REGIONAL WATER QUALITY CONTROL BOARD,
CENTRAL VALLEY REGION

Amendment
To the
Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

To
Remove the Municipal and Domestic Supply (MUN) Beneficial Use in Twelve Constructed and/or Modified Water Bodies in the Sacramento River Basin That Receive Treated Municipal Wastewater from the Cities of Biggs, Colusa, Live Oak or Willows

Draft Staff Report

January 2015

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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DISCLAIMER

This publication is a report by staff of the California Regional Water Quality Control Board, Central Valley Region. This report contains the evaluation of alternatives and technical support for the adoption of an amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basin (Resolution No. R5-201x-xxxx). Mention of specific products does not represent endorsement of those products by the Regional Board.

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ACKNOWLEDGEMENTS:

Disclosure: Funding for this project has been provided in part through an Agreement between the State Water Resources Control Board and the Central Valley Salinity Alternatives for Long Term Sustainability (CV-SALTS). This Agreement provided resources for laboratory analyses for the 18-month water quality monitoring in the Sacramento River Basin and a portion of the CEQA and economic analyses for this staff report. Additional funds and resources for the water quality monitoring and environmental analyses were provided by the cities of Biggs, Colusa, Live Oak and Willows.

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EXECUTIVE SUMMARY

The purpose of this Staff Report is to provide the rationale and supporting documentation for a proposed amendment to the Water Quality Control Plans for the Sacramento and San Joaquin River Basins (Basin Plan) to dedesignate the Municipal and Domestic Supply (MUN) beneficial use in twelve surface water bodies in the Sacramento River Basin. The twelve water bodies proposed for dedesignation of the MUN beneficial use are: Ag Drain C (Logan Creek), Cherokee Canal, East Interceptor Canal, Lateral 1, Lateral 2, Lateral K, Main Drainage Canal (C Main Drain), New Ditch (2011), Powell Slough, unnamed tributary, Wadsworth Canal, and Western Intercepting Canal. These water bodies were constructed and/or modified to convey agricultural drainage and also receive effluent from the cities of Biggs, Colusa, Live Oak or Willows under National Pollutant Discharge Elimination System (NPDES) permits.

Currently, via the incorporation of the State Water Board Resolution No. 88-63, the "Sources of Drinking Water Policy" into the Basin Plan, the MUN beneficial use applies to all surface and ground water bodies in the region unless they are specifically listed as water bodies that are not designated as supporting the MUN beneficial use in the Basin Plan. The twelve water bodies named in this amendment are not currently listed in Chapter II (Existing and Potential Beneficial Uses) of the Basin Plan and have consequently been designated with the MUN beneficial use. The Sources of Drinking Water Policy does identify exceptions to the MUN beneficial use that apply to certain water bodies, including an exception that applies to water bodies that have been designed or modified to convey agricultural drainage ("Exception 2b"), but the Central Valley Water Board Basin Plans require a formal basin plan amendment to utilize these exceptions.

The Basin Plan identifies the primary and secondary Maximum Contaminant Levels (MCLs) specified in Title 22 of the California Code of Regulations, developed for the protection of potable water at the tap after receiving standard treatment, as the appropriate water quality objectives to protect the MUN use. Recent NPDES permit updates for the four municipal facilities noted above, elevated the issue of the appropriate designation and level of protection of MUN in agriculturally (Ag) dominated surface water bodies because meeting the MCLs in treated wastewater prior to discharge into Ag dominated surface water bodies will require significant treatment plant upgrades and associated costs for the POTWs. As a result, the need to evaluate the appropriate MUN beneficial use in agricultural water bodies was noted as a priority in the 2011 Triennial Review (Central Valley Water Board, 2011) and the Central Valley Water Board subsequently allocated staff resources toward the effort. Concurrently, the Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) initiative also identified the need to evaluate the protection of the MUN beneficial use in Ag dominated water bodies due to the difficulties in meeting MCLs while maintaining agricultural operations and increasing recycling efforts to maximize water reuse. CV-SALTS partnered with the Central Valley Water Board to provide contract dollars for water quality monitoring and environmental and economic analyses for a MUN evaluation project. The receiving waters for the NPDES discharges from the cities of Biggs, Colusa, Live Oak and Willows were recognized as good case studies for this effort because they are constructed or modified to convey agricultural drainage and represent typical agricultural operations on the Central Valley floor.

Stakeholder meetings were initiated by staff in early 2012 to gather pertinent information such as construction history, operational activities, water quality, and flow characteristics for each of the twelve water bodies. Central Valley Water Board staff coordinated with a variety of stakeholders including representatives from USEPA, State Water Resources Control Board (Division of Water Quality and Division of Drinking Water), California Fish and Wildlife, water supply agencies, irrigation districts,

POTWs, the agricultural community, and the Delta Stewardship Council. Staff also coordinated internally with the Irrigated Lands Regulatory Program (ILRP), the Surface Water Ambient Monitoring Program (SWAMP), and the NPDES program. Staff kept stakeholders updated on the project via a Lyris email subscription list of almost four hundred subscribers and a publically available website containing meeting notes, water quality results, and other project-related documents.

Information gathered during this three-year stakeholder process and through staff survey and monitoring efforts demonstrates that the MUN use has not occurred in the past, is not occurring presently, and is not expected to occur in the foreseeable future in these twelve water bodies. Furthermore, these water bodies meet the requirements of Exception 2b because they all have either been constructed and/or modified to convey agricultural drainage. This staff report presents a proposed Basin Plan Amendment to remove the MUN beneficial use designation from the twelve water bodies and provides the rationale behind each part of the amendment addressing the areas of beneficial use designation, water quality objectives and implementation requirements. Alternatives were considered for the overall project and each component, including the requirement that any water body utilizing Exception 2b must be monitored to demonstrate that its discharge meets relevant water quality objectives. In addition, this Staff Report evaluates the proposed Basin Plan Amendment's consistency with existing federal and state laws, regulations and policies, contains an environmental analysis that complies with the applicable requirements of the California Environmental Quality Act (CEQA) and includes antidegradation and economic analyses that evaluate potential impacts of this project. The Board's Basin Planning Program is considered a certified regulatory program, which means that the Board is exempt from the requirement to prepare an environmental impact report for basin planning activities under the California Environmental Quality Act. (Pub. Res. Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251(g).) The Board's environmental review of the proposed Basin Plan Amendments is instead contained in this draft Staff Report, which is considered to be "substitute environmental documentation" or "SED".

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PROPOSED AMENDMENT LANGUAGE

The proposed changes to the Basin Plan are as follows. Text additions to the existing Basin Plan language are underlined and *italicized*. Text deletions to the existing Basin Plan are in ~~strikethrough~~.

Modify the Basin Plan in Chapter 2 Beneficial Uses under the heading, "Surface Waters" (page II-2.01), as follows:

> Water Bodies within the basins that do not have beneficial uses designated in Table II-1 are assigned MUN designations in accordance with the provisions of State Water Board Resolution No. 88-63 which is, by reference, a part of this Basin Plan, except as provided below:
>
> - Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek
>
> - ~~Sulphur Creek (Colusa County) from Schoolhouse Canyon to the confluence with Bear Creek~~
>
> - *Water bodies listed in Appendix 44, Water Bodies That Meet One or More Sources of Drinking Water Policy (Resolution 88-63) Exceptions*
>
> These MUN designations in no way affect the presence or absence of other beneficial use designations in these water bodies. In making any exemptions to the beneficial use designation of MUN, the Regional Board will apply the exceptions listed in Resolution 88-63 (Appendix Item 8) *and the excepted water bodies will be listed in Appendix 44.*

Staff recommends adopting the following table into the Basin Plan as Appendix 44, Water Bodies That Meet One or More of the Sources of Drinking Water Policy (Resolution 88-63) Exceptions. Since Central Valley Water Board Resolution R5-2007-0021 removed the MUN beneficial use from Sulphur Creek in Colusa County for meeting an exception in the Sources of Drinking Water Policy, Sulphur Creek has been removed from page II-2.01 of the Basin Plan and added to the table along with the twelve water bodies evaluated in this Basin Plan Amendment.

County	Water Body Name	Description	Approximate GIS Coordinates *(WGS84 Datum)*	
			Starting Location	Ending Location
Butte	Cherokee Canal	Cherokee Canal runs southwest from the Richvale area (near Nelson Shippee Road) to Butte Creek, west of the City of Live Oak	(39.537741, -121.707079)	(39.285685, -121.921656)
Butte	Lateral K	Lateral K is part of Reclamation District 833 and starts near 8th Street in the City of Biggs and travels southwest past the	(39.421894, -121.71297)	(39.406837, -121.725361)

County	Water Body Name	Description	Approximate GIS Coordinates *(WGS84 Datum)*	
			Starting Location	**Ending Location**
		City of Bigg's Wastewater Treatment Plant to the Main Drainage Canal		
Butte	Main Drainage Canal	The Main Drainage Canal (also known as the Main Drain C) is part of Reclamation District 833 and starts on the south end of the City of Biggs near Trent Street and runs southwest to the Cherokee Canal	(39.41041, -121.704258)	39.327924, -121.882067
Colusa	New Ditch (2011)	New Ditch (2011) starts near the south end of the Colusa Wastewater Treatment Plant and runs south, parallel to the unnamed tributary, until the two water bodies join near the effluent outfall and weir.	(39.180224, -122.031358)	(39.174267, -122.031274)
Colusa	Powell Slough	Powell Slough begins just north of Highway 20, downstream of Hopkins Slough, and runs south until its confluence with the Colusa Basin Drain.	(39.211133, -122.062955)	(39.161267, -122.038445)
Colusa	Sulphur Creek	Lower two miles from Schoolhouse Canyon to its confluence with Little Bear Creek.	39.035631, -122.437619	39.040144, -122.408168
Colusa	unnamed tributary (to Powell Slough)	unnamed tributary to Powell Slough starts near Will S. Green Avenue and runs west and southwest to Powell Slough	(39.188028 ,-122.02328)	(39.166857, -122.034722)
Glenn	Ag Drain C	Glenn-Colusa Irrigation District's Ag Drain C (segments also known as North Fork Logan Creek and Logan Creek) runs southeast from Highway 5 near Highway 99W through the Sacramento Wildlife Refuge to the Colusa Basin Drain	(39.498519, -122.199216)	(39.356401, -122.082675)
Sutter	East Interceptor Canal	The East Interceptor Canal starts at Pease Road and runs west until it meets the Wadsworth Canal.	(39.170745, -121.670588)	(39.171003, -121.727014)
Sutter	Lateral 1	Lateral 1 is part of Reclamation District 777 and starts near the City of Live Oak's Wastewater Treatment Plant and runs south and west to the Western Intercepting Canal.	(39.257501, -121.678718)	(39.201248, -121.696329)
Sutter	Lateral 2	Lateral 2 is part of Reclamation District	(39.264739,	(39.257501,

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County	Water Body Name	Description	Approximate GIS Coordinates *(WGS84 Datum)*	
			Starting Location	**Ending Location**
		777. It starts on the south end of the City of Live Oak near Treatment Plant Access Road and runs south and then west past the City of Live Oak's Treatment Plant outfall until it meets Lateral 1.	-121.669314)	-121.678718)
Sutter	Western Intercepting Canal *(not to be confused with West Interceptor Canal)*	Western Interceptor Canal is under shared management between Reclamation District 777 and Reclamation District 2056. It starts south of Sanders Road and runs south until it meets the East Interceptor Canal.	(39.201248, -121.696329)	(39.17092, -121.695374)
Sutter	Wadsworth Canal	The Wadsworth Canal starts just north of Butte House Road and runs southwest until it meets the Sutter Bypass	(39.171003,-121.727014)	(39.113605,-121.768985)

The proposed changes to the Basin Plan's Chapter IV Implementation (page IV-9.00) under heading State Water Board Resolution No. 88-63, Sources of Drinking Water Policy are as follows:

> Where the Regional Water Board finds that one of the exceptions applies, it may remove the municipal and domestic supply beneficial use designation for the particular body of water through a formal Basin Plan amendment and a public hearing, followed by approval of such an amendment by the State Water Board and the Office of Administrative Law. See Appendix Item 8 *for Resolution 88-63 exceptions and Appendix 44 for water bodies that meet the exceptions*.

The proposed changes to the Basin Plan's Chapter V Surveillance and Monitoring (page V-1.00) under heading Data Collected by Other Agencies are as follows:

> The Regional Water Board *currently* relies on *internal staff* coordination and *compilation of* data collected by a variety of other agencies *to augment data collected by internal programs in order to assess ambient water quality conditions and program effectiveness*. For example, the Department of Water Resources (DWR) has an ongoing monitoring program in the Delta and the United States Geological Survey (USGS) and DWR conduct monitoring in some upstream rivers. The Department of Fish and Wildlife, Fish and Wildlife Service, USGS, and State Water Board Division of Drinking Water also conduct special studies and collect data, *as do local entities such as water purveyors, county health departments and wastewater treatment plants.*
>
> *The long-term goal is to have a system in place that facilitates consolidation of information gathered from all agencies in a format that can be readily utilized to provide the foundation for*

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regular assessments of ambient surface water quality conditions and program effectiveness including support of updates to the California Integrated Report (Clean Water Act Sections 303(d)/305(b)) which provides a water quality conditions assessment of surface water bodies.

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LIST OF ACRONYMS

AGR	Agricultural Supply
Ag	Agriculturally or Agricultural
AgWTF	Agricultural Waters Task Force
Basin Plan	Water Quality Control Plan for the Sacramento River and San Joaquin River Basins
BDCM	Bromodichloromethane
BIOL	Preservation of Biological Habitats of Special Significance
BPTCs	Best Practical Treatment Controls
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIWQS	California Integrated Water Quality System
COMM	Commercial and Sport Fishing
COLD	Cold Freshwater Habitat
CTR	California Toxics Rule
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
DBCM	Dibromochloromethane
Delta	Sacramento-San Joaquin Delta
DDW	Division of Drinking Water
EC	Electrical Conductivity
IND	Industrial Service Supply
ILRP	Irrigated Lands Regulatory Program
ISWP	Inland Surface Water Plan
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
MES	Mass Emissions Strategy
MCLs	Maximum Contaminant Levels
MGD	Million Gallons per Day
MUN	Municipal and Domestic Supply Beneficial Use
M/S	Monitoring and Surveillance
MS4	Municipal Separate Storm Sewer Systems
MWQI	Municipal Water Quality Investigations
NAV	Navigation
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
POTW	Publicly Own Treatment Works
PPD	Pollutant Policy Document
PRO	Industrial Process Supply
REC-1	Water Contact Recreation
REC-2	Non-contact Water Recreation
RPA	Reasonable Potential Analysis
SHELL	Shellfish Harvesting
SIP	State Implementation Plan
SMARTS	Storm Water Multiple Application and Report Tracking System

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SPoT	Stream Pollution Trends Monitoring Program
SPWN	Spawning, Reproduction, and/or Early Development
SSOs	Site Specific Objectives
STORET	USEPA's Storage and Retrieval Data Warehouse
SWAMP	Surface Water Ambient Monitoring Program
TMDL	Total Maximum Daily Load
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WARM	Warm Freshwater Habitat
WDR	Waste Discharge Requirement
WILD	Wildlife Habitat
WQX	Water Quality Exchange Node
WWTP	Wastewater Treatment Plant

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1 INTRODUCTION AND EXISTING CONDITIONS

The purpose of this Staff Report is to provide the rationale and supporting documentation for a proposed amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basin (Basin Plan) to dedesignate the Municipal and Domestic Supply (MUN) beneficial use in twelve surface water bodies constructed and/or modified to convey agricultural drainage that also receive effluent from four Publically Owned Treatment Works (POTWs) in the Sacramento River Basin. These constructed and modified agriculturally (Ag) dominated water bodies receive wastewater effluent from the cities of Biggs, Colusa, Live Oak or Willows under National Pollutant Discharge Elimination System (NPDES) permits.

Currently, via the incorporation of the State Water Board Resolution No. 88-63, the "Sources of Drinking Water Policy" into the Basin Plan, the MUN beneficial use applies to all surface and ground water bodies in the region unless they are specifically listed as water bodies that are not designated as supporting the MUN beneficial use in the Basin Plan. The "Sources of Drinking Water Policy" does identify exceptions to the MUN beneficial use application for certain water bodies, such as those designed or modified to convey agricultural drainage, but the Basin Plan requires a formal basin plan amendment to utilize these exceptions. None of the twelve water bodies in this amendment are currently listed in Chapter II (Existing and Potential Beneficial Uses) of the Basin Plan.

The Basin Plan identifies the Maximum Contaminant Levels (MCLs) specified in Title 22 of the California Code of Regulations as the appropriate water quality objectives to protect MUN use. Recent NPDES permit updates for the four municipal facilities noted above, elevated the issue of the appropriate designation and level of protection of MUN in agriculturally (Ag) dominated surface water bodies because meeting the MCLs in treated wastewater prior to discharge into Ag dominated surface water bodies will require significant treatment plant upgrades and associated costs for the POTWs. As a result, the need to evaluate the appropriate MUN beneficial use in agricultural water bodies was noted as a priority in the 2011 Triennial Review (Central Valley Water Board, 2011) and the Central Valley Water Board subsequently allocated staff resources toward the effort. Concurrently, the Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS) initiative also identified the need to evaluate the protection of the MUN beneficial use in Ag dominated water bodies due to the difficulties in meeting MCLs while maintaining agricultural operations and increasing recycling efforts to maximize water reuse. CV-SALTS partnered with the Central Valley Water Board to provide contract dollars for water quality monitoring and environmental and economic analyses for a MUN evaluation project. The receiving waters for the NPDES discharges from the cities of Biggs, Colusa, Live Oak and Willows were recognized as good case studies for this effort because they are constructed or modified to convey agricultural drainage and represent typical agricultural operations on the Central Valley floor.

This staff report presents the Basin Plan Amendment and provides the rationale behind each part of the amendment addressing the areas of MUN beneficial use application and dedesignation, associated water quality objectives, as well as the program of implementation needed for achieving the appropriate water quality objectives. The report also presents the alternatives considered, the public processes utilized and the results of CEQA, antidegradation and economic evaluations of the preferred alternative. If adopted, this amendment will utilize Exception 2b in Resolution 88-63 to dedesignate the MUN beneficial use in the twelve Ag dominated receiving waters for the POTWs serving Biggs, Colusa, Live Oak and Willows and will identify monitoring to assure that discharge from the water bodies meet all relevant water quality objectives.

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1.1 Background and Need for Proposed Basin Plan Amendment

1.1.1 Current Application of the MUN Beneficial Use

The State Water Board Resolution No. 88-63, the "Sources of Drinking Water Policy" has been incorporated into the Basin Plan such that the MUN beneficial use applies to all water bodies unless they are specifically listed as water bodies that are not designated with MUN. Most recently, after many years of litigation challenging these provisions, the California Court of Appeal affirmed this approach and found that the State Water Board reasonably treated these surface water bodies as being assigned MUN uses and required rulemaking procedures before changing beneficial uses (California , 2012).

The Basin Plan incorporated the Sources of Drinking Water Policy in 1994 and also states that waters designated for MUN must not exceed Maximum Contaminant Levels (MCLs) of Title 22 of the California Code of Regulations for chemical constituents, pesticides, and radionuclides (Basin Plan, Chapter III Water Quality Objectives). While Resolution 88-63 does contain exceptions for the MUN designation, to utilize the exception, the Basin Plan requires *". . . a formal Basin Plan amendment and public hearing, followed by approval of such an amendment by the State Water Board and the Office of Administrative Law*", as noted in the Basin Plan implementation chapter (Basin Plan, Chapter IV, page IV-9.00) under the discussion of Resolution 88-63.

1.1.2 History of Evaluating Beneficial Uses in Ag Dominated Water Bodies

In 1991, the Inland Surface Water Plan (ISWP), a statewide plan to establish water quality objectives for all surface water bodies, was adopted in California to fulfill the requirements of the Clean Water Act Section 303(c)(2)(B). This plan established a program of implementation for agriculture and compliance time-table to meet water quality objectives based on water body type, specifically effluent as well as agriculturally dominated natural and constructed water bodies. As part of the ISWP implementation, the Central Valley Water Board approved a report in 1992, which identified and prioritized over 6,500 Ag dominated surface water bodies throughout the region. Though this report was sent to the State Water Board for approval, the Superior Court of Sacramento County upheld a challenge to the ISWP in July 1994, which ultimately resulted in the rescission of the ISWP. To address issues identified in the 1991 ISWP, the State Water Resources Control Board created Public Advisory Task Forces in 1994, including the Agricultural Waters Task Force (AgWTF), which specifically addressed agricultural issues. A wide variety of stakeholders were involved with the AgWTF and a final report was generated in 1995, which included options for water body categorization, beneficial use designations, water quality objectives and implementation strategies for Ag dominated surface water bodies (State Water Resources Control Board, 1995). However, a revised statewide ISWP was never developed. Instead, the United States Environmental Protection Agency's (USEPA) promulgated the California Toxics Rule (CTR) in May 2000, which included the numeric water quality criteria for priority toxic pollutants necessary to fulfill the Clean Water Act requirements. The CTR does not recognize separate categories of water bodies, thus issues surrounding Ag dominated waters were never resolved.

1.1.3 Recent NPDES Permit Adoptions

In recent years, during permit adoptions for the NPDES program, there have been challenges to requirements based on protecting the MUN beneficial use designation in agricultural drains due to the stated Exception 2b in Resolution 88-63 for surface waters where the "*water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality*

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objectives as required by the Regional Boards." NPDES permit updates for the POTWs in the cities of Biggs, Colusa, Live Oak and Willows, elevated the issue of the appropriate designation and level of protection of MUN in Ag dominated surface water bodies and utilization of the state's Sources of Drinking Water Policy (Resolution 88-63) exceptions for the following reasons:

- The MCLs currently being utilized to ensure receiving water protection were developed for the protection of potable water at the tap after receiving standard treatment.
- Meeting the MCLs in treated wastewater prior to discharge into Ag dominated surface water bodies will require significant treatment plant upgrades and associated costs for these four cities.
- The Ag dominated receiving waters appear to meet Exception 2b of Resolution 88-63 since they were constructed or modified to convey agricultural drainage.

The cost for each Publically Owned Treatment Works (POTW) that discharge to agricultural drains in the Sacramento Valley to comply with protecting the MUN beneficial use has been estimated at $3 - $7 million (Tyhurst, 2012) primarily due to the need to ensure a disinfection process and de-nitrification in order to meet primary and secondary MCLs for selected constituents. In the Sacramento River Basin, the four cities noted above are facing this specific concern and have been provided the option of pursuing a basin plan amendment as part of their permit compliance.

1.1.4 Joint Initiative with CV-SALTs for the Development of a Region-wide Framework

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative also identified the need to evaluate the level of appropriate protection of MUN beneficial uses in agriculturally dominated water bodies as part of its development of a Central Valley salt and nitrate management plan due in part to the increased reuse of drainage water to maximize limited resources. CV-SALTS identified the receiving waters of the above four POTWs as potential case studies or archetypes for evaluating the appropriateness of a MUN designation and use of one or more exceptions identified in Resolution 88-63. The Central Valley Water Board recognized the need for evaluating appropriate MUN and other beneficial uses in Ag dominated surface water bodies during its October 2011 Sacramento/San Joaquin River Basin Plan Triennial Review (Central Valley Water Board, 2011). The approved triennial review work plan allocated nominal staff resources to initiate the evaluation. Staff worked in conjunction with the CV-SALTS initiative on this evaluation in order to combine and leverage resources. The four POTWs were active participants in this project and served as case studies for the development of alternatives for a local evaluation of their receiving water bodies that could also support a region-wide framework for evaluating the appropriate beneficial use protection, water quality objectives, as well as implementation and monitoring requirements for the MUN beneficial use in Ag dominated surface water bodies throughout the Central Valley.

1.1.5 Stakeholder/Public Participation Process

A stakeholder group, including representatives from federal and state agencies, public water systems, municipalities and agricultural interests, met approximately quarterly from Spring 2012 thru Fall 2013, and again in Fall 2014, to contribute to the development of this amendment as well as alternatives for a region-wide MUN beneficial use evaluation process in Ag dominated surface water bodies. Central Valley Water Board staff conducted CEQA scoping meetings in the cities of Willows, Rancho Cordova and Fresno in October and November 2012 to discuss and solicit comments from the public regarding both the appropriate application of the MUN beneficial use and level of protection in the four

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Sacramento River Basin POTW receiving waters as well as a larger region-wide framework for evaluating the appropriate MUN application in Ag dominated surface water bodies. Staff kept stakeholders updated on the project via a Lyris email subscription list of almost four hundred subscribers and a publically available website containing meeting notes, water quality results, and other project-related documents.

1.2 Study Area

The twelve water bodies under consideration for this amendment are located in the Sacramento River Basin and contain a mixture of agriculturally (Ag) dominated water bodies constructed and/or modified to convey agricultural drainage. Four of the water bodies, which receive treated wastewater effluent from the cities of Colusa or Willows, are part of the Colusa Basin Watershed on the west side of the basin. The other eight water bodies, which receive effluent from the cities of Biggs or Live Oak, are part of watersheds that eventually flow into the Sutter Bypass on the east side of the basin. Figure 1 shows a map of the study area. The following sections provide an overview of these watersheds as well as descriptions of each of the four subareas receiving wastewater effluent. Information on the study area was collected as part of background research efforts and during the development of water body characterization reports for each subarea (City of Biggs 2014, City of Colusa 2014, City of Live Oak 2014, and City of Willows 2014). Findings from these water body categorization reports are discussed in more detail in Section 3.1.

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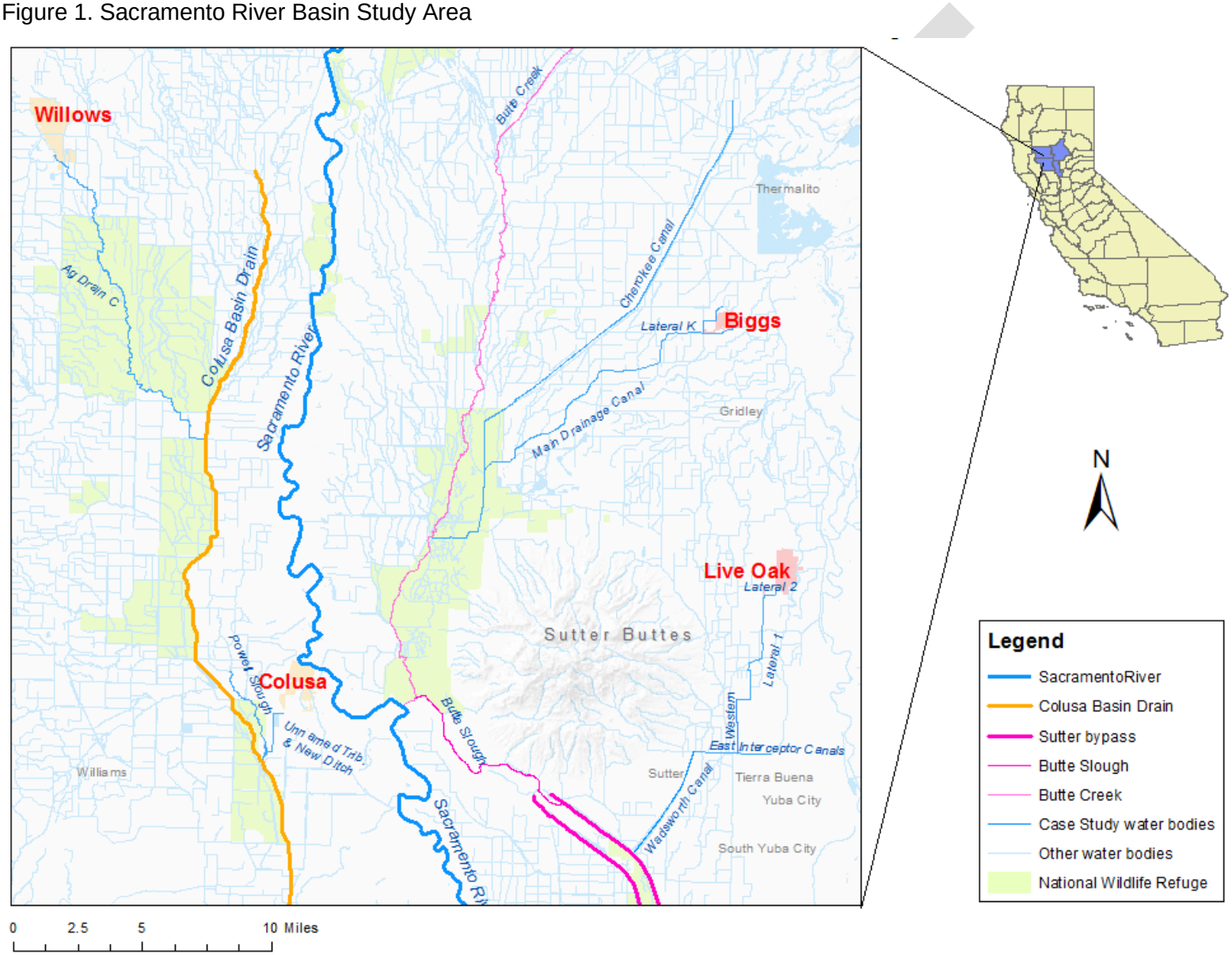
Figure 1. Sacramento River Basin Study Area



1.2.1 Colusa Basin Watershed

The Colusa Basin Watershed consists of just over 1 million acres of the Sacramento Valley. The watershed is located between the lower Stoney Creek watershed to the north and the Cache Creek watershed to the south, and is bounded on the east by the Sacramento River and on the west by the crest of the California Coast Ranges. The Colusa Basin is generally a low lying area on the west side of the Sacramento River and east of Interstate 5. The basin stretches from approximately Hamilton City south to Knights Landing. This area is a vast floodplain that has historically been subject to flooding during the rainy season. Transformation of the Colusa Basin into an important agricultural region began in the 19th century when settlers moved to the area. In the second half of the 1800s federal and state legislation created projects for flood protection, drainage, and irrigation of the Colusa Basin to encourage agriculture and urbanization. In the early 1900s, the Colusa Basin Drain was constructed to channelize flood water and serve as an agricultural drain (Colusa County Resource Conservation District, 2012). The main irrigation water supply for the area is diversion of the Sacramento River at Hamilton City. As water moves through the system, drainage is commonly recycled into supply channels to maximize use. Beneficial uses of the Colusa Basin Drain are specifically identified in the Basin Plan; MUN is not a designated use of the drain. Virtually every surface water body in the Colusa Basin has either been constructed or modified to be a component of the entire system that provides drainage, irrigation, and flood protection to the basin. This system is the enabling factor that has provided for the existence of the vast agricultural industry within the basin.

Colusa Subarea - The unnamed tributary to Powell Slough is a two mile long water body in Colusa County used primarily for agricultural drainage, prior to its confluence with Powell Slough. The unnamed tributary also receives some storm and urban runoff from the southwest portion of the City of Colusa. Historic maps show that the unnamed tributary was constructed by the mid-1900s. In 2011, an almost one half-mile New Ditch (2011) that flows into the unnamed tributary, was also constructed for Ag drainage (City of Colusa, Jesse Cain, Public Works Director, 2012). The source of the water for irrigation and ultimately drainage into the New Ditch (2011) is predominantly groundwater from the new wells that were recently installed on a local landowner's property. The City of Colusa Wastewater Treatment Plant (WWTP) is located southwest of the City of Colusa and serves 5,962 people (U.S. Census Bureau, 2010). Colusa WWTP's effluent is discharged into the unnamed tributary, downstream of the New Ditch (2011). The unnamed tributary extends for a little over a mile after the effluent discharge point, receiving Ag runoff from several adjacent fields before it enters Powell Slough.

Powell Slough, from near Highway 20, flows for approximately five miles prior to entering the Colusa Basin Drain. Its confluence with the unnamed tributary is less than a mile upstream of Colusa Basin Drain. Powell Slough is bordered primarily by agricultural land and was modified in the early 1930s to facilitate irrigation and drainage (City of Colusa, 2010). Rice is the principal agricultural crop in the area. Powell Slough receives much of its water supply during the irrigation season from the Colusa Basin Drain via an overflow channel that runs alongside Highway 20 from the Colusa Basin Drain to Powell Slough. Other hydro-modifications were made to Powell Slough such as the installation of a weir directly upstream of its confluence with the unnamed tributary. Water is stored in the slough during the irrigation season and a pump station installed upstream of the weir provides water to neighboring fields. There is also a pump nearby on the Colusa Basin Drain that is used to supply water to a farm that drains into Powell Slough. Water in this area is managed primarily by the Colusa Drain Water Users Association and Reclamation District 2047. Figure 2 shows a map of the Colusa subarea.

Figure 2. Colusa Subarea

Willows Subarea - Ag Drain C, a 17 mile reconstructed segment of Logan Creek in Glenn County, is part of the Glenn Colusa Irrigation District. The water body was significantly modified in the early 1900s to facilitate Ag drainage (Glenn Colusa Irrigation District, 2012). Ag Drain C flows south through surrounding rice fields and the Sacramento River National Wildlife Refuge before eventually draining to the Colusa Basin Drain. The City of Willows WWTP is located southwest of the City of Willows and serves 6,128 people (U.S. Census Bureau, 2010). The WWTP's effluent is currently only discharged into Ag Drain C. Water drains from neighboring fields to Ag Drain C throughout its extent upstream of the wildlife refuge and the water may be recycled back as irrigation to downstream parcels via a number of adjacent canals, laterals and drains. After leaving the refuge, water from Ag Drain C (Logan Creek) continues east downstream to the Colusa Basin Drain. Figure 3 shows a map of the Willows subarea.

Figure 3. Willows Subarea

1.2.2 Lower Butte Creek Watershed and Sutter Bypass

Butte Creek Watershed spans approximately 800 square miles on the east side of the Sacramento River, starting in Lassen National Forest and ending at the Sutter Bypass. Much like the Colusa Basin, this area of the Sacramento River Basin was converted to agriculture during the 19th century. The Lower Butte Creek Watershed, starting near the City of Chico, includes a complex system of constructed water supply diversions, canals, agricultural drains, levees, and bypasses and surrounds the Sutter Buttes, a small mountain range. Lower Butte Creek is surrounded almost entirely by agricultural lands, including several state and federal wildlife refuges. Much of Butte Creek is contained by a series of levees. Its flow at the Butte Slough Outfall can be either directed into the Sacramento River, or regulated to accommodate agricultural demands, flood flows and water supply to the wildlife refuges via the Sutter Bypass and Butte and Sacramento Slough areas. Under normal flow conditions, the Sutter Bypass enters the Sacramento River via the Sacramento Slough, immediately upstream of the mouth of the Feather River near Verona.

The Sutter Bypass is a levied channel along the southwest portion of the Sutter Basin and was constructed as part of the Lower Sacramento Valley Flood Control Project in the early 1900s to protect surrounding agricultural and urban areas during flood events and provide drainage during the irrigation season. The bypass allows channeling of escapement flow from the Sacramento River, but also receives drainage from Snake River, Gilsizer Slough, Wadsworth Canal, and other west side watercourses of the Lower Feather Watershed. During the non-storm season, flows are managed for

agricultural use and many of these water bodies are used for both irrigation supply and drainage. Crops in the eastern portion of the Sacramento River Basin include a mixture of orchards, rice and row crops.

Beneficial uses of Butte Creek (downstream of Chico), Butte Slough and Sutter Bypass are specifically identified in the Basin Plan, and MUN is not a designated use of these water bodies.

Live Oak Subarea - The water bodies under consideration upstream of the Sutter Bypass in Sutter County are constructed channels and are used by Reclamation District 777 and portions of Reclamation District 2056 to convey agricultural drainage water. This area of the valley has a mixture of agricultural crops including a number of nut producing orchards. Lateral 2, an approximately one half-mile long Ag drain, flows downstream to another Ag drain, Lateral 1. Lateral 1 extends downstream for approximately five miles to the two mile segment of Western Interceptor Canal prior to meeting East Interceptor Canal. The East Interceptor Canal is approximately one and one-half miles long and flows westward to Wadsworth Canal. Wadsworth Canal flows southwest for almost five miles before it ends at the Sutter Bypass.

Laterals 1 and 2 are part of Reclamation District 777 and were constructed in the early 1900s to provide Ag drainage. Ag drainage to Lateral 2 has diminished in recent years due to the installation of drip irrigation to nearby orchards. Western Intercepting Canal is shared by Reclamation Districts 777 and 2056 and also serves to convey Ag drainage (note that this canal is *not* the same as the West Interceptor Canal, overseen by the Department of Water Resources). Sutter Extension and Butte Water Districts also operate and supply water in this area. Supply water sources include the Feather River and groundwater wells (Reclamation District 777, 2012). The City of Live Oak WWTP is located on the southwest side of the City of Live Oak and serves 8,514 people (U.S. Census Bureau, 2010). The WWTP's effluent is discharged into Lateral 2.

As part of the "Butte Sink", this area is known for its shallow water table which causes groundwater seepage to surface water bodies. As the low point in the valley, large scale flooding was common prior to levees being built throughout the area. Segments of the Wadsworth Canal and the East Interceptor canal were initially constructed by local farmers in the late 1800s and early 1900s to both protect their property and crops from flooding and to serve as Ag drainage facilities. The State of California upgraded the construction of the Wadsworth Canal to the Sutter Bypass in 1924. Both the Wadsworth Canal and the East Interceptor Canal were widened and enlarged by the United States Army Corp of Engineers in the 1940s as part of flood control projects. Figure 4 shows a map of the Live Oak subarea.

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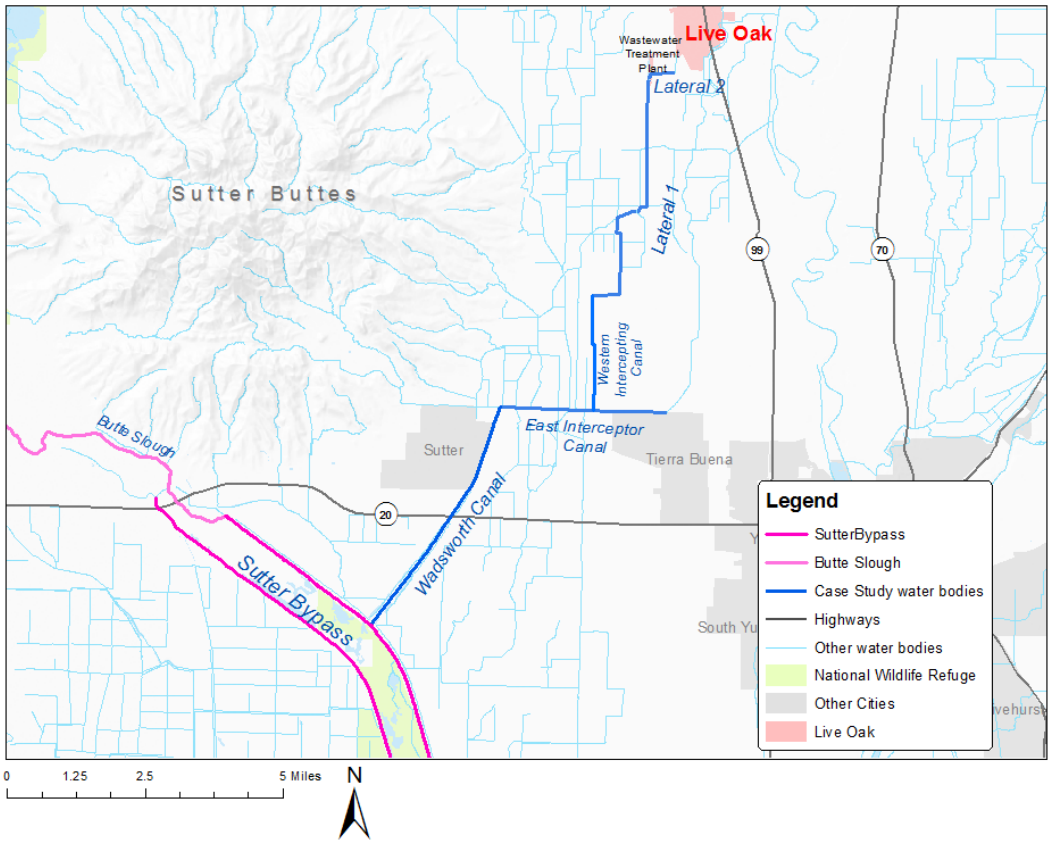
Figure 4. Live Oak Subarea

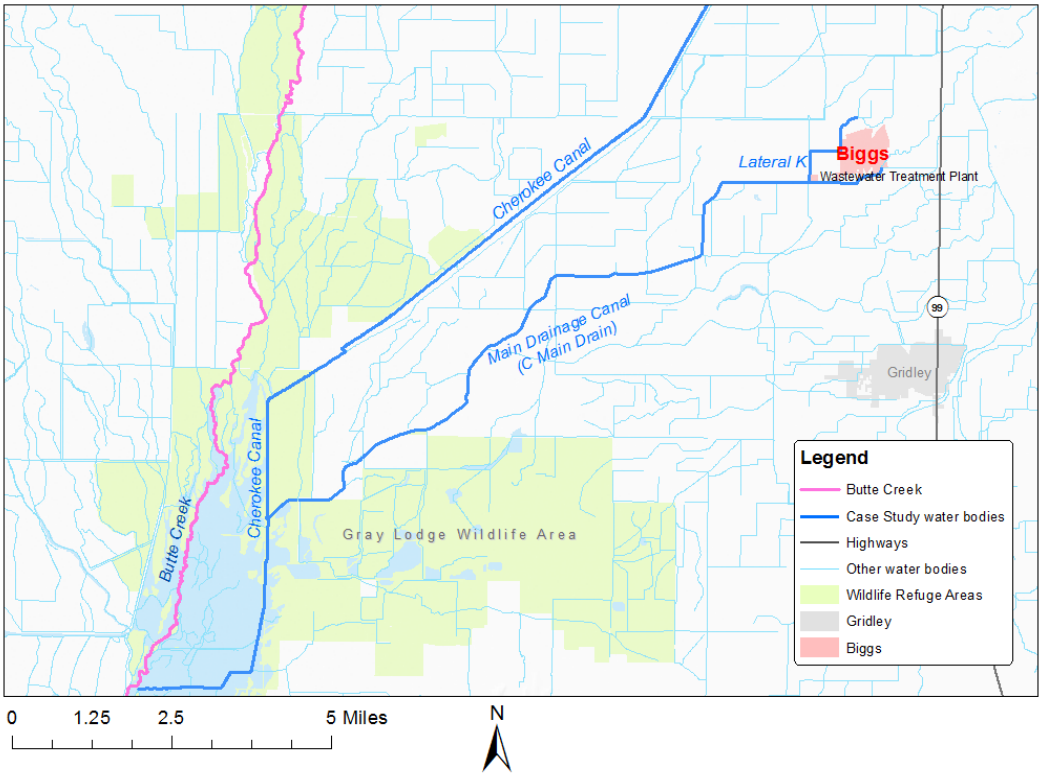


Biggs Subarea - Lateral K, a 1.7 mile constructed Ag drain that is part of Reclamation District 833 in Butte County, flows downstream to the Main Drainage Canal (C Main Drain) which is a constructed extension of Hamilton Slough on the east side of the City of Biggs. The C Main Drain flows southwest for almost 13 miles to its confluence with the Cherokee Canal and then eventually to Butte Creek. There are a number of dams along C Main Drain as well as a network of adjacent laterals and drains to the neighboring parcels that produce rice and other mixed crops. The Main Drainage Canal widens prior to the Colusa Highway and receives urban runoff from the cities of Biggs and Gridley. The City of Biggs WWTP is located on the southwest side of the City of Biggs and serves 1,707 people (U.S. Census Bureau, 2010). The WWTP's effluent is discharged into Lateral K. Water from the receiving water bodies downstream of the Biggs WWTP may be distributed throughout Reclamation District 833 and portions of Reclamation District 1004. The Biggs-West Gridley Water District is also located in the vicinity and provides water to farmers and to the Gray Lodge National Wildlife Refuge.

The Cherokee Canal extends for over 22 miles from north of Biggs to Butte Creek. The headwaters of the Cherokee Canal originate in Dry Creek, Cottonwood Creek and Gold Run Creek near the City of Chico. Segments of the canal were initially constructed by local interests in the late 1800s and early 1900s. Early on, the wastewater from mining operations upstream in Cherokee was channeled for agricultural use in the Sacramento Valley. The canal was expanded as part of the Cherokee Canal Channel Improvement and Levee Construction Project, which was authorized by Congress in 1944 for flood protection. During the growing season, water continues to be conveyed in the channel for agricultural use. Water from the Cherokee Canal after its confluence with the Main Drainage Canal is

also used for the private Duck Clubs located near the Butte Creek. Figure 5 shows a map of the Biggs subarea.

Figure 5. Biggs Subarea



1.3 Regulatory Authority and Mandates for Basin Plan Amendments

In the Porter-Cologne Water Quality Control Act, the Legislature found and declared that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.

The State Water Board and the nine Regional Water Quality Control Boards (Regional Water Boards) are the state agencies with primary responsibility for coordination and control of water quality. (Wat. Code, § 13000.) Each Regional Water Board is required to adopt a water quality control plan, or Basin Plan, which provides the basis for regulatory actions to protect water quality. (Wat. Code, § 13240 et seq.) Basin plans designate beneficial uses of water, water quality objectives to protect the uses, and a program of implementation to achieve the objectives. (Wat. Code, § 13050, subd.(j).) Basin plans, once adopted, must be periodically reviewed and may be revised. (Wat. Code, § 13240.)
Under the federal Clean Water Act (33 USC section 1251 et seq.), the states are required to adopt water quality standards for surface waters. (33 USC § 1313(c)) Water quality standards consist of: 1) designated uses; 2) water quality criteria necessary to protect designated uses; and 3) an antidegradation policy. (33 USC § 1313 (c)(2)(A) and (d)(4)(B); Title 40 Code of Federal Regulations

(CFR) §131.6) In California, water quality standards are found in the basin plans. Under the Clean Water Act, the states must review water quality standards at least every three years.

Regional Water Boards adopt and amend basin plans through a structured process involving peer review, public participation, and environmental review. Regional Water Boards must comply with the California Environmental Quality Act (CEQA) (Pub. Res. Code. § 21000 et seq.) when amending their basin plans. The Secretary of Natural Resources has certified the basin planning process as exempt from the CEQA requirement to prepare an environmental impact report or other appropriate environmental document. (Pub. Res. Code, § 21080.5; Cal. Code Regs., tit. 14, § 15251, subd. (g).) Instead, State Water Board regulations on its exempt regulatory programs require the Regional Water Boards to prepare a written report and an accompanying CEQA Environmental Checklist and Determination with respect to Significant Environmental Impacts (CEQA Checklist) (Cal. Code Regs., tit. 23, § 3775 et seq.)

The Board's environmental review of the proposed Basin Plan Amendments is contained in this draft Staff Report, in particular Section 7.1 and Appendix D, which is considered to be "substitute environmental documentation" or "SED". Appendix C of this Staff Report provides justification that the proposed Basin Plan Amendment does not contain new science that would necessitate peer review required by Health and Safety Code section 57004(d).

Basin Plan amendments are not effective until they are approved by the State Water Board and the regulatory provisions are approved by the State Office of Administrative Law. The United States Environmental Protection Agency (USEPA) also must review and approve amendments that add or modify water quality standards for waters of the United States.

2 LAWS, PLANS AND POLICIES RELEVANT TO BASIN PLANNING

The project alternatives presented in Section 4 encompass potential changes to the Basin Plan in the areas of Beneficial Uses, Water Quality Objectives and Implementation. Therefore, state laws, plans or policies pertaining to these three areas of the Basin Plan are described below. Since the four POTWs listed in this Basin Plan Amendment have permits administered through the National Pollutant Discharge Elimination System (NPDES), a federal permit program authorized by the Clean Water Act to control point source water pollution, related federal laws, plans or policies are also described. The preferred alternative is evaluated for consistency with relevant laws, plans and policies in Section 6.

2.1 REGULATIONS THAT APPLY TO BENEFICIAL USES

2.1.1 Federal Regulations and Guidance

Federal regulations require the protection of designated uses in all waters of the United States as specified by the Clean Water Act. Federal regulations establish special protections for the uses specified in Clean Water Act section 101(a)(2) uses. Clean Water Act section 101(a)(2) states that it is a national goal that wherever attainable, water quality should be sufficient "for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." These uses are also referred to as "fishable/swimmable" uses.

2.1.2 State Regulations and Guidance

The Water Code includes designation of beneficial uses in both basin plans and statewide plans. (Wat. Code, §13050, subd. (j).) The Water Code defines beneficial uses of water as including, but not limited to: "domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves." (Wat. Code, §13050, subd. (f).)

Designated uses are those uses specified in the water quality standards for each water body or segment whether or not they are being attained. (40 CFR §131.3(f).) In Table II-1 of the Basin Plan, beneficial uses for listed water bodies within the Sacramento and San Joaquin River basins are identified as Existing, Limited, or Potential.

The beneficial uses of the Sacramento and San Joaquin River basins include: municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PRO), water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), spawning, reproduction, and/or early development (SPWN), wildlife habitat (WILD), navigation (NAV), commercial and sport fishing (COMM), shellfish harvesting (SHELL),and preservation of biological habitats of special significance (BIOL).

2.1.3 State Water Board Sources of Drinking Water Policy (Resolution 88-63)

The Sources of Drinking Water Policy, establishes state policy that all waters are considered suitable or potentially suitable to support the MUN beneficial use, with certain exceptions.

The Basin Plan implements Resolution 88-63 by assigning the MUN beneficial use to all water bodies that do not have their individual uses specifically listed in Table II-1. Exceptions to the MUN designation through Resolution 88-63 are allowed for surface and ground waters: 1) with total dissolved solids exceeding 3,000 mg/L (5,000 µS/cm EC); 2) with contamination that cannot reasonably be treated for domestic use; 3) where there is insufficient water supply for a single well to provide an average, sustained yield of 200 gallons per day; 4) in systems designed for wastewater collection or conveying or holding agricultural drainage; or 5) regulated as a geothermal energy producing source. Resolution 88-63 addresses only designation of water as drinking water sources; it does not establish objectives for constituents that are protective of the designated MUN use.

2.1.4 Federal 40 CFR 131.10(g) factors for changing a beneficial use designation

As described Section 2.1.1, water quality in waters of the United States should be sufficient "for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." In order to dedesignate, subcategorize, or not designate these uses, the state must support its demonstration of infeasibility with a use attainability analysis (40 CFR §131.10(j)). While MUN is not a fishable/swimmable beneficial use and Ag drains are not typically considered waters of the United States, several of the factors evaluated during a use attainability analysis are also utilized in California reviews, such as the occurrence of contamination by natural processes or human activity.

A designated use which is not an existing use may be removed from a water of the United States after demonstrating that attaining the use is not feasible due to one or more of the following factors listed in 40 CFR §131.10(g).

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(3) Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(4) Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like unrelated to water quality preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact. (40 CFR §131.10(g)).

2.2 Regulations That Apply To Water Quality Objectives

2.2.1 Federal Regulations and Guidance

Federal regulations require States to adopt narrative or numeric water quality criteria to protect designated beneficial uses (40 CFR §131.11(a)(1).)

2.2.2 State Statute, Regulations and Guidance

Water Code section13050, subdivision (h) defines water quality objectives as "…the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area."

Pursuant to Water Code section 13241, when establishing water quality objectives, the Regional Water Board is required to consider:

(a) Past, present, and probable future beneficial uses of water;
(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
(d) Economic considerations;
(e) The need for developing housing within the region;
(f) The need to develop and use recycled water; and
(g) The Program of Implementation (Wat. Code, §13242)

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2.3 Regulations To Establish an Implementation Program

2.3.1 Federal Regulations and Guidance

Section 402 of the Clean Water Act requires a permitting system which USEPA addressed by promulgating 40 Code of Federal Regulations, part 122, which are the regulations pertaining to the NPDES program. The State's regulations pertaining to NPDES permits must be consistent with the federal regulations.

Title 40 Code of Federal Regulations Section 122.44(d)(1)(ii) sets forth the criteria for establishing a procedure for determining whether a discharge has a reasonable potential to cause or contribute to a violation of water quality standards. It states, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water." While the federal regulations do not contain explicit procedures to derive effluent limitations, USEPA has provided guidance (USEPA, 1991) that includes explicit procedures.

2.3.2 State Statue, Regulations and Guidance

Water Code Section 13050
Pursuant to Water Code section 13050, subdivision (j)(3), a basin plan amendment must include an implementation program to achieve water quality objectives. Water Code section 13242 prescribes the program of implementation for achieving water quality objectives, which include the following:

- description of the actions necessary to achieve the water quality objectives;
- time schedule; and
- a monitoring and surveillance program.

State Water Board Sources of Drinking Water Policy (Resolution 88-63)
Monitoring is required as part of using the Exception 2b in Resolution 88-63:
The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

Water Code Section 106.3
In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.

3 MUN EVALUATION IN THE TWELVE CONSTRUCTED AND/OR MODIFIED SACRAMENTO RIVER BASIN WATER BODIES

3.1 Characteristics of the Sacramento River Basin Water Bodies

The twelve water bodies proposed for MUN dedesignation are: Ag Drain C (Logan Creek), Cherokee Canal, East Interceptor Canal, Lateral 1, Lateral 2, Lateral K, Main Drainage Canal (C Main Drain),

New Ditch (2011), Powell Slough, unnamed tributary, Wadsworth Canal, and Western Intercepting Canal. Water body categorization reports were completed by each of the four Sacramento POTWs in partnership with Regional Board staff and the agencies primarily responsible for managing/maintaining the water bodies in question to document the characteristics of the twelve water bodies that have been evaluated as part of this amendment. These reports include information specific to each water body for characteristics like the MUN use, construction history, water sources, inflows and outflows, monitoring, and flow patterns. The following two sections summarize the MUN use and characteristics of the twelve water bodies described in these reports (Biggs 2014, Colusa 2014, Live Oak 2014 and Willows 2014).

3.1.1 Past, Present and Future MUN use

Site surveys, interviews and water rights reviews of were conducted for all twelve water bodies from 2012- 2014. No historic or current state water rights information was found pertaining to the MUN use in or directly downstream of these water bodies. Urban and rural residents in these areas rely primarily on groundwater for their drinking water supplies (California Department of Water Resources, 2003). All diversions and water rights within the twelve water bodies are currently for irrigation purposes. All the water bodies under consideration flow into either the Colusa Basin Drain or Sutter Bypass—both of which are specifically listed in the Basin Plan as not having MUN. The first drinking water diversion is located approximately 27 miles downstream in the Sacramento River near the city of Sacramento. Interviews with local water agencies substantiated that there are no known past or current diversions for the MUN use in the twelve water bodies under consideration and that there are no future plans to use these water bodies to provide the MUN use.

Central Valley Water Board staff met with State Water Board Division of Drinking Water's Richard Hinrichs (Chief of Northern California Section) and Ali Rezvani (Head Engineer for the Sacramento region) in 2013 to discuss this MUN evaluation effort (State Water Board Division of Drinking Water, 2013). The Division of Drinking Water representatives confirmed that there was no compelling reason to expect that the cities in this Sacramento River Basin study area would seek to use Ag drainage water as a drinking water source. Surface water treatment plants are very expensive as compared to ground water systems, and it would not be practical to build one for a source of water that only receives a seasonal or intermittent flow. Use of Ag drainage water may also require additional treatment costs for filtration and monitoring, dependent on local practices. Use of water that contains wastewater effluent is also not recommended as a drinking water source, especially without sufficient dilution.

3.1.2 Summary of Water Body Characteristics

Appendix A provides a summary table of basic characteristics for each of the twelve Sacramento River Basin water bodies, including name, length, water body type (constructed or modified), construction type, year of construction, purpose of construction, water types (Ag return flows, treated wastewater, wetlands discharge, etc.) and flow information. All twelve of the water bodies were either constructed or modified to serve as agricultural drains with discharges eventually leading to either the Colusa Basin Drain on the west side or the Sutter Bypass on the east side of the valley. In addition to Ag drainage, these ditches may contain other types of water like treated municipal wastewater discharges, urban and storm runoff, groundwater seepage and/or wetlands drainage. The Wadsworth Canal, East Interceptor Canal and the Cherokee Canal on the east side of the valley are managed by the California Department of Water Resources as flood control channels. However, prior to the flood-related construction conducted by the United States Army Corps of Engineers, various segments of these ditches were built by local farmers in the late 1800s and early 1900s as multi-purpose facilities to drain

agricultural land of storm water during the winter months and to serve as irrigation and drainage ditches during the summer months. These seasonal functions continued with their incorporation into the Sacramento Valley Flood Control network. Flow patterns in these twelve water bodies are dependent on local agricultural practices and can vary greatly throughout the year. These ditches would likely be dry for extended periods during the year without surrounding irrigation practices.

3.2 Evaluation of Water Quality in the Sacramento River Basin Study Area

An evaluation of the water quality throughout the Basin Plan Amendment study area was conducted from April 2012 through September 2013. Eighteen water bodies, including nine of the twelve water bodies proposed for MUN dedesignation, were sampled: Sutter Bypass, Wadsworth Canal, Colusa Basin Drain, Powell Slough, Butte Slough, unnamed tributary, New Ditch (2011), Lateral Drain #2, Main Drainage Canal (C Main Drain), Cherokee Canal, Hunter Creek, Lateral K, Willow Creek, Ag Drain C (Logan Creek), and Butte Creek. These water bodies either represented background conditions or received effluent from the cities of Colusa, Willows, Live Oak, and/or Biggs. All of the water bodies except for the Colusa Basin Drain and Sutter Bypass are currently designated with the MUN beneficial use.

The sample period covered primarily Water Year 2013, which was classified as a dry year based on the Sacramento Valley Water Year Type Index and followed a dry year in Water Year 2012 and a wet year in Water Year 2011 (California Department of Water Resources, 2014). Sampling within each POTW study area was conducted twice a month from April 2012 through March 2013 time period. Sampling frequency was then reduced to once a month from April 2013 through September 2013 to capture an additional irrigation season.

During each POTW's NPDES permit development or through ILRP analyses, constituents were documented with elevated concentrations in the study area. These key constituents included pH, specific conductivity (SC), turbidity, temperature, dissolved oxygen (DO), nitrate as nitrogen, sodium, aluminum, arsenic, iron, manganese, total dissolved solids (TDS), and total trihalomethanes (chloroform, bromodichloromethane, and dibromochloromethane) and were part of the initial sampling effort. In June 2012, additional constituents specified in provisions of Title 22 of the California Code of Regulations to protect human health and human health-based standards in the California Toxics Rule (CTR) were analyzed. *Escherichia coli* analyses were conducted monthly from August 2012 to September 2013 as a pathogen indicator. In total, 144 different constituents were evaluated during the course of the study.

Findings from this study were summarized in a water quality report (Central Valley Water Board, 2014a) as follows:

- When analyzing the water quality results collected from the four study areas against 144 criteria to protect municipal and domestic supply and/or human health, most constituents were below the evaluation criteria and for those that were above the criteria, some elevated concentrations occurred in the effluent but the majority occurred upstream and/or downstream of where the effluent might influence water quality.

- The following constituents showed a pattern of consistently elevated levels throughout the overall study area: SC; TDS; nitrate as nitrogen; total aluminum; total iron; total manganese; and sodium.

- Total aluminum, total iron, and total manganese were found at elevated levels at all sites upstream and downstream of the influence of the effluent. The dissolved forms of these constituents did not exceed criteria.

- SC, TDS, and nitrate as nitrogen were elevated in the effluent, but concentrations dissipated after the first downstream site, sometimes located as close as 100 feet from the effluent discharge.

- Total and dissolved arsenic were elevated in the Colusa and Live Oak study areas (the southern portion of the overall study area).

- Trihalomethanes were consistently reported at elevated levels in the City of Willow's effluent but not in any of the upstream or downstream sites, except for two detections of chloroform upstream of the effluent in the northern portion of the basin.

- *E. coli* concentrations randomly exceeded criteria both upstream and downstream of the influence from the cities' effluents.

- Constituents with elevated levels not related to the effluent appear to be linked to elevated levels in local ground water (e.g. arsenic) while others such as aluminum, iron and manganese correlate to historical background concentrations of metals in the surface waters of the Sacramento River Basin.

3.3 Synoptic Evaluation of Drinking Water Constituents of Concern (Sacramento River Basin– June 2014)

A one-day synoptic evaluation of drinking water constituents of concern was conducted in the Sacramento River Basin and San Joaquin River Basin in June 2014. The purpose of the study was to evaluate current water quality within representative agricultural drains and main stem Sacramento and San Joaquin river sites, against Title 22 Maximum Contaminant Levels (MCLs) and California Toxics Rule (CTR) criteria developed to protect human health during a one time snapshot of the irrigation period. A total of 275 constituents were analyzed. In the Sacramento River Basin, there were four sites total: one in the Colusa Basin Drain, one in the Sutter Bypass and two in the Sacramento River, upstream and downstream of the drains.

The water quality results from the Synoptic Evaluation in the Sacramento Valley report (Central Valley Water Board, 2014b) showed that most of the constituents were below the evaluation criteria and/or reporting limit. In general, constituent concentrations were higher in the Ag drain sites than in the Sacramento River. Constituents that were consistently elevated above the evaluation criteria were total aluminum and total iron. However, dissolved concentrations of these constituents were below the secondary MCL. Total manganese levels were elevated in the Sacramento Ag drains, but not in the main stem Sacramento River sites.

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4 PROJECT ALTERNATIVES

Staff has identified the following three project alternatives for the MUN beneficial use designation for the twelve Sacramento River Basin water bodies:

1. No Action
2. Application of the Sources of Drinking Water Policy (Resolution 88-63) Exception 2b
3. Development of Site Specific Objectives (SSOs)

Table 1 shows the components of these alternatives. For Alternative 2, three options for the monitoring and surveillance program are listed. Each alternative is further discussed below.

Table 1. Alternatives Matrix

Project Alternatives	Beneficial Use Designation Components	Water Quality Objective Components	Implementation Components	Monitoring/ Surveillance (M/S) Components
1. No Action	No Change in MUN Beneficial Use Designation	No New Water Quality Objectives (WQOs)	No New Implementation Program	No New Monitoring and Surveillance Program
2. **Application of the Sources of Drinking Water Policy (Resolution 88-63) Exception 2b**	Use the Sources of Drinking Water Policy (State Resolution 88-63) Exception 2b and supporting evidence to dedesignate MUN	MUN WQOs will no longer apply to these water bodies	Existing Regulatory Programs to Implement	A. No Action (Utilize Existing Monitoring Efforts) B. Selected Monitoring to Fill Data Gaps C. Develop New Monitoring Program Focused on Impacts from Affected Water Body Discharges
3. **Development of Site Specific Objectives (SSOs)**	No Change in MUN Beneficial Use Designation	Develop Individual Site Specific Objectives (SSOs)	Existing Regulatory Programs to Implement	Develop M/S program through the NPDES and ILRP permit process

4.1 NO ACTION ALTERNATIVE

This alternative would not amend the Basin Plan; rather it would continue to maintain the current MUN beneficial use designation on the twelve Sacramento River Basin water bodies. Accordingly, there

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would be no change in water quality objectives associated with meeting the MUN water quality objectives and the current MUN-related water quality objectives from the Title 22 primary and secondary MCL tables, as well as CTR human health criteria for the protection of human health from consumption of water and organisms, would continue to apply. In addition, no new implementation provisions or monitoring and surveillance programs would be initiated.

4.2 Application of the Sources of Drinking Water Policy (Resolution 88-63) Exception 2b Alternative

This alternative would involve a change to the Basin Plan, specifically focused on the twelve Sacramento River Basin water bodies.

The Sources of Drinking Water Policy (Resolution 88-63) contains an exception (2b) for water in "*systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters*". The twelve Sacramento River Basin water bodies have all been characterized as agricultural drains and thus are eligible for MUN dedesignation under this exception. MUN dedesignation means that the MUN-related water quality objectives would no longer apply to the twelve water bodies. No changes would be made to the water quality objectives for other applicable beneficial uses.

4.2.1 Evidence to support MUN dedesignation via the Sources of Drinking Water Policy exceptions

As summarized in Section 3.1, Characteristics of the Sacramento River Basin Water Bodies, the MUN use in these twelve water bodies has not occurred in the past, is not occurring presently, and is not expected to occur in the foreseeable future. In addition, these water bodies were designed or modified for conveying or holding agricultural drainage, thus meeting the Sources of Drinking Water Policy Exception 2b.

A water body only needs to meet one of the exceptions in the Sources of Drinking Water Policy to be eligible to have the MUN beneficial use removed. However, information presented in Section 3 provides supporting evidence that many of these water bodies meet other Sources of Drinking Water Policy exceptions. For example, exception 1b is for waters where there "*is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices*". In addition, exceptions 1c, for water sources that do not "*provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day*" and 2a, for water "*in systems designed or modified to collect or treat municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff*" may also be relevant to these water bodies. These additional exceptions may be applicable due to the fact that overall, these water bodies have low, intermittent and/or seasonal flows and their primary sources of water (Ag drainage, municipal wastewater and seasonal storm and urban runoff) are at a higher potential of having constituent concentrations that exceed the current MUN water quality objectives of Title 22 primary and secondary MCLs.

Water bodies with these characteristics were also recognized by the State Water Board Division of Drinking Water, which regulates public drinking water systems, when they developed a policy (when the division was part of the California Department of Health Services) on the use of "Extremely Impaired Sources" as drinking water sources. The policy listed agricultural drainage, recycled water, urban runoff

and effluent dominated streams as examples of extremely impaired sources (State Water Board Division of Drinking Water, 1997). While the policy does not preclude the use of impaired sources, it does state that extremely impaired sources with known or suspected contaminants "*should not be considered for direct human consumption where alternatives are available*". As discussed in Section 3.1.1, Division of Drinking Water representatives do not anticipate that these twelve water bodies will provide a municipal or domestic supply in the future.

4.2.2 Federal 40 CFR 131.10(g) factors

Many of the exceptions in the Sources of Drinking Water Policy mirror the federal 40 CFR 131.10(g) factors for removing a designated beneficial use which is not an existing use.

As described in Section 3 and Section 4.2.1, the twelve Sacramento River Basin water bodies have naturally and human caused conditions that are sources of pollution and prevent the attainment of use (40 CFR 131.10(g)(1) and 40 CFR 131.10(g)(3)). In addition, the intermittent or low flow conditions in these water bodies, summarized in Appendix A, are not conducive to sustaining a public or domestic water system (40 CFR 131.10(g)(2)). These water bodies also contain dams, diversions and other types of hydrologic modifications, that were constructed specifically to support agricultural activities, not municipal or domestic supply activities (40 CFR 131.10(g)(4)). Detailed information and photographs of these hydrologic modifications are available in each of the four city's water body categorization reports (City of Biggs 2014, City of Colusa 2014, City of Live Oak 2014, and City of Willows 2014).

4.2.3 Monitoring requirement for utilizing Exception 2b

Ensuring that sufficient monitoring and surveillance will be conducted is an integral piece of this project alternative. Resolution 88-63 requires monitoring of the discharge from systems using Exception 2b to *"assure compliance with all relevant water quality objectives as required by the Regional Board"*. Three monitoring and surveillance options were identified for this project alternative: A) No Action (Utilize Existing Monitoring Efforts); B) Selected Monitoring to Fill Data Gaps or; C) Develop New Monitoring Program Focused on Impacts from Affected Water Body Discharges. A review of these options is provided in Section 5.

4.3 Development of Site Specific Objectives (SSOs) Alternative

This alternative would involve changes to the Basin Plan pertaining to the water quality objectives for the twelve Sacramento River Basin water bodies. This alternative does not involve a change to the beneficial use designation of MUN to the twelve water bodies. Instead, the development of site specific objectives (SSOs) for constituents of concern for each water body would be developed on a water body-by-water body basis. SSOs for MUN-related constituents of concern for the Sacramento POTWs could include one or more of the following constituents: nitrate, electrical conductivity, arsenic, trihalomethanes, aluminum, iron, and manganese, as well as re-evaluation should additional MCLs or human health-based CTR criteria be adopted. The existing regulatory programs would be responsible to implement the monitoring and surveillance program needed to assure that waste discharges do not impair applicable beneficial uses.

4.4 Evaluation of Project Alternatives

The Basin Plan Amendment alternatives were evaluated based on their ability to meet the following primary selection criteria:

1. Maintain consistency with federal and state water quality laws and policies as applicable (e.g. Sources of Drinking Water Policy, Antidegradation Policy etc.)

2. Provide the appropriate protection of MUN in the twelve Sacramento River Basin water bodies with consideration given to the current and potential future use of drinking water.

3. Assure compliance with all relevant water quality objectives downstream

4. Make efficient use of Central Valley Water Board and stakeholder resources to develop and implement water quality standards

5. Provide a solution that does not require the Sacramento POTWs to implement new treatment processes to meet MUN use-based water quality criteria/objectives when no such use exists in their immediate receiving waters

4.5 Recommended Alternative

Central Valley Water Board staff recommend Alternative 2, which is to dedesignate MUN from the twelve water bodies in the Sacramento River Basin area by applying the Sources of Drinking Water Policy Exception 2b. Alternative 2 satisfies the selection criteria since the action would:

1. Be consistent with both federal and state water quality laws and policies. Section 4.2 demonstrates that the twelve water bodies meet the Exception 2b in the Sources of Drinking Water Policy as well as the federal 40 CFR 131.10(g) requirements for beneficial use dedesignation.

2. Be the appropriate protection for these twelve water bodies. Section 4.2 demonstrates that these water bodies have no past, current or planned future use for municipal or domestic supply and therefore need not be protected for the MUN use.

3. Ensure that downstream water bodies are protected for the all beneficial uses. Use of Exception 2b in the Sources of Drinking Water Policy requires downstream monitoring to assure compliance with all relevant water quality objectives.

4. Be the most beneficial and cost effective measure because it addresses the appropriate MUN designation with one Basin Plan Amendment for all twelve water bodies and does not require extensive scientific review and development of SSOs or additional costly measures to meet the MUN water quality objectives.

5. Finds it appropriate that Sacramento POTWs not be required to implement new treatment processes to meet MUN-related discharge limitations in their NPDES permits when no such use currently exists or is anticipated to exist in their immediate receiving waters.

Implementation of Alternative 1 (No Action) would not satisfy the selection criteria, because it would not be consistent with the intent of the Sources of Drinking Water Policy Exception 2b for water bodies that are constructed or modified to hold or convey agricultural drainage. In addition, maintaining the MUN

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beneficial use does not align well with the State Water Board Division of Drinking Water's guidance on the use of Ag drainage as a source of drinking water when better alternatives are available. Implementation of Alternative 1 would also result in costly facility upgrades for the POTW wastewater treatment plants to meet the primary and secondary MCLs to provide potable water in an Ag drain.

Adoption of Alternative 3 (Site Specific Objectives) would not satisfy the selection criteria because it also would not be consistent with the intent of the Sources of Drinking Water Policy Exception 2b for water bodies that are constructed or modified to hold or convey agricultural drainage. Developing SSOs also requires extensive scientific review and would likely require multiple Basin Plan Amendments to address each water body and its constituents of concern. Unlike Alternative 2, SSOs do not address the primary question of what the appropriate MUN beneficial use protection is for these twelve water bodies. SSOs are meant to protect a beneficial use to the type and degree that it occurs in the water body, usually resulting in less stringent water quality objectives than those stipulated by the Basin Plan to provide full protection of the use. However, as described in Section 4.1.2, because the degree of MUN use in these water bodies is no MUN use, developing SSOs for another degree of use is not a reasonable alternative. As such, SSOs were eliminated from further consideration and no environmental, antidegradation or economic analyses were conducted on this alternative.

The recommended option for the Monitoring and Surveillance component in Alternative 2 (2a-2c) is evaluated further in Section 5.0, Program of Implementation.

5 PROGRAM OF IMPLEMENTATION

Implementation provisions ordinarily describe the actions the Board will take to implement a change in water quality standards (a combination of beneficial use and the water quality objectives to protect that use), after those standards are integrated into the Basin Plan. However, in this proposed Basin Plan Amendment, under preferred Alternative 2, the Board proposes to dedesignate the MUN beneficial use from surface waters that meet Exception 2b of the Sources of Drinking Water Policy. The dedesignation would in turn remove all water quality objectives in place to protect MUN (e.g. the MCLs specified in Title 22) from the water bodies in question, thereby not requiring any additional implementation actions by dischargers to the water bodies to meet MCLs. However, to utilize the exception, discharges from the affected systems must be monitored to *". . . assure compliance with all relevant water quality objectives as required by the Regional Boards. . .* ". Potential options under the Monitoring and Surveillance portion of the Program of Implementation were evaluated to determine a preferred approach to meeting the exception requirement. Three options were evaluated:

- Option A , No Action (Utilize Existing Monitoring Efforts)
- Option B, Selected Monitoring to Fill Data Gaps
- Option C, Develop New Monitoring Program Focused on Impacts from Affected Water Body Discharges

These options are discussed in detail below.

5.1 Option A, No Action (Utilize Existing Monitoring Efforts)

This monitoring and surveillance option assumes that existing Water Board programs such as the Irrigated Lands Regulatory Program (ILRP), National Pollutant Discharge Elimination System (NPDES)

and Surface Water Ambient Monitoring Program (SWAMP) as well as monitoring conducted by outside agencies such as the California Department of Water Resources, United States Geological Survey, and water purveyors are sufficient to assure that discharges from the dedesignated systems meet relevant water quality objectives as required by the Regional Boards.

5.2 Option B, Selected Monitoring to Fill Data Gaps

This option requires additional monitoring requirements if current monitoring efforts are not sufficient to assure compliance with relevant water quality objectives as required by the Central Valley Water Board. With this option, consideration is given to adding requirements to existing internal programs and/or utilizing other agency programs to fill in the data gaps by leveraging resources and avoiding duplication to satisfy the monitoring and surveillance requirements.

5.3 Option C, Develop New Monitoring Program Focused on Impacts from Affected Water Body Discharges.

This last option for Alternative 2 requires the development of a new monitoring program to specifically fulfill the MUN dedesignation monitoring and surveillance requirements of Exception 2b in the Sources of Drinking Water Policy. Issues that may need to be considered when establishing a new monitoring program include management and administrative responsibilities, corresponding resource allocations, development of funding sources, and establishment of implementation procedures.

5.4 Evaluation of Monitoring and Surveillance Options

Discharges from the twelve water bodies under consideration in this Basin Plan Amendment are required by Resolution 88-63 to be monitored to "*assure compliance with relevant water quality objectives as required by Regional Boards"* (Exception 2b of the Sources of Drinking Water Policy). The twelve water bodies eventually drain into either the Colusa Basin Drain or the Sutter Bypass. As such, these two water bodies represent integration of discharge from all twelve water bodies under consideration. Discharges from the twelve dedesignated water bodies are not required to meet MUN water quality objectives in the Colusa Basin Drain or the Sutter Bypass since both water bodies have been specifically identified in the Basin Plan as not having the MUN beneficial use. However, the Basin Plan does designate agricultural, recreational and aquatic life beneficial uses in the Colusa Basin Drain and the Sutter Bypass. To satisfy the exception requirements, the Colusa Basin Drain and Sutter Bypass must be monitored to assure compliance with these relevant water quality objectives.

Both the Colusa Basin Drain and the Sutter Bypass discharge into the Sacramento River. Since the Sacramento River is designated for municipal and domestic supply, there is concern that the discharges from Colusa Basin Drain or the Sutter Bypass could cause exceedance of the water quality objectives applicable to the Sacramento River. The Sacramento River provides drinking water for residents in both northern and southern California. The first three municipal drinking water intakes in the Sacramento River downstream of the Sutter Bypass and the Colusa Basin Drain confluences serve the cities of Sacramento, West Sacramento and the County of Sacramento, respectively. There is another intake being constructed near the Interstate 5 overcrossing to serve the cities of Woodland and Davis and this facility is expected to be operational by the end of 2016 (Woodland-Davis Clean Water Agency, 2014). Additional flows from the Sacramento River are diverted in the Delta to other parts of the state for drinking water purposes. Due to concerns of potential impact to the MUN beneficial use in the Sacramento River and the drinking water diversions, the monitoring and surveillance evaluation was expanded to include the length of Sacramento River from the confluence with the two water bodies

to the boundary of the Sacramento-San Joaquin Delta. As described in Section 5.2.1, there are a number of existing monitoring programs in the Sacramento River Basin to evaluate water quality trends and ensure that the Sacramento River's beneficial uses are protected.

Overall, the Sacramento River is considered a "very desirable source of potable water, with limited anthropogenic contamination" as indicated in an assessment of the Sacramento River for the Woodland-Davis Clean Water Agency (Trussell Technologies, 2011). Water quality results from studies conducted by Central Valley Water Board staff from 2012 to 2014 are detailed in Sections 3.2 and 3.3. Staff also reviewed data from assessments by the Woodland-Davis Clean Water Agency, and other monitoring programs, like the Sacramento Coordinated Water Quality Monitoring Program (Larry Walker Associates, 2014), and found comparable results showing most Title 22 constituents below the detection limit in the Sacramento River with the same exceptions discussed in Section 3.3 of total aluminum, total iron and total magnesium exceeding the secondary MCLs. The assessments did not note total metals as a treatment concern because dissolved levels, which reflect concentrations after standard filtration treatment, were well below the water quality criteria.

A stakeholder workgroup associated with the development of the Central Valley Water Board's Drinking Water Policy for Surface Waters of the Delta and its Upstream Tributaries (Drinking Water Policy), adopted in 2013 (Central Valley Water Board Resolution R5-2013-0098), identified organic carbon, salt, nutrients, *Cryptosporidium*, and *Giardia* as drinking water constituents of concern. Evaluation studies of organic carbon, conducted in 2011, examined publically owned treatment works, urban runoff, and irrigated agriculture discharges and concluded that concentrations of organic carbon at public water system intakes are not expected to increase over time. Because salinity and nutrients were already being addressed by CV-SALTS and the State Board's current development of a Nutrient Policy, the Drinking Water Policy ultimately focused primarily on developing a narrative water objective for *Cryptosporidium* and *Giardia*. USEPA promulgated the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) in 2006 to protect public health from illness due to *Cryptosporidium* and other microbial pathogens in drinking water (71 FR 654). Monitoring at public water system intakes from 2006 to 2011, as required by USEPA regulations, has not resulted in additional treatment requirements for public water systems treating water from the Delta and its tributaries. However, the Drinking Water Policy set forth in the Basin Plan a process whereby staff uses the drinking water treatment requirements associated with source water quality conditions to assess how *Cryptosporidium* and *Giardia* levels are affecting the MUN beneficial use. The Drinking Water Policy also amended the Basin Plan with a recommendation to include monitoring of organic carbon, salinity and nutrients when waste discharge requirements are renewed.

5.4.1 Evaluation of Option A , No Action (Utilize Existing Monitoring Efforts)

A compilation of existing monitoring in the Sacramento River, the Colusa Basin Drain and the Sutter Bypass is summarized in Appendix B. The summary includes a map of monitoring locations and tables listing programs, constituents and frequency of monitoring. Table B.1 in Appendix B summarizes the major monitoring programs within the study area and Figure B.1 depicts the sampling locations. A total of 23 surface water quality monitoring efforts were sampling at approximately 55 different sites between the systems proposed for dedesignation and the Sacramento/San Joaquin Delta. The majority of the monitoring listed in Appendix B is from established, long-term, and ongoing efforts. Exception 2b of the Sources of Drinking Water Policy only requires that the discharge of the dedesignated systems be monitored, best represented in this case by integrated water quality downstream in the Colusa Basin

Drain and Sutter Bypass. However, additional monitoring continuing down the Sacramento River was included since beneficial uses and related water quality objectives are different between the Sacramento River and the upstream collection systems. In particular, neither the Colusa Basin Drain nor the Sutter Bypass is designated with MUN, so Title 22 MCLs do not apply, but the Sacramento River is designated MUN with higher expectations for water quality. The following is a summary of major monitoring programs in the Sacramento River Basin:

1. ILRP was initiated in 2003 to prevent agricultural runoff from impairing surface waters. The first program question intended to structure both monitoring and management activities related to the potential impacts of agricultural discharges is "Are receiving waters to which irrigated lands discharge meeting applicable water quality objectives and Basin Plan provisions?". In addition to a long-term, representative monitoring framework, exceedances of "trigger" levels of constituents require dischargers to expand monitoring efforts to identify the source of the constituent and to implement management practices to ensure that relevant water quality objectives are met. There are two coalition groups in the Sacramento River Basin, the Sacramento Valley Water Quality Coalition and the California Rice Coalition, and each have established monitoring programs to satisfy the requirements set forth by their ILRP Waste Discharge Requirements (WDR) orders. Both coalitions have sites in the Colusa Basin Drain and the Sutter Bypass. In addition, there is a WDR General Order (R5-2013-0100) for dischargers who are not coalition members.

2. NPDES permits are intended to assure that point source discharges do not impact water quality or people's health and that the state's mandatory standards for clean water and the federal minimums are being met. A reasonable potential analysis (RPA) is conducted to determine which constituents have the potential to cause or contribute to an in-stream excursion above the water quality criteria. Effluent limits are set in the permit, which is reviewed every five years, for those pollutants exceeding or having a "reasonable potential" to exceed water quality objectives at any point downstream that is influenced by their discharge. Monitoring in the receiving waters for all four Sacramento POTWs will continue to be implemented through this program based on the applicable water quality standards. Dischargers are required at least once during their permit term to monitor effluent and upstream receiving water sites for priority pollutants and other constituents of concern. If any of the POTWs has a substantial change or increase in wastewater discharge, an antidegradation analysis must be conducted followed by a RPA before a new permit can be adopted. Any new point source discharges to one of the twelve water bodies in this amendment must also go through the same RPA procedures as those required of the four POTWs.

3. The California Surface Water Ambient Monitoring Program (SWAMP) was created to fulfill the State Legislature's mandate for a unifying program that would coordinate all water quality monitoring conducted by the State and Regional Water Boards. SWAMP assessment includes the evaluation of the overall quality of California's surface waters, water quality trends, identification of problem or risk areas, causes and sources of water quality problems and the effectiveness of clean water projects and programs. Central Valley Water Board's SWAMP unit currently coordinates with the Department of Water Resources to conduct quarterly water quality monitoring throughout the Sacramento River Basin and also conducts other special studies like the "Safe-to-Swim" effort. The State Water Resources Control Board also oversees the Stream Pollution Trends (SPoT) Monitoring Program which monitors trends in sediment

toxicity and sediment contamination concentrations in large rivers across California, such as the Sacramento River.

4. The Municipal Water Quality Investigations (MWQI) Program is conducted by the Department of Water Resources and supported by State Water Project Contractors Authority. The MWQI program supports the effective and efficient use of the State Water Project as a source of water supply for municipal purposes through monitoring, forecasting and reporting of Sacramento-San Joaquin Delta and the State Water Project water quality. The MWQI has conducted ongoing monitoring since 1982 that includes sampling sites along the Sacramento River and the Colusa Basin Drain as well as within the Delta.

5. The United States Geological Survey (USGS) has collected limited water quality and stream flow data at a number of monitoring sites in the Sacramento River Basin, including the Sacramento River Mile 78 site which has flow data going back to 1929.

6. The Sacramento Coordinated Monitoring Program is a joint effort of the Sacramento Regional County Sanitation District and the Sacramento Stormwater Quality Partnership that started in 1991. Samples are collected each year in the Sacramento and American Rivers and analyzed for a wide variety of constituents.

7. Intakes for the City of West Sacramento and the City and County of Sacramento are monitored regularly by the water treatment plants to fulfill monitoring requirements set by the State Water Board Division of Drinking Water and the California Title 22 Code of Regulations

The summary demonstrates that there is extensive monitoring of the Colusa Basin Drain, Sutter Bypass and downstream main stem Sacramento River to the Delta for a wide variety of water quality constituents which are used to evaluate the protection of all the applicable beneficial uses in these water bodies. These constituents include drinking water constituents of concern such as total organic carbon, salinity, nutrients, pathogen indicators and metals. Many of the programs listed in Appendix B, like the Municipal Water Quality Investigations, produce annual or periodic reports summarizing their findings. In addition, Title 22 drinking water regulations require water utilities using surface water sources conduct a watershed survey every five years. A Sacramento River Watershed sanitary survey is due in 2015.

Pros: In assessing the historic and existing water quality information along with the current monitoring programs, staff did not identify any significant data gaps in relevant water quality monitoring from the Colusa Basin Drain and the Sutter Bypass to downstream sites in the main stem Sacramento River. As Ag dominated water bodies, the twelve water bodies named in this amendment, along with the Sutter Bypass and the Colusa Basin Plan, are already part of the overall monitoring framework developed by the Irrigated Lands Regulatory Program to evaluate compliance of agricultural discharges with the relevant water quality objectives set forth in the Basin Plan. In addition, the NPDES program will continue to monitor potential impacts of the receiving water bodies.

Cons: Staff identified deficiencies with coordinated efforts to collect and review all of the water quality information from these monitoring programs, especially for inclusion in the California Environmental Data Exchange Network (CEDEN) and the California Integrated Report (Clean Water Act Sections 303(d) and 305(b)).

Section 303(d) of the federal Clean Water Act and 40 CFR §130.7 require states to identify water bodies that do not meet water quality standards and are not supporting their beneficial uses. These waters are placed on the Section 303(d) List of Water Quality Limited Segments (or List of Impaired Water Bodies). The list identifies the pollutant or stressor causing impairment and establishes a schedule for developing a control plan to address the impairment. Placement on this list generally triggers development of a Total Maximum Daily Load (TMDL) and associated pollution control plans (PCP) for each water body and associated pollutant/stressor on the list. The PCP serves as the means to attain and maintain water quality standards for the impaired water body. Section 305(b) of the federal Clean Water Act requires states to report biennially to the USEPA on the water quality conditions of their surface waters. California has integrated the 303(d) List of Impaired Waters and the 305(b) Water Quality Assessment Report into a single report (Integrated Report), which satisfies both Clean Water Act sections. An amendment to the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List is scheduled to be heard by the State Water Board in February 2015 and proposes the use of CEDEN as the primary source of "readily available data and information" for evaluation (State Water Resources Control Board, 2014). This change is expected to streamline the listing process and ensure that water quality data meets certain quality standards.

In reviewing the programs listed in Appendix B, only a few programs like SWAMP and ILRP are currently storing their data in CEDEN. However, there are multiple efforts in progress to build data crosswalks to CEDEN for a number of the other programs listed. For example, the State Water Board has a current grant (ending in 2017) to develop the initial steps towards building a two-way flow of water quality data between the California Environmental Protection Agency's Water Quality Exchange Node (WQX) and CEDEN. WQX is a data exchange network that makes it easier for water quality data to be submitted and shared over the internet. By using WQX, data proposed to be shared with CEDEN will come from the California Department of Water Resources, USEPA's STORET data repository and USGS. In addition, work is in progress to bridge the water quality data from the Stormwater Multiple Application and Report Tracking System (SMARTS), which contains municipal storm water data, and the California Integrated Water Quality System (CIWQS), which contains NPDES receiving water data, into CEDEN. The Division of Drinking Water also regulates the monitoring and maintains water quality information of source water at water supply intakes. However, with their recent move from the California Department of Public Health to the State Water Board, only preliminary discussions have taken place to consider integrating this data into CEDEN.

5.4.2 Evaluation of Option B, Selected Monitoring to Fill Data Gaps

Based on the review of the data compiled in Appendix B as detailed in Section 5.4.1, sufficient water quality information is being collected to satisfy requirements of Exception 2b of the Sources of Drinking Water Policy as well as identify any potential threats to relevant water quality objectives. However, as also noted, compilation of the information into a format that can be submitted to CEDEN does not currently occur which makes evaluation problematic.

Pros: n/a

Cons: No apparent need to fill data gaps.

5.4.3 Evaluation of Option C, Developing New Monitoring Program Focused on Impacts from Affected Water Body Discharges

Based on the review of the data compiled in Appendix B as detailed in Section 5.4.1, sufficient water quality information is being collected to satisfy requirements of Exception 2b of the Sources of Drinking Water Policy as well as identify any potential threats to relevant water quality objectives. However, as also noted, compilation of the information does not currently occur which makes evaluation problematic.

Pros: Single source of data for evaluation.

Cons: Duplication of current efforts since existing monitoring appears to provide needed data for evaluation.

5.5 Recommendation for Monitoring and Surveillance

Staff recommends that water quality monitoring and surveillance continue to be conducted through existing monitoring programs as detailed in Section 5.2.1 Option A., No Action (Utilize Existing Monitoring Efforts), with an additional recommendation.

The effort to consolidate water quality information from many different sources into CEDEN is a complex and resource-intensive process. With plans to make CEDEN the primary source of information for the California Integrated Report, it is of utmost importance that these data processes be completed in order to ensure a more holistic evaluation of the lower Sacramento River Watershed by which compliance with relevant water quality objectives can be assessed. Every effort should be made to include data from watershed evaluations of the Sacramento River Basin, such as the Sacramento Sanitary Survey, in the next 303(d) listing cycle. Staff recommends additional basin plan language emphasizing the support needed by the Central Valley Water Board and other agencies for projects intended to facilitate the assemblage and assessment of water quality information, especially as it pertains to its submittal to CEDEN and the California Integrated Report (Clean Water Act Sections 303(d) and 305(b)).

6 CONSISTENCY WITH LAWS, PLANS, AND POLICIES

State laws, plans and policies were reviewed for this Basin Plan Amendment. In addition, four POTWs have permits to allow discharge into the water bodies under consideration in this amendment. The permits are administered through the National Pollutant Discharge Elimination System (NPDES), a federal permit program authorized by the Clean Water Act to control point source water pollution. To maintain consistency with the NPDES program, federal laws, plans and policies were also reviewed for this Basin Plan Amendment.

6.1 Antidegradation Analysis

USEPA (40 CFR §131.12) and the State of California (State Water Board Resolution 68-16) have adopted antidegradation policies as part of their approach to regulating water quality. The Central Valley Water Board must ensure that its actions do not violate the federal or State Antidegradation policies.

6.1.1 Federal Antidegradation Policy

The Federal Antidegradation Policy (40 CFR §131.12) states:

"(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an Outstanding National Resource Waters, such as waters with exceptional ecological, recreational or environmental assets, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act."

6.1.2 State Antidegradation Policy

Antidegradation provisions of State Water Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality Waters in California") state, in part:

"(1) Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

(2) Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

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6.1.3 Antidegradation Analysis of the Proposed Amendments

The proposed Basin Plan Amendment complies with both the federal and state antidegradation policies. The twelve water bodies named in this amendment are not part of an Outstanding National Resource Waters area. The four POTWs named in this Basin Plan Amendment have discharged treated effluent into these water bodies for many decades and have only been required by their NPDES permits to meet the water quality objectives for the MUN beneficial use within the last decade. Discharges from irrigated agriculture have occurred for over a century in the Sacramento River Basin and are currently under waste discharge requirements (WDRs) through the Irrigated Lands Regulatory Program. Dedesignation of the MUN beneficial use in these twelve agricultural drains, where the use does not exist and cannot feasibly be attained, is not expected to result in any significant increase in the discharge of pollutants to the water bodies.

Should there be new or significant changes in point source discharges in the future, a site-specific antidegradation analysis will be required through the NPDES permitting process. As the primary nonpoint source discharge, agricultural discharges will continue to be regulated under Waste Discharge Requirements (WDRs) through the Irrigated Lands Regulatory Program (ILRP) where Best Practical Treatment Controls (BPTCs) are implemented as needed to control degradation of water quality in both surface and ground waters. Any substantial change in discharge quantity or quality under either the NPDES or ILRP would trigger further environmental evaluation. Section 7.1 further evaluates the potential environmental impacts of the three project alternatives. Section 7.2 details the economic factors involved with MUN dedesignation as it pertains to the maximum benefit to the people of the State.

6.2 Consistency with Federal and State Laws

Federal agencies have adopted regulations implementing federal laws to which Central Valley Water Board actions must conform. To maintain consistency with the NPDES program, the following Federal laws were evaluated for this proposed Basin Plan Amendment:

- Clean Water Act
- Federal & State Endangered Species Acts (50 CFR *et seq*., Fish and G. Code §2050-2116 *et seq*.)

These laws and their relevance to the proposed Basin Plan Amendment are described in the following sections in addition to state law.

6.2.1 Clean Water Act

State Adoption of Water Quality Standards

Under Section 303(c) of the Clean Water Act, water quality standards adopted by a State are subject to USEPA approval. Water quality standards consist of the designated uses and the water quality criteria to protect the uses. (33 USC §1313 (c)(2)(A) and 40 CFR §131.3(i)) When designating uses, the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. (40 CFR §131.10(a)) When designating uses of a water body and the appropriate criteria for those uses, the State shall ensure that the water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters. (40 CFR §131.10(b))

By adopting this amendment, the Central Valley Water Board finds that these water bodies are not suitable for public water supplies. As described in Section 3.1.1 of this Staff Report, there are no municipal or domestic use water rights for these water bodies. Instead, water rights have been authorized for agricultural uses. When issuing rights to appropriate water, the State Water Resources Control Board is required to consider the relative benefit to be derived from all beneficial uses of the water concerned including, but not limited to, use for domestic, irrigation, municipal, industrial, preservation and enhancement of fish and wildlife, recreational, mining and power purposes, and any uses specified to be protected in any relevant water quality control plan. In addition, it is the established state policy that the use of water for domestic purposes is the highest use of water. (Wat.Code, §106 and §1257. Since there are no municipal or domestic water rights for these water bodies, the State Water Board has already determined that there is minimal relative benefit of these waters for public water supplies. The proposed amendments are consistent with this determination. In addition, as discussed below in Section 7.3, the water bodies being considered for MUN dedesignation are considered to be unsuitable for use as a drinking water supply by the Division of Drinking Water when there is a better quality water supply available.

Federal Regulations Pertaining to NPDES Permits

Section 402 of the Clean Water Act requires a permitting system which USEPA addressed by promulgating Title 40 Code of Federal Regulations Part 122, which are the regulations pertaining to the NPDES (National Pollutant Discharge Elimination System) program. The State's regulations pertaining to NPDES permits must be consistent with the federal regulations. Title 40 Code of Federal Regulation section122.44(d)(1)(ii) sets forth the regulations for determining whether a discharge has a reasonable potential to cause or contribute to a violation of water quality standards. It states, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water."

This Basin Plan Amendment does not recommend any new or modification to federal or state NPDES procedures and instead depends on the continued implementation of these procedures to provide appropriate protection of these water bodies.

Requirements for Avoiding Wetland Loss

Under Clean Water Act section 404 and the Rivers and Harbors Act of 1899 Section 10, alteration of waterways, including wetlands, that affect navigable waters requires a permit from the Federal government and assurance that impacts will be avoided or mitigated. The U.S. Army Corps of Engineers operates the 404 permit program with a goal of achieving "no net loss" of wetlands. For projects proposing unavoidable impacts on wetlands, compensatory mitigation in the form of replacing the lost aquatic functions is generally required. Under authority of Clean Water Act section 401, the State also reviews projects affecting water bodies. The State may require compensatory mitigation for wetlands impacts not under the jurisdiction of the Federal government, e.g., for wetlands not contiguous with navigable waters.

The proposed Basin Plan Amendment will not adversely affect or have net loss to current wetlands. Therefore, these laws and regulations pertaining to wetland loss are not applicable to the proposed Basin Plan Amendment.

6.2.2 Federal and State Endangered Species Act

The Federal Endangered Species Act of 1973 (50 CFR *et seq*.) was established to identify, protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the Interior Department's U.S. Fish and Wildlife Service (USFWS) and the Department of Commerce's National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS). The USFWS has primary responsibility for terrestrial and freshwater organisms, while the NMFS has primary responsibility for marine species such as salmon and whales. In addition, the State of California enacted the California Endangered Species Act (Fish & G. Code, sections 2050-2116 *et seq*.), which is administered by the California Department of Fish and Wildlife and similarly maintains State lists of rare, threatened and endangered species. The proposed Basin Plan Amendment is not expected to affect fish and wildlife as it only removes the MUN beneficial use. Therefore, the Endangered Species Act is not applicable to the proposed Basin Plan Amendment.

6.3 Consistency with California Water Code 106.3

In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. Water Code section 106.3 states that:

a. It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.
b. All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.
c. This section does not expand any obligation of the state to provide water or to require the expenditure of additional resources to develop water infrastructure beyond the obligations that may exist pursuant to subdivision (b).
d. This section shall not apply to water supplies for new development.
e. The implementation of this section shall not infringe on the rights or responsibilities of any public water system.

As discussed in Section 3.1.1, ground water is an accessible and preferable source for drinking water in the Basin Plan Amendment project area and there is no plan to use surface water from these water bodies as a drinking water source. In addition, 88-63 has an exception for systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters that includes a requirement to ensure that discharges from such systems meet relevant water quality objectives. This amendment is consistent with Water Code section 106.3.

6.4 Consistency with State Water Board Policies

The State Water Board is authorized to adopt state policy for water quality control. (Wat. Code §13140) State Water Board water quality control plans supersede any regional water quality control plans for the

same waters to the extent of any conflict. (Wat. Code §13170) The following are the State Water Board policies:

- Statement of Policy with Respect to Maintaining High Quality of Water in California (Antidegradation Implementation Policy) (Resolution No. 68-16)
- Water Quality Control Policy for the Enclosed Bays and Estuaries of California (Resolution No. 74-43)
- Sources of Drinking Water Policy (Resolution No. 88-63)
- Pollutant Policy Document (Resolution No. 90-67)
- Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304 (Resolution No. 92-49)
- Consolidated Toxic Hot Spots Cleanup Plan (Resolution No. 99-065 and 2004-0002)
- Nonpoint Source Management Plan & the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (Resolution No. 99-114 and 2004-0030)
- Water Quality Enforcement Policy (Resolution No. 2002-0040)
- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Resolution No. 2005-0019)
- Policy for Developing California's Clean Water Act Section 303(d) list (Resolution No. 2004-0063)
- Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options (Resolution No. 2005-0050)
- Policy for Compliance Schedules in Nation Pollutant Discharge Elimination System Permits (Resolution No. 2008-0025)
- Policy for Water Quality Control for Recycled Water (Resolution No. 2009-0011)

6.4.1 Resolution No. 68-16: Statement of Policy with Respect to Maintaining High Quality of Water in California (Antidegradation Implementation Policy)

This policy is discussed above in Section 7.1.

6.4.2 Resolution No. 74-43: Water Quality Control Policy for the Enclosed Bays and Estuaries of California

This policy was adopted by the State Water Board in 1974 and provides water quality principles and guidelines for the prevention of water quality degradation in enclosed bays and estuaries to protect the beneficial uses of such waters. The Regional Water Boards must enforce the policy and take actions consistent with its provisions. For the San Francisco Bay-Delta system, the policy requires implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded waste treatment, and improved dilution of wastewaters to provide full protection to the biota and the beneficial uses of San Francisco Bay-Delta waters.

The twelve water bodies listed in this proposed Basin Plan Amendment are not located in or discharging to an enclosed bay or estuary, so this policy is not relevant.

6.4.3 Resolution No. 88-63: Sources of Drinking Water Policy

This policy states that all waters of the state are to be considered suitable or potentially suitable for municipal and domestic supply unless one such exception is met. One such exception is 2b, for

systems designed or modified with the primary purpose of conveying or holding agricultural drainage waters.

This policy is examined in detail in Section 2.1.3. The proposed Basin Plan Amendment demonstrates that the twelve bodies proposed to have their MUN beneficial use removed meet Exception 2b in the Sources of Drinking Water Policy.

6.4.4 Resolution No. 90-67: Pollutant Policy Document

This policy requires, in part, that the Central Valley and San Francisco Bay Water Boards use the Pollutant Policy Document (PPD) as a guide to update portions of their Basin Plans. The PPD requires that the Central Valley Water Board develop a Mass Emissions Strategy (MES) for limiting loads of pollutants from entering the Sacramento-San Joaquin Delta. The purpose of the MES is to control the accumulation in sediments and the bioaccumulation of pollutant substances in the tissues of aquatic organisms in accordance with the statutory requirements of the state Porter-Cologne Water Quality Act and the Federal Clean Water Act.

The proposed Basin Plan amendment is not expected to increase accumulation of pollutants in sediment or bioaccumulation of pollutant substances in tissues of aquatic organisms; therefore, this Policy is not applicable.

6.4.5 Resolution No. 92-49: Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304

This policy contains procedures for the Central Valley Water Board to follow for oversight of cleanup projects to ensure cleanup and abatement activities protect the high quality of surface and groundwater. The proposed Basin Plan Amendment does not include any change to the procedures pertaining to cleanup and abatement activities; therefore, this policy is not applicable to the proposed Basin Plan Amendment.

6.4.6 Resolution No. 99-065 & Resolution No. 2004-0002: Consolidated Toxic Hot Spots Cleanup Plan

In June 1999, the State Water Board adopted the Consolidated Toxic Hot Spots Cleanup Plan (Cleanup Plan), as required by California Water Code Section 13394. The proposed Basin Plan Amendment does not address any of the constituents needing cleanup plans; therefore, the Cleanup Plan is not applicable.

6.4.7 Resolution No. 99-114 & Resolution No. 2004-0030: Nonpoint Source Management Plan & the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program

In December 1999, the State Water Board adopted the Plan for California's Nonpoint Source (NPS) Pollution Control Program (NPS Program Plan) and in May 2004, the State Water Board adopted the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy). The NPS Policy explains how State and Regional Water Boards will use their administrative permitting authority under the Porter-Cologne Act to implement and enforce the NPS Program Plan. The NPS Policy requires all nonpoint source discharges to be regulated under waste discharge requirements, waivers of waste discharge requirements, a Basin Plan prohibition, or some combination

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of these administrative tools. The NPS Policy also describes the key elements that must be included in a nonpoint source implementation program.

While the proposed Basin Plan Amendment will change the applicability of water quality criteria related to the MUN beneficial use, the proposed amendment does not change how the management, implementation or enforcement activities of nonpoint source pollution control programs are regulated.

6.4.8 Resolution No. 2002-0040: Water Quality Enforcement Policy

The State Water Board adopted this policy to ensure enforcement actions are consistent, predictable, and fair. The policy describes tools that the State and Regional Water Boards may use to determine the following: type of enforcement order applicable, compliance with enforcement orders by applying methods consistently, and type of enforcement actions appropriate for each type of violation. The State and Regional Water Boards have authority to take a variety of enforcement actions under the Porter-Cologne Water Quality Control Act. These include administrative permitting authority such waste discharge requirements (WDRs), waivers of WDRs, and Basin Plan prohibitions.

The proposed Basin Plan Amendment does not change how the water quality enforcement actions are taken.

6.4.9 Resolution No. 2004-0063: Policy for Developing California's Clean Water Act Section 303(d) List

Pursuant to the Water Code section 13191.3(a), this State policy for water quality control describes the process by which the State Water Board and the Regional Water Boards will comply with the listing requirements of Clean Water Act section 303(d). The Listing Policy establishes a standardized approach for developing California's section 303(d) list to achieve water quality standards and maintain beneficial uses in all of California's surface waters. The Listing Policy applies only to the listing process methodology used to comply with Clean Water Act section 303(d).

Clean Water Act section 303(d) requires states to identify waters that do not meet, or are not expected to meet by the next listing cycle, applicable water quality standards after the application of certain technology-based controls and schedule such waters for development of Total Maximum Daily Loads (40 CFR §130.7(c) and (d)).

None of the twelve water bodies have been listed as impaired on the 303(d) list due to a MUN-related water quality objective. Wadsworth Canal is listed in the 2010 303(d) list as impaired by Chlorpyrifos and Diazinon. The Main Drainage Canal is listed in the 2010 303(d) list as impaired by Diazinon, Diuron and dissolved oxygen. Since these listings do not pertain to the MUN beneficial use, they will continue to apply. Future 303(d) list development will not consider MUN water quality objectives in the twelve dedesignated water bodies.

6.4.10 Resolution No. 2005-0019:Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (a.k.a. State Implementation Plan or SIP) applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act. Regulation of priority toxic pollutants may occur through the issuance of NPDES permits. The goal of

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the SIP is to establish a statewide, standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters.

The proposed Basin Plan Amendment does not make any changes to this policy.

6.4.11 Resolution No. 2005-0050: Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options

The State Water Board's Impaired Waters Policy incorporates the following:

- Clean Water Act section 303(d) identification of waters that do not meet applicable water quality standards and prioritization for TMDL development;
- Water Code section 13191.3(a) requirements to prepare guidelines to be used by the Regional Water Boards in listing, delisting, developing, and implementing TMDLs pursuant to Clean Water Act Section 303(d) of 33 USC Section 1313(d); and
- Water Code Section 13191.3 (b) requirements that State Water Board considers consensus recommendations adopted by the 2000 Public Advisory Group when preparing guidelines.

The Impaired Waters Policy includes the following statements:

A. If the water body is neither impaired nor threatened, the appropriate regulatory response is to delist the water body.
B. If the failure to attain standards is due to the fact that the applicable standards are not appropriate due to natural conditions, an appropriate regulatory response is to correct the standards.
C. The State Water Board and Regional Water Boards are responsible for the quality of all waters of the state, irrespective of the cause of the impairment. In addition, a TMDL must be calculated for impairments caused by certain EPA designated pollutants.
D. Whether or not a TMDL calculation is required as described above, impaired waters will be corrected (and implementation plans crafted) using existing regulatory tools.
   D1. If the solution to an impairment will require multiple actions of the Regional Water Board that affect multiple persons, the solution must be implemented through a Basin Plan amendment or other regulation.
   D2. If the solution to an impairment can be implemented with a single vote of the Regional Water Board, it may be implemented by that vote.
   D3. If a solution to an impairment is being implemented by a regulatory action of another state, regional, local, or federal agency, and the Regional Water Board finds that the solution will actually correct the impairment, the Regional Water Board may certify that the regulatory action will correct the impairment and if applicable, implement the assumptions of the TMDL, in lieu of adopting a redundant program.
   D4. If a solution to an impairment is being implemented by a non-regulatory action of another entity, and the Regional Water Board finds that the solution will actually correct the impairment, the Regional Water Board may certify that the non-regulatory action will correct the impairment and if applicable, implement the assumptions of the TMDL, in lieu of adopting a redundant program."

The proposed Basin Plan Amendment does not affect the process to identify impaired water bodies and develop TMDLs.

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6.4.12 Resolution No. 2008-0025: Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits

The Policy authorizes the Regional Water Board to include a compliance schedule in a permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed.

If adopted, this Basin Plan Amendment will not change the compliance schedules that are currently in the permits of the four POTWs. The compliance schedules will continue to be in effect until the expiration of the compliance schedule or the reissuance of the NPDES permit. When the NPDES permit is renewed, the MUN related requirements will be removed and there will no longer be a need for the compliance schedules for the MUN constituents.

6.4.13 Resolution No. 2009-0011: Policy for Water Quality Control for Recycled Water

This Policy is intended to establish consistent and predictable requirements in order to increase the use of recycled water in California. The Policy establishes mandates for the use of recycled water; requires the development by stakeholders and the adoption by Regional Water Quality Control Boards of regional salt/nutrient management plans; establishes requirements for regulating incidental runoff from landscape irrigation with recycled water; establishes criteria and procedures for recycled water landscape irrigation projects eligible for streamlined permitting; establishes procedures for permitting groundwater recharge projects; establishes procedures for implementing State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" for recycled water projects; requires the establishment of a scientific advisory panel to advise the State Water Board on regulation of constituents of emerging concern; and establishes actions and incentives to promote the use of recycled water.

The proposed Basin Plan Amendment will not restrict the development or use of recycled water.

6.5 Consistency with Central Valley Regional Water Quality Board Policies

The following are the Central Valley Water Board policies:

- Urban Runoff Policy
- Controllable Factors Policy
- Water Quality Limited Segment Policy
- Antidegradation Implementation Policy
- Application of Water Quality Objectives Policy
- Watershed Policy
- Drinking Water Policy

6.5.1 Urban Runoff Policy

On page IV-14.00 of the Basin Plan, the Central Valley Water Board's Urban Runoff Policy states:

"a. Subregional municipal and industrial plans are required to assess the impact of urban runoff on receiving water quality and consider abatement measures if a problem exists.

"b. Effluent limitations for storm water runoff are to be included in NPDES permits where it results in water quality problems."

Storm water dischargers to these water bodies are not required to consider abatement measures nor has there been a need to include effluent limitations for these dischargers. Because the proposed Basin Plan Amendment is to dedesignate MUN, there will be less need for abatement and effluent limitations for storm water dischargers.

6.5.2 Controllable Factors Policy

On page IV-15.00 of the Basin Plan, the Central Valley Water Board's Controllable Factors Policy states:

> "Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objective being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or Central Valley Water Board, and that may be reasonably controlled."

There is no expected change to the existing water quality due to the proposed Basin Plan Amendment, therefore the proposed Basin Plan Amendment is consistent with the Controllable Factors Policy

6.5.3 Water Quality Limited Segment Policy

On page IV-15.00 of the Basin Plan, the Central Valley Water Board's Water Quality Limited Segment Policy states:

> "Additional treatment beyond minimum federal requirements will be imposed on dischargers to Water Quality Limited Segments. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment."

The 2010 Clean Water Act Section 303(d) list does not identify any MUN-related constituents causing impairments to the twelve water bodies in this amendment. The proposed Basin Plan Amendment does not change how this policy is implemented for other applicable beneficial uses.

6.5.4 Antidegradation Implementation Policy

Consistency of the proposed Basin Plan Amendment with the federal and state Antidegradation policies is discussed earlier in Section 7.1.

6.5.5 Application of Water Quality Objectives Policy

Excerpts from Policy for Application of Water Quality Objectives are presented below. The full text can be found on page IV-16.00 of the Basin Plan.

> "Water quality objectives are defined as 'the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water, or the prevention of nuisance within a specific area.'… Water quality objectives may be stated in either numerical or narrative form. Water quality objectives apply to all waters within a surface or ground water resource for which beneficial uses have been designated…

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> "The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Boards will apply to regional waters in order to protect beneficial uses."

The proposed Basin Plan Amendment proposes to remove the MUN beneficial use from twelve water bodies. It does not propose to modify or change how the applicable numeric or narrative water quality objectives are applied, so this policy is not applicable.

6.5.6 Watershed Policy

On page IV-21.00 of the Basin Plan, the Central Valley Water Board's Watershed Policy states:

> "The Regional Water Board supports implementing a watershed based approach to addressing water quality problems. The State and Regional Water Boards are in the process of developing a proposal for integrating a watershed approach into the Board's programs. The benefits to implementing a watershed based program would include gaining participation of stakeholders and focusing efforts on the most important problems and those sources contributing most significantly to those problems.

The proposed Basin Plan Amendment was developed with the assistance of a stakeholder workgroup and is consistent with taking a watershed based approach to addressing water quality issues and concerns. By evaluating all four study areas together rather than individually, a watershed analysis was conducted for the Colusa Basin Drain and Sutter Bypass watersheds. Central Valley Water Board staff also conducted multiple outreach meetings from 2012 through 2015 to stakeholders in the area encompassed by the proposed Basin Plan Amendment

6.5.7 Drinking Water Policy for Surface Waters of the Delta and its Upstream Tributaries

This Policy includes a narrative water quality objective for *Cryptosporidium* and *Giardia*, along with implementation provisions to maintain existing conditions for public water systems. Applicable provisions from this Policy include the requirements to upstream dischargers when implementation actions are triggered by monitoring at a public water system. In addition, the Policy recommends that the Central Valley Water Board consider the necessity of including monitoring or organic carbon, salinity and nutrients when waste discharge requirements are renewed.

The proposed Basin Plan Amendment does not change implementation of the Policy and has evaluated the ongoing monitoring of these drinking water constituents.

7 ENVIRONMENTAL AND ECONOMIC ANALYSIS

7.1 ENVIRONMENTAL REVIEW

7.1.1 Background

The Central Valley Regional Water Quality Control Board, when acting as a Lead Agency under CEQA, is responsible for evaluating all the potential environmental impacts that may occur due to changes made to the Basin Plan. The Secretary of Resources has determined that the Central Valley Water Board's basin planning process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Central Valley Water Board's is exempt from the requirement to prepare an environmental impact report. Instead, this Staff Report and the Environmental Checklist provided in

Appendix D satisfy the requirements of State Water Board's Regulations for Implementation of CEQA, Exempt Regulatory Programs, which are found at California Code of Regulations, title 23, sections 3775 et seq.

This section and the Environmental Checklist provided in Appendix D evaluate the proposed amendment to the Basin Plan discussed in this Staff Report, which is the dedesignation of MUN from twelve agriculturally-dominated water bodies in the Biggs, Colusa, Live Oak, and Willows subareas of the Sacramento River Basin. The water bodies under consideration were constructed and/or modified to convey agricultural drainage. The proposed amendment would also establish a Program of Implementation, which includes Monitoring and Surveillance programs, to ensure that discharge from the water bodies will be in compliance with all relevant water quality objectives.

7.1.2 Setting/Baseline

The baseline against which the proposed Basin Plan amendment is assessed includes the following characteristics:

- Existing water body characteristics, hydrology and operation
- Existing discharges to water bodies under consideration (including discharges from irrigated agriculture, POTW wastewater effluent and storm water) and receiving water quality
- Existing POTW discharge rates and agricultural operations
- Existing regulatory programs and policies

Existing irrigation and drainage channel hydrology and operation are characterized from surveys conducted by Central Valley Water Board staff and local water agency staff, documented in "water body characterization" reports for each of the four subareas (City of Biggs 2014, City of Colusa 2014, City of Live Oak 2014, and City of Willows 2014). Existing receiving water body hydrology is characterized as the current flow regimes as affected by current land uses and operations of water projects for hydropower, instream flow requirements, and water deliveries.

The primary discharges to these water bodies come from agricultural drainage water and treated municipal effluent. Existing POTW discharge quality is characterized as the current concentrations of constituents of concern, as represented by historical data for the period April 2012–September 2013, collected under NPDES permit monitoring and reporting programs, and from monitoring conducted specifically for this Basin Plan amendment. The monitoring for this amendment also evaluated background water quality to characterize the water quality from agricultural discharges as well as temporal storm water flows and other non-point sources. This characterization is provided in *Evaluation of Water Quality in Agriculturally Dominated Water Bodies in Relation to Municipal and Domestic Supply Beneficial Use (MUN), Sacramento Valley Archetypes* (Central Valley Water Board, 2014a) and *Technical Memorandum: Synoptic Evaluation of Drinking Water Constituents of Concern in the Sacramento River and San Joaquin River Basins: June 2014* (Central Valley Water Board, 2014b)

Existing discharge rate is characterized as the current (2014) average dry weather flow rates from the current POTW operations. Flows in the major collection systems were characterized utilizing continuous flow meters in the Colusa Basin Drain and the Sutter Bypass.

Existing regulatory programs and policies are those that currently regulate the current POTW, agricultural and storm water discharges and receiving water operations and water quality. These programs and policies include, but are not limited to, the NPDES program to regulate point source discharges to surface water, including municipal waste water treatment plants and medium to large municipal separate storm sewer systems (MS4s) serving populations greater than 10,000, Irrigated Lands Regulatory Program (ILRP) to ensure that agricultural discharges do not adversely affect beneficial uses, Storm Water General Permit programs for construction and industrial activities, Water Quality Certification program for dredge and fill activities, the State Water Board Sources of Drinking Water Policy (Resolution 88-63) which assumes that all surface and ground water has the potential to provide municipal and domestic supply unless specific exceptions are met, and the State Water Board Policy with Respect to Maintaining High Quality of Waters (Resolution 68-16 or antidegradation policy).

7.1.3 Proposed Project Analysis

The proposed Basin Plan amendment would remove MUN designations in twelve agriculturally-dominated water bodies in the Biggs, Colusa, Live Oak, and Willows subareas of the Sacramento River Basin which were constructed and/or modified to convey agricultural drainage. The MUN use is not an existing use in these water bodies and cannot feasibly be attained due to one or more factors, including low/intermittent flows, hydrologic modifications, and physical conditions of these water bodies, e.g., because they are constructed or have been modified for the purpose of conveying agricultural drainage. Until recently, waste dischargers to these water bodies were not regulated to meet effluent limits or conditions based on the MUN water quality objectives since the water bodies were thought to fall under Exception 2b of the Sources of Drinking Water Policy. However, a formal Basin Plan Amendment is required to utilize the exceptions of that policy (as stipulated in the Basin Plan, Chapter IV Implementation, page IV-9.00). Adoption of the proposed amendment would not have any significant effect on the existing physical environment because the amendment would not change any factors affecting existing hydrology or water quality in the affected agriculturally-dominated water bodies or downstream water bodies. The amendment simply recognizes that MUN is not an existing or attainable use for the twelve constructed/modified water bodies, formally applies the exceptions identified in State Water Board Resolution 88-63, and enables the Central Valley Water Board to regulate waste discharges to the twelve water bodies and make impairment assessments based on appropriate beneficial use designations, consistent with state and federal policies. The proposed Basin Plan amendment would not cause any potentially significant environmental impacts and, therefore, there are no mitigation measures or alternatives that could reduce or avoid significant impacts. These conclusions are reflected in the Environmental Checklist provided in Appendix D for the proposed Basin Plan amendment.

7.1.4 Cumulative Impact Analysis

Cumulative impacts refer to one or more individual effects which, when taken together, are considerable or which compound or increase other environmental impacts. Cumulative impacts are the result of the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

In the future cumulative condition, the agricultural diversion and return-flow discharge operations that dominate the flow conditions in the twelve water bodies addressed by the proposed Basin Plan amendment are expected to be similar to current operations. Thus, the flow conditions in the twelve

water bodies as affected by agricultural operations are assumed to be unchanged in the future cumulative condition, relative to existing conditions. Water quality within the twelve water bodies as affected by agricultural operations would be no worse, and likely improved, in the future cumulative condition, relative to existing conditions. The ILRP regulates discharges from agricultural lands in the Sacramento River Basin, and two coalitions—Sacramento Valley Water Quality Coalition and California Rice Coalition—have formed to enhance and improve water quality associated with agricultural discharges. Irrigated lands are not expected to expand in this area and the types of crops are expected to stay the same. Through continued implementation of the ILRP and associated actions by the coalitions, water quality in the twelve water bodies addressed by the proposed Basin Plan amendment for constituents of concern directly affected by agricultural operations would not adversely affect, and at least somewhat improve, water quality conditions within the twelve water bodies or downstream receiving waters in the future. Because future agricultural discharge operations to the twelve water bodies are being regulated to protect beneficial uses, agricultural discharges would be no worse, and likely improved, relative to existing conditions, agricultural discharges to the twelve water bodies in the future cumulative condition with the proposed Basin Plan amendment in place would not cumulatively contribute to adverse water quality conditions in receiving waters.

Potential changes in storm water volume due to increased urban development are not expected to have a significant impact to the water quality to these water bodies in the future. Small MS4s serving less than 10,000 people and construction sites disturbing between one and five acres of land are required through a general permit administered by the State Water Board to implement Best Management Practices (BMPs) to control 303(d) listed pollutants and other pollutants of concern. In addition, the general permit incorporates Low Impact Development requirements to reduce urban runoff in areas of new development and redevelopment.

In the cumulative condition, the four Sacramento POTWs—Biggs, Colusa, Live Oak, and Willows—would be discharging treated effluent at higher rates relative to existing conditions, up to their permitted discharge rates. The permitted discharge rates have been determined by the Central Valley Water Board to be consistent with the State's antidegradation policy (State Water Board Resolution 68-16) for issuance of their respective NPDES permits authorizing surface water discharges from these POTWs. The existing and permitted average dry weather flow (ADWF) discharge rates of the POTWs are as follows:

- Biggs POTW: 0.3 million gallons per day (MGD); 0.38 MGD (permitted);
- Colusa POTW: 0.4 MGD (existing); 0.7 MGD (permitted)
- Live Oak POTW: 0.6 MGD (existing); 1.4 MGD (permitted)
- Willows POTW: 0.6 MGD (existing); 1.2 MGD (permitted)

The combined existing ADWF discharge rate from the four POTWs is 1.9 MGD, which is about one-half the combined permitted discharge rate of 3.7 MGD. Thus, in the cumulative condition, the four POTWs could add a combined flow of 1.8 MGD (2.8 cubic feet per second [cfs]) to the Sacramento River basin relative to existing conditions. The additional wastewater flows would come from new development within the POTW service areas. This development may occur on lands currently used for agriculture. However, the amount of land converted from agricultural use would be relatively small compared to that which would remain in production, such that the agricultural inflow and outflows of the receiving waters would be expected to be very similar to existing conditions.

The primary constituents of concern from the POTWs are those related to human health through the consumption of drinking water (nitrate, arsenic and trihalomethanes). Under the proposed Basin Plan Amendment, the Sacramento River would be the first receiving water downstream of the twelve water bodies addressed by this Basin Plan amendment with a MUN beneficial use designation and where these constituent concentrations must meet primary MCLs. Sacramento River flows averaged 19,800 cfs at Verona (which is downstream of Feather River confluence) for the period January 1, 1991 – December 31, 2013 (Source: California Data Exchange Center, Station ID VON). Thus, the incremental increase in effluent discharge from the four POTWs would be 0.01 percent of the Sacramento River flow, assuming that all of the POTW discharges enter the Sacramento River. However, the actual percentage of POTW discharge reaching the Sacramento River would be lower, as flows in the twelve water bodies are diverted for irrigation (see discussion in the water body characterization reports; (City of Biggs 2014, City of Colusa 2014, City of Live Oak 2014, and City of Willows 2014). As described above, there is not anticipated to be any increase in agricultural discharges to the Sacramento River relative to existing conditions.

As indicated above, elevated concentrations in the POTW discharges that are of concern to human health are arsenic (Live Oak POTW), nitrate (all POTWs), and trihalomethane compounds (Willows POTW). TDS concentrations are elevated in the discharges also, though these are of concern in drinking water only as it relates to taste. The elevated concentrations of these constituents in the future cumulative POTW discharges, relative to water quality objectives/criteria for the consumption of drinking water, would not translate to exceedances of applicable water quality objectives/criteria in the Sacramento River, where MUN is a beneficial use. Concentrations of nitrate in the receiving waters of the POTWs with an elevated nitrate discharge decrease to less than 1 mg/L-N, well below the primary MCL of 10 mg/L-N, prior to reaching either the Sutter Bypass or Colusa Basin Drain (Central Valley Water Board, 2014a, Figure 12 and Figure 28), which are upstream of the Sacramento River. Similarly, the mean concentration of arsenic in the Sutter Bypass is 4.1 µg/L, which is less than the primary MCL of 10 µg/L, and 17% of the Live Oak POTW mean discharge concentration of 24 µg/L (Central Valley Water Board, 2014a,Table 6 and Figure 30). Finally, there have been no detections of trihalomethane compounds downstream of the Willows discharge, except for the detection of chloroform 100 feet downstream of the Willows POTW outfall (Central Valley Water Board, 2014a, Table 5). Based on the discharge quality of the POTWs, the attenuation of the discharge concentrations of constituents of concern in the immediate receiving waters, and the fact that the combined discharges comprise less than 0.01 percent of the Sacramento River flow, the additional 1.8 MGD discharge from these POTWs that would occur in the future cumulative condition would not cumulatively contribute to exceedances of water quality objectives/criteria for protection of drinking water uses, or any other beneficial uses, in the Sacramento River or downstream waters.

Further, future discharges from both the POTWs and irrigated agriculture into the twelve water bodies addressed by the proposed Basin Plan amendment would be required to comply with waste discharge requirements (WDRs) developed to protect the designated beneficial uses of these water bodies, as well as all beneficial uses of downstream water bodies, including downstream MUN uses. The future discharges from the POTWs would be regulated by the Central Valley Water Board's NPDES program, which issues NPDES permits/WDRs that include effluent discharge limitations, prohibitions, receiving water limitations, compliance monitoring and reporting requirements, and other provisions, as necessary, for protecting beneficial uses and compliance with federal and state policies. Discharges from irrigated agriculture in the Sacramento Valley would be regulated by the ILRP to prevent impairment of receiving waters through issuance of WDRs. Storm Water General Permit programs would regulate storm water discharges and future construction and industrial activities while Water

Quality Certification would be required for dredge and fill activities. NPDES permits and WDRs issued by the Central Valley Water Board must be consistent with the State's antidegradation policy (State Water Board Resolution 68-16), which requires discharges to high quality waters to meet WDRs "…which will result in the best practical treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained." Finally, the exception to the Sources of Drinking Water Policy that would be implemented by the proposed Basin Plan amendment for the twelve water bodies requires the discharges from systems utilizing Exception 2b of the policy be monitored to assure compliance with all relevant water quality objectives. This monitoring requirement has been evaluated in Section 5.4 and met by option A, No Action, which utilizes existing programs. Therefore, even if the quality of future discharges to the twelve water bodies should change, or new or revised water quality objectives were to be developed and adopted for protection of downstream beneficial uses, the future discharges would be required to meet all applicable water quality objectives/criteria.

Accordingly, the proposed Basin Plan amendment would not have an incremental effect or a cumulatively considerable adverse effect on the environment.

7.1.5 No Action Alternative Analysis

Because the Proposed Project Analysis concluded that the proposed Basin Plan amendment would not cause any potentially significant environmental impacts, no analysis of alternatives to the proposed project is required. However, this report includes a discussion of a No Action Alternative to provide additional context for decision-making parties.

Under the No Action Alternative, there would be no change to any existing MUN designations in in the twelve agriculturally-dominated water bodies in the Biggs, Colusa, Live Oak, and Willows subareas of the Sacramento River Basin. Thus, the need for the twelve agriculturally-dominated water bodies in the Biggs, Colusa, Live Oak, and Willows subareas to meet water quality objectives/criteria for protection of the MUN use would continue. For this to occur, the POTWs would need to make treatment modifications to reduce concentrations of drinking water constituents of concern to meet WDRs based on drinking water quality objectives/criteria. The specific constituents of concern by POTW are identified below.

- Biggs POTW – This effluent from this facility currently has elevated ammonia concentrations, which must be reduced to comply with aquatic life criteria. To continue discharge to surface water, nitrification of the wastewater is required, which would result in elevated nitrate concentrations relative to drinking water MCL of 10 mg/L-N. Without this amendment, an additional process to denitrify the wastewater would be needed to reduce nitrate concentrations in the wastewater below the primary MCL for nitrate of 10 mg/L-N.
- Colusa POTW – This facility would need to be modified to reduce concentrations of nitrate in the discharge below 10 mg/L-N, whereas the current concentration averages 27 mg/L-N.
- Live Oak POTW – This facility would need to be modified to reduce concentrations of arsenic in the discharge below 10 µg/L, whereas the current concentration averages 24 µg/L. In addition, concentrations of nitrate in the discharge would need to be reduced below 10 mg/L-N, whereas the current concentration averages 16 mg/L-N.
- Willows POTW – This facility would need to be modified to reduce concentrations of nitrate in the discharge below 10 mg/L-N, whereas the current concentration averages 20 mg/L-N. Concentrations of the disinfection byproducts bromodichloromethane (BDCM) and

dibromochloromethane (DBCM) would need to be to 0.56 µg/L and 0.41 µg/L, respectively, whereas current concentrations average 13 µg/L for BDCM and 2.1 µg/L for DBCM.

While the reduced discharge of nitrate, arsenic, and BDCM and DBCM to achieve compliance with MUN-related WDRs would reduce concentrations of these constituents in the immediate receiving waters, this would not translate to increased protection of human health because MUN is not a current or future anticipated use of the water bodies addressed by the proposed Basin Plan amendment. Further, concentrations of these constituents in the receiving waters are well below applicable water quality objectives/criteria prior to flowing into the first downstream water body that would continue to have a MUN designation under the proposed amendment (the Sacramento River).

The modifications that would be required for the Biggs, Colusa, Live Oak, and Willows POTWs would undergo project-specific CEQA evaluations. Environmental impacts that could occur during POTW improvement projects may include temporary impacts to air quality, noise, water quality, biological resources, traffic, and cultural resources associated with construction activities, though these can generally be mitigated to less than significant levels. Significant long-term impacts to environmental resources would generally not be expected because these projects typically involve reduction in pollutant loadings, and the new construction is typically within the existing site footprint. There may be increases in impervious areas, but because these areas would be small relative to the watershed as a whole, this would not be expected to reduce groundwater recharge or adversely increase storm water runoff amounts or quality.

Under the No Action alternative, agricultural discharges to the twelve water bodies would also need to be regulated to protect the MUN beneficial use. Secondary MCLs (salt, aluminum, iron and manganese) would be the primary constituents of concern. While concentrations of these constituents have not been problematic for crop productivity, managing concentrations to meet drinking water objectives would restrict the ability for agriculture to maximize tailwater recovery and reuse as the secondary MCL constituent concentrations continually increase after consumptive use. Discharge from individual fields into the channel constructed for drainage may become prohibited.

7.2 Economic Analysis

7.2.1 Introduction

Though an economic analysis is only required pursuant to Water Code section 13241 when the Central Valley Water Board establishes water quality objectives (the proposed Basin Plan Amendment does not propose the establishment of new water quality objectives), the following economic analysis is nonetheless provided to assist in the Central Valley Water Board's decision making process.

In addition to considering the economic effects of the Proposed Amendment, this analysis also considers potential economic effects of Alternative 1, No Action. Under this alternative, the four Sacramento Publicly-owned Treatment Works (POTWs)—Biggs, Colusa, Live Oak, and Willows—would continue discharging treated effluent at a permitted discharge rate. Agricultural discharges in the project area would also need to comply with water quality requirements associated with the Irrigated Lands Regulatory Program (ILRP), which ultimately must ensure that agricultural discharges do not adversely affect beneficial uses in receiving waters. Under the No Action alternative, effluent quality of POTW or agricultural dischargers would need to be consistent with existing water quality objectives to protect the MUN use.

7.2.2 Methodology

The economic analysis for the proposed amendment (Alternative 2) and the No Action alternative included two specific elements:

- *Implementation Costs* – This element addresses the direct implementation costs specific to the alternative, including capital expenditures, long term operation and maintenance (O&M) costs, including monitoring, labor costs, and Program of Implementation costs (associated with amendments to the Basin Plan).

  Regional Economic Effects – A regional economic effects analysis considers the changes in local economic activity as a result of a project or action. Effects are evaluated in factors such as employment, income, economic output, and other economic parameters. Total effects include direct, indirect, and induced effects. Indirect and induced effects are the result of "multiplier effects" and account for changes in business activity of support industries and changes in household income as a result of a direct effect. Indirect economic effects can also occur as a result of environmental impacts. This analysis considers environmental impacts identified in the CEQA analysis for potential indirect economic impacts. The regional economic effects analysis also considers potential effects to agricultural water users. An increase in operation costs for growers to meet water quality standards as required by the ILRP would affect farm net revenues. Regional economic effects for this evaluation are described qualitatively.

For this analysis, the costs for Alternative 1 (No Action) are presented along with the preferred Alternative 2 and quantified where possible. If inadequate information or uncertainty limited the ability to quantify costs, a qualitative evaluation was performed. Following is a summary of the information used to evaluate costs for each alternative.

- *Alternative 1: No Action* - Under this alternative, the cities would need to upgrade their POTWs to comply with effluent limitations imposed to protect the MUN beneficial use, based on existing MUN water quality objectives. Facility upgrades would vary based on the existing treatment processes of the POTWs. The cities of Colusa, Live Oak and Willows provided a description of upgrades needed, estimated capital expenditures and annual O&M costs for upgrades that would be required for their respective POTWs. Capital and O&M costs were estimated for the City of Biggs POTW based on the existing treatment system and typical engineering costs associated with upgrading the facility to meet expected effluent quality requirements under the No Action alternative. Monitoring would be required to demonstrate compliance with permit effluent limitations. However, it was assumed that the monitoring costs following a facility upgrade would be the same as required under existing permit conditions; as a consequence, there would be no additional monitoring costs under the No Action alternative.
- *Alternative 2: Application of the Sources of Drinking Water Policy Exception 2b (Proposed Amendment)* - Alternative 2 would amend the Basin Plan to de-designate the MUN beneficial use in twelve constructed and/or modified water bodies in the Sacramento River Basin. POTWs would not need to be upgraded under this alternative because the MUN designation would be removed from the receiving water body. Therefore, there would be no capital expenditures or O&M costs associated with this alternative. The Proposed Amendment includes a Program of Implementation (e.g., monitoring and surveillance program) following removal of the MUN use.

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7.2.3 Sacramento Case Study Area – Economics Analysis

This section presents the economic analysis for each of the three POTWs included in the Sacramento Case Study area. Table 2 summarizes the findings from this analysis.

7.2.3.1 Alternative 1: No Action

7.2.3.1.1 Implementation Costs

7.2.3.1.1.1 Colusa POTW

The City of Colusa (Colusa) owns and operates a wastewater collection, treatment, and disposal system and provides wastewater service to residential, commercial, and industrial users within its jurisdiction. The City has a 2018 permit deadline to reduce effluent nitrate nitrogen to below 10 mg/L as N. This nitrate limitation is based on the water quality objective to protect MUN. The WWTP was not designed to remove nitrates; currently, effluent nitrate concentrations are typically above 20 mg/L as N. The total cost for the planning, design, and construction upgrades to comply with effluent limitations required to protect the MUN use is estimated at $4.5 million (NEXGEN Utility Management, 2014). O&M costs for the upgraded POTW would be about $50,000 per year. Based on these estimates, the present value of the No Action alternative for the Colusa POTW would be $4.8 million over a 30-year period at a 5% discount rate.

7.2.3.1.1.2 Live Oak POTW

The Live Oak POTW would need to be modified to reduce concentrations of arsenic in the discharge below 10 µg/L, whereas the current effluent concentration averages 24 µg/L. In addition, nitrate concentrations in the discharge would need to be reduced below 10 mg/L-N, whereas the existing effluent concentration averages 16 mg/L-N. A 2011 preliminary engineering cost estimate for implementation of denitrification was $4.2 million (Lewis, 2014). Costs for arsenic compliance have not been quantified, but are likely in the range of $2.0 million (Lewis, 2014). The total estimated cost for the planning, design, and construction upgrades is $6.2 million. In addition, O&M costs for the upgraded POTW would be about $50,000 per year. Accordingly, the present value of the No Action alternative for the Live Oak POTW would be $6.4 million over a 30-year period at a 5% discount rate.

7.2.3.1.1.3 Willows POTW

Under the No Action alternative, the City of Willows wastewater treatment facility would need to be modified to reduce concentrations of nitrate in the discharge below 10 mg/L-N; the current effluent concentration averages 20 mg/L-N. Concentrations of the disinfection byproducts bromodichloromethane (BDCM) and dibromochloromethane (DBCM) would need to be reduced below laboratory detection levels (less than 0.5 µg/L); existing effluent concentrations average 13 µg/L for BDCM and 2.1 µg/L for DBCM. The following facility upgrades would be necessary to reduce nitrate and disinfection byproduct concentrations in the effluent to acceptable levels:

The POTW is not designed to denitrify and upgrades would be needed to denitrify to below the effluent nitrate limit. The estimated total project cost of the upgrades is estimated at $3.7 million and would require a year to plan and design and about 2 years to construct (NEXGEN Utility Management, 2012).

The most established disinfection alternative to chlorination, which produces the problematic disinfection byproducts, is UV disinfection. The estimated project cost (planning, design, and construction) is $4.0 million in current dollars. Similar to the denitrification upgrade, planning and design would require about one year and construction would require two additional years (NEXGEN Utility Management, 2012).The total cost for the planning, design, and construction of all upgrades is

estimated at $7.7 million. O&M costs for the upgraded POTW would be about $100,000 per year. The present value of the No Action alternative for the Live Oak POTW would be $8.2 million over a 30-year period at a 5% discount rate. While monitoring would be required to demonstrate compliance with permit effluent limitations, it is assumed that the monitoring costs following a facility upgrade would be the same as the monitoring costs incurred before facility upgrades are implemented. As a consequence, there would be no additional monitoring costs expected under the No Action alternative.

7.2.3.1.1.4 Biggs POTW

The City of Biggs owns and operates the City of Biggs Wastewater Treatment Plant. Currently, the City of Biggs is planning on eliminating its surface water discharge in favor of land-based discharge. However, since this change has yet to be implemented, the City of Biggs was evaluated in this economic analysis under the scenario that they continue to discharge.

The City of Biggs is in the process of evaluating a number of improvements to their POTW to meet current and future permit requirements. The POTW is currently unable to treat wastewater to the established final effluent limits for ammonia, which is protective of aquatic life. Nitrification, which is necessary regardless of the MUN designation, can be used to remove ammonia from the waste stream. Denitrification facilities would be needed to meet MUN nitrate effluent quality requirements. Accordingly, this analysis assumes that the City of Biggs would upgrade the POTW with nitrification and denitrification in the event that the land disposal option is not further pursued.

Based on the high level engineering analysis completed, it is estimated that the capital cost to upgrade the POTW would be up to $2.7 million. Annual O&M costs, not including labor, would be about $25,000. Annual labor to operate and maintain the POTW is expected to be provided by existing employees; therefore, additional annual labor costs associated with the upgrades are not assumed. The present value of the No Action alternative for the City of Biggs POTW would be $2.8 million over a 30-year period at a 5% discount rate.

7.2.3.1.2 Regional Economic Effects

The cities of Colusa, Live Oak, Willows and Biggs would each need to fund the POTW upgrades required to meet effluent limitations under the No Action alternative. The acquisition of adequate funds for these POTW upgrades could result in increased utility fees, reducing discretionary income of customers and potentially affecting their spending habits within the region. Decreased spending within the regional economy would be an adverse effect in the region, affect total sales of local businesses.

Construction activities associated with the POTW upgrades would increase economic activity in the region due to increases in equipment rentals, purchase of supplies, and employment of construction workers. These effects would be temporary and only occur during the construction period. It is assumed that annual operations would be completed by an existing employee and would not result in an increase in employment in the region. Because there are no significant environmental effects associated with the No Action alternative (status quo), no indirect economic effects would occur.

Under the No Action alternative, agricultural dischargers will ultimately be required to meet MUN water quality objectives in water bodies to which they discharge. This requirement would be expected to impose a potentially significant cost on growers. These potential costs cannot be quantified at this time as actual costs will be grower-specific. However, increased costs would affect net farm revenues and the value of agricultural production in the region.

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7.2.3.2 Alternative 2: Application of the Sources of Drinking Water Policy (Resolution 88-63) Exception 2b

7.2.3.2.1 Implementation Costs

As described in Section 1.2, this alternative would amend the Basin Plan to remove MUN designations in twelve agriculturally-dominated water bodies in the Biggs, Colusa, Live Oak, and Willows subareas of the Sacramento River Basin. This alternative requires monitoring to assure that there are no effects to downstream users. There is substantial monitoring already occurring in the area of the POTWs as required by other existing monitoring programs. Monitoring data collected for these programs is expected to meet the needs of the Proposed Amendment and there will be no need for additional monitoring. Therefore, there are no monitoring costs associated with implementation of Alternative 2.

7.2.3.2.2 Regional Economic Effects

Implementation of this Alternative would not result in substantial regional economic effects. There would be no increase in employment as a result of amending the Basin Plan. Existing Central Valley Water Board staff would complete the amendment process as part of their normal job responsibilities. The cities would not need to upgrade POTWs as identified in Alternative 1; therefore, customer utility bills would stay the same as existing conditions, resulting in no decrease in disposable income. The environmental analysis (see Appendix D) did not identify any significant environmental effects associated with the implementation of this alternative; therefore, no indirect economic effects are expected to occur.

Increases in costs for growers would not occur under this alternative because MUN would be de-designated and agricultural discharges would not need to meet any MUN-based water quality objectives as required by the ILRP. This would be an avoided cost under this alternative and a regional economic benefit.

7.2.4 Summary

Table 2 summarizes the analysis of implementation cost and regional economic effects for the two alternatives evaluated. With regards to implementation costs, Alternative 2 would be substantially less costly to implement relative to the No Action alternative.

Regional economic effects would be relatively minor for all alternatives. Construction under Alternative 1 could cause a temporary boost in the regional economy due to increased spending and employment associated with construction. However, the POTW upgrades could require an increase in utility bills for customers, which would decrease income and potentially household spending. These effects would not occur under Alternative 2.

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Table 2. Estimated Economic Effects of Alternatives 1 and 2

Cost Factor	Alternative 1: No Action	Alternative 2: Proposed Amendment
Implementation Costs	• Capital & O&M: Upgrades to POTWs to comply with MUN objectives. Present worth estimates over a 30-yr period include: o Colusa POTW - $4.7 million o Live Oak POTW - $6.4 million o Willows POTW - $8.4 million o Biggs POTW - $2.8 million • Monitoring Costs: No additional monitoring costs expected	• Capital & O&M Costs: No implementation costs expected. • Monitoring Costs: Existing monitoring efforts would be sufficient for this alternative.
Regional Economic Effects	• Temporary increased labor, income, and output due to POTW construction activities • For POTW customers, increased utility bills for customers, which would decrease discretionary income • For agricultural dischargers, Increased costs would affect net farm revenues and the value of agricultural production in the region • No indirect costs expected	• For POTWs, no change in utility bills for customers • No indirect economic effects • For agricultural dischargers, no change to production or operations costs for growers

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9 APPENDICES

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APPENDIX A –SUMMARY INFORMATION FOR THE TWELVE SACRAMENTO RIVER BASIN WATER BODIES

Table A. 1. Summary Information for the Twelve Sacramento River Basin Water Bodies

Subarea	Name of water body/ Approx. Length (miles)	Water Body Type *(natural, modified or constructed)*	For Constructed or Modified			Water Type(s)	Flow Characteristics/ Flow Period	
			Type of Construction or Modification	Year of Construction or Modification	Purpose(s) of Construction or Modification		Natural	Managed
Biggs	*Lateral K (RD 833)/ 1.7 miles*	*Constructed*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Ag return flows, treated municipal wastewater, groundwater seepage, storm water during winter season*	*no natural flow (constructed)*	*Generally low flow conditions with year-round effluent discharge, but volume does increase during irrigation season, in part due to backflow from the Main Drainage Canal*
	Main Drainage Canal (RD 833)/ 13 miles	*Constructed*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Ag return flows, urban runoff, treated municipal wastewater, groundwater seepage, storm water during winter season*		*Intermittent flow conditions year-round, with increased volume during irrigation and winter storm seasons*
	Cherokee Canal/ 22 miles	*Constructed*	*Earthlined*	*Initial segments in late 1800s, additional construction in early 1900s and Army Corps work in 1959-1960*	*Ag Irrigation and Drainage in dry months, Flood control in the winter months*	*Ag return flows, urban runoff, treated municipal wastewater, groundwater seepage, storm water during winter season, wetlands drainage*		*Intermittent flow conditions year-round, with increased volume during irrigation and winter storm seasons*
Colusa	*unnamed tributary (to Powell Slough)/ 2.1 miles*	*Constructed*	*Earthlined*	*By 1930s*	*Ag Drainage*	*Ag return flows, treated municipal wastewater, urban and storm runoff from the City of Colusa*	*no natural flow (constructed)*	*Intermittent flows which increase during irrigation and storm seasons. Most of the flow during other periods is due to Colusa's effluent discharge*

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Table A. 1. Summary Information for the Twelve Sacramento River Basin Water Bodies

Subarea	Name of water body/ Approx. Length (miles)	Water Body Type *(natural, modified or constructed)*	For Constructed or Modified			Water Type(s)	Flow Characteristics/ Flow Period	
			Type of Construction or Modification	Year of Construction or Modification	Purpose(s) of Construction or Modification		Natural	Managed
Colusa	*New Ditch 2011 (tributary to unnamed tributary)/ 0.4 miles*	*Constructed*	*Earthlined*	*2011*	*Ag Drainage*	*Ag return flows*	*no natural flow (constructed)*	*Generally very low flow conditions except during irrigation season.*
	Powell Slough/ 5 miles	*Modified*	*Earthlined*	*By 1930s*	*Hold Ag Drainage for recycling*	*Ag return flows, treated municipal wastewater, wetlands drainage, urban and storm runoff*	*Variable during Winter Storm Season*	*Intermittent flows which increase during irrigation and storm seasons.*
Live Oak	*Lateral 2/ 1 mile*	*Constructed*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Primarily treated municipal wastewater, but some Ag return flows, urban and storm runoff*	*no natural flow (constructed)*	*Generally Low Flow conditions other than year-round effluent discharge flows*
	Lateral 1/ 5 miles	*Constructed*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Ag return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Generally Low Flow conditions, but flow does increase during irrigation and winter storm season*
	Western Intercepting Canal/ 2 miles	*Constructed*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Ag return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Generally Low Flow conditions, but flow does increase during irrigation and winter storm season*
	East Interceptor Canal/ 3 miles	*Constructed*	*Earthlined*	*By 1925*	*Flood Control during the storm season and Ag Irrigation/*	*Ag return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Generally Low Flow conditions upstream of confluences with Western Intercepting Canal and Snake River. Managed for Ag*

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Table A. 1. Summary Information for the Twelve Sacramento River Basin Water Bodies

Subarea	**Name of water body/ Approx. Length (miles)**	**Water Body Type** *(natural, modified or constructed)*	**For Constructed or Modified**			**Water Type(s)**	**Flow Characteristics/ Flow Period**	
			Type of Construction or Modification	**Year of Construction or Modification**	**Purpose(s) of Construction or Modification**		**Natural**	**Managed**
					Drainage during the dry months			*return flows/recycling during irrigation season and flood flows during the winter season*
Live Oak	*Wadsworth Canal/ 5 miles*	*Constructed*	*Earthlined*	*Some segments in the 1800s, full segment in 1924*	*Flood Control during the storm season and Ag Irrigation/ Drainage during the dry months*	*Ag return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Managed for Ag return flow/recycling during irrigation season and flood flows during the winter season*
Willows	*Ag Drain C (Logan Creek)/ 17 miles*	*Modified*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*Ag return flows, treated municipal wastewater, wetlands drainage*	*Headwaters are cut off, so no natural flow*	*Intermittent flow conditions/ Year-round mgmt. related to irrigation and wetlands flows*

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APPENDIX B – LOWER SACRAMENTO RIVER BASIN WATER QUALITY MONITORING SUMMARY

Introduction

This appendix contains a summary of monitoring information for the lower Sacramento River Basin, focused primarily on the Sutter Bypass, Colusa Basin Drain and downstream mainstream sites in the Sacramento River to the Delta. Table B.1 contains an overall summary of monitoring programs. Figure B.1 is a map of major programs and agencies monitoring in this area of the basin. Table B.2 contains a key to the sites indicated on the map in Figure B.1., along with additional information about the sites and monitoring programs. Tables B.3 through B.7 contain constituent level information on general water quality parameters, pathogens, nutrients, VOCs, priority pollutants, metals and trace elements, ions, nutrients, pesticides and toxicity.

The information presented in this summary is based on data collected from best-known available sources. Since much of the information pertains to other programs and agencies, Central Valley Water Board staff do not guarantee the accuracy of the information contained in this summary. A full list of references used to create this summary is listed at the end of this appendix.

List of Acronyms for Appendix B

CMP	Coordinated Monitoring Program
CRC	California Rice Commission
CV	Central Valley
DDW	Division of Drinking Water
Diss	Dissolved
DS	Downstream
DWR	California Department of Water Resources
ILRP	Irrigated Lands Regulatory Program
MS4	Municipal Separate Storm Sewer Systems
MWQI	Municipal Water Quality Investigations
NWQA	National Water Quality Assessment
PPP	Priority Pollutant Prevention
RMP	Regional Monitoring Program
Sac	Sacramento
SacReg	Sacramento Regional
SMP	Self-Monitoring Plan
SPoT	Sediment Pollution Trends
SRWTP	Sacramento Regional Water Treatment Plant
SVWQC	Sacramento Valley Water Quality Coalition
SWAMP	Surface Water Ambient Monitoring Program
US	Upstream
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

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Table B. 1. Summary of Monitoring Programs in the Lower Sacramento River Basin

Program	Agency	Monitoring Plan	Project Term	Data in CEDEN ?	General Water Quality	Organic Carbon	Bacteria/ Pathogen	Priority Pollutants	Metals & Trace Elements	Minerals & Ions	Nutrients	Pesticides	Toxicity
ILRP	California Rice Commission	WDR	Ongoing	**Yes**	X	X	X		X		X	X	X
	Sacramento Valley Water Quality Coalition	WDR	Ongoing	**Yes**	X	X	X		X	X	X	X	X
SFEI Regional Monitoring	San Francisco Estuary Institute	Regional Monitoring Program for Water Quality in the San Francisco Estuary	Ongoing, SS	**Yes**	X	X			X	X	X	X	X
SWAMP	State Water Resources Control Board	SPoT	Ongoing	**Yes**		X				X		X	X
	Central Valley/Coordinated with DWR	Sacramento Watershed Coordinated Monitoring Program (SWCMP)	Ongoing	**Yes, but not all**	X	X	X		X	X	X		
	Central Valley Water Board	Seasonal Trend Monitoring at Central Valley Integrator Sites	2017 (to be re-evaluated)	**Yes**	X	X	X						
	Central Valley Water Board	Safe-to-Swim Study	2011-2013	**Yes**	X		X						
Delta Flows Network	U.S. Geological Survey	Delta Flows Network	Ongoing	No	X								
Division of Drinking Water Regulated Source Water Monitoring	Woodland-Davis Clean Water Agency	Title 22 Source Water Monitoring	Ongoing	No			X						
	City of Sacramento	Title 22 Source Water Monitoring	Ongoing	No			X				X		
	City of West Sacramento	Title 22 Source Water Monitoring	Ongoing	No			X						
	Sacramento County Water Agency	Title 22 Source Water Monitoring	Ongoing	No	X		X	X	X	X	X		
IEP	California Department of Water Resources	Continuous Multiparameter Monitoring (IEP Environmental Monitoring Program)	Ongoing	No	X								
	Interagency Ecological	IEP Environmental Monitoring		No	X						X		

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Table B. 1. Summary of Monitoring Programs in the Lower Sacramento River Basin

Program	Agency	Monitoring Plan	Project Term	Data in CEDEN ?	General Water Quality	Organic Carbon	Bacteria/ Pathogen	Priority Pollutants	Metals & Trace Elements	Minerals & Ions	Nutrients	Pesticides	Toxicity
	Program	Program: Discrete Water Quality Sampling											
MWQI	California Department of Water Resources	Municipal Water Quality Investigations (MWQI)	Ongoing	No	X	X	X		X	X	X		
NPDES	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and the County of Sacramento	NPDES Self Monitoring Program	Ongoing	No	X		X			X		X	
	Sacramento County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from Municipal Separate Storm Sewer Systems	NPDES Self Monitoring Program	Ongoing	No	X	X	X		X	X	X	X	
	City of Sacramento	City of Sacramento Combined Sewer System (NPDES Self Monitoring Program)	Ongoing	No	X		X				X		
	Sacramento Regional County Sanitation District	Sacramento Regional WWTP (NPDES Self Monitoring Program)	Ongoing	No	X		X	X	X	X	X	X	
	City of Rio Vista	City of Rio Vista Northwest Wastewater Treatment Facility (NPDES Self Monitoring Program)	Ongoing	No	X			X		X			
NWQA	U.S. Geological Survey	National Water Quality Assessment Program	Ongoing	No	X				X	X	X	X	
Other	County of Sacramento DWR, Sacramento Regional County Sanitation District, City of	Sacramento River Coordinated Monitoring Program (May include some overlap with NPDES	Ongoing	No	X	X	X	X	X	X	X	X	

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Table B. 1. Summary of Monitoring Programs in the Lower Sacramento River Basin

Program	Agency	Monitoring Plan	Project Term	Data in CEDEN ?	General Water Quality	Organic Carbon	Bacteria/ Pathogen	Priority Pollutants	Metals & Trace Elements	Minerals & Ions	Nutrients	Pesticides	Toxicity
	Sacramento Utility District	monitoring in Sacramento)											
Priority Pollution Prevention	Sacramento Regional County Sanitation Distict	Sacramento Regional Wastewater Treatment Plant Priority Pollution Prevention Program	Ongoing	No	X	X		X	X	X	X	X	

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Figure B. 1. Monitoring Sites in the Lower Sacramento River Basin

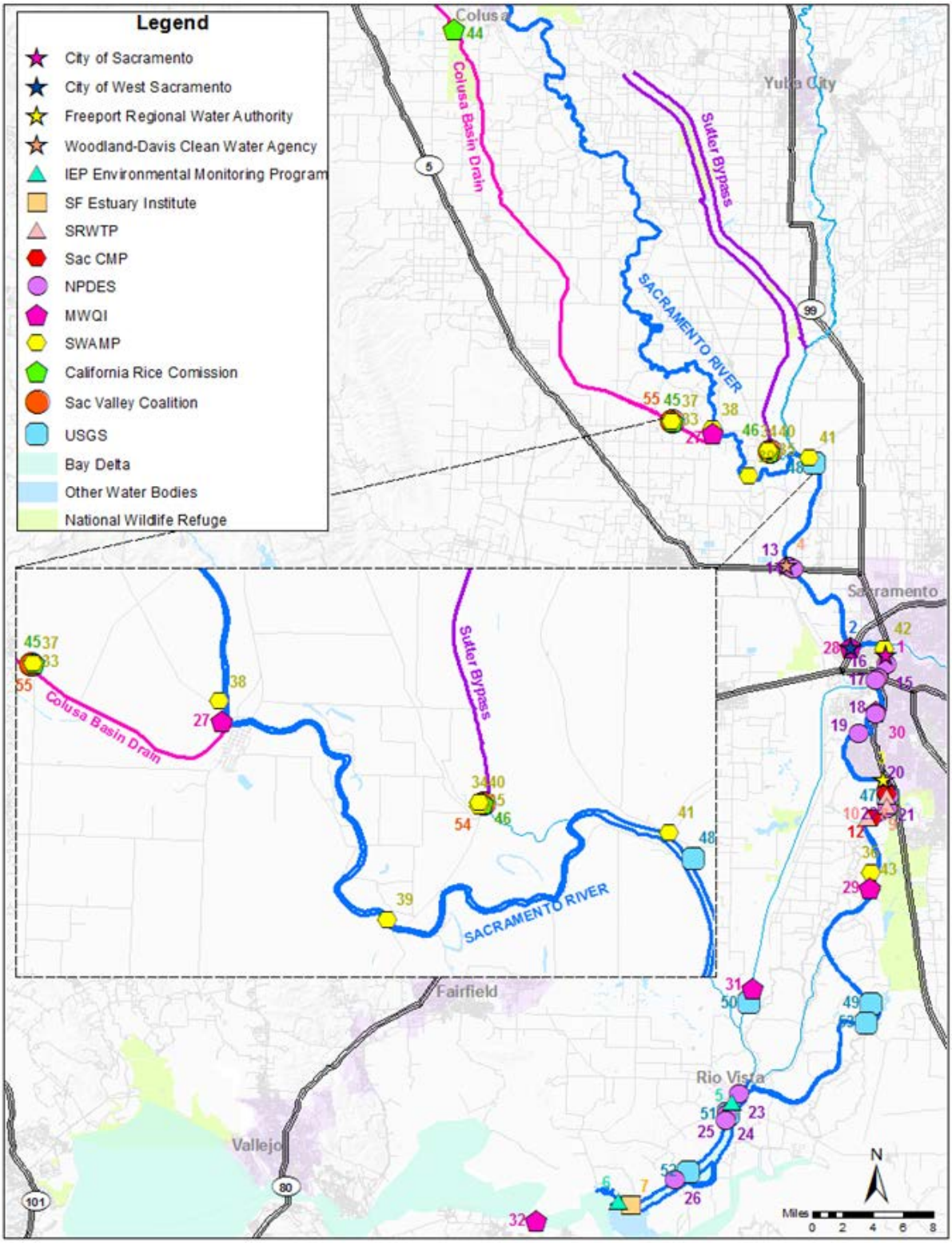

Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
44	CBD #5	California Rice Commission	Irrigated Lands Regulatory Program	520XCB DWR	Testing for Pesticides and Nutrients did not begin until 2012	39.18325	-122.05143
55	Colusa Basin Drain above KL	Sacramento Valley Water Quality Coalition	Irrigated Lands Regulatory Program	520XC OLDR	Constituent and frequency varies year-to-year (Core for 2 years after one year of Assessment	38.81212	-121.7741
45	Colusa Basin Drain above KL	California Rice Commission	Irrigated Lands Regulatory Program	520XCB DKL	Testing for Pesticides and Nutrients did not begin until 2012	38.81212	-121.72433
38	Sacramento River above Colusa Basin Drain	Central Valley Water Board/ California Department of Water Resources	Sacramento Watershed Coordinated Monitoring Program	520SUT 003/A02 23002		38.80521	-121.72372
27	Ag Drain on Colusa Basin Main Drain	Department of Water Resources	Municipal Water Quality Investigations	A02945 00		38.801096	-121.723146
33	Colusa Basin Drain at Knights Landing	State Water Resources Control Board	Stream Pollution Trends	520CB DKLU	SPoT program design will be revised in 2015 to reflect observed trends and include additional chemicals of emerging concern and toxicity indicator species as necessary	38.8125	-121.773611

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
37	Colusa Basin Drain at Knights Landing	Central Valley Water Board/ California Department of Water Resources	Sacramento Watershed Coordinated Monitoring Program	A0294710	Funded by SWAMP	38.8125	-121.773611
34	Sutter Bypass at RD-1200 Powerplant (@ Karnak)	State Water Resources Control Board	Streams Pollution Trends	515SUT004	SPoT program design will be revised in 2015 to reflect observed trends and include additional chemicals of emerging concern and toxicity indicator species as necessary	38.78523	-121.65428
40	Sutter Bypass at RD-1200 Powerplant (@ Karnak)	Central Valley Water Board/ California Department of Water Resources	Sacramento Watershed Coordinated Monitoring Program	A0292700	Funded by SWAMP	38.7845561	-121.654387
35	Sacramento Slough at Karnak	State Water Resources Control Board	Stream Pollution Trends	515SACKNK	SPoT program design will be revised in 2015 to reflect observed trends and include additional chemicals of emerging concern and toxicity indicator species as necessary	38.78456	-121.65439
54	Sacramento Slough near Karnak Bridge	Sacramento Valley Water Quality Coalition	Irrigated Lands Regulatory Program	SSKNK		38.785	-121.6533

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
46	Sacramento Slough near Karnak Bridge	California Rice Commission	Irrigated Lands Regulatory Program	SSB		38.785	-121.6533
39	Sacramento River below Knights Landing	Central Valley Water Board/ California Department of Water Resources	Sacramento Watershed Coordinated Monitoring Program	519SUT002/A0219501	Funded by SWAMP	38.76064	-121.67824
41	Sacramento River below Verona	Central Valley Water Board/ California Department of Water Resources	Sacramento Watershed Coordinated Monitoring Program	519SACVER/A0215000	Funded by SWAMP	38.7796501	-121.6037311
48	Sacramento River at Verona	U.S. Geological Survey	Delta Flows Network	11425500		38.774444	121.597222
4	Sacramento River Woodland-Davis future WTP intake	Woodland-Davis Clean Water Agency	DDW Regulated Monitoring	Intake		38.676426	-121.630562
13	Sacramento River at Veterans Bridge	County of Sacramento DWR, Sacramento Regional County Sanitation District, City of Sacramento Utility District	National Pollutant Discharge Elimination System Self-Monitoring Program	R-1	Each year, samples shall be collected during two wet season storm events, targeting the first storm of the wet season, and two dry season events.	38.6746	-121.628167

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
14	North Natomas Develop-ment Sump	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and the County of Sacramento	National Pollutant Discharge Elimination System Self-Monitoring Program	R-2	In two of every three years, samples shall be collected during three storm events and one dry season monitoring event. Permittees shall target for monitoring the first storm event of the year preceded by at least 30 days of dry weather.	38.672645	-121.623116
2	Sacramento River at City of West Sacramento Bryte Bend Intake	City of West Sacramento	DDW Regulated Monitoring	Intake		38.598003	-121.549285
28	Sacramento River at City of West Sacramento Bryte Bend Intake	California Department of Water Resources	DDW Regulated Monitoring	A02104 51	Tested monthly, May to Oct; Weekly Nov to Apr	38.598003	-121.549285
42	American/ Sacramento Confluence (Beach)	Central Valley Surface Water Ambient Monitoring Program	Safe-to-Swim Study	519AM NSAC	April through September, 2011-2013	38.59763	-121.50736
15	Sacramento River, US of CSO Discharge Point Nos. 006 and 007, at the Delta King	City of Sacramento Combined Sewer System	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-001	Samples taken within the first 4 hours of beginning of storm causing discharge at any of the discharge points and daily if the discharge event is greater than 24 hours	38.582454	-121.50682

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
16	Sump 111 near American River	Sacramento County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from Municipal Separate Storm Sewer Systems	National Pollutant Discharge Elimination System Self-Monitoring Program	R-4	In two of every three years, samples shall be collected during three storm events and one dry season monitoring event. Permittees shall target for monitoring the first storm event of the year preceded by at least 30 days of dry weather.	38.569206	-121.51685
17	Sacramento River, DS of Discharge Point Nos. 006 and 007, at Miller Park	City of Sacramento Combined Sewer System	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-002	Samples taken within the first 4 hours of beginning of storm causing discharge at any of the discharge points and daily if the discharge event is greater than 24 hours	38.567274	-121.518781
30	Sacramento River at Westin Boat Dock	California Department of Water Resources	Municipal Water Quality Investigations	B9D832 213010		38.536656	-121.662322
18	Sacramento River, DS of Discharge Point Nos. 004 and 005, at La Rivage	City of Sacramento Combined Sewer System	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-003	Samples taken within the first 4 hours of beginning of storm causing discharge at any of the discharge points and daily if the discharge event is greater than 24 hours	38.534829	-121.518577

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
19	Sacramento River, DS of Discharge Point Nos. 002 and 003, at Wooden Stairs	City of Sacramento Combined Sewer System	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-004	Samples taken within the first 4 hours of beginning of storm causing discharge at any of the discharge points and daily if the discharge event is greater than 24 hours	38.516087	-121.539124
20	Sacramento River at Freeport Marina	Sacramento County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from Municipal Separate Storm Sewer Systems	National Pollutant Discharge Elimination System Self-Monitoring Program	R-5	Each year, samples shall be collected during two wet season storm events, targeting the first storm of the wet season, and two dry season events.	38.4595	-121.503103
11	Freeport upstream of SRWTP	County of Sacramento DWR, Sacramento Regional County Sanitation District, City of Sacramento Utility District	Sacramento River Coordinated Monitoring Program	SRFPT		38.4582	-121.5026
8	Freeport upstream of SRWTP	Sacramento Regional County Sanitation District	Sacramento Regional Wastewater Treatment Plant Priority Pollution Prevention Program	SRCSD R-1		38.455661	-121.501917

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
3	Sacramento River at Freeport WTP Intake	Freeport Regional Water Authority	DDW Regulated Monitoring	Intake		38.472422	-121.506565
47	Sacramento River at Freeport	U.S. Geological Survey	National Water Quality Assessment	11447650/FPT		38.45556	-121.50194
21	Sacramento River at Freeport Bridge	City of Sacramento	National Pollutant Discharge Elimination System Self-Monitoring Program	RSWU-001	Fathead Minnow is tested for chronic toxicity; Priority pollutants to include all 126 pollutants listed in the California Toxics Rule, except dioxin; Hardness must be sampled concurrently with Priority Pollutant sampling	38.455856	-121.500985
9	Cliffs Marina	Sacramento Regional County Sanitation District	Sacramento Regional Wastewater Treatment Plant Priority Pollution Prevention Program	SRCSDR-3		38.447003	-121.501522

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
22	Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina	City of Sacramento	National Pollutant Discharge Elimination System Self-Monitoring Program	RSWD-003	Fathead Minnow is tested for chronic toxicity; Priority pollutants to include all 126 pollutants listed in the California Toxics Rule, except dioxin; Hardness must be sampled concurrently with Priority Pollutant sampling	38.443929	-121.501508
12	River Mile 44 downstream of SRWTP	County of Sacramento DWR, Sacramento Regional County Sanitation District, City of Sacramento Utility District	Sacramento River Coordinated Monitoring Program	SRRMF		38.4347	-121.5192
10	River Mile 44 downstream of SRWTP	Sacramento Regional County Sanitation District	Sacramento Regional Wastewater Treatment Plant Priority Pollution Prevention Program	RivrMile 44		38.434939	-121.525161

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
36	Clarksburg Marina	Central Valley Surface Water Ambient Monitoring Program	Stream Pollution Trends	510LSAC08	SPoT program design will be revised in 2015 to reflect observed trends and include additional chemicals of emerging concern and toxicity indicator species as necessary	38.38312	-121.52057
29	Sacramento River at Hood	California Department of Water Resources	Municipal Water Quality Investigations	HOOD (B9D82211312)		38.3677	-121.5205
43	Sacramento River at Hood	Central Valley Surface Water Ambient Monitoring Program	Seasonal Trend Monitoring at Central Valley Integrator Sites	510SACHOD		38.36691	-121.52037
49	Sacramento River above Delta Cross Channel	U.S. Geological Survey	Delta Flows Network	SDC		38.257483	-121.51805
53	Sacramento River Below Georgiana Slough	U.S. Geological Survey	Delta Flows Network	GES		38.238883	-121.523433
23	Sacramento River, Approx. 250 ft. US and 80 feet offshore of Discharge Pt No. 001 of the diffuser	City of Rio Vista	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-001	Toxicity testing is to determine chronic toxicity; Quarterly monitoring for priority pollutants is required during the third year of the discharger's permit	38.168333	-121.678333

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
5	Sacramento River at Rio Vista	California Department of Water Resources		D24A		38.16016	-121.6853
24	Sacramento River, Approximately 250 feet downstream of Discharge Point No. 001	City of Rio Vista	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-003		38.148094	-121.691793
25	Sacramento River, Approximately 1 mile downstream and 80 feet offshore of Discharge Point No. 001 near Hwy 12	City of Rio Vista	National Pollutant Discharge Elimination System Self-Monitoring Program	RSW-002	Quarterly monitoring for priority pollutants is required during the third year of the discharger's permit	38.142291	-121.69395
52	Sacramento River at Decker Island	U.S. Geological Survey	Delta Flows Network	SDI		38.0934	-121.736
26	Sacramento River at River Mile 43	City of Sacramento	National Pollutant Discharge Elimination System Self-Monitoring Program	RSWD-005	Fathead Minnow is tested for chronic toxicity; Priority pollutants to include all 126 pollutants listed in the California Toxics Rule, except dioxin; Hardness must be sampled concurrently with Priority Pollutant sampling	38.084757	-121.75395

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Table B. 2. Monitoring Sites

Map ID #	Site	Agency	Program	Site Code	Monitoring Notes	Latitude	Longitude
7	Sacramento River	San Francisco Estuary Institute	Regional Monitoring Program for Water Quality in the San Francisco Estuary	BG20	Each year will alternatively monitor either water or sediment	38.059699	-121.806267
6	Sacramento River above Point Sacramento	Interagency Ecological Program	IEP Environmental Monitoring Program	D4		38.06248	-121.8205
32	Sacramento River at Mallard Island	California Department of Water Resources	Municipal Water Quality Investigations	MALLARDIS	Mallard Island is a monthly routine monitoring location, but for DSM2 Nutrient study, samples will be collected every 2 weeks	38.0428	-121.9201
31	Sacramento Shipping Channel above Prospect Island	California Department of Water Resources	Municipal Water Quality Investigations	B9D81621397		38.269411	-121.662322
50	Sacramento River Deep Water Ship Channel near Rio Vista	U.S. Geological Survey	Delta Flows Network	11455335		38.256111	.121.666667

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
CBD #5															
ILRP	CRC	ILRP	M[1]	M[1]	M[1]	M[1]	M[1]				M[1]	M[1]	M[1]		
Colusa Basin Drain above KL															
ILRP	SVWQC	WDR	Q		Q	Q				Q	Q	Q	Q		
ILRP	CRC	WDR	M[1]	M[1]	M[1]	M[1]	M[1]				M[1]	M[1]	M[1]		
Sacramento River above Colusa Basin Drain															
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	C	Q	Q		Q	Q			TBD	
Ag Drain on Colusa Basin Main Drain															
DWR	DWR	MWQI	M/RD	M/RD	M/RD		M/RD			M/RD	M/RD				
Colusa Basin Drain at Knights Landing															
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	C	Q	Q		Q	Q				
Sutter Bypass at RD-1200 Powerplant (@ Karnak)															
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	C	Q	Q		Q	Q				
Sacramento Slough near Karnak Bridge															
ILRP	SVWQC	WDR	M	M	M	M	M				M	M			
ILRP	CRC	WDR	M[1]	M[1]	M[1]	M[1]	M[1]				M[1]	M[1]	M[1]		
Sacramento River below Knights Landing															
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	C	Q	Q		Q	Q	Q	Q		
Sacramento River below Verona															

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	C	Q	Q		Q	Q			TBD	
Sacramento River at Verona															
Delta Flows Network	USGS	Delta Flows Network	C			C	C								
Sacramento River Woodland-Davis future WTP intake															
DDW Regulated Monitoring	Woodland-Davis Clean Water Agency	Title 22 Source Water Monitoring													per LT2ESW TR regs
Sacramento River at Veterans Bridge															
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	O	O	O	O	O			O	O	O	O		
North Natomas Development Sump															

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sac, and Sac County	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sac, and Sac County	NPDES SMP					O			O	O			O	
Sacramento River at City of West Sacramento Bryte Bend Intake															
DDW Regulated Monitoring	City of West Sacramento	Title 22 Source Water Monitoring													per LT2ESW TR regs
DWR	DWR	MWQI	M/W	M/W	M/W	M/W	M/W		M/W	M/W			M/W		
American/Sacramento Confluence (Beach)															
SWAMP	CV-SWAMP	Safe-to-Swim Study	BM	BM	BM	BM	BM					BM	BM		
Sacramento River at City of Sacramento WTP Intake															
DDW Regulated Monitoring	City of Sac	Title 22 Source Water Monitoring													per LT2ESW TR regs
Sacramento River, US of CSO Discharge															

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Point Nos. 006 and 007, at the Delta King															
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A	A	A	A						A		
Sump 111 near American River															
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O	O			O	O	O	O		
Sacramento River at Westin Boat Dock															
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW	BW	BW				
Sacramento River, DS of Discharge Point Nos. 006 and 007, at Miller Park															
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A	A	A	A						A		
Sacramento River, DS of Discharge Point Nos. 004 and 005, at La Rivage															

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A	A	A	A						A		
Sacramento River, DS of Discharge Point Nos. 002 and 003, at Wooden Stairs															
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A	A	A	A						A		
Sacramento River at Freeport Marina															
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O	O				O	O	O		
Freeport upstream of SRWTP															
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O	O				O	O				

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/Yr.	4-6 times/Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/Yr.	4-6 times/Yr.		
Sacramento River at Freeport WTP Intake															
DDW Regulated Monitoring	Freeport Regional Water Authority	Title 22 Source Water Monitoring	A		A		A	A		A					per LT2ESWTR regs
Sacramento River at Freeport															
USGS	USGS	NWQA Program	O		O		O	O		O					
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento River at Freeport Bridge															
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	O[4]	W	C	W	W	O[4]		O[4]			Q		

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Cliffs Marina															
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O	O				O	O				
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina															
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	W	W	W	W	W	M				Q	Q	W	
River Mile 44 downstream of SRWTP															
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County, DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/Yr.		4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/Yr.	4-6 times/Yr.		
SacReg County Sanitation	SacReg County Sanitation	SacReg WWTP Priority PPP	O	O	O	O				O	O				

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
District	District														
Sacramento River at Hood															
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW	BW					
CV-SWAMP	CV-SWAMP	Seasonal Trend Monitoring at CV-Integrator Sites	Q	Q	Q	Q	Q					Q	Q		
Sacramento River above Delta Cross Channel															
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento River Below Georgiana Slough															
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento River, Approx. 250 ft. US and 80 feet offshore of Discharge Pt No. 001 of the diffuser															
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)	Q	Q	Q	Q	Q			Q					

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Sacramento River at Rio Vista															
DWR	DWR	Continuous Multipara-meter Monitoring (IEP Environ-mental Monitoring Program)	C	C	C	C	C								
Sacramento River at Rio Vista															
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento River, Approximately 250 feet downstream of Discharge Point No. 001															
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)	Q	Q	Q	Q	Q			Q					
Sacramento River, Approximately 1 mile downstream and 80 feet offshore of Discharge Point No. 001 near Hwy 12															
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF	Q	Q	Q	Q	Q			Q					

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
		(NPDES SMP)													
Sacramento River at Decker Island															
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento River at River Mile 43															
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	W	W	W	W	W						Q		
Sacramento River															
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary	BE	BE	BE	BE					BE				
Sacramento River above Point Sacramento															

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Table B. 3. General Water Quality & Bacteria/Pathogens

SITE INFORMATION			GENERAL WATER QUALITY									BACTERIA/PATHOGENS			
Site Name			**EC**	**DO**	**pH**	**Temp**	**Turbidity**	**Alkalinity**	**UV (ABS 254 NM)**	**TDS**	**TSS**	***E. coli***	**Total fecal coliforms**	**Bacteria (General)**	***Crypto/ Giardia***
Program	**Agency**	**Monitoring Plan**													
Interagency Ecological Program	Interagency Ecological Program	IEP Environ-mental Monitoring Program: Discrete Water Quality Sampling	M	M		M	M			M	M				
Delta at Mallard Island															
DWR	DWR	MWQI	M/BW	M/BW	M/BW	M/BW	M/BW		M/BW	M/BW					
Sacramento River Deep Water Shipping Channel near Rio Vista															
USGS	USGS	Delta Flows Network	C			C	C								
Sacramento Shipping Channel above Prospect Island															
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW	BW	BW				

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
Sacramento River above Colusa Basin Drain																
SWAMP	CV- Water Board/DWR	SWCMP			Q	Q			Q	Q					Q	Q
Ag Drain on Colusa Basin Main Drain																
DWR	DWR	MWQI											M/RD			
Colusa Basin Drain at Knights Landing																
SWAMP	CV- Water Board/DWR	SWCMP			Q	Q			Q	Q					Q	Q
Sutter Bypass at RD-1200 Powerplant (@ Karnak)																
SWAMP	CV- Water Board/DWR	SWCMP			Q	Q			Q	Q					Q	Q
Sacramento River below Knights Landing																
SWAMP	CV- Water Board/DWR	SWCMP			Q	Q			Q	Q					Q	Q
Sacramento River below Verona																
SWAMP	CV- Water Board/DWR	SWCMP			Q	Q			Q	Q					Q	Q
Sacramento River at Veterans Bridge																

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County, DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	O													
North Natomas Development Sump																
Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sac, and Sac County	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sac, and Sac County	NPDES SMP	O	O												
Sacramento River at City of West Sacramento Bryte Bend Intake																
DWR	DWR	MWQI							M/W				M/W			
Sacramento River, US of CSO Discharge Point Nos. 006 and 007, at the Delta King																

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A												
Sump 111 near American River																
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sac Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O	O	O	O	O					O	O
Sacramento River, DS of Discharge Point Nos. 006 and 007, at Miller Park																
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A												
Sacramento River, DS of Discharge Point Nos. 004 and 005, at La Rivage																

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A												
Sacramento River, DS of Discharge Point Nos. 002 and 003, at Wooden Stairs																
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A												
Sacramento River at Freeport Marina																
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacra-mento Storm Water Discharger s from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O			O	O					O	O
Freeport upstream of SRWTP																
SacReg County Sanitation	SacReg County Sanitation	SacReg WWTP Priority PPP		O	O	O	O	O	O	O	O	O			O	O

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
District	District															
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacra-mento River CMP	4-6 times/ Yr.	4-6 times/Yr.					4-6 times/ Yr.	4-6 times/ Yr.					4-6 times/ Yr.	4-6 times/ Yr.
Sacramento River at Freeport WTP Intake																
DDW Regulated Monitoring	Freeport Regional Water Authority	Title 22 Source Water Monitoring			A		A		A		A				A	
Sacramento River at Freeport																
USGS	USGS	NWQA Program			O	O										
Sacramento River at Freeport Bridge																
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP	O	O[4]	O[4]	O[4]										

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
		(NPDES SMP)														
Cliffs Marina																
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP		O	O	O	O	O	O	O	O	O			O	O
River Mile 44 downstream of SRWTP																
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/ Yr.	4-6 times/Yr.						4-6 times/ Yr.						4-6 times/ Yr.
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O	O	O	O	O	O	O	O			O	O
Sacramento River at Hood																
DWR	DWR	MWQI											BW	BW		
Sacramento River, Approx. 250 ft. US and 80 feet offshore of Discharge Pt No. 001																

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
of the diffuser																
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)		Q												
Sacramento River, Approximately 250 feet downstream of Discharge Point No. 001																
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)														
Sacramento River, Approximately 1 mile downstream and 80 feet offshore of Discharge Point No. 001 near Hwy 12																
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)		Q												
Sacramento River at River Mile 43																

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Table B. 4a. Metals and Trace Elements Part I

SITE INFORMATION					METALS & TRACE ELEMENTS											
Site Name			**VOCs**	**Priority Pollu-tants**	**Al (Total)**	**Al (Diss)**	**Sb (Total)**	**Sb (Diss)**	**As (Total)**	**As (Diss)**	**Be (Total)**	**Be (Diss)**	**Br (Total)**	**Br (Diss)**	**Cd (Total)**	**Cd (Diss)**
Program	**Agency**	**Monitoring Plan**														
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	O	O												
Sacramento River																
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary			BE	BE				BE						BE
Delta at Mallard Island																
DWR	DWR	MWQI											M/BW			

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Table B. 5b. Metals & Trace Elements Part II

SITE INFORMATION			METALS & TRACE ELEMENTS														
Site Name			**Cr (Total)**	**Cr (Diss)**	**Co (Total)**	**Co (Diss)**	**Cu (Total)**	**Cu (Diss)**	**Fe (Total)**	**Fe (Diss)**	**Pb (Total)**	**Pb (Diss)**	**Li (Total)**	**Mn (Total)**	**Mn (Diss)**	**Mo (Total)**	**Mo (Diss)**
Program	**Agency**	**Monitoring Plan**															
CBD #5																	
ILRP	CRC	ILRP						M[2]									
Colusa Basin Drain above KL																	
ILRP	SVWQC	WDR					A	A									
ILRP	CRC	WDR						M[2]									
Sacramento River above Colusa Basin Drain																	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q			Q	Q	Q	Q	Q	Q		Q	Q		
Colusa Basin Drain at Knights Landing																	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q			Q	Q	Q	Q	Q	Q		Q	Q		
Sutter Bypass at RD-1200 Powerplant (@ Karnak)																	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q			Q	Q	Q	Q	Q	Q		Q	Q		
Sacramento Slough near Karnak Bridge																	
ILRP	CRC	WDR						M[2]									
Sacramento River below Knights Landing																	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q			Q	Q	Q	Q	Q	Q		Q	Q		
Sacramento River below Verona																	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q			Q	Q	Q	Q	Q	Q		Q	Q		
Sacramento River at Veterans Bridge																	

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Table B. 5b. Metals & Trace Elements Part II

SITE INFORMATION			METALS & TRACE ELEMENTS														
Site Name			**Cr (Total)**	**Cr (Diss)**	**Co (Total)**	**Co (Diss)**	**Cu (Total)**	**Cu (Diss)**	**Fe (Total)**	**Fe (Diss)**	**Pb (Total)**	**Pb (Diss)**	**Li (Total)**	**Mn (Total)**	**Mn (Diss)**	**Mo (Total)**	**Mo (Diss)**
Program	**Agency**	**Monitoring Plan**															
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP					O	O	O	O	O	O					
Sump 111 near American River																	
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP	O	O			O	O	O	O	O	O					
Sacramento River at Freeport Marina																	

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Table B. 5b. Metals & Trace Elements Part II

SITE INFORMATION			METALS & TRACE ELEMENTS														
Site Name			**Cr (Total)**	**Cr (Diss)**	**Co (Total)**	**Co (Diss)**	**Cu (Total)**	**Cu (Diss)**	**Fe (Total)**	**Fe (Diss)**	**Pb (Total)**	**Pb (Diss)**	**Li (Total)**	**Mn (Total)**	**Mn (Diss)**	**Mo (Total)**	**Mo (Diss)**
Program	**Agency**	**Monitoring Plan**															
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP							O	O	O	O				O	O
Freeport upstream of SRWTP																	
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O			O	O				O	O
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/ Yr.	4-6 times/ Yr.			4-6 times/ Yr.	4-6 times/ Yr.			4-6 times/ Yr.	4-6 times/ Yr.					
Sacramento River at Freeport WTP Intake																	
DDW Regulated Monitoring	Freeport Regional Water	Title 22 Source Water	A				A		A					A			

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Table B. 5b. Metals & Trace Elements Part II

SITE INFORMATION			METALS & TRACE ELEMENTS														
Site Name			**Cr (Total)**	**Cr (Diss)**	**Co (Total)**	**Co (Diss)**	**Cu (Total)**	**Cu (Diss)**	**Fe (Total)**	**Fe (Diss)**	**Pb (Total)**	**Pb (Diss)**	**Li (Total)**	**Mn (Total)**	**Mn (Diss)**	**Mo (Total)**	**Mo (Diss)**
Program	**Agency**	**Monitoring Plan**															
	Authority	Monitoring															
Sacramento River at Freeport																	
USGS	USGS	NWQA Program											O				
Sacramento River at Freeport Bridge																	
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)												O[4]	O[4]		
Cliffs Marina																	
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O			O	O				O	O
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina																	
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP					O	O			O	O					

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Table B. 5b. Metals & Trace Elements Part II

SITE INFORMATION			METALS & TRACE ELEMENTS														
Site Name			**Cr (Total)**	**Cr (Diss)**	**Co (Total)**	**Co (Diss)**	**Cu (Total)**	**Cu (Diss)**	**Fe (Total)**	**Fe (Diss)**	**Pb (Total)**	**Pb (Diss)**	**Li (Total)**	**Mn (Total)**	**Mn (Diss)**	**Mo (Total)**	**Mo (Diss)**
Program	**Agency**	**Monitoring Plan**															
		(NPDES SMP)															
River Mile 44 downstream of SRWTP																	
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP		4-6 times/ Yr.				4-6 times/ Yr.				4-6 times/ Yr.					
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O			O	O				O	O
Sacramento River at Hood																	
DWR	DWR	MWQI												BW	BW		
Sacramento River																	
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary				BE		BE		BE		BE			BE		

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Table B. 6c. Metals & Trace Elements Part III

SITE INFORMATION			METALS & TRACE ELEMENTS									
Site Name			**Ni (Total)**	**Ni (Diss)**	**Se (Total)**	**Se (Diss)**	**Ag (Total)**	**Ag (Diss)**	**Sr**	**Tl**	**Zn (Total)**	**Zn (Diss)**
Program	**Agency**	**Monitoring Plan**										
Sacramento River above Colusa Basin Drain												
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	
Colusa Basin Drain at Knights Landing												
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	
Sutter Bypass at RD-1200 Powerplant (@ Karnak)												
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	
Sacramento River below Knights Landing												
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q
Sacramento River below Verona												
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q
Sacramento River at Veterans Bridge												
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP									O	O
Sump 111 near American River												

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Table B. 6c. Metals & Trace Elements Part III

SITE INFORMATION			METALS & TRACE ELEMENTS									
Site Name			**Ni (Total)**	**Ni (Diss)**	**Se (Total)**	**Se (Diss)**	**Ag (Total)**	**Ag (Diss)**	**Sr**	**Tl**	**Zn (Total)**	**Zn (Diss)**
Program	**Agency**	**Monitoring Plan**										
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O	O	O		O	O	O
Sacramento River at Freeport Marina												
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP	O	O			O	O			O	O
Freeport upstream of SRWTP												
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O		O	O	O
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/Yr.	4-6 times/Yr.			4-6 times/Yr.	4-6 times/Yr.			4-6 times/Yr.	4-6 times/Yr.

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Table B. 6c. Metals & Trace Elements Part III

SITE INFORMATION			METALS & TRACE ELEMENTS									
Site Name			**Ni (Total)**	**Ni (Diss)**	**Se (Total)**	**Se (Diss)**	**Ag (Total)**	**Ag (Diss)**	**Sr**	**Tl**	**Zn (Total)**	**Zn (Diss)**
Program	**Agency**	**Monitoring Plan**										
Sacramento River at Freeport WTP Intake												
DDW Regulated Monitoring	Freeport Regional Water Authority	Title 22 Source Water Monitoring	A		A		A			A	A	
Sacramento River at Freeport												
USGS	USGS	NWQA Program							O			
Cliffs Marina												
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O		O	O	O
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina												
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)					O	O			O	O
River Mile 44 downstream of SRWTP												
Sac County DWR, SacReg County Sanitation District,	Sac County DWR, SacReg County Sanitation District,	Sacramento River CMP		4-6 times/Yr.				4-6 times/Yr.				4-6 times/Yr.

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Table B. 6c. Metals & Trace Elements Part III

SITE INFORMATION			METALS & TRACE ELEMENTS									
Site Name			**Ni (Total)**	**Ni (Diss)**	**Se (Total)**	**Se (Diss)**	**Ag (Total)**	**Ag (Diss)**	**Sr**	**Tl**	**Zn (Total)**	**Zn (Diss)**
Program	**Agency**	**Monitoring Plan**										
City of Sac Utility District	City of Sac Utility District											
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O			O	O		O	O	O
Sacramento River												
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary		BE		BE		BE				BE

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
Colusa Basin Drain above KL																		
ILRP	SVWQC	WDR					Q											
Sacramento River above Colusa Basin Drain																		
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	Q			
Ag Drain on Colusa Basin Main Drain																		
DWR	DWR	MWQI		M/RD		M/RD	M/RD				M/RD	M/RD	M/RD	M/RD	M/RD			
Colusa Basin Drain at Knights Landing																		
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	Q			
Sutter Bypass at RD-1200 Powerplant (@ Karnak)																		
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	Q			
Sacramento River below Knights Landing																		
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	Q			
Sacramento River below Verona																		
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	Q			
Sacramento River at Veterans Bridge																		

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
Sac County DWR, SacReg County Sanita-tion District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacra-mento River CMP					O	O		O				O				
North Natomas Development Sump																		
Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacra-mento, and Sac County	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and Sac County	NPDES SMP						O		O								
Sacramento River at City of West Sacramento Bryte Bend Intake																		

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
DWR	DWR	MWQI		M/W		M/W	M/W				M/W	M/W	M/W	M/W				
Sump 111 near American River																		
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacra-mento Storm Water Discharg ers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP					O	O	O	O				O			O	O
Sacramento River at Westin Boat Dock																		
DWR	DWR	MWQI	BW		BW						BW	BW	BW	BW	BW			
Sacramento River at Freeport Marina																		

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacra-mento Storm Water Dischar-gers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP					O	O		O								
Freeport upstream of SRWTP																		
SacReg County Sanitatio n District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O	O	O	M	M		O	O	O	O			O	
Sac County DWR, SacReg County Sanita-	Sac County DWR, SacReg County Sanitation District, City of Sac Utility	Sacra-mento River CMP						4-6 times/ Yr.	4-6 times/ Yr.	4-6 times/Yr .								

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
tion District, City of Sac Utility District	District																	
Sacramento River at Freeport WTP Intake																		
DDW Regu-lated Monitor-ing	Freeport Regional Water Authority	Title 22 Source Water Monitoring	A		A		A	A			A		A	A			A	A
Sacramento River at Freeport																		
USGS	USGS	NWQA Program	O	O	O	O						O	O			O		O
Sacramento River at Freeport Bridge																		
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	O[4]	O[4]	O[4]	O[4]	O[4]				O[4]	O[4]		O[4]	O[4]			
Cliffs Marina																		
SacReg County	SacReg County	SacReg WWTP	O	O	O	O	O	M	M		O	O	O	O			O	

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
Sanitation District	Sanitation District	Priority PPP																
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina																		
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)					M	O	O								W	
River Mile 44 downstream of SRWTP																		
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacra-mento River CMP							4-6 times/ Yr.	4-6 times/Yr.								
SacReg County Sanitatio	SacReg County Sanitation	SacReg WWTP Priority	O	O	O	O	O	M	M		O	O	O	O			O	

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
n District	District	PPP																
Sacramento River at Hood																		
DWR	DWR	MWQI	BW	BW	BW	BW					BW	BW	BW	BW	BW			
Sacramento River, Approx. 250 ft. US and 80 feet offshore of Discharge Pt No. 001 of the diffuser																		
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)					Q											
Sacramento River, Approximately 1 mile downstream and 80 feet offshore of Discharge Point No. 001 near Hwy 12																		
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest WWTF (NPDES SMP)					Q											
Sacramento River at River Mile 43																		

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)					M											
Sacramento River																		
San Fran-cisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary				BE	BE		BE	BE						BE		
Sacramento River above Point Sacramento																		
Inter-agency Ecologic al Program	Interagency Ecological Program	IEP Environ-mental Monitoring Program: Discrete Water Quality Sampling												M				
Delta at Mallard Island																		
DWR	DWR	MWQI					M/BW							M/BW				

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Table B. 7. Other Metals & Ions

SITE INFORMATION			MINERALS & IONS															
Site Name			**Ca (Total)**	**Ca (Diss)**	**Mg (Total)**	**Mg (Diss)**	**Hard-ness**	**Hg (Total)**	**Hg (Diss)**	**Methyl-mercury**	**Na**	**K**	**Sulfate**	**Chloride**	**Boron**	**Silica**	**Cya-nide**	**Fluo-ride**
Program	**Agency**	**Monitoring Plan**																
Sacramento Shipping Channel above Prospect Island																		
DWR	DWR	MWQI	BW		BW						BW	BW	BW	BW	BW			

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
CBD #5									
ILRP	CRC	ILRP		M[3]	M[3]	M[3]		M[1]	
Colusa Basin Drain above KL									
ILRP	SVWQC	WDR			Q		Q	A	
ILRP	CRC	WDR		M[3]	M[3]	M[3]		M[1]	
Sacramento River above Colusa Basin Drain									
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q	Q
Ag Drain on Colusa Basin Main Drain									
DWR	DWR	MWQI		M/RD	M/RD	M/RD		M/RD	M/RD
Colusa Basin Drain at Knights Landing									
SWAMP	State Water Resources Control Board	SPoT						A	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q	Q
Sutter Bypass at RD-1200 Powerplant (@ Karnak)									
SWAMP	State Water Resources Control Board	SPoT						A	
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q	Q	Q	Q
Sacramento Slough at Karnak									
SWAMP	State Water Resources Control Board	SPoT						A	
Sacramento Slough near Karnak Bridge									
ILRP	SVWQC	WDR			M	M	M	M	
ILRP	CRC	WDR		M[3]	M[3]	M[3]		M[1]	
Sacramento River below Knights Landing									

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
SWAMP	CV- Water Board/DWR	SWCMP		Q	Q	Q	Q	Q	Q
Sacramento River below Verona									
SWAMP	CV- Water Board/DWR	SWCMP	Q	Q	Q	Q		Q	Q
Sacramento River at Veterans Bridge									
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP			O	O		O	O
Sacramento River at City of West Sacramento Bryte Bend Intake									
DWR	DWR	MWQI	M/W		M/W	M/W		M/W	M/W
Sacramento River at City of Sacramento WTP Intake									
DDW Regulated Monitoring	City of Sac	Title 22 Source Water Monitoring			A	every 3 years			
Sacramento River, US of CSO Discharge Point Nos. 006 and 007, at the Delta King									
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP		A					
Sump 111 near American River									
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP			O	O	O		
Sacramento River, DS of Discharge Point Nos. 006 and 007, at									

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
Miller Park									
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP	A						
Sacramento River at Westin Boat Dock									
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW
Sacramento River, DS of Discharge Point Nos. 004 and 005, at La Rivage									
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP	A						
Sacramento River, DS of Discharge Point Nos. 002 and 003, at Wooden Stairs									
City of Sac Combined Sewer System	City of Sac Combined Sewer System	NPDES SMP	A						
Sacramento River at Freeport Marina									
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP						O	O
Freeport upstream of SRWTP									
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP		O	O	O		M	
Sac County DWR, SacReg County Sanitation District,	Sac County DWR, SacReg County Sanitation District, City	Sacramento River CMP	4-6 times/Yr.		4-6 times/Yr.		4-6 times/Yr.	4-6 times/Yr.	4-6 times/Yr.

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
City of Sac Utility District	of Sac Utility District								
Sacramento River at Freeport WTP Intake									
DDW Regulated Monitoring	Freeport Regional Water Authority	Title 22 Source Water Monitoring			A	A			
Sacramento River at Freeport									
USGS	USGS	NWQA Program	O		O	O			
Sacramento River at Freeport Bridge									
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	W				O[4]		
Cliffs Marina									
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP		O	O	O		M	
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina									
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	W						
River Mile 44 downstream of SRWTP									
Sac County DWR, SacReg County Sanitation District, City of Sac Utility	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/Yr.		4-6 times/Yr.		4-6 times/Yr.	4-6 times/Yr.	4-6 times/Yr.

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
District									
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP		O	O	O		M	
Clarksburg Marina									
CV-SWAMP	CV-SWAMP	SPoT						A	
Sacramento River at Hood									
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW
CV-SWAMP	CV-SWAMP	Seasonal Trend Monitoring at CV-Integrator Sites						Q	Q
Sacramento River at River Mile 43									
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)	W						
Sacramento River									
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary	BE						BE
Sacramento River above Point Sacramento									
Interagency Ecological Program	Interagency Ecological Program	IEP Environmental Monitoring Program: Discrete Water Quality Sampling		M			M		

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Table B. 8. Nutrients & Organic Carbon

SITE INFORMATION			NUTRIENTS					ORGANIC CARBON	
Site Name			**Ammonia as N**	**Ammonia NH3**	**Nitrate as N**	**Nitrite as N**	**Phosphorus**	**TOC**	**DOC**
Program	**Agency**	**Monitoring Plan**							
Delta at Mallard Island									
DWR	DWR	MWQI	M/BW		M/BW			M/BW	M/BW
Sacramento Shipping Channel above Prospect Island									
DWR	DWR	MWQI	BW	BW	BW	BW	BW	BW	BW

Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
CBD #5													
ILRP	CRC	ILRP	M[1]							M[s]		M[1]	
Colusa Basin Drain above KL													
ILRP	CRC	WDR	M[1]							M[s]		M[1]	
Colusa Basin Drain at Knights Landing													
SWAMP	State Water Resources Control Board	SPoT		A	A	A	A			A			
Sutter Bypass at RD-1200 Powerplant (@ Karnak)													

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Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
SWAMP	State Water Resources Control Board	SPoT		A	A	A	A			A			
Sacramento Slough at Karnak													
SWAMP	State Water Resources Control Board	SPoT		A	A	A	A			A			
Sacramento Slough near Karnak Bridge													
ILRP	SVWQC	WDR			5/Year						M	M	
ILRP	CRC	WDR	M[1]							M[s]		M[1]	
Sacramento River at Veterans Bridge													
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacra-mento River CMP			O	O	O	O					
North Natomas Development Sump													
Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and Sac County	Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, and Sac County	NPDES SMP			O	O	O						
Sump 111 near American River													

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Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP	O	O	O	O	O	O					
Sacramento River at Freeport Marina													
Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	Sac County and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Dischargers from MS4	NPDES SMP							O		O		
Freeport upstream of SRWTP													
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O								
Sac County DWR, SacReg County Sanitation	Sac County DWR, SacReg County Sanitation	Sacramento River CMP	4-6 times/ Yr.		4-6 times/Yr.			4-6 times/ Yr.					

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Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
District, City of Sac Utility District	District, City of Sac Utility District												
Sacramento River at Freeport													
USGS	USGS	NWQA Program	O		O			O					
Sacramento River at Freeport Bridge													
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)				O[4]			M		M	M	
Cliffs Marina													
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O								
Sacramento River 4200 ft. DS of Discharge Point No. 001 at Cliff's Marina													

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Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
City of Sac	City of Sac	SacReg County Sanitation District, SacReg WWTP (NPDES SMP)							M		M	M	
River Mile 44 downstream of SRWTP													
Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sac County DWR, SacReg County Sanitation District, City of Sac Utility District	Sacramento River CMP	4-6 times/ Yr.		4-6 times/Yr.								
SacReg County Sanitation District	SacReg County Sanitation District	SacReg WWTP Priority PPP	O	O	O								
Clarksburg Marina													
CV-SWAMP	CV-SWAMP	SPoT		A	A	A	A			A			
Sacramento River, Approx. 250 ft. US and 80 feet offshore of Discharge Pt No. 001 of the diffuser													
City of Rio Vista	City of Rio Vista	City of Rio Vista Northwest							A		A	A	

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Table B. 9. Pesticides & Toxicity

Site Information			Pesticides						Toxicity				
Site Name			**Pesti-cides (other)**	**Organo-chlorine Pesticides**	**Orga-no-phos-phates**	**Pyre-throids**	**PCBs**	**Carba-mates**	**Fathead Minnow**	***Hyalella azteca***	***Cerio-daphnia dubia***	***Selenastrum capricornutum***	**Amph-ipod (% survival)**
Program	**Agency**	**Monitoring Plan**											
		WWTF (NPDES SMP)											
Sacramento River													
San Francisco Estuary Institute	San Francisco Estuary Institute	RMP for Water Quality in the San Francisco Estuary	BE	BE	BE		BE						BE

Footnotes for Tables B.3 through B.7

[S]- Monitored in September
[1]- Monitoring Period is from April-August
[2]- Monitoring Period is April, May
[3]- Monitoring Period is July, August
[4]- Monitored 1/month, every other year
Sediment Testing
No Testing Done

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APPENDIX C – NO PEER REVIEW JUSTIFICATION

Background:

The Central Valley Water Board will consider the proposed Basin Plan Amendment to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins to remove the municipal and domestic supply (MUN) beneficial use in twelve constructed or modified surface water bodies receiving treated municipal effluent from the cities of Biggs, Colusa, Live Oak and/or Willows. Currently all twelve water bodies are designated with the MUN beneficial use via the Sources of Drinking Water Policy (Resolution 88-63). These water bodies are agricultural drains which flow to either the Sutter Bypass or the Colusa Basin Drain, and neither is designated with the MUN beneficial use. During Water Board hearings to consider adopting National Pollutant Discharge Elimination System (NPDES) permits for the publicly owned treatment works (POTWs) for these four cities, there have been challenges to protecting the MUN beneficial use designation in agricultural drains due to the stated Exception 2b in Resolution 88-63 regarding water bodies constructed or modified for the primary purpose of conveying or holding agricultural drainage. The recommended alternative for this project is to de-designate the MUN beneficial use in the twelve water bodies utilizing this exception. The proposed Basin Plan Amendment will include a Monitoring and Surveillance element that supports compliance.

Legal Basis for Peer Review according to the Health and Safety Code, section 57004(d):

"No board, department, or office within the agency shall take any action to adopt the final version of a rule unless [the Board] submits the scientific portions of the proposed rule, along with a statement of the scientific findings, conclusions, and assumptions on which the scientific portions of the proposed rule are based and the supporting scientific data, studies, and other appropriate materials, to the external scientific peer review entity for its evaluation."

The State Water Board Administrative Procedures Manual (APM) Section 8, III.D clarifies that

"Peer review is not needed for source documents that have been previously peer reviewed by a recognized expert or body of experts.

Evaluation of Need for Peer Review:

Staff believes that this proposed Basin Plan Amendment does not need external technical peer review for the following reasons:

- **The proposed Basin Plan Amendment (i.e. the proposed rule) is to remove the municipal and domestic water supply beneficial use (MUN) from twelve water bodies based on Exception 2b in the Sources of Drinking Water Policy. Water body characterizations for the twelve water bodies are based on reports that are a compilation of existing information that demonstrate that the water bodies have been constructed or modified to convey or store agricultural drainage and do not make scientific findings.**

  The Basin Plan Amendment staff report references four reports that were developed to better understand the characteristics (e.g. seasonal flow patterns, inflows and outflows, and

construction information) in each of the twelve water bodies. Water body characterization assertions were made by compiling information from the four Sacramento POTW cities, interviews with local landowners and water managers, water district records, Central Valley Water Board site surveys and historic documentation like those developed as part of the Inland Surface Water Plan in 1992. Compilation of this existing information does not have a scientific basis to peer review.

- **Monitoring and surveillance to support the Basin Plan Amendment will utilize existing programs**

  Exception 2b in Resolution 88-63 requires monitoring of discharge to assure compliance with all relevant water quality objectives as required by the Regional Board. The recommended monitoring and surveillance option to fulfill this requirement in the proposed Basin Plan Amendment is to continue existing monitoring programs such as those implemented through ILRP, SWAMP, and NPDES. Any changes to the monitoring conducted by these programs to ensure that discharges from water bodies utilizing Exception 2b in Resolution 88-63 are in compliance with all relevant water quality objectives as required by the Central Valley Water Board will be implemented through these programs.

Conclusion:

Based on the interpretation of Health and Safety Code, section 57004 and APM Section 8, III. D., staff has determined that the proposed Basin Plan Amendment does not contain new science that would require peer review. The proposed Basin Plan Amendment contains policy decision and relies upon existing information, plans and policies. Therefore, the proposed Basin Plan Amendment has already satisfied the peer review requirement of Health and Safety Code, section 57004 and, therefore, does not require additional peer review.

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APPENDIX D – ENVIRONMENTAL CHECKLIST

California Environmental Quality Act Requirements

The Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board), as a Lead Agency under the California Environmental Quality Act (CEQA), is responsible for evaluating all the potential environmental impacts that may occur due to changes made to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan). (Pub. Resources Code, §21000 et seq.) The Secretary of Resources has determined that the Central Valley Water Board's Basin Planning Process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Central Valley Water Board's Basin Planning process needs only to comply with abbreviated CEQA requirements. The Staff Report and this Checklist satisfy the requirements of State Water Board's Regulations for Implementation of CEQA, Exempt Regulatory Programs, which are found at California Code of Regulations, title 23, section 3775 et seq.

1. Project title:

Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to dedesignate the MUN beneficial use from specific agricultural dominated surface water bodies in the Sacramento River Basin

2. Lead agency name and address:

California Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200, Rancho Cordova, CA 95670

3. Contact person and phone number:

Anne Littlejohn, Environmental Scientist, (916) 464-4840
Jeanne Chilcott, Environmental Program Manager, (916) 464-4788

4. Project location:

The project is located within the Sacramento River Basin, in the Central Valley. The project is in Butte, Colusa, Sutter and Glenn counties in the vicinity of the cities of Biggs, Colusa, Live Oak and Willows.

5. Description of project: The Central Valley Water Board is proposing amendments to the Basin Plan to dedesignate the MUN beneficial use from twelve water bodies in the Sacramento River Basin. The affected water bodies are in four subareas: Willows, Colusa, Biggs, and Live Oak. The specific water bodies to have the MUN use dedesignated are:

- Biggs subarea: Lateral K, Main Drainage Canal (C Main Drain), and Cherokee Canal
- Colusa subarea: Unnamed Tributary to Powell Slough, New Ditch (2011; tributary to Unnamed Tributary), and Powell Slough

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- Live Oak subarea: Lateral 2, Lateral 1, Western Intercepting Canal, East Interceptor Canal, and Wadsworth Canal.
- Willows subarea: Ag Drain C (Logan Creek)

EVALUATION OF THE ENVIRONMENTAL IMPACTS IN THE CHECKLIST

1. The board must complete an environmental checklist prior to the adoption of plans or policies for the Basin/208 Planning program as certified by the Secretary for Natural Resources. The checklist becomes a part of the Substitute Environmental Documentation (SED).

2. For each environmental category in the checklist, the board must determine whether the project will cause any adverse impact. If there are potential impacts that are not included in the sample checklist, those impacts should be added to the checklist.

3. If the board determines that a particular adverse impact may occur as a result of the project, then the checklist boxes must indicate whether the impact is “Potentially Significant,” “Less than Significant with Mitigation Incorporated,” or “Less than Significant.”

a. “Potentially Significant Impact” applies if there is substantial evidence that an impact may be significant. If there are one or more “Potentially Significant Impact” entries on the checklist, the SED must include an examination of feasible alternatives and mitigation measures for each such impact, similar to the requirements for preparing an environmental impact report.

b. “Less than Significant with Mitigation Incorporated” applies if the board or another agency incorporates mitigation measures into the SED that will reduce an impact that is “Potentially Significant” to a “Less than Significant Impact.” If the board does not require the specific mitigation measures itself, then the board must be certain that the other agency will in fact incorporate those measures.

c. “Less than Significant” applies if the impact will not be significant, and mitigation is therefore not required.

d. If there will be no impact, check the box under “No Impact.”

4. The board must provide a brief explanation for each “Potentially Significant,” “Less than Significant with Mitigation Incorporated,” “Less than Significant,” or “No Impact” determination in the checklist. The explanation may be included in the written report described in section 3777(a)(1) or in the checklist itself. The explanation of each issue should identify: (a) the significance criteria or threshold, if any, used to evaluate each question; and (b) the specific mitigation measure(s) identified, if any, to reduce the impact to less than significant. The board may determine the significance of the impact by considering factual evidence, agency standards, or thresholds. If the “No Impact” box is checked, the board should briefly provide the basis for that answer. If there are types of impacts that are not listed in the checklist, those impacts should be added to the checklist.

5. The board must include mandatory findings of significance if required by CEQA Guidelines section 15065.

6. The board should provide references used to identify potential impacts, including a list of information sources and individuals contacted.

ISSUES	*POTENTIALLY SIGNIFICANT IMPACT*	*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED*	*LESS THAN SIGNIFICANT IMPACT*	*NO IMPACT*
I. AESTHETICS. Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the California Toxics Rule (CTR)) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, surface water elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. The proposed Basin Plan amendment would have **no impact** on receiving water aesthetics, because the proposed amendment would result in no change to the current conditions in the affected water bodies.

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
II. AGRICULTURAL AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forestry resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The water bodies affected by the proposed Basin Plan amendment are surrounded by agricultural lands, not forestland. With the proposed Basin Plan amendment, there would be no change to the relevant agricultural beneficial use (AGR) designation of the affected water bodies, and water quality objectives for protection of the AGR use would continue to apply. The proposed Basin Plan amendment will remove the MUN water quality objectives and thus reduce the restrictions that complying with these objectives might have on agricultural activities. Therefore, the proposed Basin Plan amendment would

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
have **no impact** on agriculture and forestry resources.				
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the Project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including objectives/criteria for protection of MUN where that use remains a designated use. Of relevance to air quality resources, the Willows POTW would not be required to convert from chlorine disinfection to ultraviolet light (UV) disinfection to reduce concentrations of the volatile trihalomethane (THM) compounds chloroform, bromodichloromethane, and dibromochloromethane in the effluent discharge. However, receiving water concentrations of these THM compounds would continue to be regulated by federal CTR criteria for protection from the consumption of organisms only. THMs are volatile compounds, thus as these compounds are transported in the receiving waters, concentrations decrease as these compounds are lost to the atmosphere. Air quality management in the Willows, Colusa, Biggs, and Live Oak subareas is focused on particulates and greenhouse gas-related pollutants. THMs are not an air quality concern at the low concentrations that would occur in the POTW effluent. Because POTW effluent quality would be unchanged relative to existing conditions with the proposed change to the Basin Plan, there would be no change in the associated air quality relative to existing conditions following adoption of the proposed Basin Plan amendment. Therefore, the proposed Basin Plan amendment would have **no impact** on air quality.				
IV. BIOLOGICAL RESOURCES. Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
Discussion: With the proposed Basin Plan amendment, there would be no change to relevant biological resources-related beneficial use designations (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) of the affected water bodies and water quality objectives for protection of these uses would continue to apply. Therefore, the proposed Basin Plan amendment would have **no impact** on biological resources.				
V. CULTURAL RESOURCES. Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, surface water elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. There would be no ground disturbance that would occur. Thus, the proposed Basin Plan amendment would have **no impact** on cultural resources.				
VI. GEOLOGY AND SOILS. Would the Project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading,	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
subsidence, liquefaction or collapse?				
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, water surface elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. There would be no ground disturbance that would occur. Thus, the proposed Basin Plan amendment would have **no impact** on geology and soils.				
VII. GREENHOUSE GAS EMISSIONS. Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, water surface elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. There would be no release of greenhouse gas-related pollutants as a result of the project that would occur. Thus, the proposed Basin Plan amendment would have **no impact** on greenhouse gas emissions.				
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, surface water elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. The proposed Basin Plan amendment would not create, emit, or expose people to new or more hazardous materials. Thus, the proposed Basin Plan amendment would have **no impact** on hazards and hazardous materials.

IX. HYDROLOGY AND WATER QUALITY. Would the Project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that results in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, surface water elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. Therefore, there would be no degradation of water quality relative to existing conditions or effect on surface water or groundwater hydrology. ,. Overall, the proposed Basin Plan amendment would have **no impact** on hydrology and water quality.				
X. LAND USE AND PLANNING. Would the Project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would not conflict with any applicable land use plan, policy or regulation, or any applicable habitat conservation plan or natural community conservation plan. Thus, the proposed Basin Plan amendment would have **no impact** on land uses and planning.				
XI. MINERAL RESOURCES. Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

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ISSUES	*POTENTIALLY SIGNIFICANT IMPACT*	*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED*	*LESS THAN SIGNIFICANT IMPACT*	*NO IMPACT*
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would not result in the loss of availability of mineral resources, as the proposed Basin Plan amendment would not result in any ground disturbance. Thus, the proposed Basin Plan amendment would have **no impact** on mineral resources.				
XII. NOISE. Would the Project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒
f) For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

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ISSUES	*POTENTIALLY SIGNIFICANT IMPACT*	*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED*	*LESS THAN SIGNIFICANT IMPACT*	*NO IMPACT*
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, waste dischargers to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges to the water bodies would continue to be regulated to achieve water quality objectives/criteria for the remaining designated beneficial uses of the water bodies, and to not cause exceedance of applicable objectives/criteria in downstream waters, including criteria/objectives for protection of MUN where that use remains a designated use. Approval of the proposed change to the Basin Plan would not change flows, surface water elevations, or water quality in these water bodies relative to existing conditions, because POTW and agricultural discharge quantity and quality would remain similar to existing conditions following adoption of the proposed Basin Plan amendment. Because there would be no physical change to the environment, the proposed change to the Basin Plan would not create or expose any persons to additional noise. Thus, the proposed Basin Plan amendment would have **no impact** on noise.				
XIII. POPULATION AND HOUSING. Would the Project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. The proposed Basin Plan amendment does not grant the POTWs discharging to these water bodies additional discharge capacity, thus, the proposed amendment would not induce population growth either directly or indirectly. Further, the proposed Basin Plan amendment does not displace housing or people. Thus, the proposed Basin Plan amendment would have **no impact** on population and housing.				
XIV. PUBLIC SERVICES.				
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, POTWs discharging to these water bodies would not be required to construct additional treatment processes to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. The proposed Basin Plan amendment would not result in the need to construct or modify any governmental facilities in order to provide continued, suitable public services. Thus, the proposed Basin Plan amendment would have **no impact** on public services.				
XV. RECREATION.				
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. The proposed Basin Plan amendment does not grant the POTWs discharging to these water bodies additional discharge capacity, thus, the proposed Basin Plan amendment does not affect population or housing, and thus would not increase the use of recreational facilities or require construction or expansion of recreational facilities. Thus, the proposed Basin Plan amendment would have **no impact** on recreation.				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
XVI. TRANSPORTATION / TRAFFIC. Would the Project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance of safety of such facilities?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. The proposed Basin Plan amendment does not grant the POTWs discharging to these water bodies additional discharge capacity that would induce growth, thus, the proposed Basin Plan amendment				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
would not change traffic, or result in incompatible uses or inadequate access or parking, or conflict with adopted transportation policies, plans, or programs. Thus, the proposed Basin Plan amendment would have **no impact** on transportation/traffic.				
XVII. UTILITIES AND SERVICE SYSTEMS. Would the Project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the Project, that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
protection of human health from the consumption of water and organisms would no longer apply to these water bodies. Thus, POTWs and agricultural discharges to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies. Waste discharges would continue to be regulated to achieve water quality standards for the remaining designated beneficial uses of the affected water bodies, and would not be permitted to cause exceedance of water quality standards in downstream water bodies that have beneficial use designations that are not affected by the proposed Basin Plan amendment. Thus, the proposed Basin Plan amendment would not cause exceedance of wastewater treatment requirements of the Central Valley Water Board. The proposed Basin Plan amendment would not affect storm water drainage facilities, require additional water supplies, require additional wastewater treatment capacity, affect landfill services, or be in noncompliance with solid waste statutes and regulations. Overall, the proposed Basin Plan amendment would have **no impact** on utilities and service systems.				
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the Project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒
Discussion: The removal of MUN as a designated beneficial use of specific water bodies in the Willows,				

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ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would mean that State water quality objectives for protection of drinking water and federal water quality criteria (defined in the CTR) for the protection of human health from the consumption of water and organisms would no longer apply to these water bodies. As a result, POTWs and agricultural discharges to these water bodies would not be required to reduce concentrations of constituents exceeding objectives and criteria for protection of MUN in these water bodies, and discharge quality would be similar to existing conditions. Thus, there would be no further degradation to water quality relative to existing conditions. With the proposed Basin Plan amendment, there would be no change to the biological resources-related beneficial use designations (e.g., WARM, COLD, WILD, BIOL, RARE, MIGR, SPWN) of the affected water bodies and water quality objectives for protection of these uses would continue to apply. Thus, the proposed Basin Plan amendment would not reduce the quality or quantity of habitat for any fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The proposed Basin Plan amendment would not cause any cumulatively considerable impacts. Future discharges to the water bodies no longer designated with the MUN beneficial use as a result of the amendment would be required to comply with State water quality objectives and federal water quality criteria for protection of all applicable designated beneficial uses. Further, the discharges must comply with all relevant water quality objectives as required by the Central Valley Water Board. POTWs requiring an increased discharge capacity in the future to accommodate planned and approved growth in the region will need to prepare an antidegradation analysis for the Central Valley Water Board, and receive approval from the Central Valley Water Board, through an NPDES permit modification, for any future expanded discharge capacity discharge. Thus, the proposed Basin Plan amendment itself would not cause cumulatively considerable impacts in the receiving waters or downstream waters of the Sacramento River Basin. No longer having MUN as a designated beneficial use of specific water bodies in the Willows, Colusa, Biggs, and Live Oak subareas of the Sacramento River Basin would not cause substantial adverse effects on humans directly or indirectly. Investigations of these water bodies found that these water bodies were constructed and/or modified for the purpose of conveying or holding agricultural drainage waters, not for MUN supply, as described in the four water body characterization reports (Biggs 2014, Colusa 2014, Live Oak 2014 and Willows 2014). Further, investigations found that these water bodies have not historically been used for MUN supply (Biggs 2014, Colusa 2014, Live Oak 2014 and Willows 2014). Criteria for protection of other beneficial uses of these water bodies, as well as downstream water bodies where MUN is and would remain a designated use, would continue to apply, including criteria for protection of humans from consumption of water and organisms and organisms only. Additional discussion of the proposed Basin Plan amendment relative to the cumulative condition and protection of downstream beneficial uses, including downstream MUN uses not affected by the proposed Basin Plan amendment, is provided in Section 7.1.4 of the Staff Report.				

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Preliminary Staff Determination

On the basis of this evaluation and staff report, which collectively provide the required information:

- ☒ The proposed project COULD NOT have a significant effect on the environment, and, therefore, no alternatives or mitigation measures are proposed.

- ☐ The proposed project MAY have a significant or potentially significant effect on the environment, and therefore alternatives and mitigation measures have been evaluated.

Note: Authority cited: Section 21082, Public Resources Code. Reference: Sections 21080(c), 21080.1, 21080.3, 21080.5, 21082.1, 21083, 21083.05, 21083.3, 21093, 21094, 21151, Public Resources Code; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); and *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

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