat waste products are shipped off-site to a commercial rendering service. Edible trimmings are reworked back into the product (e.g., sausage products). All wastewater from this operation is discharged into the MCSP sewer system and is conveyed to the MCSP WWTP. All operations are conducted indoors.

Pre-treatment of the meat packing operation wastewater consists of grease separators that are regularly pumped by a waste hauler for off-site disposal.

#### 2.3.3.2 Laundry

At the MCSP Yard C, the PIA operates an industrial laundry service that serves the Deuel Vocational Institution, Northern California Youth Complex, McGee Correctional Training Center, and CAL FIRE. The laundry service operates 5 days per week, with average washer run-times of 5 ½ hours. The laundry operations include a total of fifteen washers, with individual machine capacities ranging from 135 lbs. to 450 lbs. per load. Table 2-11 lists typical cleaning products used in this operation and the estimated annual volume of each used.

<sup>1</sup> Personal communication, Mike Williams, CDCR, January 23, 2015.

Table 2-11  
**Existing Laundry Service Products and Use**

Product	Annual Volume Used (gallons)
Bleach	1,100
Detergent	1,800
Neutralizer	800
Alkaline Breakup	1,800

The water used in the laundry service does not receive any pre-conditioning (e.g., water softening). Wastewater generated from the laundry operation (recent 2019 annual of approx. 55,000 gpd) is discharged to the MCSP sewer system for treatment and disposal through the MCSP WWTP. Prior to discharge to the MCSP sewer, the laundry service wastewater is screened to reduce solids. No other pre-treatment is provided to the wastewater prior to discharge to the sewer.

All laundry operations are conducted indoors.

#### 2.3.4 OTHER ACTIVITIES

Other site activities involving vehicle maintenance and fueling do not generate wastewater flows to the MCSP WWTP. Additionally, floor drains in the vehicle maintenance area used to collect incidental spills are collected in a local sump that is not connected to either MCSP or MCIC sewer systems.

#### 2.3.5 STORM WATER COLLECTION SOURCES

CDCR owns and operates two small storm sewer systems, one that serves the MCSP, constructed around 1988, and one that serves the MCIC, which was constructed in 2016. These systems collect storm water generated at the MCSP and MCIC sites originating from precipitation runoff, surface runoff, and drainage. At the MCSP, storm water is collected through a series of pervious and impervious surfaces, ditches, catch basins, and storm drains. At the MCIC, storm water is collected through a series of pervious and impervious surfaces, ditches, catch basins, and storm drains, which discharge storm water into a storm water detention basin. CDCR is currently permitted as a Small, Non-Traditional Municipal Separate Storm Sewer System (MS4). The focus of this report is effluent from the WWTP, which is not intended to be comingled with storm water, and therefore the discharges associated with the storm water are not covered in further detail here.

## 2.4 WASTEWATER CONVEYANCE, TREATMENT AND DISPOSAL SYSTEMS

Four separate sewer systems are served by the MCSP WWTP, including: 1) the MCSP sewer system, 2) the MCIC sewer system, 3) PYCF sewer system, and 4) the CAL FIRE sewer system. Flows from these systems are comingled in a manhole upstream of the MCSP WWTP influent pump station. The three primary systems (MCSP sewer, MCIC sewer, and CAL FIRE/PYCF sewer) are as described below.

### 2.4.1 MCSP SEWER SYSTEM

The MCSP sewer system consists of approximately 3 miles of gravity sewer pipe. The system was constructed primarily of polyvinyl chloride (PVC) in the mid-1980s (around 1986-1987). Sewer sizes vary from 4-inches to 18-inches in diameter<sup>2</sup>. Figure 2-2 depicts the MCSP sewer system service area.

Flows from the MCSP contribute the majority of the current base wastewater flow to the MCSP WWTP. Recent influent monitoring data indicate that wastewater flows from the MCSP site are most strongly associated with inmate population, with moderate seasonal variability as a function of seasonal precipitation. Analysis of MCSP flows in Section 2.2 supports the conclusion that the influent flow from this site is moderately influenced by seasonal precipitation.

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<sup>2</sup> Sewer System Management Plan for Mule Creek State Prison, December 2009 (Updated September 2014).

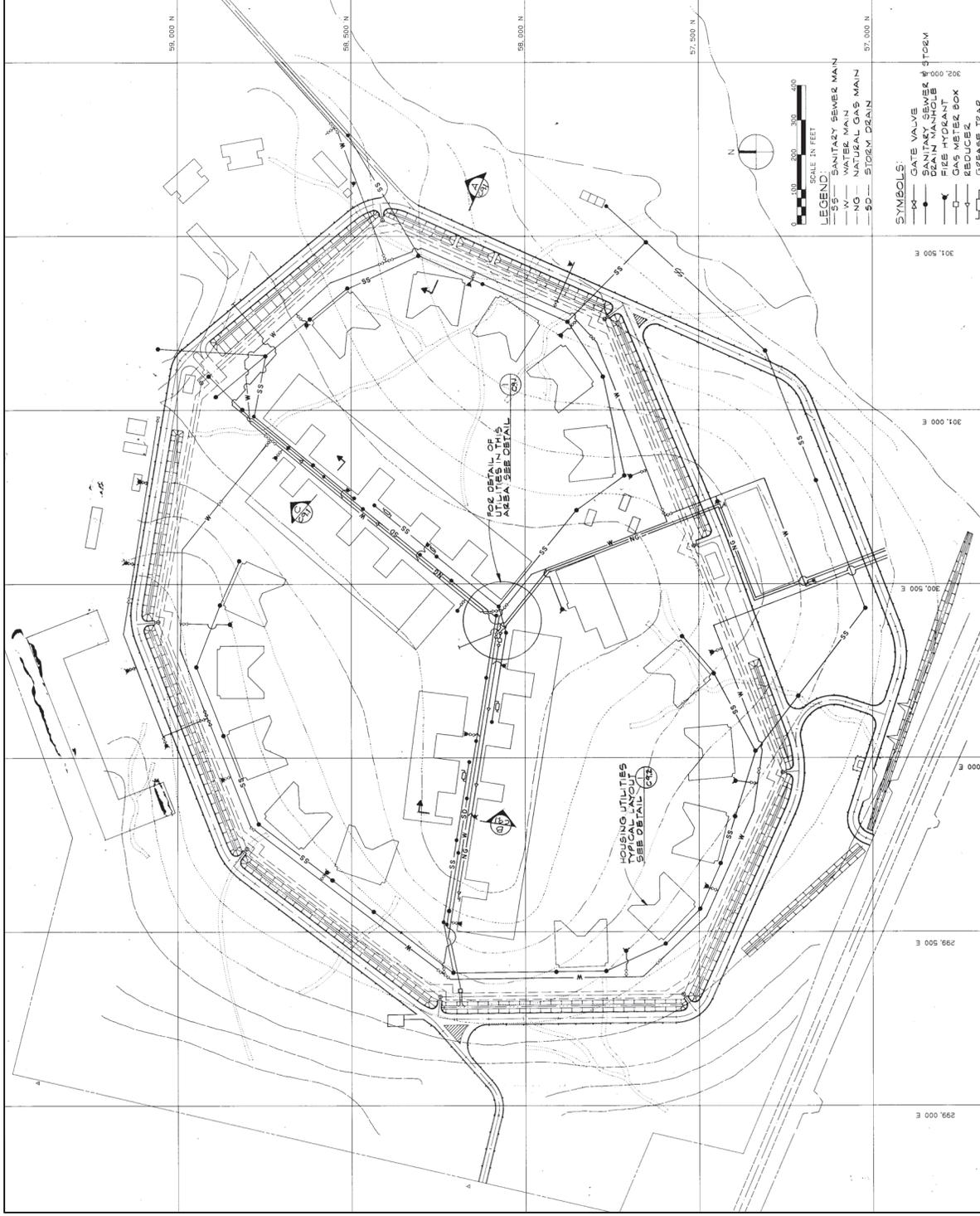


Figure 2-2  
MCSP Sewer System Area

### **2.4.2 MCIC SEWER SYSTEM**

With the addition of the MCIC, approximately 7,200 linear feet of new gravity sanitary sewer were connected to the MCSP WWTP as depicted generally in Figure 2-3. The gravity sanitary sewer is constructed of PVC. At the MCIC site, a new sanitary sewer pump station was constructed with a 3,500-foot-long, 6-inch High Density Poly Ethylene (HDPE) force main. The force main discharges to a manhole in the MCSP sewer system upstream of the MCSP WWTP Influent Pump Station.

Flow increases at MCIC as a result of precipitation are almost nonexistent (see Section 2.2) as expected for a well-constructed new system. However, it is recognized that as the system ages infiltration and inflow rates are likely to gradually increase, albeit at moderate rates.



Figure 2-3  
MCIC Sewer System Area

### 2.4.3 CAL FIRE AND PYCF SEWER SYSTEMS

Both CAL FIRE and the PYCF are served by separate sewer systems that are combined at one point before being conveyed to the MCSP sewer system. The larger of the two remote sewer systems serves the PYCF. The PYCF has been closed since June 30, 2011 and is considered to be a “warm shutdown facility” in which no wards are currently housed, but maintenance crews managed by the MCSP continue to maintain the buildings and infrastructure. The PYCF sewer system consists of approximately 2 to 4 miles of PVC, Vitrified Clay Pipe (VCP) and Cast Iron Pipe (CIP) gravity and force main sewer lines. The institution was opened in 1880; therefore, the oldest sewer system components may be as old as 140 years. The sewer sizes range from 4-inches to 12-inches in diameter. The majority of the PYCF gravity sewer system discharges into a pump station at the northwest corner of the site, where it is pumped to a manhole at the CAL FIRE site upstream of the MCSP WWTP influent pump station<sup>3</sup>.

The sewer pump station that serves the PYCF consists of a duplex pump station arrangement with two pumps providing a reliable pumping capacity of 400 gpm. The pump station discharges to a 6-inch diameter force main, conveying sewage to the CAL FIRE manhole. The PYCF sewer pump station is equipped with a dedicated backup generator and automatic transfer switch to maintain power supply to the station during utility power outages. The pump station is set up to locally signal alarm on high wet well level.

Sewage generated by CAL FIRE is collected by a local sewer system consisting of smaller diameter gravity sanitary sewers that discharge via gravity to a manhole upstream of the MCSP WWTP influent pump station. Wastewater flows originating from the PYCF and CAL FIRE systems are monitored at a location on the CAL FIRE site.

Although the PYCF is in a warm shutdown state, the existing sewer system continues to receive minor flows associated with system maintenance and ancillary flows associated with I/I. The PYCF has been reported to have seasonal variability in influent flows, which are anticipated to be a result of higher relative I/I rates for these older sewers, as compared to the MCSP and MCIC systems. Recent wet year (near 1-in-100 year condition) PYCF flows have indicated peak flows of up to 0.342 Mgal/d, associated with average flows at that time of 0.107 Mgal/d<sup>4</sup>. These data would suggest a potential peak infiltration rate on a maximum day of up to 332,000 gpd. Utilizing 2016-2017 wet year data, monthly I/I rates as summarized in Table 2-12 are expected from this facility as it continues to be connected to the MCSP WWTP. In addition to this I/I, it is assumed that an average of 15,000 gpd of wastewater flow, estimated from PYCF and CAL FIRE combined ADWF contribution, will continue associated with maintenance of the existing PYCF facilities, which is consistent with recent available influent flow data.

<sup>3</sup> Sewer System Management Plan, Preston Youth Correctional Facility, December 2009 (Updated September 2014), SSMP.

Table 2-12  
**PYCF and CAL FIRE Water-Year 2017 1-in-100 Year Monthly I/I**

Water Year of 2016-2017	Water Year 2017 Estimated I/I	
Month	(gpd)	(Mgal/month)
October	11,000	0.34
November	14,000	0.42
December	16,000	0.50
January	67,000	2.08
February	97,000	2.72
March	29,000	0.89
April	23,000	0.69
May	1,000	0.03
June	0	0
July	0	0
August	5,000	0.16
September	0	0

#### 2.4.4 WASTEWATER TREATMENT AND DISPOSAL SYSTEMS

Figure 2-4 presents a block diagram of the existing wastewater treatment and disposal processes, with key facilities described in further detail below. The overall treatment and disposal facility locations on the MCSP site are as depicted on Figure 2-5.

As shown in Figure 2-5, the existing MCSP effluent storage reservoir is located north-east of the existing WWTP site and the existing MCSP facility. Surrounding this area, on both sides of Mule Creek, the existing effluent LAAs encompass an area of approximately 200 acres. Prior to construction of the MCIC and related improvements, the MCSP total effluent spray field area was historically determined as 296 acres. The existing areas are as described in Section 2.11.

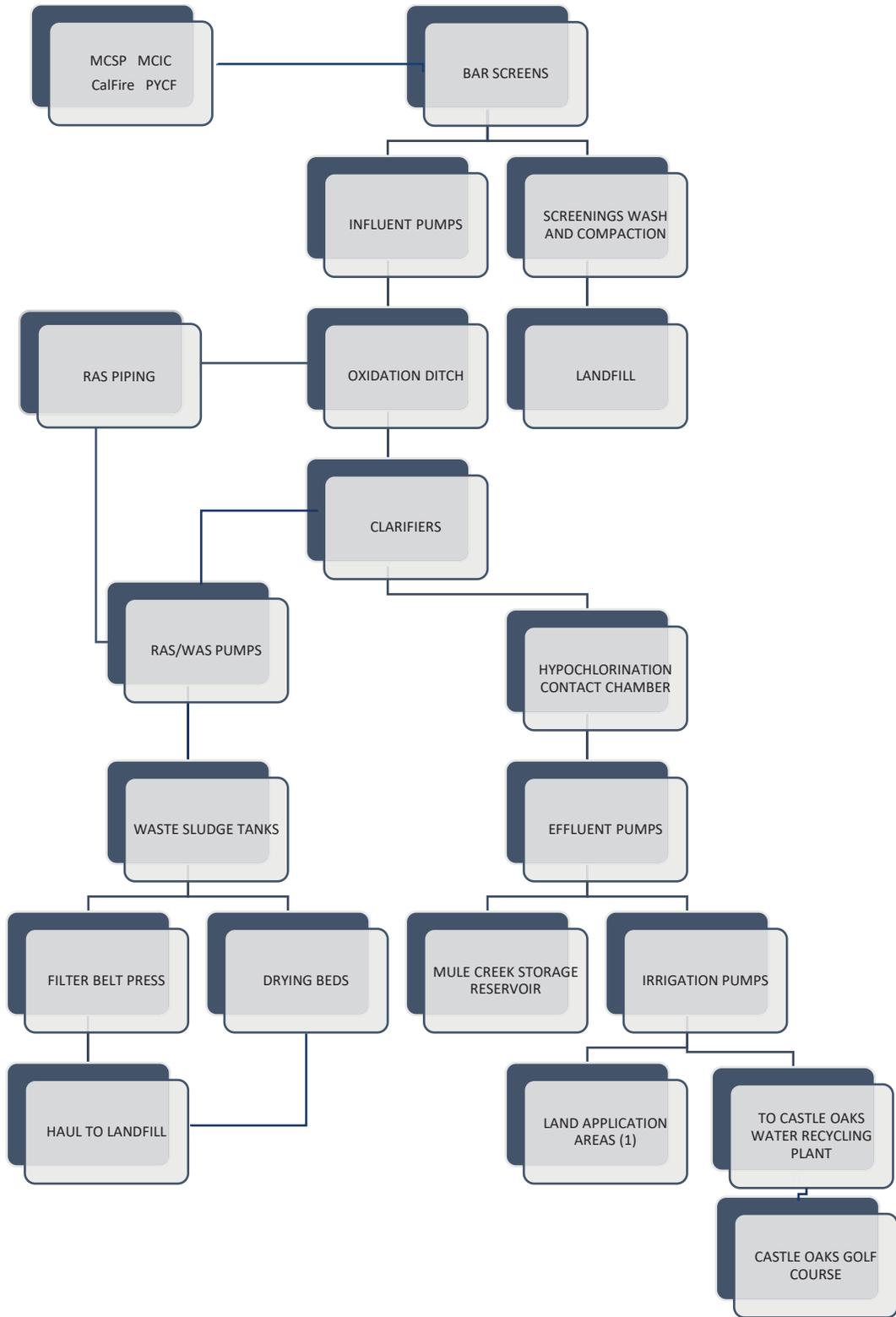
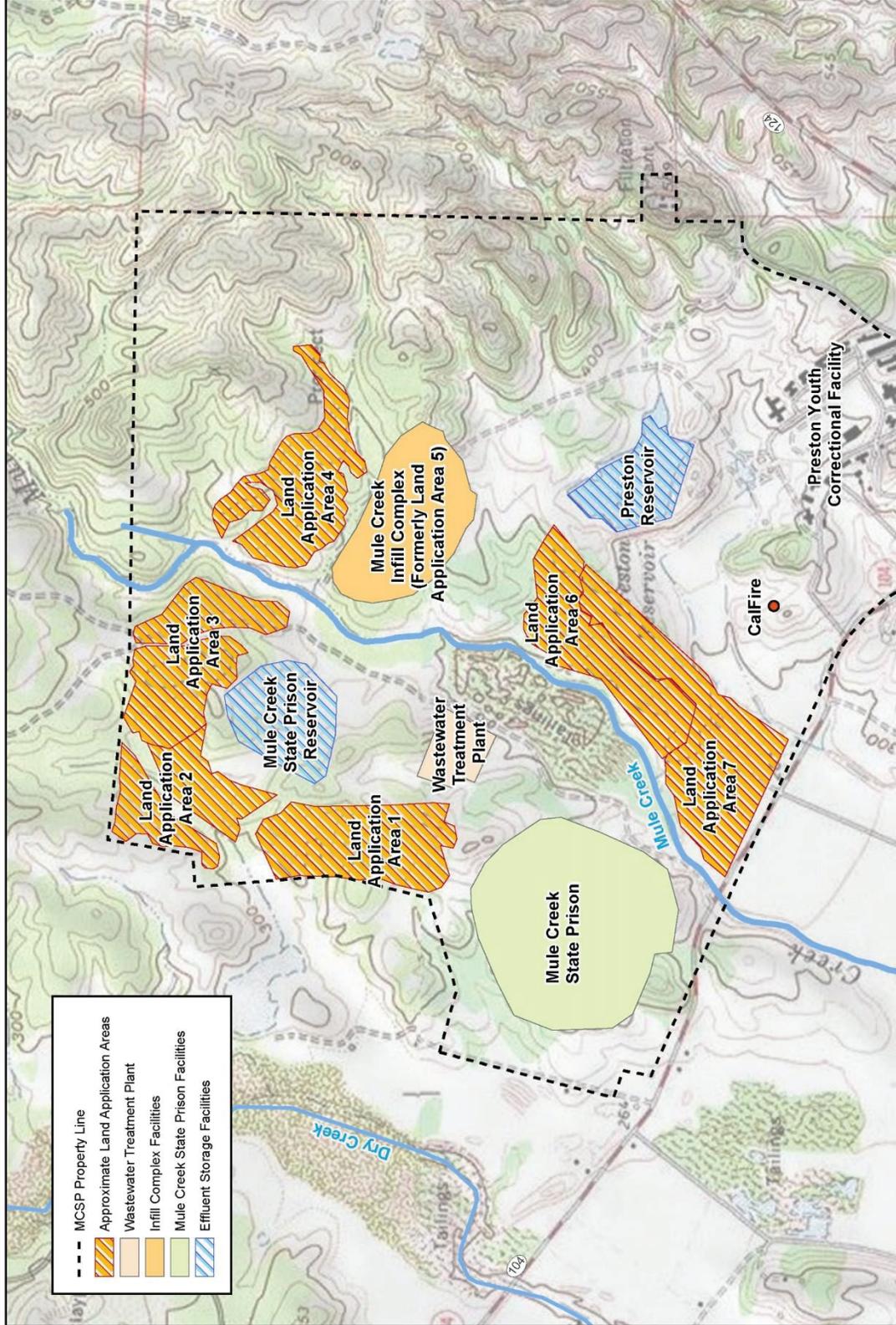


Figure 2-4  
**Treatment and Disposal System Block Flow Schematic**  
 (1) Fields 8, 9, 10, and 11 described in Order No. RS 2015-0129 were not constructed.



	MCSPP Property Line
	Approximate Land Application Areas
	Wastewater Treatment Plant
	Infill Complex Facilities
	Mule Creek State Prison Facilities
	Effluent Storage Facilities

	Scale 1" = 1,250' Original Drawing Scale 0 1/4" 1/2"	EXHIBIT <b>1</b> DATE 5.14.2020
	<b>MULE CREEK STATE PRISON EXISTING WASTEWATER FACILITY MAP</b>	
711 N. Peirshing Avenue Stockton, CA 95203 209-946-0268 1550 Harbor Blvd, Suite 212 West Sacramento, CA 95691 916-403-5800 www.ksninc.com		
<b>KJELDSEN SINNOCK NEUDECK</b> CIVIL ENGINEERS & LAND SURVEYORS		

Figure 2-5  
**Facility Location Map**

#### 2.4.4.1 MCSP WWTP Treatment System

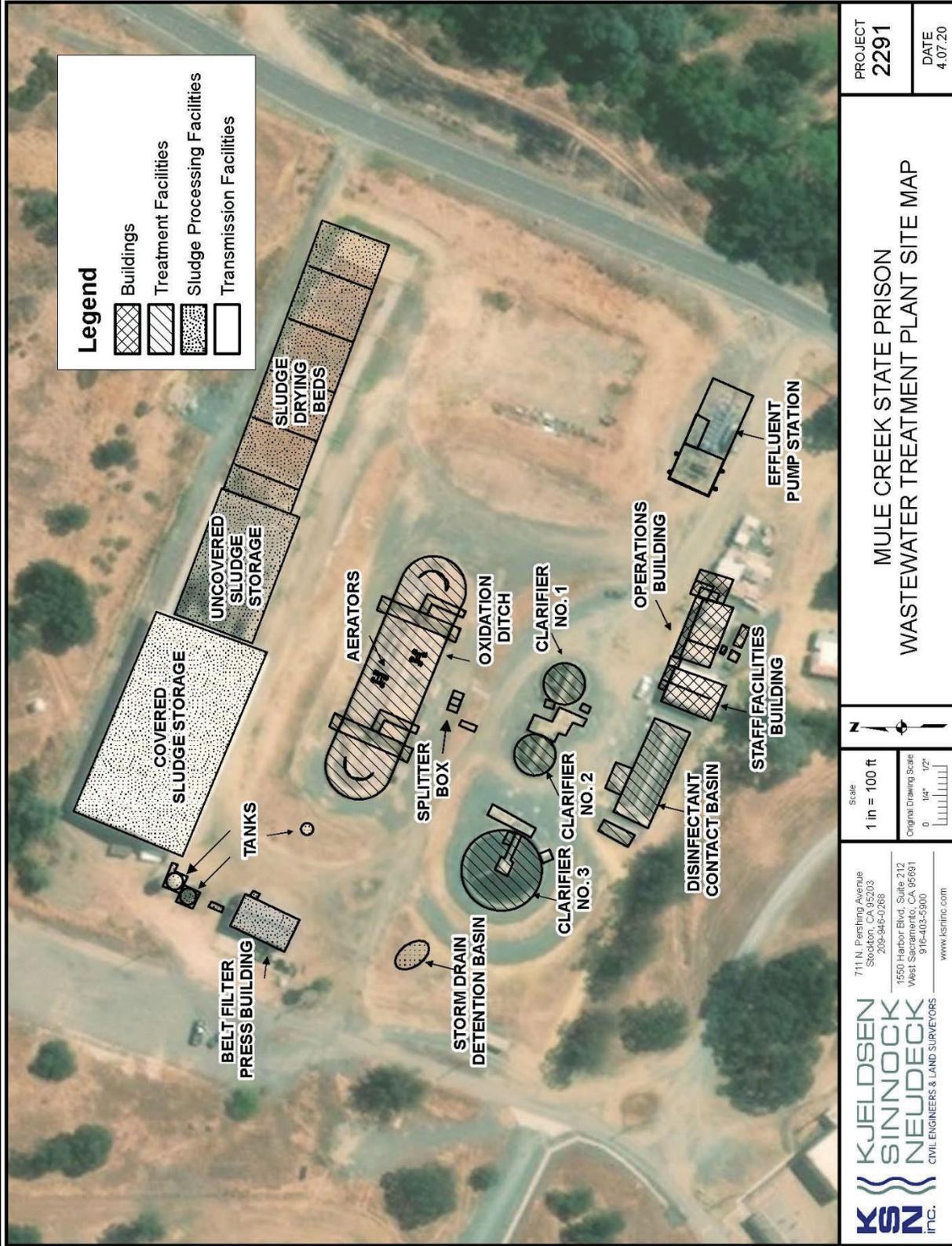
The primary existing wastewater treatment facilities are shown in Figure 2-6. Previously proposed improvements to the wastewater treatment facilities consisting of reliability and performance improvements to the existing treatment processes have now been incorporated. The processes that have been changed included:

- Addition of aeration to the existing oxidation ditch;
- Addition of a third, larger, clarifier;
- Replacement of the 84-inch chlorine contact pipe with a chlorine contact basin;
- Addition of utility water pumps to supply water for the clarifier spray system and for the belt filter press;
- Site piping, splitter box, and sludge pumps to accommodate the above improvements;
- Addition of a fifth effluent pump; and
- Upgrade and renovation of approximately 15,300 square feet of sludge drying beds.

In addition to the wastewater treatment plant improvements, improvements to the effluent pumping and LAAs that have been completed include:

- Additions to and operational modification of irrigation pumping systems;
- Installation of a direct connection to the Preston Outfall located on the MCSP site consisting of piping and a bypass valve installed in 2017; and
- Modification to portions of the existing LAAs to improve application control and efficiency.

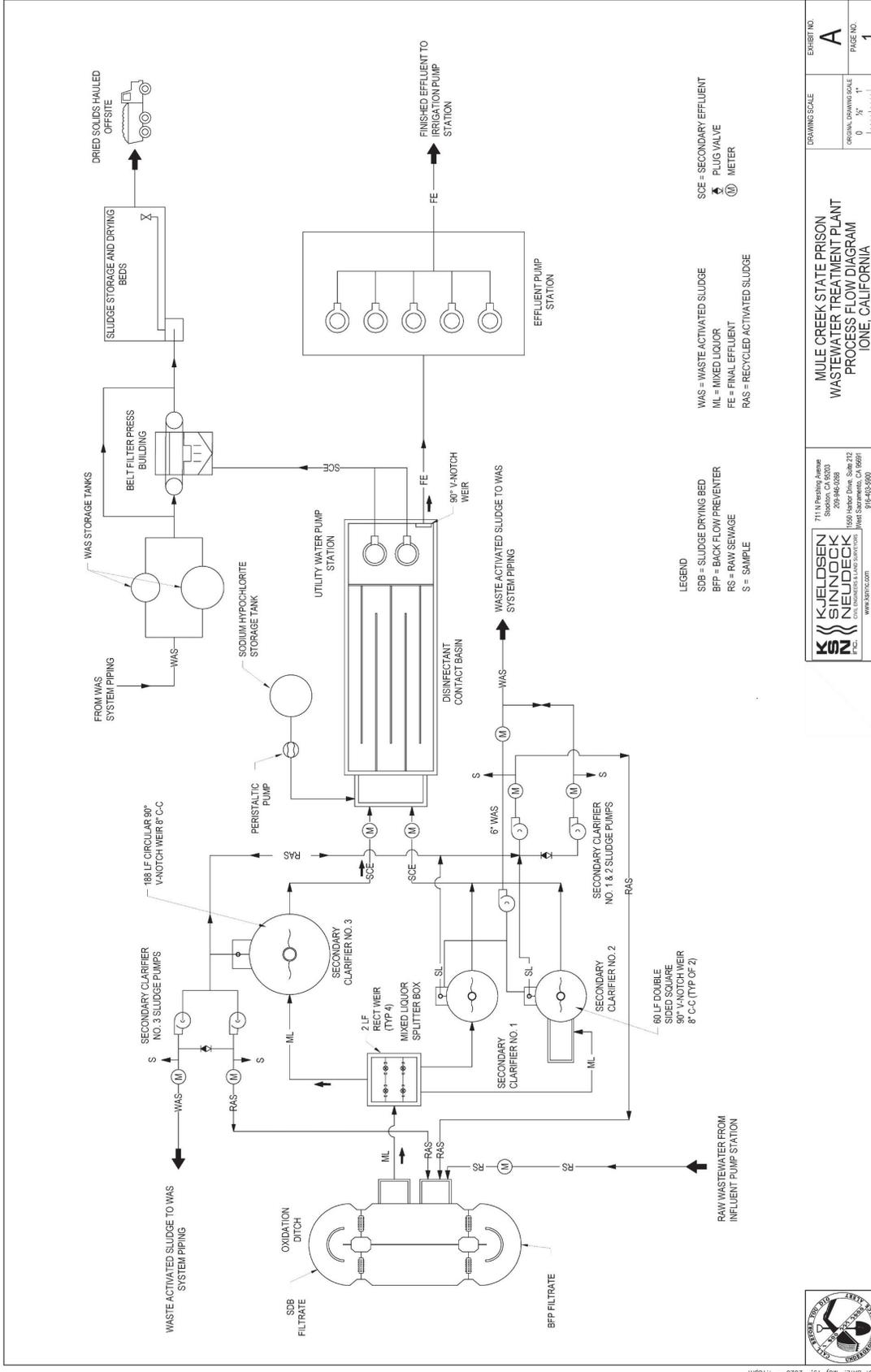
No other improvements to the existing wastewater treatment and effluent pumping systems are proposed at this time. The WWTP process flow diagram, based on current best available information, is presented in Figure 2-7.



<p>7111 N. Pershing Avenue Stockton, CA 95203 209-946-0268</p> <p>1450 Harbor Blvd., Suite 212 West Sacramento, CA 95601 916-403-5900 www.jsrinc.com</p> <p><b>KJELDSEN SINNOCK NEUDECK</b> CIVIL ENGINEERS &amp; LAND SURVEYORS</p>	<p>Scale</p> <p>1 in = 100 ft</p> <p>Original Drawing Scale</p> <p>0 1/4" 1/2"</p>	<p>PROJECT</p> <p><b>2291</b></p>
	<p>North Arrow</p>	<p>DATE</p> <p>4.07.20</p>

**MULE CREEK STATE PRISON  
WASTEWATER TREATMENT PLANT SITE MAP**

Figure 2-6  
**MCSP WWTP Site Map**



LEGEND

SDB = SLUDGE DRYING BED  
 BFP = BACK FLOW PREVENTER  
 RS = RAW SEWAGE  
 S = SAMPLE

WAS = WASTE ACTIVATED SLUDGE  
 ML = MIXED LIQUOR  
 FE = FINAL EFFLUENT  
 RAS = RECYCLED ACTIVATED SLUDGE

SCE = SECONDARY EFFLUENT  
 PLUG VALVE  
 METER



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DRAWING SCALE		EXHIBIT NO.
ORIGINAL DRAWING SCALE	0 1/2" = 1'	<b>A</b>
PAGE NO.		<b>1</b>

MULE CREEK STATE PRISON  
 WASTEWATER TREATMENT PLANT  
 PROCESS FLOW DIAGRAM  
 IONE, CALIFORNIA

Figure 2-7  
 MCSP WWTP Treatment Process Flow Diagram

#### **2.4.4.2 MCSP WWTP Disposal Systems**

WWTP effluent is disposed of either by irrigation to on-site LAAs or by transferring to COWRP for further treatment by the City of Lone and subsequent use for irrigation of Castle Oaks Golf Course. In 2017 a direct connection from the MCSP on-site irrigation system to the Preston Outfall was constructed to facilitate a direct delivery of effluent from the MCSP WWTP to the COWRP. This direct connection is now used to convey effluent directly from the MCSP WWTP or MCSP effluent storage reservoir to the COWRP, bypassing Preston Reservoir.

The process flow diagram for MCSP disposal operations is provided in Figure 2-8. Information regarding the management and practices of the LAAs is discussed in Section 2.11. Other interim storage and maintenance procedures are described in Sections 2.10 and 2.14.

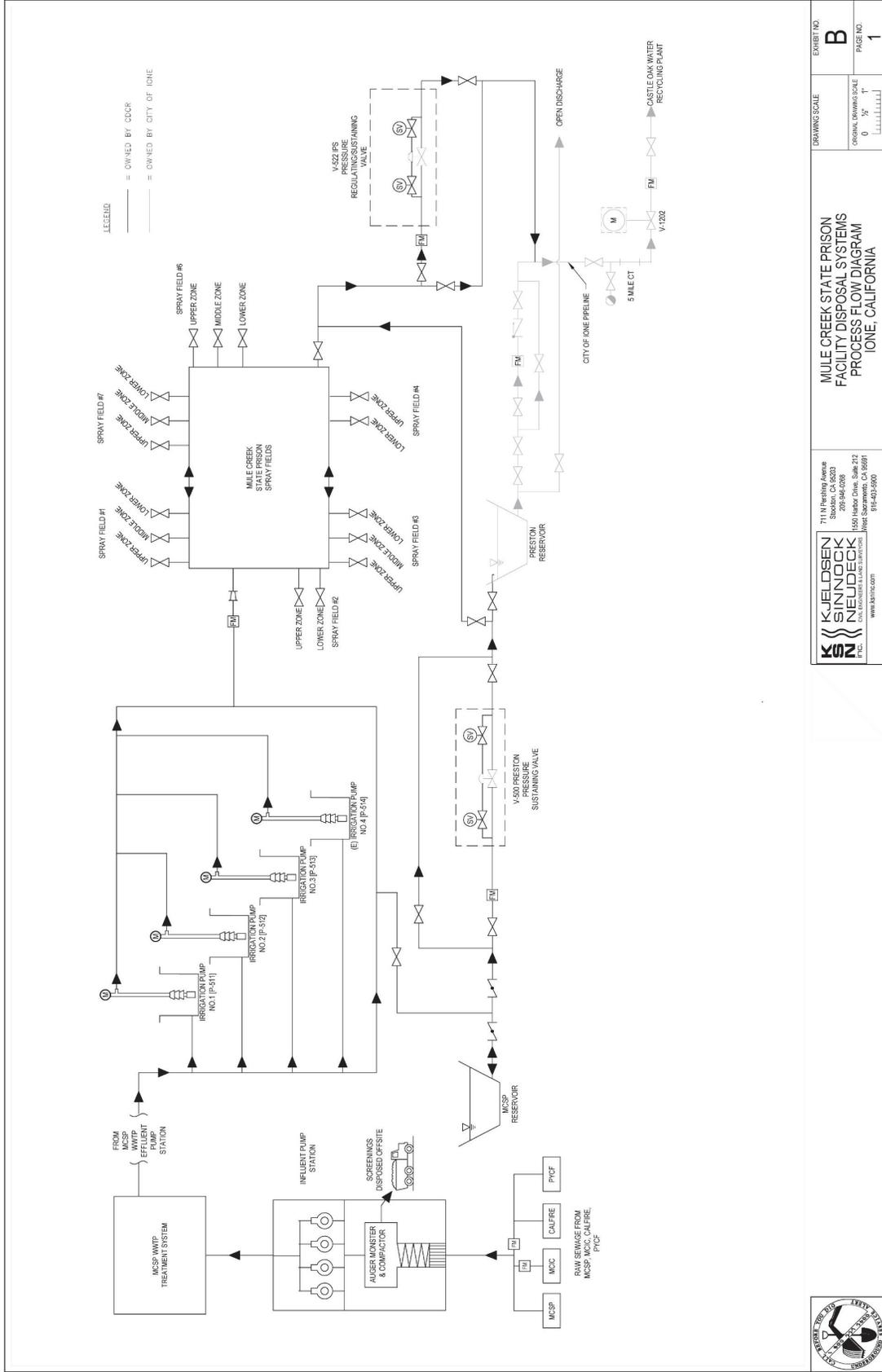


Figure 2-8 Wastewater Disposal Systems Process Flow Schematic

	DRAWING SCALE ORIGINAL DRAWING SCALE 0 3/4" = 1'	EXHIBIT NO. <b>B</b>
	PROJECT TITLE <b>MULE CREEK STATE PRISON FACILITY DISPOSAL SYSTEMS PROCESS FLOW DIAGRAM</b> IONE, CALIFORNIA	PAGE NO. <b>1</b>

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## 2.5 CHARACTERIZATION OF SOURCE WATER, INFLUENT, AND EFFLUENT QUALITY

This section presents existing available data and characterization of source water to the MCSP, and wastewater influent and effluent. Source water characterization is based on data received from the Safe Drinking Water Information System (SDWIS) for Amador Water Agency (AWA) lone System. Influent and effluent characterization is based on results of CDCR's self-monitoring conducted in accordance with the Monitoring and Reporting Programs (MRP) associated with Order Nos. 5-00-088, and R5-2015-0129 and available supplemental sampling as conducted by CDCR. Influent flow measurement data is collected from a magnetic flow meter installed in the raw sewage line feeding the oxidation ditch aeration basin. Influent flow measurements include sewer flows from the MCSP, MCIC, PYCF, and CAL FIRE. Effluent flow measurement data is collected from two magnetic meters, one located downstream of clarifiers 1 and 2, and one located downstream of clarifier 3, with both meters located at the beginning of the contact basin. Table 2-13 summarizes source water, influent, and effluent characteristics.

### 2.5.1 SOURCE WATER

The existing MCSP, MCIC, CAL FIRE and PYCF are supplied potable water from the AWA lone System. The AWA lone System is fed surface water from the Mokelumne River<sup>5</sup> to the lone Water Treatment Plant, where the water is treated for use in the lone service area (including the City of lone).

### 2.5.2 INFLUENT WASTEWATER

Influent grab samples for the MCSP WWTP are collected from the influent channel at the influent pump station before the bar screen. These samples are analyzed for 5-day biochemical oxygen demand (BOD) on a monthly basis, and since November 2012, total suspended solids. Additionally, total flow reported in gallons per day (gpd) is continuously monitored per the MRP. Available recent data indicate an average influent wastewater BOD concentration of approximately 257 mg/L and an influent total suspended solid concentration of 190 mg/L, consistent with characterization as a medium strength domestic wastewater. Influent BOD concentration results from grab sample monitoring have varied from a low of 15 mg/L to a high of 490 mg/L, while influent total suspended solids have varied from a low of 20 mg/L to a high of 430 mg/L.

### 2.5.3 TREATED EFFLUENT

Finished effluent samples are collected from the outfall weir of the disinfectant contact basin, prior to entering the effluent pump station wet well where it is pumped to LAAs, the effluent storage reservoir, or to the Preston Outfall. These samples are analyzed for total coliform organisms on a weekly basis. Effluent flow totals are monitored on a continuous basis.

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<sup>5</sup> AWA Urban Water Management Plan, Section 4.2, September 2011.

On a monthly basis, effluent samples are also collected and analyzed for the following constituents:

- Total Kjeldahl Nitrogen;
- TDS;
- Sodium;
- Chloride;
- Total VOCs;
- BOD;
- pH; and
- Nitrate as Nitrogen.

Annual effluent samples are also analyzed for standard minerals including: arsenic, boron, calcium, iron, magnesium, manganese, nitrate as nitrogen, potassium, sulfate, as well as total alkalinity and hardness.

According to the existing MRP, Volatile Organic Compounds (VOCs, according to EPA Method 8260) are monitored on a monthly basis from effluent samples. Semivolatile organic compounds are not monitored in influent, effluent, or groundwater, and are therefore not included in this ROWD. The average characteristics of the recent MCSP WWTP VOC sampling analysis have been evaluated and presented in the MCSP VOC Monitoring and Treatment Report included in Appendix E.

#### **2.5.4 EXPECTED WATER CHARACTERIZATION**

The nature of the wastewater sources to the MCSP WWTP are not expected to change, therefore substantial change in the characteristics of the influent wastewater are not expected. Due to the wastewater treatment plant improvements, the quality and consistency of the effluent has improved and can be expected to remain as characterized.

Table 2-13  
Summary Source Water and Wastewater Characterization

Constituent <sup>(2)</sup>	Units	Source Water <sup>(1)</sup> (AWA lone System)	Average <sup>(2)</sup> Characteristics for Available Data 2013-2015		Average <sup>(3)</sup> Characteristics for Available Data 2016-2019	
			Influent	Effluent	Influent	Effluent
Biochemical Oxygen Demand	mg/L	N/A	270	11.32	285	7.38
Total Coliform Organisms	MPN/100m l	N/A	-	7.8	-	4.0
pH	pH Units	7.3	-	5.8	-	5.7
Total Settleable Solids	MI/L	-	-	0.01	-	-
Total Suspended Solids	mg/L	N/A	191	25.7	326	39.3
Total Dissolved Solids	mg/L	32.8	-	250.6	-	269
Total Kjeldahl Nitrogen as N	mg/L	N/A	-	5.4	-	3.7
Nitrate Nitrogen as N	mg/L	2	-	22.1	-	18.4
<b>General Minerals</b>						
Alkalinity	mg/L	17	-	11	-	45
Hardness	mg/L	12	-	38	-	46
Bicarbonate	mg/L	20	-	17	-	110
Boron	mg/L	<0.1	-	0.05	-	0.03
Carbonate	mg/L	0.5	-	<5	-	<5
Calcium	mg/L	703	-	11	-	12
Chloride	mg/L	2.1	-	53.4	-	48.9
Fluoride	mg/L	0.4	-	0.1	-	0.1
Magnesium	mg/L	0.5	-	2.4	-	3.0
Potassium	mg/L	1	-	11	-	13
Sodium	mg/L	2.8	-	50.8	-	50.5
Sulfate	mg/L	1.0	-	13.9	-	14.2
<b>Metals</b>						
Aluminum	ug/L	145	-	-	-	-
Antimony	ug/L	6	-	-	-	-
Arsenic	ug/L	2	-	-	-	<2.5
Barium	ug/L	100	-	-	-	-
Beryllium	ug/L	0.5	-	-	-	-
Cadmium	ug/L	1	-	-	-	-
Chromium (total)	ug/L	10	-	-	-	-
Copper	ug/L	50	-	-	-	-
Iron	ug/L	117	-	162	-	343
Lead	ug/L	5	-	-	-	-
Manganese	ug/L	79	-	30	-	33
Mercury	ug/L	1	-	-	-	-
Nickel	ug/L	10	-	-	-	-
Thallium	ug/L	1	-	-	-	-
Selenium	ug/L	5	-	-	-	-
Silver	ug/L	10	-	-	-	-
Vanadium	ug/L	-	-	-	-	-
Zinc	ug/L	50	-	-	-	-

- (1) Average characteristic based on lone Reservoir monitoring since January 2009 and according to AWA reporting on the lone water supply. Median total coliform is presented. N/A = Not available, - Constituent not monitored.
- (2) Constituents listed are those monitored during the period of 2015 through 2019 as listed in Table 1 of the RWQCB's Technical Information Requirements for Report of Waste Discharge.
- (3) Constituents listed are those monitored during the period of January 2016 through December 2019, and includes data from post-MCIC activation.

## 2.6 DESCRIPTION OF CONTROLS AND ALARMS

The existing MCSP facilities are designed and constructed with reliability features built-in to provide for facilities that reliably convey and treat wastewater under a variety of reasonably foreseeable conditions. System reliability features include, but are not limited to, the following:

- The existing sewer lines designed to convey 190% of the design occupancy capacity of MCSP<sup>6</sup>;
- Sewage pumping facilities are constructed with:
  - Reliable pumping capacity, with peak capacity requirements provided even if the largest pumping unit is out of service;
  - Backup power provided with automatic transfer from utility to backup power supplies; and
  - System alarms and communications to Plant Operations for such events as: pump fail, power fail, and high wet well level.
- The MCSP WWTP includes the following reliability and alarm features:
  - Existing facilities designed for an average flow of 0.74 Mgal/d and a peak flow of 2.2 Mgal/d (3 times the permitted amount);
  - Reliable pumping capacity for all pumping systems, with peak capacity requirements provided even if the largest pumping unit is out of service;
  - The MCSP WWTP Influent Pump Station is equipped with the following alarms:
    - High wet well level;
    - Power fail; and
    - General fault, e.g., pump fail, automatic bar rack fail, etc.
  - The existing MCSP WWTP is equipped with the following alarms:
    - Aerator motor fault;
    - Sludge pump station wet well high level and low level;
    - Clarifier driver fault; and
    - Effluent pump station high level, low level, and pump fault.

CDCR implements a preventative maintenance program on sewer system elements including the influent pump station grinder and screening equipment and elements of the sewer system. Preventative maintenance activities for the sewer system are described in detail in the Sewer System Management Plans (SSMP) for the MCSP and

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<sup>6</sup> MCSP SSMP, Page 21.

PYCF already in the State Water Resources Control Board (SWRCB) files. Preventative maintenance activities include<sup>7</sup>:

- Regular pumping out of grease interceptors;
- Maintaining spare parts for key systems (see SSMP);
- Annual cleaning of the sewer system with Institution-maintained jetting equipment; and
- Routine manhole checks and inspections.

As a means to respond to routine and emergency conditions, CDCR has established Operational Procedure FMD-100, which provides guidelines and procedures for regular Operation and Maintenance (O&M) and for identification and response to emergency or corrective maintenance activities. FMD-100 results in work requests falling into one of the following five categories:

- Emergency Maintenance;
- Preventative Maintenance;
- Corrective Maintenance;
- Non-maintenance Service Requests; and
- Projects (for minor improvements/alterations).

In addition to the above procedures, CDCR follows an overflow emergency response plan as described in detail in the Institution's SSMP<sup>8</sup>.

## 2.7 EMERGENCY SPILLAGE AND CONTINGENCY PLANS

The existing MCSP wastewater facilities are designed and constructed to provide reliable capacity during normal and reasonably foreseeable overload conditions and MCSP operation and emergency response procedures are designed to minimize the potential for detrimental effects of such conditions. In addition to the above procedures and overflow response plan, MCSP has a Spill Response Plan that is applicable on the MCSP campus, the MCIC, PYCF, and CAL FIRE sites as well as the WWTP and land application areas. The MCSP Spill Response Plan is attached in Appendix F.

## 2.8 FLOOD AND FROST PROTECTION

All MCSP above grade or exposed facilities are constructed outside of the 100-year flood zone, as shown in Figure 2-5. Where sewer system components (force mains or gravity sewers) cross the 100-year flood zone, they are buried and armored to protect from damage during flooding.

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<sup>7</sup> SSMP, Page 11 & 12.

<sup>8</sup> SSMP, Starting at Page 17.

Frost control at the MCSP WWTP is provided on small diameter piping by utilizing heat strips and/or insulation. One is not subject to extremely low freezing temperatures for long durations; therefore, modest measures are satisfactory for reducing the occurrence and effect of freezing.

## 2.9 SOLIDS MANAGEMENT

Wastewater solids at the MCSP WWTP are removed for disposal at two primary locations: 1) screenings from the influent pump station; and, 2) waste sludge from the extended aeration oxidation ditch. All screenings and waste sludge is collected and transported to a public landfill for disposal.

### 2.9.1 EXISTING TREATMENT, HANDLING, AND STORAGE PROCEDURES

At the influent pump station, an Auger Monster system removes solids from the influent sewage, and washes and compacts the screenings through an auger system and deposited in an adjacent dumpster for disposal at the local land fill. The dumpster is emptied weekly by a contract disposal company. The frequency of screening removal and disposal is not specifically tracked; however, it is typical that approximately three 30-gallon trash bags are filled about half full each day and replaced.

Waste sludge is pumped to two sludge storage tanks with a total volume of 30,000 gallons (one 10,000 gallon tank and one 20,000 gallon tank). Sludge from the storage tanks is fed to a belt filter press for dewatering. Alternative to the belt filter press, waste sludge (from the waste sludge pumps or tanks) can be diverted to sludge drying beds. Dewatered sludge is stored on-site before collection and disposal at a public landfill.

In 2019, approximately 440 tons of biosolids were pressed and removed from the drying beds<sup>9</sup>. Biosolids are hauled to Petrero Hills Landfill located in Suisun, California by Dillard Environmental. Biosolid production is expected to remain similar in future years.

## 2.10 TREATMENT, STORAGE AND DISPOSAL PONDS OR CONTAINMENT STRUCTURES

One existing effluent storage reservoir actively provides containment of treated effluent from the MCSP WWTP, as shown in Figure 2-5. The MCSP Effluent Storage Reservoir is located on the MCSP site and is dedicated to seasonal storage of effluent from the MCSP WWTP. Preston Reservoir provides storage and pass through for effluent generated from ARSA. Since the construction of the bypass structure, MCSP WWTP effluent has not been sent through Preston Reservoir, but rather sent directly to COWRP.

### 2.10.1 MCSP EFFLUENT STORAGE RESERVOIR

The MCSP Effluent Storage Reservoir was constructed in 1987 (completed in 1988) under the jurisdiction of the Division of Safety of Dams (DSOD) as Dam No. 1-081 (listed as CSP Mule Creek). The reservoir is approximately 525 acre-feet, and provides seasonal storage of effluent from the MCSP WWTP. At two feet of freeboard, this reservoir is reported to have an available permitted volume of approximately 475 acre-feet or 155 million gallons (Mgal), which is based on a minimum of two feet of freeboard from the lowest point of outlet.

The MCSP Effluent Storage Reservoir is formed by earthen embankment dams on two sides, while natural site topography provides containment on the other two sides of the reservoir. The earthen embankment dams have

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<sup>9</sup> 2019 Annual Report, prepared by Atlas Environmental.

been constructed according to the California Department of Water Resources' DSOD standards for such facilities. Lining of the Effluent Storage Reservoir consists of a synthetic HDPE liner installed on the inside of the two embankment dams. The bottom and natural sides of the reservoir are not lined. The catchment surface area of the Effluent Storage Reservoir is estimated to be approximately 27 acres, within the limits of the reservoir perimeter road. The known characteristics of the MCSP Effluent Storage Reservoir are listed in Table 2-14.

Table 2-14  
**Storage Reservoir Characteristics**

Specifications	Units	Reservoir
Name		MCSP Effluent Storage Reservoir <sup>(1)</sup>
Function		MCSP effluent storage
Surface Area	<i>Acres</i>	24
Depth	<i>Ft</i>	32
Volumetric Capacity <sup>(2)</sup>	<i>ac-ft</i>	475
Height	<i>ft</i>	52 (max)
Crest Width	<i>ft</i>	16
Interior Slope of Each Berm/ Levee		2.5:1
Exterior Slope of Each Berm/ Levee		2.5:1
Materials for Each Berm/ Levee		Earth
Engineered Liner		Partial <sup>(3)</sup>

(1) Based on information available from California Department of Water Resources (DWR) Bulletin 17-2000 and January 2009 Report of Waste Discharge prepared for CDCR Mule Creek State Prison.

(2) Estimated at 2 feet of freeboard from the spillway.

(3) HDPE Synthetic liner on the inside slope of the main and saddle dams.

### 2.10.2 PRESTON RESERVOIR

Preston Reservoir, which is leased by ARSA under the 2009 Lease Agreement with CDCR, is located on the State-owned property at MCSP. The reservoir serves as a means of conveyance of treated effluent from the ARSA system to the COWRP. No MCSP effluent is currently stored or conveyed through Preston Reservoir.

## 2.11 EFFLUENT LAND APPLICATION ACTIVITIES

MCSP utilizes a combination of on-site and off-site WWTP effluent disposal. On-site effluent is land applied to approximately 200 acres of LAAs, owned by the State of California and controlled by CDCR. Significant renovation of the sprinkler system that is used for effluent irrigation on these fields occurred in 2017 in response to the 100-year rainfall event. Off-site disposal is provided through an agreement with the City of Lone for use of the effluent to provide irrigation at Castle Oaks Golf Course after treatment at the City's COWRP. These disposal mechanisms are described in detail in the follow sections.

### 2.11.1 LANDOWNER CONTACT INFORMATION

On-site land application occurs on five parcels surrounding the MCSP site, all under the jurisdiction of CDCR. Management of these lands is under MCSP. Offsite application of treated effluent occurs on facilities owned by the City of Lone. Off-site facilities are covered under separate WDRs. The on-site LAA parcel numbers and ownership are summarized in Table 2-15.

Table 2-15  
Facility Landowner Information

Assessor's Parcel Number	Landowner
004-290-005	State of California
004-290-006	State of California
005-070-007	State of California
005-070-008	State of California
005-070-011	State of California

### 2.11.2 EFFLUENT DISINFECTION SYSTEMS

The improvements made to the MCSP WWTP in 2016 included construction of a new rectangular disinfection contact basin (DCB). The purpose of this DCB is to improve disinfection processes to more consistently and reliably meet effluent requirements and to better facilitate system maintenance, as compared to the previous system utilizing an 84-inch disinfection pipe. Disinfected effluent is conveyed to the effluent pump station for disposal as described below.

### 2.11.3 EFFLUENT CONVEYANCE SYSTEMS

Effluent is conveyed from the DCB to the effluent pump station where it is pumped to one or more of the following locations:

1. The MCSP Effluent Storage Reservoir with a permitted capacity of approximately 475 acre-feet;
2. The irrigation pump station for on-site land application; or
3. Direct delivery to the COWRP through the Preston Outfall/City tertiary plant pipeline, which was constructed in 2017 to allow direct transfer.

The effluent pump station consists of five effluent pumps and a 14-inch diameter effluent pipeline. The effluent pipeline conveys disinfected effluent through a suction plenum connected to the irrigation pump station pumps. When land application is not occurring, disinfected effluent is conveyed through approximately 800 linear feet of 14-inch pipeline to a valve station where it can be diverted to the MCSP Effluent Storage Reservoir (through an additional 1,100 linear feet of 14-inch pipeline), or a direct connection to COWRP through the Preston Outfall. The direct connection is controlled by a remote operated and monitored control valve, allowing CDCR to control the flow rate, flow total, and operating pressure of the direct discharge to the Preston Outfall.

### **2.11.3.1 Preston Outfall**

The Preston Outfall is a 12-inch diameter pipeline that connects to existing outlet piping from Preston Reservoir and has historically conveyed treated effluent originating from ARSA and the MCSP WWTP to the COWRP. The Preston Outfall piping from MCSP to COWRP consists of approximately 7,830 feet of 12-inch PVC piping. To facilitate a more direct delivery of treated effluent to the COWRP a direct connection to the Preston Outfall was constructed in LAA No. 7 on the MCSP site. The direct connection to the Preston Outfall is shown in Figure 2-9 and consists of an electronic control valve as described above.

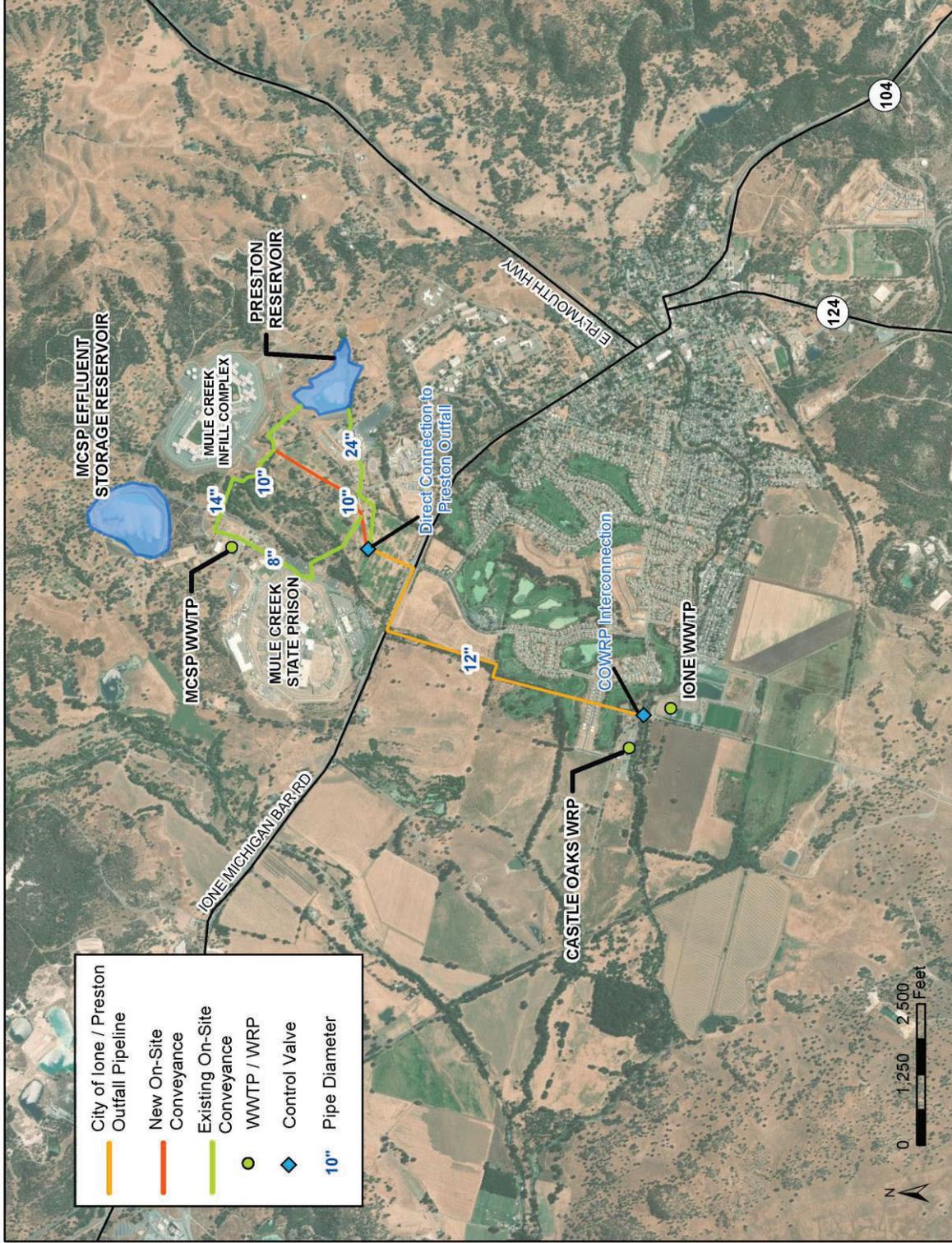


Figure 2-9  
Off-site Effluent Conveyance Facilities

### 2.11.4 OFF-SITE RECYCLED USE AT THE CASTLE OAKS GOLF COURSE

Secondary disinfected effluent is conveyed to the COWRP for additional treatment that allows it to be recycled at the local Castle Oaks Golf Course for landscape irrigation. The COWRP consists of a tertiary treatment plant designed to treat secondary effluent to produce disinfected tertiary recycled water for recycled use. The bypass valve and piping at the Preston Reservoir Outfall allow CDCR to bypass Preston Reservoir and transfer secondary disinfected effluent directly into the City pipeline that connects to the COWRP. The Preston Outfall terminates at the COWRP, where a motorized valve controls discharge to the COWRP. Discharges to the COWRP from Preston Reservoir are coordinated between the City of Lone and ARSA. When requested, MCSP WWTP effluent may be discharged to the COWRP through the direct connection to the Preston Outfall.

CDCR currently operates under the 2009 Lease Agreement<sup>10</sup>. This Agreement provides for an allowable total annual discharge by CDCR to the City of Lone of 350 acre-feet, counted against the allowable annual ARSA discharge of 650 acre-feet. Effluent from ARSA and the MCSP WWTP is conveyed to the COWRP through the Preston Outfall. At the COWRP, the comingled secondary effluent is treated to Title 22 tertiary standards for recycled use irrigation on the Castle Oaks Golf Course. Table 2-16 presents recent historical MCSP discharges to COWRP.

Table 2-16  
Recent MCSP WWTP Discharges to COWRP

Month <sup>(1)</sup>	2013		2014		2015		2016		2017		2018		2019		Average	
	Mgal	AF	Mgal	AF	Mgal	AF	Mgal	AF	Mgal	AF	Mgal	AF	Mgal	AF	Mgal	AF
October	12.3	37.9	5.8	17.6	0.0	0.0	4.3	13.1	1.7	5.3	21.9	67.1	20.6	63.2	9.5	29.2
November	8.6	26.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.9	58.0	3.9	12.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	6.4	0.3	0.9
January	0.0	0.0	3.2	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.4
February	0.0	0.0	12.1	37.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.3
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	28.1	86.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	12.3
June	9.6	29.4	45.2	138.6	15.7	48.3	0.7	2.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	31.2
July	15.0	46.1	28.6	87.7	24.8	76.1	35.9	110.3	0.0	0.0	0.9	2.8	0.0	0.0	15.0	46.1
August	23.7	72.7	0.0	0.0	22.9	70.4	36.4	111.7	31.6	96.9	43.8	134.4	31.3	96.1	27.1	83.2
September	11.8	36.3	10.1	30.9	15.1	46.3	10.3	31.7	32.3	99.2	35.0	107.4	24.5	75.3	19.9	61.0
<b>Total</b>	<b>109.1</b>	<b>334.9</b>	<b>104.9</b>	<b>321.9</b>	<b>78.5</b>	<b>241.1</b>	<b>87.5</b>	<b>268.7</b>	<b>65.6</b>	<b>201.4</b>	<b>101.5</b>	<b>311.7</b>	<b>97.4</b>	<b>299.0</b>	<b>92.1</b>	<b>282.7</b>

(1) Source: Adapted from MCSP WWTP Monthly Report spreadsheets.

### 2.11.5 ON-SITE LAND APPLICATION AREAS

Disinfected effluent from MCSP WWTP is delivered to on-site LAAs through an existing network of irrigation supply pipelines, either directly from the effluent pump station and/or from the MCSP Effluent Storage Reservoir. Figure 2-5 shows the approximate location of the existing LAAs. These fields are used to assure that fall storage requirements of the 2015 WDRs are met. Following construction of the MCIC, the total acreage of LAAs is approximately 200 acres, consisting of LAAs Nos. 1 through 4 and LAAs Nos. 6 and 7. The irrigation system for the existing 200 acres of on-site LAAs was substantially improved in 2017. The installation of a fixed-set orifice

<sup>10</sup> Exhibit B to the January 1, 2009 Ground Lease No. L-2070.

style sprinkler system optimized irrigation uniformity and application rate, with less potential for runoff and soil saturation.

Land application occurs as needed to manage and reduce effluent volumes in storage. Historically, land application has started as early as January and continued into December, depending on climactic conditions and effluent volumes stored in the MCSP effluent reservoir. The primary land application season is from May through October. Each application is maximized within the permit requirements, in particular Discharge Specification D.7 which requires applied water to be infiltrated into the soil within 48 hours.

Each LAA is divided into sub-areas, with fields 1; 3; 6; and 7 having lower, middle, and upper zones; and fields 2 and 4 having lower and upper portions. Starting in late 2018, in response to a notice from the RWQCB, MCSP changed the way they were recording land application of effluent to better track the quantity of effluent applied to each of these sub-areas. Table 2-17 summarizes the most recent irrigation season's effluent application by LAA sub area. These data represent effluent disposal from MCSP WWTP after the stabilization of inmate population; and post construction of the MCIC during a moderately wet rainfall season of 28.4 inches (typical 27.64 inches for return period of 5 years).

Table 2-17  
2019 Land Application Season Irrigation per LAA

	Effluent Volume Applied (Mgal)															
	LAA #1			LAA #2		LAA #3			LAA #4		LAA #6			LAA #7		
	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Middle	Upper
May	0	0	0	0	0.45	0	0	0	0	0	0.19	0.22	0.03	0.93	0.72	0.08
June	0	0	0.10	0.19	0.93	0.57	1.42	0.37	0.61	0.46	1.13	0.92	0.39	6.12	2.30	0.17
July	1.29	1.18	1.19	0.77	1.55	1.63	1.48	1.43	1.81	1.35	1.03	1.10	0.11	3.62	2.36	1.87
August	0.86	0.80	0.80	0.65	1.30	0.84	0.81	0.74	1.09	1.09	1.22	0.99	0.20	2.79	2.79	1.79
September	0.22	0.21	0.21	0.24	0.49	0.22	0.20	0.19	0.21	0.21	0.26	0.27	0.08	0.52	0.52	0.35
October	0	0	0	0.14	0.28	0.15	0.14	0.14	0	0	0	0	0	0.85	0.42	0.29
<b>Annual Total</b>	<b>2.4</b>	<b>2.2</b>	<b>2.3</b>	<b>2.0</b>	<b>5.0</b>	<b>3.4</b>	<b>4.0</b>	<b>2.9</b>	<b>3.7</b>	<b>3.1</b>	<b>3.8</b>	<b>3.5</b>	<b>0.8</b>	<b>14.8</b>	<b>9.1</b>	<b>4.5</b>
<b>LAA Annual Total</b>	<b>6.9</b>			<b>7.0</b>		<b>10.3</b>			<b>6.8</b>		<b>8.1</b>			<b>28.5</b>		

Effluent volumes applied to each LAA were used to calculate hydraulic loading rates from 2013 to present. The volumes for each sub-LAA (lower, middle, upper), were summed for each field for the purposes of calculating loading rates, as shown in Table 2-18. LAA acreages changed in 2015 due to construction of the MCIC. For comparison to historical LAA operations, the hydraulic loading rates were calculated on a million gallon per acre-year basis for each year, including 2019. The recent LAA annual total application volumes presented in Table 2-17 are within the historical application volumes presented in Table 2-18. The historical hydraulic loading distribution is generally consistent with LAAs 6 and 7 receiving the greatest volumes of effluent due to the deeper soils with higher water holding capacities.

Table 2-18  
**Historical LAA Hydraulic Loading Rates**

Year	LAA #1	LAA #2	LAA #3	LAA #4	LAA #5	LAA #6	LAA #7
<b>Pre-MCIC Project Acreage</b>	<b>32</b>	<b>35</b>	<b>46</b>	<b>50</b>	<b>47</b>	<b>44</b>	<b>42</b>
2013 (Mgal/acre-year)	0.2	0.1	0	0.1	0.2	0.2	0.5
2014 (Mgal/acre-year)	0.2	0.1	0.1	0.2	0.1	0.3	0.7
<b>Post-MCIC Project Acreage</b>	<b>28</b>	<b>28</b>	<b>31</b>	<b>39</b>	<b>0</b>	<b>31</b>	<b>43</b>
2015 (Mgal/acre-year)	0	0	0	0	0	0.1	0.2
2016 (Mgal/acre-year)	0	0	0	0	0	0.1	0.4
2017 (Mgal/acre-year)	0.4	0.3	0.4	0.5	0	0.6	0.7
2018 (Mgal/acre-year)	0.1	0.1	0.2	0.2	0	0.4	0.3
2019 (Mgal/acre-year)	0.2	0.3	0.3	0.2	0	0.3	0.7

### 2.11.6 VEGETATION MANAGEMENT

The LAAs are not currently planted and no crops are harvested from the LAAs. Existing emergent vegetation is allowed to grow within the LAAs based on water from precipitation and applied effluent. The LAA vegetation is a mix of naturally-occurring grasses, common weeds, shrubs, and trees. On at least an annual basis, the LAAs are disked, primarily to control vegetation height, but also to maintain a high secondary porosity and improve retention of applied effluent. Vegetation is also currently managed by cutting and leaving the cuttings on the soil surface and/or disking the cuttings into the soil. Cutting of vegetation occurs as needed to facilitate operation and function of the sprinkler application system. No fertilizers or pesticides are used in the LAAs.

### 2.11.7 PLANNED OPERATIONS

CDCR plans to continue operating the LAAs consistent with historical operational practices and consistent with provisions of Order R5-2015-0129, however the preference will be to predominantly convey treated effluent to the COWRP for recycled use. Management of the LAAs is to include maintaining existing vegetation cover as a means to maintain or promote soil stability, soil organic content and retention, salinity and nitrogen sequestration, and promote microorganism populations in the soil to promote certain soil treatment effects. Continuing this means of vegetation management is also consistent with the constraints of the site, based on many of the LAAs having shallow and rocky soils and often steep terrain.

The following LAA soil/vegetation management practices will be employed:

1. Limited disking of LAAs to control vegetation as needed;
2. Regular disking of perimeters of the LAAs within the setbacks; and
3. During average and dry years, manage annual application according to target application rates.

Management to achieve these outcomes includes LAA rotation as described below.

As required by the current Monitoring and Reporting Program, CDCR will continue to monitor groundwater quality in the vicinity of the LAAs to assess the effectiveness of LAA management and the effects of predominantly conveying treated effluent to COWRP. If groundwater monitoring data indicates a need for changing LAA management, additional management strategies may be considered.

### 2.11.7.1 Management of Application by LAA Rotation

Annual rotation of LAAs, with certain LAAs not actively irrigated in any given year is expected to improve overall water quality, as well as soil salinity and nitrogen concentrations of groundwater underlying those LAAs not being actively irrigated. Select LAAs can remain inactive on a rotational basis with limited irrigation to maintain the mixture of perennial vegetation. The action of leaving select LAAs inactive is expected to promote leaching with low salinity precipitation, resulting in long-term reduction of the soil salinity and potentially groundwater salinity.

Rotation of active LAAs is proposed for average and dry years. However, during wet years all LAAs may have to be used to dispose of enough effluent to empty the reservoir by winter. A typical LAA rotation is presented in Table 2-19 based on relative LAA capacity and ability to apply effluent during the average year. To maintain the established cover of predominantly perennial grasses during dry years, those LAAs identified to not be used should still receive enough early season irrigation water to maintain the vegetation cover for later years.

Table 2-19  
Example Five Year LAA Rotation Under Average Year Conditions

Year #	LAA No. 1	LAA No. 2	LAA No. 3	LAA No. 4	LAA No. 6	LAA No. 7
Year 1		X				X
Year 2	X				X	
Year 3			X	X		
Year 4		X				X
Year 5	X				X	

1) An "X" indicates the LAA is being applied to in that year

This rotation is presented as an example; however, application rates should consider an even distribution of applied effluent and associated salt and nitrogen. LAAs 2, and 7 are grouped to balance application potential with other field rotations; this grouping is more balanced since LAA 7 has a high application potential and LAA 2 has a low application potential. Likewise, grouping LAAs 1 and 6 together in a year may facilitate meeting effluent disposal requirements at the same time as allowing for a more even application.

### 2.11.8 EXISTING NITROGEN LOADING RATES

Nutrient loading to the existing LAAs is a result of organic ammonia and nitrate nitrogen in the disinfected effluent. Nutrient loading calculations are based on grab sampling of secondary effluent; however, additional nitrogen losses or transformations may also occur during storage (including dilution with precipitation), likely resulting in actual nutrient loading rates less than what would be calculated from effluent data. For the 2019 land application season, the nutrient loading (sum of nitrate as N and TKN) for each of the LAAs is shown in Table 2-20. Nutrient loading to the LAAs is not expected to substantially change in the future, as the MCSP inmate population has stabilized, and discharge to COWRP in 2019 was approaching the agreement limit. However, soil organic matter accumulation and associated nitrogen sequestration rates are not quantified in these loading rates, and are expected to be significant, resulting in a reduced threat to groundwater quality.

Table 2-20  
**MCSP Site 2019 Land Application Season Nitrate Loading**

	LAA #1			LAA #2		LAA #3			LAA #4		LAA #6			LAA #7		
	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Middle	Upper
<b>Acres</b>	9.8	9.1	9.1	9.3	18.7	11.1	10.1	9.8	19.5	19.5	13.1	14.0	3.9	16.2	16.2	10.7
<b>Nitrogen Loading (lbs/Ac)</b>																
May	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.4	3.0	2.3	0.4
Jun	0.0	0.0	1.1	2.0	5.0	5.1	14.0	3.8	3.1	2.4	8.6	6.6	10.0	37.9	14.2	1.6
Jul	27.3	26.9	26.9	17.1	17.1	30.3	30.2	30.2	19.1	14.3	16.3	16.3	6.1	46.3	30.2	36.2
Aug	14.5	14.5	14.5	11.4	11.4	12.5	13.2	12.4	9.2	9.2	15.3	11.7	8.3	28.4	28.4	27.6
Sep	1.3	1.3	1.3	1.5	1.5	1.1	1.1	1.1	0.6	0.6	1.1	1.1	1.1	1.8	1.8	1.9
Oct	0.0	0.0	0.0	2.4	2.4	2.2	2.2	2.2	0.0	0.0	0.0	0.0	0.0	8.5	4.2	4.3
<b>Annual Total</b>	<b>43.1</b>	<b>42.7</b>	<b>43.7</b>	<b>34.4</b>	<b>38.7</b>	<b>51.2</b>	<b>60.8</b>	<b>49.8</b>	<b>32.1</b>	<b>26.5</b>	<b>42.1</b>	<b>36.5</b>	<b>25.9</b>	<b>125.8</b>	<b>81.1</b>	<b>72.0</b>
<b>LAA Avg</b>	<b>43.2</b>			<b>36.6</b>		<b>54.0</b>			<b>29.3</b>		<b>34.8</b>			<b>93.0</b>		

### 2.11.9 EXISTING SALT LOADINGS

As with nutrient loading, salt loading to the existing LAAs is a result of dissolved solids in the disinfected effluent applied to the LAAs. Salt loading is based on results of grab sampling of secondary effluent. For the 2019 land application season, the salt loading of each of the LAAs is shown in Table 2-21. Similar to expected nutrient loading, salt loading to the LAAs is not expected to substantially change in the future.

Table 2-21  
**MCSP Site 2019 Land Application Season Salt Loading**

	LAA #1			LAA #2		LAA #3			LAA #4		LAA #6			LAA #7		
	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Upper	Lower	Middle	Upper	Lower	Middle	Upper
<b>Acres</b>	9.8	9.1	9.1	9.3	18.7	11.1	10.1	9.8	19.5	19.5	13.1	14.0	3.9	16.2	16.2	10.7
<b>TDS Loading (lbs/Ac)</b>																
May	0.0	0.0	0.0	0.0	37.8	0.0	0.0	0.0	0.0	0.0	23.2	24.9	12.6	90.3	69.7	11.2
Jun	0.0	0.0	21.4	41.1	100.5	104.2	283.9	76.4	63.4	47.7	174.2	133.1	202.4	767.4	288.1	32.0
Jul	276.7	272.0	272.2	173.0	173.5	306.2	306.1	306.0	193.8	144.6	164.9	164.9	61.4	468.2	305.6	366.5
Aug	240.2	240.3	240.3	189.7	189.7	206.8	219.2	206.6	153.0	153.0	253.7	193.8	137.6	471.1	471.1	458.2
Sep	42.4	42.1	42.1	47.9	47.9	36.3	36.5	36.5	19.9	20.0	36.0	36.0	35.7	59.1	59.1	61.0
Oct	0.0	0.0	0.0	33.0	32.9	30.5	30.5	30.6	0.0	0.0	0.0	0.0	0.0	115.9	57.3	59.6
<b>Annual Total</b>	<b>559.3</b>	<b>554.4</b>	<b>576.0</b>	<b>484.8</b>	<b>582.4</b>	<b>684.0</b>	<b>876.3</b>	<b>656.1</b>	<b>430.1</b>	<b>365.3</b>	<b>651.9</b>	<b>552.7</b>	<b>449.6</b>	<b>1972.0</b>	<b>1250.9</b>	<b>988.5</b>
<b>LAA Avg</b>	<b>563.2</b>			<b>533.6</b>		<b>738.8</b>			<b>397.7</b>		<b>551.4</b>			<b>1,403.8</b>		

### 2.11.10 TAILWATER AND STORM WATER MANAGEMENT PLANS AND METHODS

The LAAs are managed to avoid any tailwater under normal application practices. This is achieved by closely monitoring and controlling the application durations such that surface soil saturation and runoff do not occur. Each LAA has an approximately 3 to 5 ft. earthen berm constructed along the downslope perimeters as shown in Figure 2-10. Tailwater berms are located downslope of the LAAs and are maintained to capture and contain any runoff

that may occur during unanticipated events such as broken sprinklers, broken laterals, or excessive rainfall. The LAAs are not operated during or immediately following precipitation events. In the event of excess water being contained by the berms, a portable pump is used to reapply the ponding water to the adjacent LAA. This method is utilized to prevent standing water.

#### 2.11.10.1 Setbacks

The existing LAAs have been constructed to maintain certain setback distances from sensitive areas and/or activities. Table 2-22 lists the existing minimum setbacks for the existing LAAs. No water wells are known to exist on-site where additional setback requirements would apply.

Table 2-22  
Existing Land Application Area Setbacks

Setback Condition	Existing Minimum Setback (ft)
Edge of application area to property boundary	100
Edge of application area to public road	50
Edge of application area to natural or manmade surface water drainage courses	50

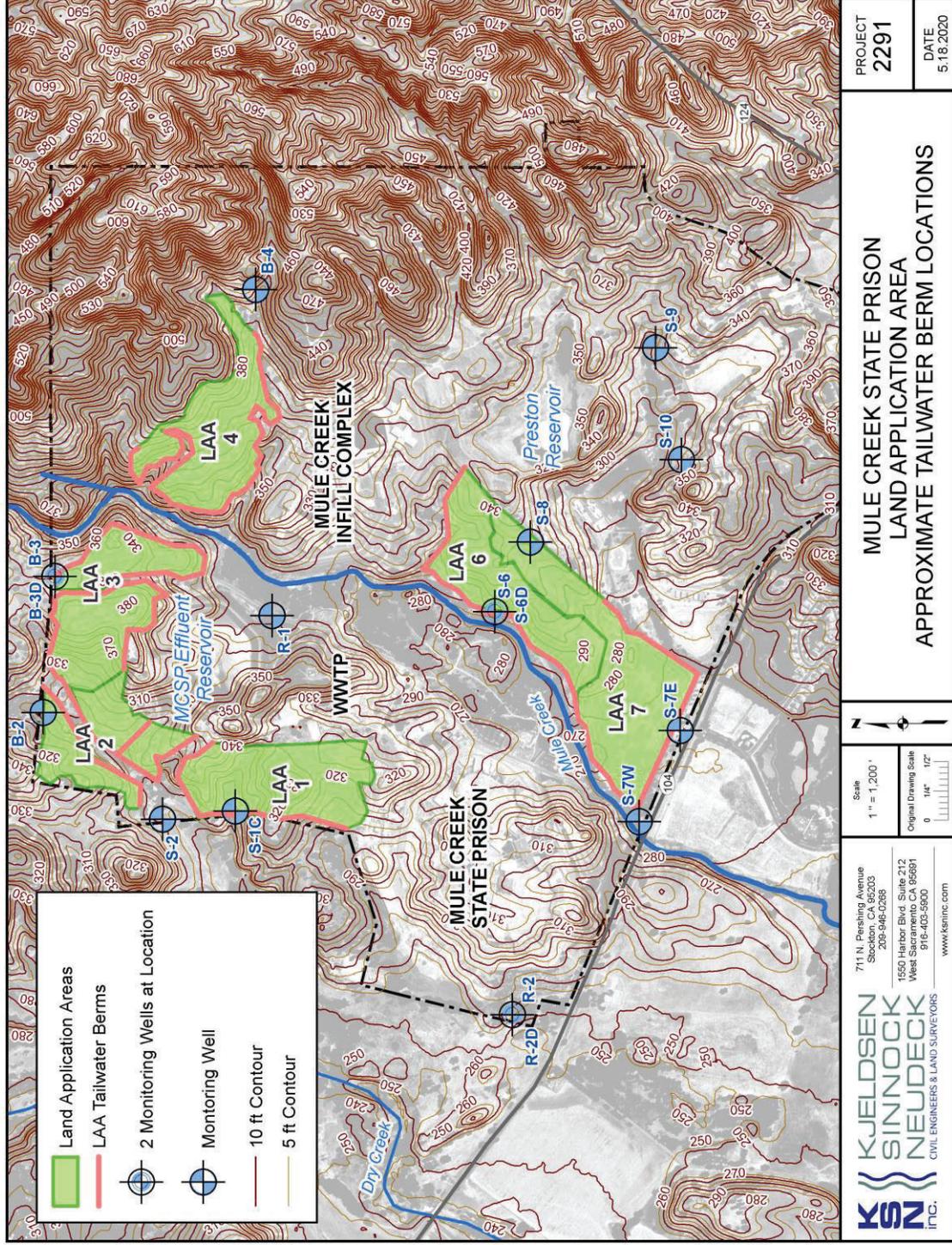


Figure 2-10  
MCSP LAA Tailwater Berm Locations

## 2.12 PROJECTED MONTHLY WATER BALANCES

Monthly waterbalance calculations were prepared for the MCSP WWTP based on the proposed new ADWF limit of 0.57 Million Gallons per Day (Mgal/d). This value was established based on the evaluation of MCSP WWTP flow and inmate population as described in Section 2.13. These calculations estimate the facility's ability to dispose of effluent consistent with Discharge Specifications D.11, D.12, and D.13 of Order No. R5-2015-0129 and assume system operation as provided for in Discharge Prohibition No. A.4, and Land Application Area Specifications Nos. F.1, F.2, F.4 through F.7, and F.11. The calculations, site-specific characteristics, and assumptions used in the calculations are consistent with the Regional Water Quality Control Board's current requirements for waterbalance calculations.

The construction of the Mule Creek Infill Complex (MCIC), completed in 2016, lead to an approximately 60-acre reduction in the available on-site LAAs. The remaining total acreage of LAAs is approximately 200 acres, with LAAs 1-4, and 6 accounting for 157 acres and LAA 7 accounting for 43 acres. Waterbalance calculations assumed this total available acreage for land application of treated effluent.

Inflow and Infiltration (I&I) values for the MCSP WWTP were estimated for the waterbalance calculations based on the monthly MCSP WWTP influent data for the 2016 water-year, which is representative of a recent very wet year and expected to represent I&I conditions that would occur under a 1-in-100 year annual precipitation year. The average flow for the months of July through September were used as the basis of the ADWF. Monthly flow volumes that exceeded the ADWF volume were characterized as the I&I expected for that month in the water balance.

Additional information on site-specific characteristics such as ETo, crop coefficients, and soil characteristics used in developing the water balance calculations are described in Section 4.2 through 4.5. The water balance calculations contained in Appendix G are based on the following:

- Projected average dry weather flow influent flow of 0.57 Mgal/d;
- 200 acres of LAA available for land application of treated effluent;
- Average monthly precipitation based on data from average of the Lone and Camp Pardee Reservoir stations;
- 1-in-100 year to average annual precipitation factor based on DWR long-duration depth-duration-frequency calculations for Lone (See Appendix H);
- Reference Evapotranspiration based on California Zone 14 as published by the Cal Poly Irrigation Training and Research Center;
- Crop coefficients were based on a mixture of miscellaneous pasture grasses and deciduous oaks, with monthly calculated weighted coefficients ranging from 0.83 to 1.14.
- 1-in-100 year application efficiency based on ratio of observed peak-month sprinkler application volume during the 2017, 1-in-100 year rain-event, compared to theoretical LAA volume;

- Percolation from the effluent storage reservoir is assumed to be zero as the reservoir embankment dams are lined.
- Maximization of the disposal capacity of facilities under CDCR control; and
- Inflow and infiltration based on recorded site-specific ADWFs subtracted from the site-specific average monthly influent flow rates.

Based on the calculations in Appendix G, influent flows of 0.57 Mgal/d can be contained and disposed of consistent with the requirements of Order No. R5-2015-0129, with the existing dedicated LAAs and annual discharge to the COWRP as summarized in Table 2-23. Under average year conditions, the effluent storage reservoir is expected to be empty by the start of the following water year. Under the 1-in-100 year condition, approximately 24 Mgal would remain in the effluent storage reservoir by the start of the following water year. In both cases, there is adequate storage capacity for storage of effluent throughout the year in the effluent storage reservoir.

The 1-in-100 year condition was further evaluated to determine if the end of season effluent storage reservoir remaining volume could be accommodated with limited risk of exceeding the 2 foot freeboard requirements under a subsequent average or wet year. If an average precipitation season occurred following a 1-in-100 year season, the effluent storage reservoir could be emptied in the following year. In this case, the maximum storage required was calculated to be 135 Mgal and the effluent storage reservoir could be emptied by the start of the next water year. Waterbalance calculations demonstrate that there would be sufficient storage capacity to accommodate a 1-in-50 year season following a 1-in-100 year season. These conditions are reasonable approximations of conditions expected to be observed, as two consecutive 1-in-100 year events are not likely to occur.

Table 2-23  
Water Balance Calculation Results

		Average Year		1-in-100 Year	
		MG	AF	MG	AF
ANNUAL INFLOW	WASTEWATER INFLOW <sup>(1)</sup>	208	638	208	638
	INFLOW AND INFILTRATION	14	43	14	43
	PRECIPITATION INTO RESERVOIR	16	49	29	89
	<b>TOTAL INFLOW</b>	<b>238</b>	<b>731</b>	<b>251</b>	<b>770</b>
ANNUAL OUTFLOW POTENTIAL	EVAPORATION FROM RESERVOIR	15	46	15	46
	PERCOLATION FROM RESERVOIR	0	0	0	0
	ON-SITE LAND DISPOSAL	132	405	99	304
	DISCHARGE TO COWRP	114	350	114	350
	<b>TOTAL OUTFLOW</b>	<b>261</b>	<b>801</b>	<b>228</b>	<b>700</b>
OVERALL BALANCE	LAA CAPACITY USED	111	340	99	304
	COWRP CAPACITY USED	113	345	114	350
	TOTAL DISPOSAL CAPACITY USED	223	686	213	654
	<b>EFFLUENT REMAINING AT END OF SEASON</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>74</b>
STORAGE	TOTAL REQUIRED STORAGE CAPACITY <sup>(2)</sup>	113	346	129	395

(1) Based on Average Dry Weather Flow basis of 0.57 Mgal/d

(2) Maximum available MCSP Effluent Storage Reservoir capacity is 155 Mgal/ 475 AF

### 2.13 PROPOSED FLOW LIMITS AND BASIS FOR LIMITS

As discussed in Section 2.2, significant reductions in annual influent flow to the MCSP WWTP have occurred since 2005. The reduction in inmate population at MCSP, water conservation measures, and WWTP facility upgrades have resulted in a lower daily flow of treated effluent over this period over historic levels. Data from recent years (2016-2019), after the construction of MCIC and implementation of the above water conservation measures, shows that AWWDF over these years ranges from 0.34 to 0.51 Mgal/d and average annual flow (AAF) ranges from 126-193 Mgal. This data is presented in Table 2-24, below.

Table 2-24  
**MCSP WWTP Average Annual and Average Dry Weather Flow**

Year	AAF (Mgal)	ADWF (Mgal/d)
2006	251.69	0.79
2007	303.78	0.80
2008	230.43	0.59
2009	226.782	0.57
2010	203.701	0.56
2011	175.079	0.46
2012	165.955	0.44
2013	158.392	0.42
2014 <sup>(1)</sup>	132.64	0.35
2015 <sup>(1)</sup>	116.022	0.31
2016 <sup>(1)</sup>	126.184	0.34
2017	154.954	0.37
2018	176.656	0.46
2019	192.928	0.51

(1) 2014, 2015, and 2016 influent flows may be influenced by MCIC construction activity including sewer flushing and testing.

Under Order No. R5-2015-0129, the MCSP WWTP is currently limited to an annual flow of 274 Mgal, and an ADWF of 0.74 Mgal/d. As a result of the stabilized flows and inmate population over recent years, a reduction in the plant's ADWF permitted capacity from 0.74 Mgal/d to 0.57 Mgal/d is recommended. No modifications of the treatment plant will be necessary to accommodate the reduction in permitted capacity. For further information on the basis of this recommendation, see Section 2.2.

The proposed permitted capacity, current permitted capacity based on R5-2015-0129, and the existing wastewater treatment processes design capacity are listed in Table 2-25. The effluent storage and disposal system, including on-site LAAs, and the maximum level of discharge to the COWRP, are expected to continue to accommodate the new proposed ADWF of 0.57 Mgal/d and an estimated annual total influent flow of 223 Mgal per year.

Table 2-25  
**Design Influent Flow Rates**

Flow Scenario	Proposed Permitted Capacity (Mgal/d)	Influent Flow Rate (Mgal/d)	Treatment Capacity (Mgal/d)
Avg. Dry Weather Basis	0.54	0.74	1.0

## 2.14 TREATMENT SYSTEM OPERATION AND MAINTENANCE PROCEDURES

The MCSP WWTP is operated consistent with the current O&M Manual.

### **2.14.1 TREATMENT SYSTEM OPERATION**

Treatment system operations are conducted by, or under the direct supervision of, certified WWTP operators.

The headworks and influent pump station operate automatically, however MCSP operations staff conduct daily checks on the facility to monitor proper performance. Influent screenings are collected in collection bags and are periodically placed in an on-site dumpster for hauling to an off-site disposal location. The influent pump station force main discharges into the influent box of the oxidation ditch aeration basin. Prior to this discharge, influent flow totals are recorded in a magnetic flow meter installed on the influent pump station force main.

The oxidation ditch treatment system is operated automatically. The system is currently equipped with four aerators, with two floating aerators operating continuously to provide the minimum mixing energy required to keep the mixed liquor solids suspended. A dissolved oxygen probe is utilized to monitor aeration basin dissolved oxygen and is used to control the remaining three aerators, where aeration input is increased as dissolved oxygen reaches certain set-points.

Oxidation ditch effluent is conveyed via gravity to the existing three clarifiers. Clarifier mechanisms operate automatically to collect settled sludge and divert it to the sludge pumping station. Settled sludge is pumped from the sludge pumping station to the aeration basin or to waste. Return sludge is pumped automatically based on maintaining specified level in the sludge pumping station wet well. Sludge is manually wasted from the return sludge pumping line to maintain a target mean cell residence time (based on system performance).

Clarified effluent is discharged by gravity to the new DCB through an H-flume. Effluent flow from the clarifiers is recorded by two magnetic flow meters located upstream of the DCB and the H-flume. At the flume discharge, sodium hypochlorite solution is added utilizing a chemical feed pump set to deliver a specified chlorine dose to achieve disinfection according to existing effluent limits.

Disinfected effluent enters the effluent pump station where it is automatically pumped to the on-site effluent storage reservoir, to COWRP through the bypass valve, or through the irrigation pump station to land application.

Waste sludge is pumped to a sludge holding tank where it is stored before dewatering in the belt filter press or sludge drying beds. Dried sludge is hauled off-site to the landfill for disposal.

### **2.14.2 EFFLUENT STORAGE AND DISPOSAL OPERATION**

Following disinfection, secondary effluent is conveyed to the MCSP Effluent Storage Reservoir, to the land application area, or to COWRP. Pumps and valves are manually operated to allow discharge of effluent to one or more of the above three locations. Effluent storage reservoir conditions are monitored on a weekly basis with effluent water quality characteristics, freeboard, and dam condition monitored on at least a weekly basis.

During wet months, when land application area conditions do not allow land disposal or when influent flows exceed allowable discharge to COWRP, the secondary effluent is conveyed to the main on-site storage reservoir.

Typically, seasonal storage is utilized during the months of December through April or May. Land application is achieved through sprinkler application to the 200 acres of land application area.

### 2.14.2.1 Off-Site Deliveries to COWRP

When necessary, CDCR can discharge to COWRP during winter months consistent with the provisions in CDCR, ARSA, and City of Lone Agreement. During dry months, when requested by the City of Lone, effluent is preferentially discharged to COWRP for further treatment by the City of Lone and reuse at the Castle Oaks Golf Course. Discharge to COWRP is controlled automatically through valving at the MCSP bypass valve located at the Preston Outfall.

Due to construction of the bypass to the Preston Reservoir, MCSP can now deliver treated effluent directly to the COWRP via the use of the Preston Outfall, which is as described in Section 2.11.3. The COWRP controls influent flows using feedback-loop controls with an existing flow meter and motor actuated butterfly valve. Deliveries to the COWRP depends on the operation of two valve systems, as shown in Figure 2-11. On the MCSP site, and under the responsibility of MCSP operations staff, electronic control valve V-522 controls the rate of flow and pressure of deliveries directly from the MCSP on-site treated effluent distribution system to the Preston Outfall. At the point of intertie with the COWRP a motorized valve V-1202 is used to select when treated effluent is delivered to the COWRP. Valve V-1202 is operated by the City of Lone and/or MCSP, depending on when deliveries are to be made to the COWRP.

Operation of Valve V-1202 is open/close, with flow rate to the COWRP controlled by a flow control valve at the COWRP headworks.

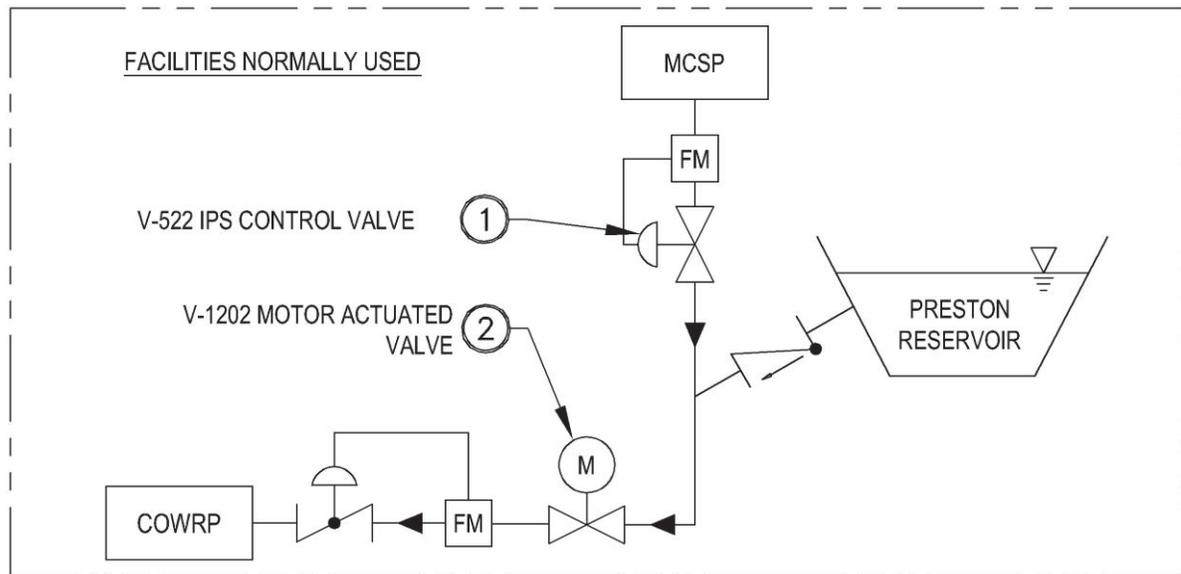


Figure 2-11  
MCSP Effluent Valve Operating Diagram

Valve position, and control mode, to control deliveries to the COWRP are listed in Table 2-26. Valve position, and control mode, depend on the treated effluent destination.

Table 2-26  
**COWRP Delivery Valve Positions**

Effluent Destination	Source of Conveyed Effluent		
	MCSP	Preston Reservoir	MCSP & Preston Reservoir
Castle Oaks Water Recycling Plant	1. V-522: Open – High Pressure 2. V-1202: Open	1. V-522: Closed 2. V-1202: Open	1. V-522: Open – Low Pressure 2. V-1202: Open

Off-site deliveries will be controlled by the CLA-VAL pressure sustaining and regulating control valve, V-522. The V-522 control valve will allow deliveries to COWRP. However, MCSP Operations staff may also deliver to on-site land application areas and to Preston Reservoir at the same time. CDCR does not plan to discharge to Preston in the future.

All deliveries off-site are controlled by the CLA-VAL pressure sustaining and regulating control valve V-522. The V-522 control valve is controlled by the CLA-VAL 131-VC controller, which is a local controller that receives operator set points remotely via MSCP SCADA. The valve will act independently of the irrigation pumps and will not have interlock functions.

### 2.14.3 OPERATOR CERTIFICATION AND STAFFING

The wastewater treatment and disposal operations are conducted by or under the direction and supervision of California certified WWTP operators. The MCSP currently employs the certified operators listed in Table 2-27.

Table 2-27  
**Existing Certified Operators**

Name	Grade Level & Number
Anthony Stark	Grade IV Cert. #28431
Robert Slater	Grade II Cert. #10117
Daniel Fine	Grade II Cert. #37776

The MCSP WWTP facility is normally staffed during the hours of 06:00 to 16:00 seven days a week. During non-manned periods, the treatment system is set up to operate automatically.

Table 2-28  
**Facility Hours of Operation**

Mon-Fri	06:00-16:00
Sat	06:00-16:00
Sun	06:00-16:00

## Section 3

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# Planned Changes in Existing Facilities and Discharges

There are currently no planned changes to the operations of MCSP WWTP as described in previous sections of this report. CDCR plans to continue to use its onsite LAAs and the COWRP as described in this report. Please also note that the previously proposed on-site LAA expansion described in Order No. R5-2015-0129 was not constructed nor activated in any manner. CDCR's preference is for beneficial reuse of treated effluent generated at the MCSP WWTP through conveyance to the COWRP, with remaining effluent disposal capacity provided by the on-site LAAs. Through maximized transfer to the COWRP under the 2009 Lease Agreement and a documented consistent reduction in influent flows, a reduced permitted capacity of 0.57 Mgal/d can be accommodated within existing facilities available to CDCR for the MCSP WWTP.

## Local and Site-Specific Conditions

### 4.1 NEIGHBORING LAND USES

The existing MCSP site is immediately surrounded by State-controlled lands, including the MCSP, existing LAAs, CAL FIRE, and PYCF, as well as oak woodlands, rangelands, and pastures. Beyond this to the south and south-east of the site are existing residential developments in the City of Lone, including the Castle Oaks residential development. Within the Castle Oaks residential development is the existing Castle Oaks Golf Course. Land uses to the north and north-west include aggregate and clay mining.

#### 4.1.1 TYPICAL CROPS GROWN IN SURROUNDING AREAS

Land uses adjacent to the MCSP site are predominantly rangeland. Beyond the MCSP site immediately adjacent properties, the alluvial areas between Mule Creek and Dry Creek tend to include limited agricultural land uses, with crop types consisting primarily of pasture grasses.

#### 4.1.2 LOCAL IRRIGATION PRACTICES

Irrigation water for landscaping at the MCSP site is supplied from surface water under contract to the AWA. For agricultural purposes, surface water may be available to certain MCSP site agricultural parcels when flow is occurring in the area creeks, or through capture of surface runoff in ponds, however, the volume of water available for diversion from this source is significantly limited and normally with inadequate quantity to support irrigated agricultural practices.

### 4.2 SITE TERRAIN, DRAINAGE FEATURES AND SURFACE WATER DRAINAGE COURSES

The MCSP site consists of hilly foothill terrain. The land surface elevation across the site ranges from approximately 290 feet to over 460 feet above sea level. Surface drainage follows the natural land contours of the site, where it is collected in local lower elevations before flowing into the nearby surface water drainage courses. The existing MCSP site is bisected by Mule Creek. Smaller drainage courses collect surface water from the adjacent land surface and discharge into Mule Creek, including a small unnamed tributary to Mule Creek that provides local drainage to the north-eastern quadrant of the MCSP site. An additional small local unnamed drainage course is located upslope of Preston Reservoir. This drainage has been diverted around Preston Reservoir through a cutoff ditch constructed upslope of the reservoir; runoff from this drainage now is directed to Mule Creek. Figure 4-1 depicts the location of Mule Creek and local surface drainage courses with respect to existing recent improvements.

### 4.3 FEMA FLOODPLAIN DESIGNATION(S)

Mule Creek, which runs through CDCR-controlled land, has been designated as a Federal Emergency Management Agency (FEMA) Zone A Flood Zone. Areas designated as Zone A are subject to inundation by the 1-percent-annual-chance flood event. The limits of the FEMA Zone A mapping are shown in Figure 4-1. All existing facilities and recent MCSP WWTP improvements are located outside of Zone A, or are constructed to accommodate flooding or creek flow (e.g., the utility crossings of Mule Creek).

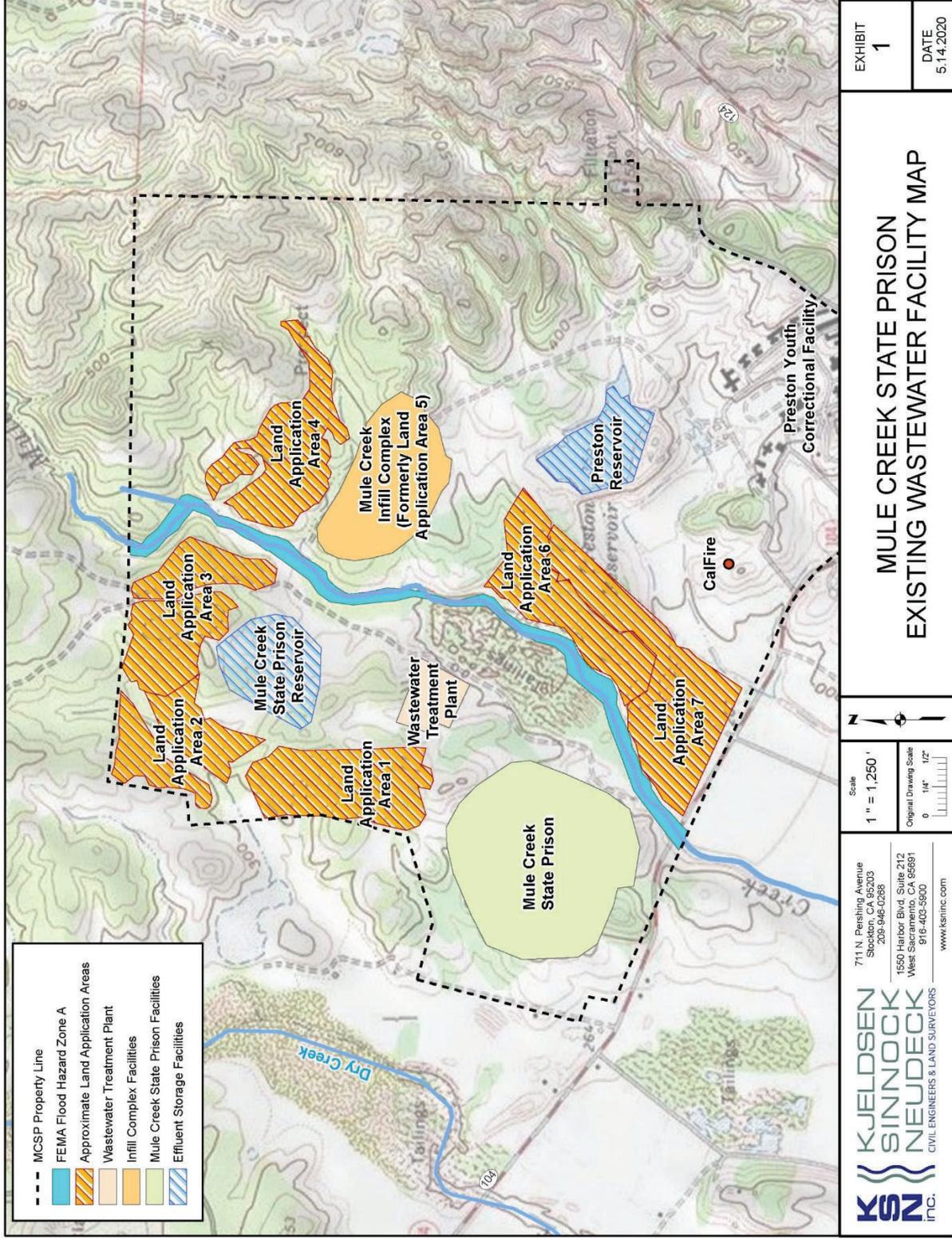


Figure 4-1  
Mule Creek FEMA Zone A Within MCSPP Vicinity

## 4.4 CLIMATOLOGICAL DATA

### 4.4.1 AVERAGE AND 100-YEAR PRECIPITATION DATA

Annual average precipitation in the area of the MCSP site is approximately 22 inches per year, based on precipitation data collected during the period of record. The Desert Research Institute has tabulated average monthly precipitation for Camp Pardee from 1926 through 2016<sup>11</sup> and for Lone from 1906 through 1977<sup>12</sup>. Average monthly rainfall at MCSP is assumed to be the average of rainfall from these two sites.

The DWR maintains depth duration frequency calculations for certain precipitation stations in California. Depth duration frequency calculations are developed for either long-duration (1 or more consecutive days) or short duration (including periods less than one day). Data from the lone precipitation station compiled by the DWR (see Appendix H) indicates a long duration depth duration frequency precipitation of 39.33 inches for a water year duration and 100-year return period. Based on an average precipitation of 21.76 inches per year, the 1-in-100 year annual precipitation season is 1.81 times the average year precipitation season. This factor of 1.81 has been utilized to estimate the 1-in-100 year annual precipitation season according to the monthly pattern presented in Table 4-1.

The waterbalance calculations contained in Appendix G assume an annual average precipitation of 21.76 inches per year, distributed monthly according to the average monthly precipitation. Table 4-1 presents the average monthly precipitation totals expected for the MCSP site. For calculation of the 100-year hydrologic condition in the waterbalance, average monthly rainfall was multiplied by the ratio of the 100-year, 365-day storm to the average annual storm. This ratio is 1.81 and remains unchanged from previous iterations of water balance calculations for the site.

Table 4-1  
Average Year and 1-in-100 Year Monthly Precipitation for MCSP Site

Month	Precipitation (inches)	1-in-100 year annual precipitation factor	1-in-100 year annual precipitation
October	1.18	1.81	2.13
November	2.69	1.81	4.87
December	3.49	1.81	6.32
January	4.52	1.81	8.17
February	3.35	1.81	6.05
March	3.29	1.81	5.95
April	1.82	1.81	3.29
May	0.74	1.81	1.33
June	0.25	1.81	0.44
July	0.06	1.81	0.10
August	0.10	1.81	0.17
September	0.31	1.81	0.56
Total	21.76		39.39

<sup>11</sup> Desert Research Institute, Period of Record Monthly Climate Summary, Camp Pardee, California (041428). <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1428>

<sup>12</sup> Desert Research Institute, Period of Record Monthly Climate Summary, Lone, California (044283). <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4283>

#### 4.4.2 EVAPOTRANSPIRATION AND PAN EVAPORATION DATA

Site-specific evapotranspiration (ET<sub>o</sub>) (e.g., from a California Irrigation Management Information System [CIMIS] station), is not available from the MCSP site. The nearest CIMIS station is in Plymouth, California, at an elevation of 1,520 feet which is more than approximately 1,200 feet higher in elevation than the MCSP site. Therefore, due to the lack of site-specific reference evapotranspiration data, typical monthly ET<sub>o</sub> rates were obtained from California Polytechnic State University Irrigation Training and Research Center (ITRC)<sup>13</sup>. MCSP falls within reference evapotranspiration Zone 14. Crop evapotranspiration coefficients are available for both average year and wet year conditions. Crop coefficients assumed for the waterbalance calculations were based on a mixture of miscellaneous pasture grasses and deciduous oaks (see Table 10 and 23 of the referenced document).<sup>13</sup> Site reference evapotranspiration values used in the waterbalance calculations are summarized in Table 4-2. Wet year values were used for the 1-in-100 year annual precipitation conditions, while typical year values were used for the average annual precipitation condition.

Table 4-2  
California Zone 14 Reference Evapotranspiration

Year	Monthly Reference Evapotranspiration (in)												Annual Total
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Wet	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01	45.55
Typical	3.86	1.50	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82	56.45

#### 4.5 UNDERLYING SOIL DATA

Soil survey information available from the Natural Resource Conservation Service (NRCS) of the United States Department of Agriculture indicates that the MCSP LAAs are predominantly within three soil series (the Auburn, Honcut, and Red Bluff-Mokelumne series) and areas of historical mine tailings, consisting of nine (9) soil mapping units. These soil map units and their abbreviations are presented in Table 4-3. A copy of the NRCS report used as the source of this information was included with the 2015 Report of Waste Discharge.

<sup>13</sup> California Crop and Soil Evapotranspiration for Water Balances and Irrigation Scheduling/Design, January 2003.

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/california\\_waterfix/exhibits/docs/dd\\_jardins/part2/ddj\\_267.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/dd_jardins/part2/ddj_267.pdf)

Table 4-3  
Soil Map Unit Abbreviations

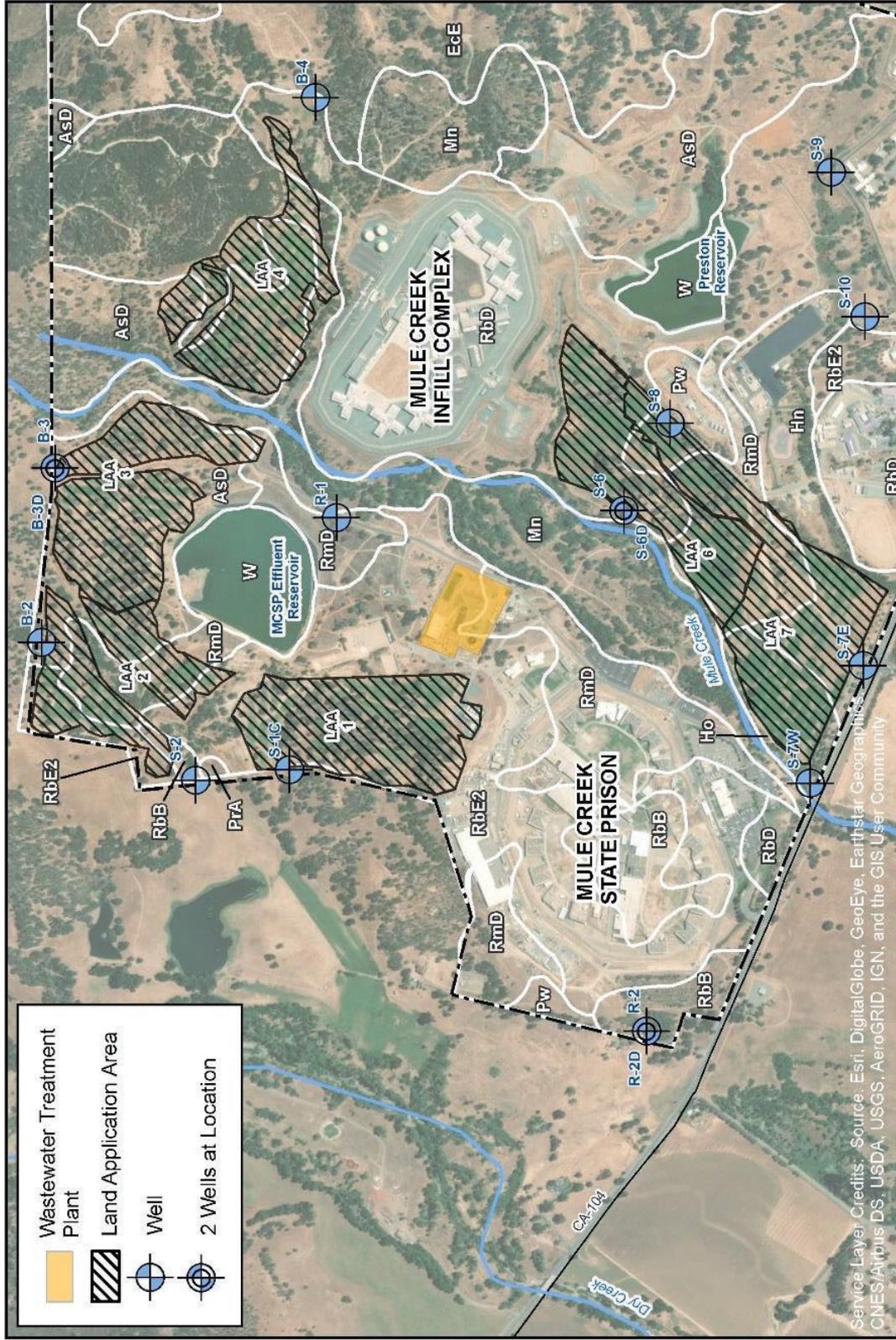
Soil Map Unit Abbreviation	Soil Map Unit Name
AsD	Auburn Very Rocky Silt Loam
Hn	Honcut Silt Loam
Ho	Honcut Very Fine Sandy Loam
Mn	Mine Tailings and River Wash
Pw	Placer Diggings and Riverwash
RbB	Red Bluff-Mokelumne complex, 0 to 5 percent slopes
RbD	Red Bluff-Mokelumne, 5 to 16 percent slopes
RbE2	Red Bluff-Mokelumne, 16 to 36 percent slopes, eroded
RmD	Red Bluff-Mokelumne-Mine Pits, 2 to 16 percent slopes

#### 4.5.1 LAND APPLICATION AREA UNDERLYING SOILS AND BEDROCK CONDITIONS

The predominant mapped soil units within the LAAs are shown in Figure 4-2. Minor portions of LAA2 (approximately 3%) appear to be mapped within the Red Bluff-Mokelumne complex, 0 to 5 percent slopes (RbB), and less than 10% each of LAA 6 and 7 appear to be mapped with Pw (Placer Diggings and Riverwash), which have been considered insignificant. However, these soils are expected to be similar to the same soil mapping units characterized at the site. The estimated percentages of each soil type and depths to restrictive feature in the LAAs, as presented in the October 2018 Soil Sampling Plan, are shown in Table 4-4. Depths to restrictive feature for each LAA have been estimated based on the range of depth to these features for the soil types present in the LAA. LAAs 2 through 4 contain soils as shallow as 10 inches in depth, with LAA 3 having soils with a depth to restrictive feature of at most 28 inches. Alternatively, LAAs 1, 6 and 7 tend to have deeper soil settings, typically 39 to 60 inches or greater. For more information on the soil map units including description, slopes, setting, profiles, and qualities refer to the LAA Soil Sampling Plan dated October 2018, included as Appendix I.

Table 4-4  
Soil Types Underlying LAAs

LAA Number	Soil Types and Percentage									Soil Depth to Restrictive Feature
	AsD	Hn	Ho	Mn	Pw	RbB	RbD	RbE2	RmD	
1								100%		39 to 60 inches to paralithic bedrock
2	30%					3%		30%	37%	10 to 60 inches to lithic or paralithic bedrock
3	~100%									10 to 28 inches to lithic bedrock
4	64%			31%			5%			10 to more than 60 inches to lithic bedrock
6					6%		62%		32%	39 to 60 inches to paralithic bedrock
7		33%	26%		7%		3%		31%	39 to more than 80 inches to paralithic bedrock



	Wastewater Treatment Plant
	Land Application Area
	Well
	2 Wells at Location

<p>Scale 1:12,000 Original Drawing Scale 0 1/4" 1/2"</p>	<p>PROJECT <b>2291</b></p>
	<p>DATE 9/27/18</p>
<p>MULE CREEK STATE PRISON LAND APPLICATION AREA SOIL TYPES</p>	
<p>711 N Pershing Avenue Stockton, CA 95203 208-946-2268 1355 Highland Drive, Suite 100 West Sacramento, CA 95691 916-423-5600 www.kjnmnc.com</p> <p><b>KJELDTSEN SINNOCK NEUDECK</b> INC. CIVIL ENGINEERS &amp; LAND SURVEYORS</p>	

Figure 4-2  
Soil Types Underlying MCSP LAAs

#### 4.5.2 UNDERLYING GEOLOGY

Available information on underlying geology for the MCSP site was presented in the October 2018 Soil Sampling Plan. This information indicates that the site is underlain primarily by three bedrock types:

Eocene Nonmarine Sedimentary Rocks (Map Symbol Ec): The lone formation of Eocene Nonmarine Sedimentary rock is described as massive, white quartzose sandstone, with lenses of white or light-colored anaerobic clay and white sandstone, gray or bluish gray shale and clay, lignite, and other carbonaceous beds.

Jurassic and/or Triassic Metavolcanic (Map Symbol JTRv): The Mother Lode Belt is described as containing mafic volcanic breccia and tuff, amphibolite schist, quartz porphyry “feeders” for dacite volcanics, and include Upper Jurassic basic sills and dikes.

Upper Jurassic Marine Sedimentary and Metasedimentary Rocks (Map Symbol Ju): The Cosumnes formation of the Amador group of Upper Jurassic Marine Sedimentary and Metasedimentary Rocks is described as dark gray clay slate, sheared greywacke, thin-bedded tuff, some basic lava, red and green chert, and a basal conglomerate.

Figure 4-3 presents the approximate aerial extent of mapped geology within the MCSP area and underlying the MCSP LAAs.

The parent material for the soils in the MCSP LAA vicinity is expected to be strongly based on the mineralogy of the underlying geologic formations. For the majority of the soils in the LAAs, the depth to bedrock is typically less than 40 inches, and it is expected that the adjacent deeper soils and mine tailings or river wash map units are predominantly formed from the adjacent upslope soils and related geology. This mineralogical composition is expected to be a dominant factor in composition of groundwater inorganic constituents.

The soil depth of the LAAs were assumed to be 14 inches for fields 1-4, and 6 and 60 inches for field 7 based on soil sampling field logs included in the Soil Evaluation Report (see Appendix J). Soil Available Water Holding Capacity (AWHC) – or the total of available water in the root zone, and the Management Allowed Depletion (MAD) – or the amount of water that is allowed to be used by the plant between irrigations was estimated based on values as stated in the NRCS Web Soil Survey.<sup>14</sup>

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<sup>14</sup> USDA Natural Resources Conservation Service Web Soil Survey, Mule Creek State Prison and Vicinity.  
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

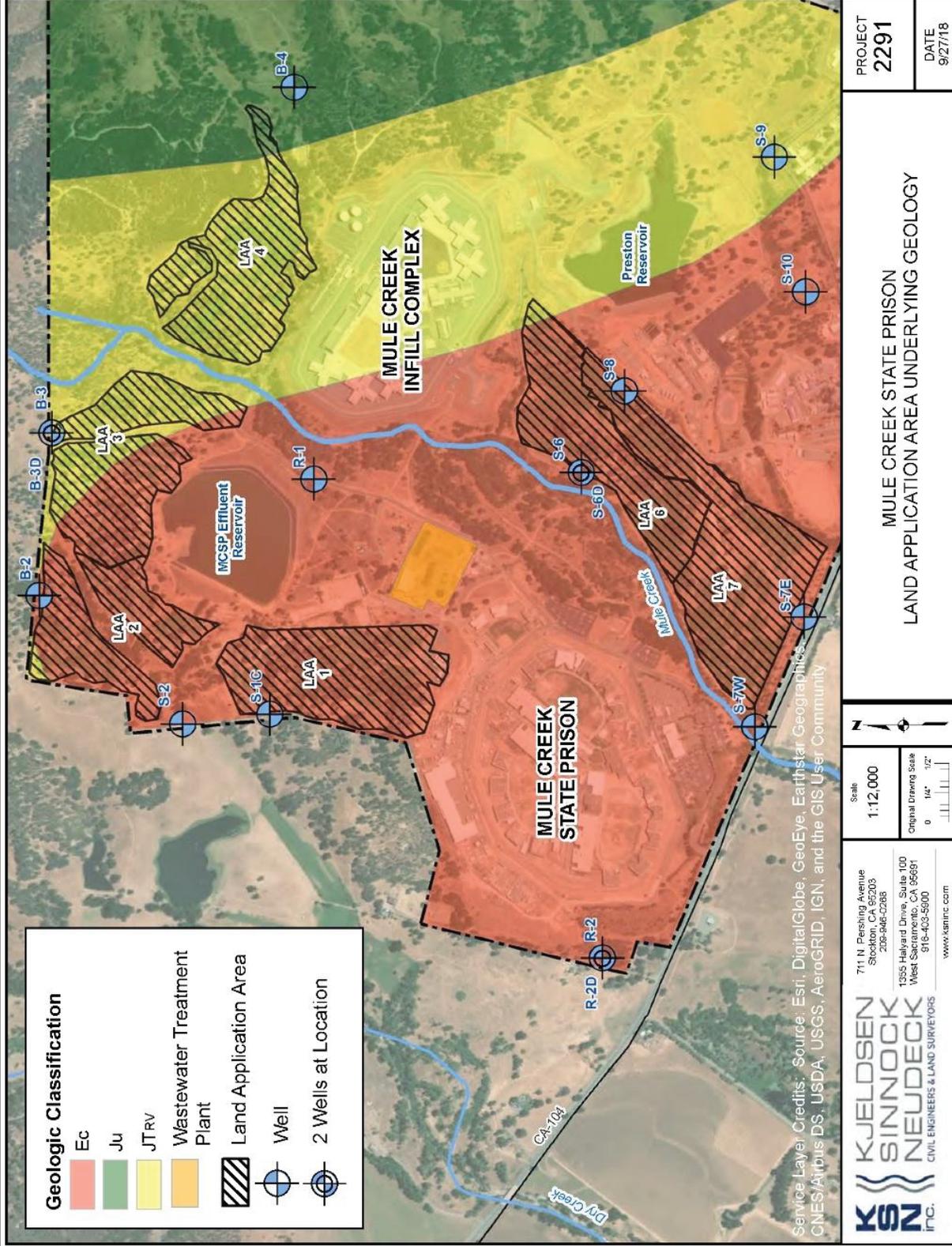


Figure 4-3  
 Geology Underlying MCSP LAAs

## 4.6 HYDROGEOLOGY AND GROUNDWATER

### 4.6.1 FIRST GROUNDWATER

Groundwater monitoring commenced in April 2007 following installation of the existing groundwater monitoring wells. Additional information regarding site groundwater is contained in the CDCR's quarterly groundwater monitoring reports submitted to the California RWQCB. The locations of existing groundwater monitoring wells are provided on the map in Figure 4-2 and Figure 4-3. Ten monitoring wells were installed by Condor Earth Technologies, Inc. (Condor) in 2007 and are effective to date. Wells B-2, B-3, and B-4 are downgradient from adjacent properties and upgradient of existing land application areas. Wells S-1, S-2, S-6, S-7E, and S-7W are downgradient from spray fields respective to their numbering, while wells R-1 and R-2 are downgradient from the effluent reservoir and state prison complex. In September 2015, three additional monitoring wells (S-8, S-9, S-10) were installed by Kleinfelder, Inc. near PYCF, CAL FIRE, and Preston Reservoir. Monitoring wells B-3, R-2, S-1, and S-6 have recently been supplemented with new deeper nested wells (B-3D, R-2D, S-1D, and S-6D) in 2017 and 2018 due to the monitoring wells being consistently dry during sampling events.

Based on the results of groundwater monitoring since 2007, which are available to the RWQCB Staff through MCSP's regular groundwater reporting, the depth to groundwater has ranged from 4.0 feet below the land surface (monitoring well S-7E on 3/29/2011) to a depth greater than 42 feet (based on monitoring well S-1 being found dry). Since 2007 the CDCR has been sampling the existing groundwater monitoring wells for analysis of a series of constituents.

### 4.6.2 HIGHEST ANTICIPATED GROUNDWATER

Groundwater elevations in the existing land application areas has generally been stable since 2007, however as mentioned in 4.6.1 several monitoring wells had intermittent gaps in groundwater measurements because groundwater depth exceeded well completion depths. Historical groundwater elevation trends since 2007 are presented in Figure 4-4.

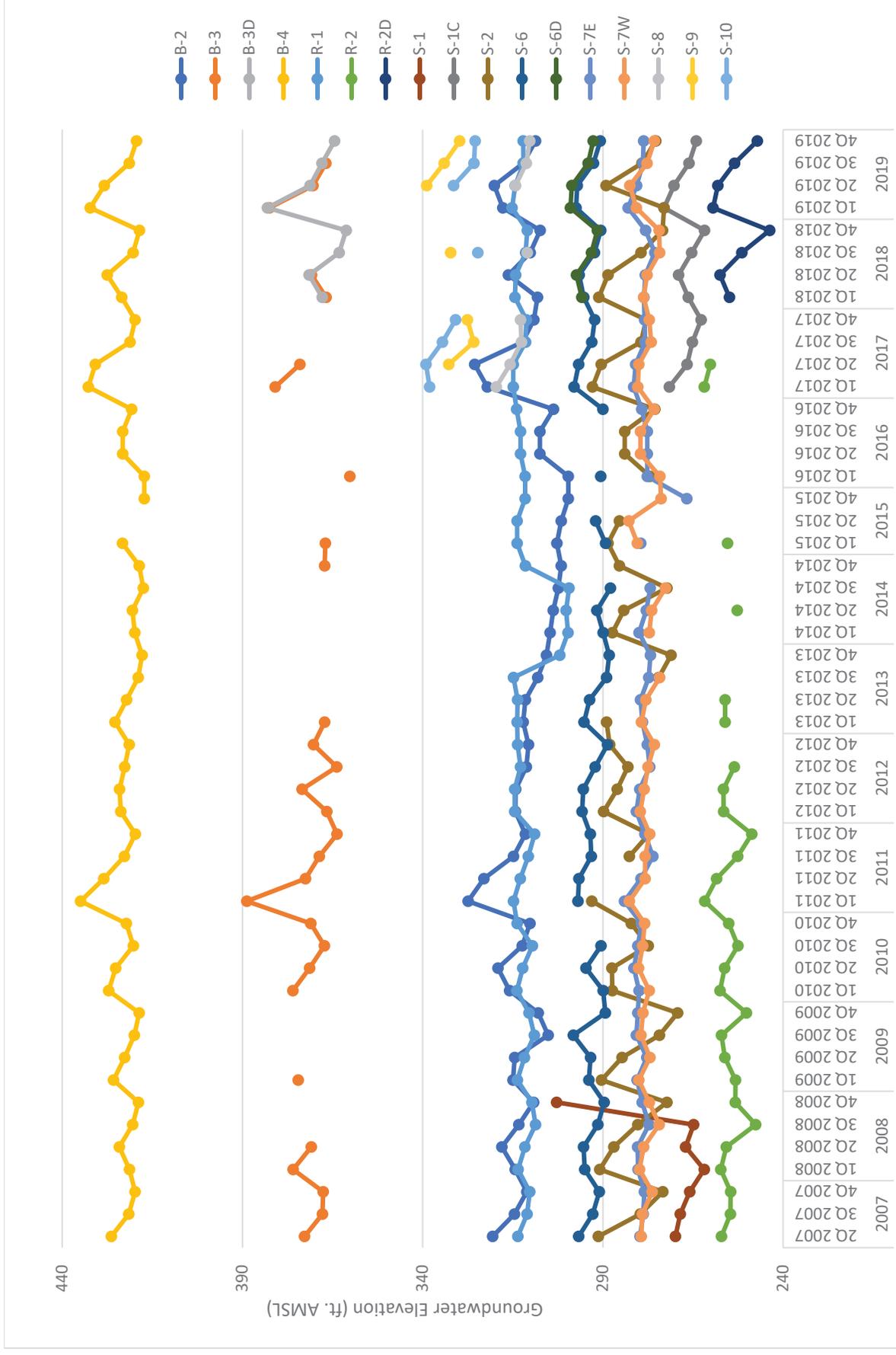


Figure 4-4  
Historical Monitoring Well Groundwater Elevations

The existing record indicates groundwater at a depth as shallow as 4.09 feet (monitoring well S-7E on 3/29/2011), however the data also suggests that groundwater is typically 10 feet or more below the land surface, in particular during typical land application in May through September. Based on historical data, the range of depth to groundwater in the existing monitoring wells is presented in Table 4-5. Depth to groundwater has generally been increasing since 2007.

Table 4-5  
Historical Depth to Groundwater

Monitoring Well I.D.	Range of Depth to Groundwater (ft)
B-2	5.37 to 33.20
B-3*	9.90 to >33.00
B-3D	15.24 to 37.10
B-4*	16.00 to >39.00
R-1	8.00 to 23.81
R-2*	15.76 to >30.00
R-2D	16.33 to 32.02
S-1*	31.67 to >42.00
S-1C	28.54 to 39.78
S-2*	5.15 to >33.00
S-6*	15.00 to >30.00
S-6D	15.37 to 22.83
S-7E*	4.09 to >22.00
S-7W	5.50 to 15.65
S-8	31.86 to 41.12
S-9*	6.90 to >30.00
S-10	8.27 to 27.20

\*Based on depth of well when dry.

### 4.6.3 BACKGROUND GROUNDWATER EVALUATION

The evaluation of the groundwater underlying the MCSP facilities (MCSP Groundwater Evaluation Report) was completed by Stantec Consulting Services, Inc. on October 12, 2018, and identified that monitoring wells B-2, B-3, B-3D, B-4, S-1C, S-2, and S-10 provide the highest likelihood of being representative of the variability of background/ambient groundwater quality. With this evaluation, site-specific groundwater limitations were developed based on a statistical evaluation of groundwater data. The resulting Site-Specific Groundwater Limitations (SSGLs) developed from this analysis are presented in Table 4-6. As discussed in Section 5.1.1, the use of the SSGLs are recommended for compliance assessments of MCSP WWTP effluent impacts on underlying groundwater.

Table 4-6  
MCSP Background/Ambient Groundwater Statistics and SSGLs

Constituent	Upper-Threshold Background Statistic	Water Quality Goal	SSGL
pH	6.2 – 9.0	6.5 – 8.4 (Ag)	6.2 – 9.0
TDS (mg/L)	1,700	450 (Ag)	1,700
Nitrate as N (mg/L)	38	10 (pMCL)	38
Arsenic (mg/L)	0.11	0.01 (pMCL)	0.11
Boron (mg/L)	1	0.7 (Ag)	1
Chloride (mg/L)	490	106 (Ag)	490
Iron (mg/L)	3.7	0.3 (sMCL)	3.7
Manganese (mg/L)	2.05	0.05 (sMCL)	2.05
Sodium (mg/L)	210	69 (Ag)	210
Sulfate (mg/L)	116	250 (sMCL)	250

- (1) Based on Table 3 of Groundwater Evaluation Report contained in Appendix K.  
Ag = agricultural water quality goal, BP = Basin Plan objective, pMCL = Primary maximum contaminant level, sMCL = Secondary maximum contaminant level.

## Antidegradation Analysis

### 5.1 COMPARISON OF EFFLUENT AND GROUNDWATER QUALITY

Order R5-2015-0129 includes the following requirements:

Discharge Specifications D. 4: No waste constituents shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.

Groundwater Limitations E:

1. Release of waste constituents from any portion of the WWTP shall not cause or contribute to groundwater containing concentrations of waste constituents in excess of concentrations specified below.
  - a. Nitrate (as nitrogen) of 10 mg/L.
  - b. Total coliform organism level of 2.2 MPN/100 mL over any seven-day period.
  - c. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.
2. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.

In addition to these requirements, according to the Basin Plan and as stated in Finding 57, Antidegradation Analysis of Order R5-2015-0129:

State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

- a. The degradation is consistent with the maximum benefit to the people of the state.
- b. The degradation will not unreasonably affect present and anticipated future beneficial uses.
- c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
- d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

Groundwater and effluent data have been used to provide an analysis of MCSP effluent and its potential effects on groundwater.

### 5.1.1 EFFLUENT CROSS-COMPARISON TO SSGLS

The 2018 Groundwater Evaluation Report prepared by Stantec, included in Appendix K, established SSGLs, as described in Section 4.6. When background exceeds a water quality goal, it is assumed that there is no assimilative capacity in the underlying aquifer and thus background becomes the SSGL. These SSGLs are the basis of evaluation for the comparison of effluent and groundwater quality. Table 5-1 provides a summary of recent (2016 through 2019) effluent and groundwater monitoring data with respect to the SSGLs. As can be seen from this table all constituents except pH comply with the SSGLs in effluent. However, pH, nitrate nitrogen, and iron in compliance monitoring wells (R-1, R-2, R-2D, S-1, S-6, S-7E, S-7W, S-8 and S-9) have had results between 2016 and 2019 that did not meet the SSGLs. These constituents may pose a potential for impacting underlying groundwater.

Table 5-1  
Comparison of Effluent and Compliance Monitoring Wells with SSGLs

Constituent	Background/Ambient SSGL	Average Effluent Concentration 2016 – 2019	Compliance Well. Concentration Range 2016 – 2019
pH	6.2 – 9.0	5.7	6.02 – 8.42
TDS (mg/L)	1,700	269	169 – 1,360
Nitrate as N (mg/L)	38	18.4	<0.03 – 39.1
Arsenic (mg/L)	0.11	<0.0025	<0.0025 – 0.066
Boron (mg/L)	1	0.03	0.05 – 0.7
Chloride (mg/L)	490	48.9	5.4 – 402
Iron (mg/L)	3.7	0.343	0.0115 – 7.66
Manganese (mg/L)	2.05	0.033	<0.001 – 0.29
Sodium (mg/L)	210	50.5	15 – 166
Sulfate (mg/L)	250	14.2	11 – 204

### 5.1.1.1 Groundwater Compliance Assessments

For compliance evaluations of constituents where nonparametric background statistics are the SSGL, the lower confidence level (LCL) about the mean of the past 8 observations is used. An LCL for each compliance monitoring well evaluated at the 99% confidence interval uses the following in Equation 1.

Equation 1  
**Lower Confidence Limit Formula**

$$LCL = \bar{x} - \frac{\sigma t_{(1-\alpha, n-1)}}{\sqrt{n}}$$

Where:

$\bar{x}$  = Average of last eight quarterly measurements

$\sigma$  = Standard deviation of dataset

$n$  = number of observations (typically the past 8)

$1 - \alpha$  = level of confidence (99%)

A compliance assessment of the monitoring network was included in the MCSP Groundwater Evaluation Report and was completed for data that was as recent as September 2018 (third quarter 2018). The results of the compliance assessment indicated that iron in S-7W and manganese in R-2/R-2D had multiple anomalous detections above the SSGL that were likely a result of acidic conditions. Furthermore, the presence of reducing conditions can solubilize the iron and manganese, further any sediment generated during sampling may have also influenced sample results. Iron in S-7W statistically does not regularly exceed the SSGL, and manganese at R-2 was found to be representative of the range of conditions present at the location. Future compliance assessments are recommended on an annual basis and at minimum on a bi-annual basis.

### 5.1.2 ASSESSMENT OF VOCs

The effects of effluent VOCs on underlying groundwater were assessed in the August 2019 *VOC Monitoring Data and Treatment Technical Report*, included in Appendix E. As part of this analysis, WWTP effluent and groundwater VOC data from 2009 through 2019 were assessed.

A Reasonable Potential Analysis (RPA) was conducted to assess the potential for the MCSP WWTP effluent to impact groundwater and its beneficial uses. The maximum effluent concentrations (MEC) and background concentrations (BGC) of constituents were compared to applicable water quality criteria based on beneficial uses. If a MEC or BGC of a constituent is higher than the applicable water quality criteria a reasonable potential is triggered.

#### 5.1.2.1 Conclusions and Recommendations from VOC Assessment

The results of the RPA showed the potential for the following constituents detected in the MCSP WWTP effluent have a reasonable potential to threaten beneficial uses of groundwater:

1. The trihalomethane disinfection by-products bromodichloromethane and chloroform;
2. Carbon tetrachloride; and

### 3. Tetrachloroethene

Bromodichloromethane and chloroform are known Disinfection By-Products (DBPs). Bromodichloromethane and chloroform were detected in 71 of 120 and 108 of the 120 total effluent samples, respectively. The MEC of bromodichloromethane was 3.2 ug/L. This is below the MCL of 80 um/L but above the Cal/EPA Cancer Potency Factor of 0.27 ug/L. The MEC of chloroform was 190 ug/L. This is above both the MCL of 80 ug/L and the Cal/EPA Cancer Potency Factor of 1.1 ug/L. The frequency of detection of these constituents suggests that they may also be present in the effluent as a result of chlorination practices at the WWTP.

Carbon tetrachloride was detected in 22 of 119 effluent samples. The average value of carbon tetrachloride detected was 0.5 ug/L, which is equal to the MCL for the chemical. The MEC of carbon tetrachloride detected was 2.4 ug/L, which is above both the MCL and the California Public Health Goal for Drinking Water. The chemical was historically associated with refrigerants, cleaning agents, and fire extinguishers but its use has been phased out over time. The training programs on-site that include repair of refrigeration systems may be a source of this chemical. Tetrachloroethene was detected in 3 out of 116 effluent samples during the years of 2009 and 2010 but has not been detected since. The limited detection is believed to be from historic uses. It is recommended that this constituent remain on the sampling list but no further action is warranted unless it is detected moving forward. Monitoring for carbon tetrachloride will be conducted in the MCSP WWTP effluent for a period of two years to confirm its recent absence in site wastewater. BPTC for this constituent is discussed further in Section 5.1.2.3.

Available data indicates that *groundwater* concentrations of trihalomethanes, carbon tetrachloride, and tetrachloroethene do not exceed applicable water quality objectives and that groundwater beneficial uses are not unreasonably affected. However, effluent concentrations were identified above water quality objectives, therefore according to the Antidegradation Policy, an evaluation of BPTC is warranted. The following sections identify and evaluate preliminary BPTC.

#### 5.1.2.2 Trihalomethane Disinfection Byproduct BPTC Concepts

Disinfection with chlorine forms trihalomethanes as a disinfection byproduct. These constituents are known to form through treatment of the potable water used at the institutions served by the MCSP WWTP. In addition to the water source, use of chlorine containing cleaning chemicals and chlorine-based disinfection at the MCSP WWTP can both contribute to disinfection byproduct-based trihalomethanes. Potential concepts in assessing BPTC for trihalomethane disinfection byproducts include:

1. Review and improve if necessary, education on the use of chlorine-based cleaning chemicals at the MCSP, CalFire, and PYCF;
2. Optimization of the MCSP WWTP chlorine-based disinfection process to reduce to the extent practicable the formation of disinfection byproduct-based trihalomethanes while also meeting disinfection requirements; and
3. Review alternative wastewater disinfection methods to reduce or eliminate disinfection byproduct-based trihalomethanes, however such a review should be conducted considering other disinfection byproducts that could form (e.g., bromate formation as a result of use of ozone).

### 5.1.2.3 Carbon Tetrachloride BPTC Concepts

Carbon tetrachloride sources are not known to exist at the institutions served by the MCSP WWTP, however review of these institutions for the potential presence of carbon tetrachloride-containing materials is recommended as part of a source control program.

### 5.1.2.4 Tetrachloroethene BPTC Concepts

Because tetrachloroethene was only detected in influent three times and has not been detected in either influent or effluent since 2011 it is not believed that BPTC measures are required for the constituent.

## 5.2 OPERATIONAL PRACTICES TO LIMIT DEGRADATION POTENTIAL

Operational practices that limit the potential for degradation include:

- Management of LAAs to irrigate within the discharge specifications of the current WDRs as described in Section 2.11;
- Management of LAAs to evenly distribute the disposal of effluent to all available LAA acreage as described in Section 2.11.7;
- Maximizing discharge of effluent to COWRP for further treatment and beneficial reuse as described in Section 2.11.4;
- Source control measures for proper handling and storage of chemicals used throughout the MCSP site, as described in Section 2.3; and
- Optimization of disinfection at the DCB before effluent is discharged from the WWTP.

Although the MCSP WWTP effluent has an average pH of 5.7, based on the LAA Soil Evaluation Report in Appendix J, the LAA soils are expected to have enough buffer capacity to prevent groundwater degradation.

## 5.3 CONCLUSIONS

Based on the evaluation of data presented above, BPTC measures, and operational practices described above, disposal of effluent from the MCSP WWTP is expected to be consistent with the Antidegradation Policy.

As part of CDCR, MCSP provides essential services to the people of the State of California by enhancing public safety and promoting successful community reintegration through education, treatment, and active participation in rehabilitative and restorative justice programs. MCSP WWTP has embraced BPTC measures to limit site degradation, therefore it is recommended that the facilities remain operational in order for CDCR to continue to offer these beneficial services to the people of the State of California.

## Section 6

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# Industrial Stormwater Permit

All stormwater on the MCSP site is segregated from wastewater in a separate storm sewer system. MCSP is a Regulated Small Municipal Separate Storm Sewer System (MS4) under the Small MS4 General Permit (Order No. 2013-0001-DWQ) under Resolution R5-2019-0006.

The existing MCSP WWTP is a facility treating domestic sewage with a permitted capacity of less than 1.0 Mgal/d, and therefore is not subject to industrial storm water permitting.

## Section 7

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# General WDRs for Sanitary Sewers

The CDCR has enrolled for coverage of the MCSP collection systems under the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order 2006-0003-DWQ). The collection system is registered with the SWRCB under Place ID 630842, Regulatory Measure ID 301511. The General WDRs for Sanitary Sewer Systems have been effective for the MCSP collection systems since August 16, 2006, and is currently listed as active.

## Department of Water Resources Well Standards

### 8.1 CONSTRUCTION FEATURES OF SITE MONITORING WELLS

A series of thirteen (13) groundwater monitoring wells are located on the MCSP site. Ten (10) of these wells were installed in 2007. Three (3) additional monitoring wells were installed in 2015 when the construction of the MCIC was proposed to include addition of new spray fields to offset those retired by the facilities construction. The three (3) additional wells were meant to monitor groundwater in the, at that time proposed, new spray fields. Of the thirteen monitoring wells, four wells (B-3D, S-1C, S-6D, and R-2D) were nested due to depth to groundwater exceeding the completed well depths. All wells were designed and installed in accordance with the Department of Water Resources well standards. Further detail on the construction of these monitoring wells is provided in the 2007 *Groundwater Monitoring Well Installation Report*, prepared by Condor Earth Technologies, and the 2016 *Monitoring Well Installation Report*, by Kleinfelder, as previously submitted to the RWQCB.