

STAFF REPORT

This report would not have been possible without the help of the 340 water, drainage and reclamation agencies who responded to our request for information.

I. INTRODUCTION

The State Water Resources Control Board (State Water Board) adopted Resolution No. WQ 91-93, approving the Water Quality Control Plan for Inland Surface Waters of California or Inland Surface Waters Plan (ISWP) on 11 April 1991. By 12 October 1992, the ISWP requires, in part, that the Regional Board identify and rank in priority order those natural water bodies that, as of 11 April 1991, are dominated by agricultural drainage and constructed water bodies, used for conveying or holding agricultural drainage. The ISWP further requires the Regional Board to identify the ISWP water quality objectives that are inappropriate for the listed water bodies. The purpose of this staff report is to provide the necessary information to fulfill the 12 October 1992 ISWP requirements.

II. SUMMARY OF THE ISWP

Section 303(c)(2)(B) of the Federal Clean Water Act (CWA) required all states to adopt water quality objectives for the 129 Priority Pollutants that the U.S. Environmental Protection Agency (EPA) has published criteria under Section 304(a) of the CWA. If the State failed to do this, EPA would promulgate these criteria as objectives. The Porter-Cologne Act (California Water Code Section 13170) authorizes the State Water Board to adopt Water Quality Control Plans (Basin Plan) that include the objectives required by the CWA. The State Water Board used this authority in order to continue their role as the agency implementing the CWA in California.

As required of all water quality control plans, the Plan includes designation of beneficial uses, water quality objectives and an implementation program. The ISWP does not include any new beneficial uses but rather incorporates, by reference, beneficial uses in existing Basin Plans and other statewide plans. The ISWP includes five new narrative water quality objectives (Chapter II, Part A, page 3 of Plan), two toxicity objectives (Chapter II, Part B, page 3 of Plan), and numerical water quality objectives for the protection of freshwater aquatic life and for the protection of human health [Chapter II, Part C, pages 4 and 5 of ISWP (Table 1 and 2)]. The Implementation Program of the ISWP (Chapter III, pages 10-25) outlines specific actions for:

- (a) point and nonpoint sources (including stormwater)
- (b) waters which support threatened/endangered species, and
- (c) waters which are predominately composed of reclaimed water or agricultural drainage.

The water quality objectives in the ISWP apply in all surface waters within the State. All agricultural supply canals and drains, whether constructed or flowing in natural channels, are considered surface waters or waters of the State and must conform with the ISWP (State Attorney General's Opinion

No. 65-259 [48 Ops. Cal. Atty. Gen. 30]). The State Water Board recognized, however, that many of the agricultural facilities are not natural waters and that the objectives listed in Table 1 and 2 of the ISWP may not be appropriate. The ISWP establishes special categories of water bodies which are described as follows for categories (b) and (c):

- (b) *Natural water bodies, or segments thereof, that, as of the date of adoption of the ISWP are dominated by agricultural drainage; and*
- (c) *Water bodies, or segments thereof, that, as of the date of adoption of the ISWP, have been constructed for the primary purpose of conveying or holding agricultural drainage and were not natural water bodies which supported aquatic habitat beneficial uses. Such drains may include drains constructed in normally dry washes and low-lying areas.*

The ISWP allows, in these special category water bodies, establishment of site-specific objectives* or performances goals** in lieu of the Table 1 and 2 objectives in the ISWP.

The plan is to have site-specific objectives* or performance goals** in place within a six-year period. The schedule for the two types of categories are as follows:

Water Body Category	What Applies Upon Adoption	What Applies Within 6 Years or Less
(b) Water Bodies Dominated by Agricultural Drainage	<ul style="list-style-type: none"> - All Narrative Water Quality Objectives - All Toxicity Objectives - Numerical Objectives Apply as Performance Goals for Purposes of Regulating Agricultural Drainage Discharges & Other NonPoint Sources 	<ul style="list-style-type: none"> - All Numerical Objectives in the Plan or Alternate Site-Specific Objectives Established by the C V Reg Board
c) Constructed Agricultural Drains	<ul style="list-style-type: none"> - All Narrative Water Quality Objectives - All Toxicity Objectives - The Numerical Objectives Apply as Performance Goals for Purposes of Regulating Agricultural Drainage Discharges & Other NonPoint Sources 	<ul style="list-style-type: none"> - Initial Performance Goals apply or Alternate Site-Specific Performance Goals Established by the Central Valley Regional Board

* A site-specific objective is identical to a water quality objective but has been developed for special local conditions using a site-specific data base rather than the national data base upon which EPA water quality criteria are developed.

** Performance goals, as defined in the Plan, "are concentrations of water quality constituents established for receiving waters that a discharger must make best efforts to meet in discharging waste to waters of the State. For nonpoint source dischargers, these best efforts must be made pursuant to the Nonpoint Source Management Plan. Performance goals will serve as a measure of success in improving water quality."

III. ISWP REQUIREMENTS TO BE COMPLETED BY 12 OCTOBER 1992

The ISWP contains a range of actions that must be completed by the Regional Board by 12 October 1992.

For Category (b) water bodies, by 12 October 1992, the Regional Board must:

- Identify Category (b) water bodies (develop a list).
- Establish a priority list of these waters, consistent with the State Water Board's Clean Water Strategy** (CWS), to identify where early Regional Board action is necessary.
- Identify which numerical objectives defined in Tables 1 and 2 of the ISWP are inappropriate for Category (b) water bodies based on available data.
- Submit the information to State Water Board for consideration and approval.

** The aim of the California Clean Water Strategy (CWS) is to direct State and Regional Board efforts to those water bodies where they will have the greatest impact. To establish CWS priorities, each water body is characterized in terms of relative resource value and severity of impairment of threat. Proposed actions on these water bodies are screened with regard to feasibility.

By 11 April 1993, the State Water Board will act to approve or disapprove the list of Category (b) water bodies and constituents for site-specific objectives (statewide objectives apply in cases of disapproval). Regional Board staff will then proceed to develop the site-specific objectives for Regional Board adoption by 11 April 1997. Until numerical objectives are adopted for Category (b) water bodies, the ISWP Table 1 and 2 objectives apply as performance goals.

For Category (c) water bodies, by 12 October 1992, the Regional Board must:

- Identify Category (c) water bodies (develop a list).
- Establish a priority list of these waters, consistent with the State Water Board's CWS, to identify where early Regional Board action is necessary.
- Submit the information to State Water Board for consideration and approval.

By 11 April 1993, the State Water Board will act to approve or disapprove the list of Category (c) water bodies (statewide objectives apply in cases of disapproval). Tables 1 and 2 objectives in the ISWP will be applied as performance goals to Category (c) waters. For Category (c) water bodies, site-specific performance goals may be developed as needed. The State Water Board shall approve or disapprove the site-specific performance goals.

Natural and constructed water bodies associated with agricultural irrigation not listed as either category (b) or (c) water bodies will have statewide water quality objectives from the ISWP applied to them as if they are natural streams.

IV. REGIONAL BOARD ACTIONS TO COMPLY WITH ISWP

The Regional Board is responsible to prepare the 12 October 1992 report to the State Water Board, but in practicality, the Regional Board can only act as a coordinator. As noted in the Plan, all of the work, described in the previous section, must be conducted with the strong assistance of the water and drainage entities. These agencies have the expertise and information to determine which category a water body should be in.

To compile the information needed to complete the report to the State Water Board, staff contacted by mail over 700 water agencies to request their aid in identifying category (b) and (c) water bodies. Unfortunately most of the agencies were not even aware of the existence of the ISWP; therefore, staff held over 60 area meetings to explain the ISWP and how it impacts agricultural operations. Staff have received reports from over 340 Water, Irrigation, Reclamation, Levee and Drainage Districts which cover over 90 percent of the Region's irrigated area. These reports vary greatly in depth depending upon the information that was available and the agency's understanding of the ISWP.

This wide variability has caused staff a great deal of trouble in trying to bring the information together in one report. This effort was also complicated by the diverse nature of irrigation and drainage system in the Region. Often irrigation canals and drains are used interchangeably as greater and greater portions of the drainage water is recycled through the canal systems.

Because of the diverse topography and nature of irrigation practices in the Central Valley, staff elected to evaluate the information by defined drainage basin. The Region was initially divided between foothills and the valley floor. The valley floor was then divided into four distinct areas with boundaries similar to those of Basin Plans 5A, 5B, 5C and 5D. The four valley floor zones were further subdivided into drainage basins, as shown in Figure 1. These drainage basins represent areas of similar hydrology and common discharge locations and will be used to define future monitoring efforts. The information from the district reports was used to categorize water bodies within each drainage basin.

a. Designation of Water Body Categories

Table 1 lists the category (b) and (c) water bodies. Category (b) are natural channels whose flow and quality are dominated by irrigation activities. The category (c) list is composed of two components. The first is natural dry channels which have been extensively reconstructed and realigned as irrigation/drainage facilities. The second is other constructed facilities named in water agency submittals but too numerous to list in Table 1. The length of the affected reach of each water body is listed.

b. Priority Listing of Water Bodies

The prioritization for all listed category (b) and (c) water bodies is shown in Table 1. This prioritization is based on staff judgments, as little water quality data was available.

c. Inappropriate Water Quality Objectives

Table 1 shows the water quality concerns for each of the category (b) water bodies. These concerns point to groups of water quality objectives that may be inappropriate, but there was little or no available data for most of the ISWP objectives.

V. DISCUSSION

As specified in the ISWP, staff relied heavily on the information provided by local water agencies. Over 340 informational reports were reviewed, but time and budget constraints have limited the amount of verification possible. The current designations represent the best judgment of staff along with input from local water agencies. Modifications may be necessary before the final approval by the State Water Board.

The ISWP directed the Regional Board to classify water bodies as either natural bodies dominated by agricultural *drainage* or constructed to transport agricultural *drainage*. The district reports showed, however, that three other types of agriculturally dominated water bodies provide beneficial uses which would not exist without the flows resulting from irrigated agriculture. These three types are natural waterways used to transport agricultural *supply* water, constructed facilities used to transport agricultural *supply* water, and dry washes that have been reconstructed and realigned to be an integral component of the *supply or drainage* system.

Because of this complex system, Regional Board staff reviewed the reports and placed the water bodies in one of the following subcategories based on information supplied by the districts:

Natural Water Body

Category (b) Water Bodies:

- (b1) - Natural water bodies dominated by agricultural drainage water.
- (b2) - Natural water bodies dominated by agricultural supply water.

Constructed Facility

Category (c) Water Bodies:

- (c1) - Constructed facilities designed to carry agricultural flows or drainage.
- (c2) - Constructed facilities designed to carry irrigation water and may, at times, carry recycled return flows.
- (c3) - Natural dry washes that have been altered and now carry agricultural supply water or return flows during time periods.

The criteria for each subcategory are described in Appendix A along with an illustration of a decision-making flow chart. The process outlined in Appendix A was used to categorize all water bodies within each drainage basin. A description of each drainage basin and the agriculturally dominated natural water bodies is presented in Appendix B. (Appendix B will be mailed under a separate cover). Appendix B also presents a summary of all constructed agricultural facilities as provided by the cooperating agencies.

Most of the major natural water bodies in the Central Valley are not dominated by agricultural activities although, in many cases, they do provide either agricultural supply water or receive extensive amounts of agricultural drainage flows. One major water body, the San Joaquin River, is agriculturally dominated. With the construction of Friant Dam and the Friant-Kern Canal, most natural flows downstream of Highway 99 ceased. A 22.8-mile reach of the River is used to convey imported supply of water (Mendota Pool to Sack Dam), but the majority of the River (a 109.7-mile reach from Sack Dam to the Stanislaus River confluence) is dominated by agricultural return flows, drainage water, and ground water seepage.

Also noted in Table 1 are major constructed facilities which have greatly altered the flow of water throughout the Central Valley. These water supply and flood control facilities in many cases either completely eliminated the natural flow to or caused complete realignment of former natural streams. These facilities include the:

Natomas-Cross Canal	Sacramento Ship Channel
Tehema-Colusa Canal	California Aqueduct
Glenn-Colusa Canal	Folsom-South Canal
Colusa Basin Drain	Delta Mendota Canal
Madera Canal	Friant-Kern Canal
Yolo Bypass	Tisdale Bypass
Sutter Bypass	Cross Valley Canal
Knights Landing Ridge Cut	

The evaporation basins used for tile drainage are not included in the list of (b) or (c) water bodies. The ISWP in its introduction, clearly states that it "*does not apply to waste treatment systems, including treatment ponds, evaporation ponds, or lagoons designed to meet the requirements of the federal Clean Water Act*" (emphasis added). The ponds are designed to

contain the waste without discharge to waters of the United States. This is the same position that State Water Board staff took when responding to issues raised by E.P.A. In their report of 26 September 1991 to Walt Pettit and State Water Board members, the State Water Board staff recommended not to change this portion of the plan.

The second direction to the Board under the ISWP is to "*establish a priority list of the listed category (b) and (c) water bodies to identify where early Regional Board action is necessary.*" Using the State Water Board's Clean Water Strategy, almost all the listed water bodies would be in the lowest priority state wide. An additional prioritization was conducted, however, to rank these water bodies based upon their potential to have water quality problems present or create similar problems downstream. To make this second assessment consistent with the Clean Water Strategy, the following five factors were used:

1. Magnitude of existing beneficial uses
2. Water Body size (length)
3. Flow (perennial vs. intermittent and volume)
4. Degree of beneficial use impairment
5. Degree of threat to downstream water quality

The prioritization for all listed category (b) and (c) water bodies is shown in Table 1. This prioritization is based upon staff judgment as little water quality data is available.

The third direction to the Board under the ISWP is to "*identify which numerical objectives defined in Table 1 and 2 of the ISWP are inappropriate for the category (b) water bodies based on available data.*" For most agricultural drains, canals and natural water bodies dominated by these flows, there is little or no data available on most of the ISWP numerical objectives. Table 1 shows the water quality concerns for each of the category (b) water bodies. These designations point to groups of water quality objectives that may be inappropriate, but more thorough monitoring needs to be conducted before a site-specific objective workplan can be prepared. The designation of water quality concerns was based upon the following observations:

- The water bodies showing elevated selenium concentrations are located principally in the west side of the San Joaquin Valley.
- Elevated boron and total dissolve solids concentrations are common in many water bodies dominated by agricultural drainage and in natural and constructed facilities that carry ground water or recycled agricultural drainage water.

- Monitoring shows that water quality objectives for metals (As, Cd, Cr, Cu, Pb, Ni, Ag and Zn) are violated when total recoverable analytical techniques are used for analysis. These elevated levels are commonly due to the natural levels of metals on sediment. This sediment is commonly found in water bodies dominated by agricultural drainage. This sediment also has attached pesticides residues, such as DDT, DDE, toxaphene, chlordane, endosulfan, and other persistent pesticides.
- Concentrations of pesticides can be found in all water bodies that are dominated by agricultural drainage and at times in agricultural supply canals as a result of recycling of drainage water, pumped ground water or maintenance operations that are conducted on constructed canals and drains.
- Maintenance operations in constructed canals and drains may cause water quality objective violations including violation of the toxicity objectives. These maintenance operations, such as use of copper sulfate or other chemicals are critical to maintaining the integrity of the facility's use.
- Many of the category (b) and (c) water bodies are subject to inflows from urban areas.

VI. RECOMMENDATION

Staff recommendation is to adopt Table 1 and all the agency submittals by reference. This approach recognizes the requirement to submit the list but also recognizes the complexity of defining these water bodies. The Resolution for adoption also recognizes the need to include all types of agriculturally dominated water bodies by directing staff to submit the listing to the State Water Board using the 5 subcategories outlined in the Appendix A of the Staff Report. This approach will allow ourselves and State Water Board staff to make modifications to the category designations as they are needed. In addition, the adoption should be done with a clear public understanding that these designations are not intended to impact existing beneficial use designations; rather, these designations are to provide a logical process for developing and implementing water quality objectives consistent with the Federal Clean Water Act.

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (b) WATER BODIES			
SACRAMENTO RIVER BASIN			
DRAINAGE BASIN 20A			
Unnamed Tributaries to Walker Creek	7	5	3,4
Walker Creek	15	3	3,4
Sheep Corral/White Cabin Creek	5.5	5	3,4
Wilson Creek (Upstream of Road 35, Glenn County)	4	5	3,4
Freshwater Creek	4	5	3,4
Salt Creek (North)	2.5	5	3,4
Cortina Creek	4	5	3,4
Hopkins Slough (Within boundaries of Colusa NWR)	1.5	3	3,4
Hunters Creek (Within boundaries of Sacramento NWR)	1.7	3	3,4
North Fork of Logan Creek (Within boundaries of Sacramento NWR)	6	3	3,4
Logan Creek (Within boundaries of Sacramento NWR)	9	3	3,4
Funks Creek	6	5	3,4
Buckeye Creek	12	5	3,4
Lurline Creek (Tehema Colusa Canal to Glenn-Colusa Canal)	3	5	3,4
DRAINAGE BASIN 20B			
Butte Creek	44	1	3,4
Hamlin Slough	18.5	3	3,4
Butte Slough	6	2	3,4
Butte Sink	10	2	3,4
Angel Slough	21	5	3,4
Campbell Slough	8	5	3,4
Howard Slough	6	5	3,4
Little Butte Creek	6	5	3,4
DRAINAGE BASIN 20C			
Butte Slough	9.4	2	3,4
Willow Slough	1	5	3,4
Nelson Slough	1.3	5	3,4
Sacramento Slough (Downstream of Karnak)	1.5	3	3,4
Gilsizer Slough (Downstream of O'Banion Road)	6	5	3,4
DRAINAGE BASIN 15			
Grasshopper Slough (Diversion to Grass Valley Road)	1	5	3,4,6
Messick Lake	1	5	3,4
Reeds Creek	7.6	5	3,4
Dry Creek (South)	6	5	3,4,6
Clark Slough (Upstream of Plumas Lake Canal)	3	5	3,4,6
Hutchinson Creek	5.1	5	3,4

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (b) WATER BODIES CONTINUED			
DRAINAGE BASIN 15 Continued:			
Best Slough (HWY 65 to Forty Mile Road)	3	5	3,4
No Name Creek	5.5	5	3,4
Tennessee Creek	5.3	5	3,4
Prairie Creek	6.8	5	3,4
Dry Creek (North)	11.6	2	3,4
Wilson Creek	3.7	5	3,4
North Honcut Creek	3.3	3	3,4
South Honcut Creek	15.3	3	3,4
Jack Slough (Upstream of Trainer Hills)	5.2	2	3,4
DRAINAGE BASIN 19			
Yankee Slough	9.9	3	3,4
Coon Creek (Upstream of the East Side Canal)	9.4	5	3,4,6
Bunkham Slough (Upstream of Pleasant Grove Road)	9.4	5	3,4
Markham Ravine (Upstream of Pleasant Grove Road)	6.8	5	3,4
Auburn Ravine (Upstream of Pleasant Grove Road)	4.4	5	3,4,6
King Slough (Upstream of Western Pacific Railroad)	5	5	3,4
Pleasant Grove Creek	4.5	4	3,4
Ping Slough (Upstream of Cornelius Avenue)	5	4	3,4
DRAINAGE BASIN 11			
Cache Creek	26	2	2,3,4
Goodnow Slough	12	5	2,3,4,6
Almondale Slough	4	5	2,3,4
South Fork of Willow Slough	21	5	2,3,4
Cottonwood Slough	8	5	2,3,4
North Fork of Willow Slough	3	5	2,3,4
Willow Slough	17	5	2,3,4
Union Slough	28	5	2,3,4,6
Moody Slough	16	5	2,3,4
Cache Slough (Upstream of Haas Slough)	3	2	2,3,4
Dry Slough	17.5	5	2,3,4
Putah Creek	16	3	2,3,4
Haas Slough	3	2	2,3,4,6
Old Alamo Creek	3	5	2,3,4
Gordon Slough (Lower West Adams)	6	5	2,3,4
Lamb Valley Slough	2	5	2,3,4
Shag Slough	2.5	3	2,3,4
Duck Slough	1.5	3	2,3,4

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (b) WATER BODIES CONTINUED			
SAN JOAQUIN RIVER BASIN			
DRAINAGE BASIN 40			
Orestimba Creek	5	3	1,2,3,4,5
Old San Joaquin River Channel at Laird Slough	5.3	4	2,3,4
Del Puerto Creek	5.5	4	2,3,4,5
Tom Payne Slough	13	5	3,4
Mountain House Creek	3.5	5	2,3,4
San Joaquin River (Merced River to Stanislaus River)	34.8	1	1,2,3,4
DRAINAGE BASIN 41			
Los Banos Creek	24	5	2,3,4,6
San Luis Creek	8	5	2,3,4
Garzas Creek	4	5	2,3,4,6
Salt Slough	10	1	1,2,3,4
Mud Slough (south)	3.1	4	2,3,4
Mud Slough (north)	5.1	1	1,2,3,4
San Joaquin River (Mendota Pool to Merced River)	86.7	1	1,2,3,4
DRAINAGE BASIN 35A			
Lone Tree Creek	29	3	3,4
French Camp Slough	6.5	3	3,4
Walthall Slough	5	5	3,4
Littlejohns Creek (Goodwin Dam to Farmington Fld Cntrl Basin)	15	5	3,4
Dry Creek (Crabtree Road to Wellsford Road)	17	4	3,4
Lesnini Creek	3	5	3,4
Simmons Creek	5	5	3,4
DRAINAGE BASIN 35B			
Bear Creek	39	2	3,4
Mariposa Creek	11	5	3,4
Duck Slough	11	5	3,4
Cottonwood Creek	2.5	5	3,4
South Slough	3.5	5	3,4
Black Rascal Creek	16.5	5	3,4
Deadman Creek (Downstream of El Nido Canal)	5.5	5	3,4
Canal Creek	19.5	5	3,4
Edendale Creek	3.2	5	3,4
Parkinson Creek	3	5	3,4
Hartley Slough	2.5	5	3,4
Fahrens Creek	5	5	3,4
Lake Yosemite	N/A	5	3,4

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (b) WATER BODIES CONTINUED			
DRAINAGE BASIN 35B Continued:			
Miles Creek	7	5	3,4
Owens Creek	26	5	3,4
Dutchman Creek	13	5	3,4
Chowchilla River	12	5	3,4
DRAINAGE BASIN 45			
Root Creek	1	5	3,4,6
Lone Willow Slough	18	5	3,4
Schmidt Creek	2	5	3,4,6
Fresno River	6	5	3,4
Berenda Creek	9	5	3,4
Dry Creek	7	5	3,4
Cottonwood Creek	20	5	3,4
Berenda Slough	1.7	5	3,4
Ash Slough	5	5	3,4
SACRAMENTO-SAN JOAQUIN DELTA			
DRAINAGE BASIN 10			
Mayberry Slough	4.7	5	3,4
DRAINAGE BASIN 44B			
Frisk Creek	3.8	5	3,4
Brushy Creek	2.4	5	2,3,4
Marsh Creek	9	5	2,3,4
DRAINAGE BASIN 44C			
Old River	6	1	2,3,4
Paradise Cut	7.6	3	2,3,4
DRAINAGE BASIN 32			
Pixley Slough	9.7	5	3,4
Bear Creek	13.6	5	3,4
Mosher Creek	19.3	5	3,4
Mormon Slough	13.4	5	3,4
Laguna-Hadelville Creek	10.8	5	3,4
Consumnes River	10.5	1	3,4
Deer Creek	15	5	3,4

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (b) WATER BODIES CONTINUED			
TULARE LAKE BASIN			
Kings River (Downstream of Peoples Weir)	71.6	1	3,4
Wahtoke Creek	14.9	5	3,4
Navelencia Creek	2.4	5	3,4
Sand Creek	2.2	5	3,4
Traver Creek	10.1	5	3,4
Kaweah River	11.3	4	3,4
St. Johns River	14.1	4	3,4
Elk Bayou	9.9	5	3,4
Outside Creek	6.2	5	3,4
Deep Creek	12	5	3,4
Elbow Creek	16.3	5	3,4
Cottonwood Creek	5.4	5	3,4
Cross Creek	11.7	4	3,4
Byrd Slough	8.3	5	3,4
Cameron Slough	5.3	5	3,4
Clarks Fork	5	4	3,4
Cole Slough	8.8	5	3,4
Dutch John Cut	2.5	5	3,4
Fresno Slough	20	5	2,3,4
Lower North Fork Kings River	5.3	1	3,4
Lower South Fork Kings River	8.7	1	2,3,4
Old Fresno Slough	1.8	4	3,4
Poso Creek	6.5	3	3,4
Buena Vista Lake	N/A	5	3,4
Surprise Creek	2.4	5	3,4
Wooten Creek	2.4	5	3,4
Negro Creek	1.3	5	3,4
Long Creek	1.8	5	3,4
FOOTHILLS			
Jackson Creek	7	5	
Dry Creek (Amador County)	2	5	3,4
Wolf Creek	12	5	
Coon Creek	12	5	6
Auburn Ravine	6	5	6

* Water Quality Concerns:

1 = selenium and molybdenum

2 = boron and total dissolved solids

3 = Metals

4 = pesticides

5 = DDT, Endosulfan, etc.

6 = urban, dairy wastes, WWTP

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (c) WATER BODIES			
MAJOR CONSTRUCTED FACILITIES WITHIN THE CENTRAL VALLEY			
Natomas Cross Canal	5	3	
Tehama-Colusa Canal	111	2	
Glenn-Colusa Canal	66	2	
Colusa Basin Drain	75	1	
Knights Landing Ridge Cut	6	3	
Yolo Bypass	16.5	1	
Tisdale Bypass	4.5	3	
Sutter Bypass	32	1	
California Aquaduct (Central Valley)	300+	1	
Corning Canal	21	2	
Toe Drain	23	1	
Folsom-South Canal	26.8	2	
Delta Mendota Canal	116+	1	
Madera Canal	36	3	
Friant-Kern Canal	152	2	
Eastside Bypass (plus the Eastside Canal)	45	2	
Cross Valley Canal	20	3	
San Luis Drain	84.8	1	

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

USBR
DWR
Friant-Kern Water Users Association
San Luis-Delta Mendot Water Users Authority
Tehama Colusa Water Users Association

SACRAMENTO RIVER BASIN

DRAINAGE BASIN 4

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Poberta Water District
Corning Water District

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Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (c) WATER BODIES CONTINUED			
DRAINAGE BASIN 20A			
Orland -Artois Unnamed "A"	9.5	5	
Orland - Artois Unnamed "B"	13	5	
Lateral "A"	13	5	
East Branch of Walker Creek	5	5	
Shepherd Slough	10	5	
Bounde Creek	13	5	
Hopkins Slough	9	5	
Willow Creek	13	5	
North Fork Logan Creek	2.5	5	
Logan Creek	2.5	5	
Hunters Creek	7	5	
Funks Creek (Downstream of Glenn-Colusa Canal)	4	5	
Stone Corral Creek	12	5	
Lurline Creek (Downstream of Glenn-Colusa Canal)	3	5	
Freshwater Creek (Glenn-Colusa Canal to Salt Creek)	6	5	
Salt Creek (North) [Glenn-Colusa Canal to Colusa Trough]	6.5	5	
Spring Creek	3	5	
Cortina Creek	5.5	5	
Wilkins Slough	8	5	
Sycamore Slough	16	5	
Hayes Hollow Creek	3.1	5	
French Creek	6.8	5	
South Fork of Willow Creek (Downstream of Tehema-Colusa Canal)	17	5	
Glenn Valley-Manor Slough	13	5	
Wilson Creek (Road 35 to Willow Creek)	7	5	

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Colusa Basin Drainage District
- Glenn-Colusa Irrigation District
- Orland-Artois Water District
- Provident Irrigation District
- Princeton-Cordova-Glenn Irrigation District
- Glide Water District
- Kanawha Water District
- Holthouse Water District
- Westside Water District
- Maxwell Irrigation District
- Cortina Water District

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 20A Continued:

Colusa Water District
 Dunnigan Water District
 Knights Landing Ridge Drainage District
 Reclamation District 2047
 Reclamation District 479
 Reclamation District 108
 Reclamation District 787

DRAINAGE BASIN 20B

Durham Slough	7	5
Little Dry Creek	15	5
Drumheller Slough	11	5

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Western Canal Water District
 Butte County Drainage District #2
 Drainage District 200
 Richvale Irrigation District
 Butte Water District
 Reclamation District 833
 Biggs-West Gridley Water District
 Reclamation District 1004
 Butte Sink Waterfowl Association

DRAINAGE BASIN 20C

Morrison Slough	11	5
Snake River	30	5
Live Oak Slough	23	5
Gilsizer Slough (Yuba City of O'Banion Road)	11	5
Poodle Creek	5	5
Sutter Bypass (East and West Borrow Pit Channels)	60	1

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Biggs-West Gridley Water District
 Butte Water District
 Sutter Extension Water District

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAIANGE BASIN 20C Continued:

- Reclamation District 777
- Reclamation District 2056
- Reclamation District 2054
- Drainage District No. 1
- Tierra Buena Drainage District
- Sutter County Water Agency
- Feather Water District
- Tudor Mutual Irrigation Company
- Hamatani Ranch
- Garden Highway Mutual Water Company
- Sutter Butte Mutual Water Company
- Sutter National Wildlife Refuge
- Goose Club Farms (Sutter Bypass Properties)
- Department of Water Resources, State of California

DRAINAGE BASIN 20D

Long Lake	2	5
Sacramento Slough (Within RD 1500)	2.5	5
Tisdale Bypass	4.4	4

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Meridian Farm Water Company
- Sutter Buttes Mutual Water Company
- Reclamation District No. 1660
- Reclamation District No. 70
- Tisdale Irrigation Company
- Butte Slough Irrigation Company
- Sutter Mutual Water Company
- Pelger Mutual Water Company
- Sutter Mutual Water Company
- Reclamation District 1500

DRAINAGE BASIN 15

Plumas Lake Drain	2	5
Algodon Slough Drain	4.1	5
Baxter Slough	2.9	5
Kimball Creek	2.5	5

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 15 Continued:

Simmerly Slough	3.4	5
Jack Slough (Downstream of Trainer Hills)	6	2
Clark Slough (Downstream of Plumas Lake Canal)	4.4	4
Best Slough (Downstream of Forty Mile Road)	2.2	5
Grasshopper Slough (Downstream of Grass Valley Road)	2	5

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Oroville-Wyandotte Irrigation District
 Yuba County Water Agency
 Brophy Water District
 South Yuba Water District
 Browns Valley Irrigation District
 Cordura Irrigation Company
 Hallwood Irrigation Company
 Ramirez Water District
 City of Wheatland
 Wheatland Irrigation District
 Reclamation District 784
 Plumas Mutual Irrigation District
 Camp Far West Irrigation District
 Dana & Dana, Inc.

DRAINAGE BASIN 19

Curry Creek (Within RD 1000)	1.2	5
Ping Slough (Downstream of Cornelius Ave.)	4	5
Coon Creek (Downstream of the East Side Canal)	2.5	5
Bunkham Slough (Downstream of Pleasant Grove Rd.)	1.1	5
Markham Ravine (Downstream of Pleasant Grove Rd.)	1.6	5
Auburn Ravine (Downstream of Pleasant Grove Rd.)	2.1	5
King Slough (Downstream of the Western Pacific Railroad)	0.9	5

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

South Sutter Water District
 Natomas Central Mutual Water Company
 Reclamation District 1000
 Reclamation District 1001

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 19 Continued:

Nevada Irrigation District
 Placer County Water Agency

DRAINAGE BASIN 11

Walnut Canal	6.2	5
South Fork of Putah Creek	10	5
Willow Slough Bypass	7	5
Sweeney Creek	4	5
Gibson Canyon Creek	5.5	5
Ulatis Creek	5.5	5
Ulatis Channel	13	4

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Cowell Ranch
 Reclamation District 2093
 Reclamation District 2060
 Reclamation District 730
 Reclamation District 2104
 Reclamation District 1600
 Reclamation District 537
 Reclamation District 2068
 Reclamation District 2098
 Reclamation District 2035
 Reclamation District 827
 Reclamation District 785
 Reclamation District 2084
 Dixon Resource Conservation District
 Maine Prairie Water District
 Solano Irrigation District
 Solano County Water Agency
 Yolo County Flood Control and Water Conservation District

SAN JOAQUIN RIVER BASIN

DRAINAGE BASIN 40

Corral Hollow Creek (Downstream of the Delta Mendota Canal)	2.5	5
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Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 40 Continued:

Ingram Creek (Downstream of Interstate 5)	6.5	5	
Hospital Creek (Downstream of Interstate 5)	8	5	
Salado Creek (Downstream of the Delta Mendota Canal)	6	5	

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- West Stanislaus Irrigation District
- Kasson Reclamation District #2085
- New Jerusalem Drainage District
- Banta-Carbona Irrigation District
- Patterson Water District
- Newman Drainage District
- Hospital Water District
- Naglee Burk Irrigation District
- Paradise Mutual Water Company
- Pescadero Reclamation District 2058
- El Solyo Water District
- Kern Cañon Water District
- Salado Water District
- Sunflower Water District
- Orestimba Water District
- Oak Flat Water District
- Foothill Water District
- Davis Water District
- Central California Irrigation District
- Reclamation District 1602
- Reclamation District 2099
- Reclamation District 2101
- Reclamation District 2102
- Westside Irrigation District
- Byron-Bethany Irrigation District

DRAINAGE BASIN 41

Santa Rita Slough	7	5	
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Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 41 Continued:

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Central California Irrigation District
- Mustang Water District
- Quinto Water District
- Romero Water District
- Centinella Water District
- Mercy Springs Water District
- Eagle Field Water District
- Pacheco Water District
- Oro Loma Water District
- San Luis Water District
- Broadview Water District
- Panoche Water and Drainage District
- Firebaugh Canal Water District
- Grassland Water District
- San Luis Canal Company
- Poso Canal Company
- Charleston Drainage District
- Gustine Drainage District
- Widren Water District
- Dos Palos Drainage District

DRAINAGE BASIN 35A

Littlejohns Creek (Downstream of Farmington Fld Cntrl Basin)	17	5
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All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Modesto Irrigation District
- Turlock Irrigation District
- McMullin Reclamation District #2075
- Oakdale Irrigation District
- South San Joaquin Irrigation District
- Reclamation District 17

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 35B

Mariposa Slough	6.3		5
Miles Creek (Downstream of Puglizevich Dam)	5.6		5
North Slough	1		5
Deadman Creek (upstream of the El Nido Canal)	11		5
Turner Slough	3		5
Deep Slough	1.4		5
Sand Slough	7		5
Chamberlain Slough	3.2		5

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Merced Irrigation District
 Turner Island Water District
 Stevenson Water District
 Merquin County Water District
 El Nido Irrigation District
 LeGrand-Athlone Water District
 La Branza Water District
 Lone Tree Mutual Water Company

DRAINAGE BASIN 45

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Madera Irrigation District
 Gravely Ford Water District
 Columbia Canal Company
 Chowchilla Water District

SACRAMENTO-SAN JOAQUIN DELTA

DRAINAGE BASIN 10

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

North San Joaquin Water Conservation District
 Reclamation District 765 (Glide District)
 Reclamation District 999

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 10 Continued:

- Reclamation District 307 (Lisbon District)
- Reclamation District 501 (Ryer Island)
- Reclamation District 551 (Pierson)
- Reclamation District 3 (Grand Island)
- Reclamation District 554 (Walnut Grove)
- Reclamation District 2110 (McCormack-William Tract)
- Reclamation District 556 (Upper Andrus Island)
- Reclamation District 2086 (Canal Ranch Tract)
- Reclamation District 2111 (Dead Horse Island)
- Reclamation District 813 (Erhardt Club)
- Reclamation District 348 (New Hope Tract)
- Reclamation District 563 (Tyler Island)
- Reclamation District 38 (Staten Island)
- Reclamation District 341 (Sherman Island)

DRAINAGE BASIN 44A

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Central Delta Water Agency
- Reclamation District 2033 (Brack Tract)
- Reclamation District 548 (Terminus Tract)
- Reclamation District 756 (Bouldin Island)
- Reclamation District 2026 (Webb Tract)
- Reclamation District 2059 (Bradford Island)
- Reclamation District 2044 (King Island)
- Reclamation District 2029 (Empire Tract)
- Reclamation District 2023 (Venice Island)
- Reclamation District 2114 (Rio Blanco Island)
- Reclamation District 2042 (Bishop Tract)
- Reclamation District 2027 (Mandeville Island)
- Reclamation District 2041 (Medford Island)
- Reclamation District 2030 (McDonald Tract)
- Reclamation District 2037 (Rindge Tract)
- Reclamation District 2115 (Shima Tract)
- Reclamation District 799 (Hotchkiss Tract)
- Reclamation District 2025 (Holland Tract)
- Reclamation District 2090 (Quimby Island)

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

DRAINAGE BASIN 44A Continued:

- Reclamation District 2028 (Bacon Island)
- Reclamation District 2119 (Wright-Elmwood Tract)
- Reclamation District 2036 (Palm Tract)
- Reclamation District 2024 (Orwood Tract)
- Reclamation District 800 (Byron Tract)
- Reclamation District 2117 (Coney Island)
- Reclamation District 2040 (Victoria Island)
- Reclamation District 2072 (Woodward Island)
- Reclamation District 2039 (Upper Jones Tract)
- Reclamation District 2038 (Lower Jones Tract)
- Reclamation District 684 (Lower Roberts Island)
- Reclamation District 2113 (Fay Island)
- Reclamation District 2118 (Little Mandeville Island)
- Shin Kee Tract
- Bethel Island Municipal Improvement District
- Drexler-Honker Lake Tract
- Franks Tract State Park

DRAINAGE BASIN 44C

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Reclamation District 2 (Union Island West)
- Reclamation District 1 (Union Island East)
- Reclamation District 773 (Private Landowners)
- Reclamation District 2062 (Stewart Tract)
- Reclamation District 2089 (Stark Tract)
- Reclamation District 544 (Upper Roberts Island)
- Reclamation District 524 (Middle Roberts Island)

DRAINAGE BASIN 32

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Omuchumne-Hartnell Water District
- Galt Irrigation District
- North San Joaquin Water Conservation District
- Woodbridge Irrigation District
- Stockton East Water District

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
CATEGORY (c) WATER BODIES CONTINUED			
DRAINAGE BASIN 32 Continued:			
	Reclamation District 2074 (Sargent-Barnhart Tract)		
	Reclamation District 1614 (Smith Tract)		
	San Joaquin Flood Control and Water Conservation District		
DRAINAGE BASIN 44B			
<i>All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.</i>			
	East Contra Costa Irrigation District		
	Byron - Bethany Irrigation District		
TULARE LAKE BASIN			
China Slough	7.3	5	
Phillips Ditch	1.6	5	
Carmelita Ditch	3.1	5	
Rice Ditch	1.1	5	
Short Ditch #1	1	5	
McLaughlin Ditch	1.7	5	
Farm Ditch #1	1.8	5	
Farm Ditch #3	1.5	5	
Jacobi Ditch	0.3	5	
Fink Ditch	1	5	
Turner Ditch	1.6	5	
Hanke Ditch	2.9	5	
Byrd Ditch	1.1	5	
Jack Ditch	1.4	5	
Cameron Ditch	0.7	5	
Tule River (Below Friant-Kern Canal)	41	5	
Porter Slough	11.5	5	
Old Fresno Slough	8.2	5	
Harris Slough Ditch	1.8	5	
Bates Slough	4.3	5	
Lewis Creek	3.3	5	
Inside Creek	5.2	5	
Mill Creek	26.7	5	
Cameron Creek	8.4	5	
Tule River (above Friant-Kern Canal)	9	5	
White River	12	5	
Deer Creek	24	5	

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

TULARE LAKE BASIN Continued:

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- Alpaugh Irrigation District
- Alta Irrigation District
- Angiola Water District
- Arvin-Edison Water Storage District
- Berenda Mesa Water District
- Buena Vista Water Storage District
- Cawelo Water District
- City of Bakersfield
- Consolidated Irrigation District
- Corcoran Irrigation District
- Crescent Canal Company
- Delano-Earlimart Irrigation District
- Devil's Den Water District
- Dudley Ridge Water District
- Empire West Side Irrigation District
- Exeter Irrigation District
- Friant Kern Water Users Authority
- Fresno Irrigation District
- Henry Miller Water District
- Ivanhoe Irrigation District
- James Irrigation District
- Kaweah & St. Johns River Association
- KCWA Improvement District #4
- Kern Delta Water District
- Kern River Levee District
- Kern-Tulare Water District
- Kings County Water District
- Kings River Water District
- Laguna Irrigation District
- Lakeside Irrigation District
- Last Chance Water Ditch Company
- Lemoore Canal & Irrigation Company
- Lewis Creek Water District
- Lindmore Irrigation District
- Lindsay-Strathmore Irrigation District
- Lost Hills Water District

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

TULARE LAKE BASIN Continued:

- North Kern Water Storage District
- Peoples Ditch Company
- Rag Gulch Water District
- Reclamation District No. 1601
- Riverdale Irrigation District
- Rosedale-Rio Bravo Water Storage District
- Saucelito Irrigation District
- Semitropic Water Storage District
- Shafter-Wasco Irrigation District
- Southern San Joaquin Municipal Utilities District
- Stinson Canal & Irrigation Company
- Stone Corral Irrigation District
- Terra Bella Irrigation District
- Tranquillity Irrigation District
- Tulare Lake Drainage District
- Tule River Association
- Westlands Water District
- Wheeler Ridge-Maricopa Water Storage District
- Zalda Reclamation District 801

FOOTHILLS

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

- | | |
|---|---|
| <ul style="list-style-type: none"> Tuolumne Regional Water District Tuolumne Public Utility District Northridge Water District Citrus Heights Irrigation District Squaw Valley Co. Water District Tehachapi-Cummings Co. Water District Fall River Conservation District Nevada Irrigation District Amador County Water Resources Jackson Valley Irrigation District Omochumne-Hartnell Water District El Dorado Irrigation District Mill Race Group Placer County Water Agency | <ul style="list-style-type: none"> West Lake Resources Conservation District Sierra County Department of Planning Yuba County Water District Plumas County Plumas County Private Rancher Indian-American Valleys RCD Calaveras County Water District Big Valley Irrigation District Pit RCD Resource Conservation District South Fork Irrigation District |
|---|---|



APPENDIX A

Category (b1): Natural water bodies dominated by agricultural drainage water. Criteria set down in the ISWP.

Category (b2): Natural water bodies dominated by agricultural supply water. Almost every stream, creek and river within the Central Valley is dominated by water that will be used for agricultural supply. It is not our intent to list all these waterways. The only water bodies we have included carry all of the following criteria:

- a) Agricultural supply water dominated the flow and water quality of the water body.
- b) The agricultural supply water is not the same natural flow that would have been in the water body.
- c) The flow is released into the natural channel and subject to significant changes in volume.
- d) The natural channel would not have had significant flow or aquatic life beneficial uses in the absence of the agricultural supply flows.
- e) The agricultural supply flows are subject to releases and diversions and are not necessarily continuous throughout the irrigation season or year.

Category (c1): Water bodies that are constructed (drains) for the primary purpose of conveying or holding agricultural return flows or drainage and were not natural water bodies which supported aquatic life beneficial uses. Does not include on-farm facilities, such as furrows, beds, checks, ditches and sumps.

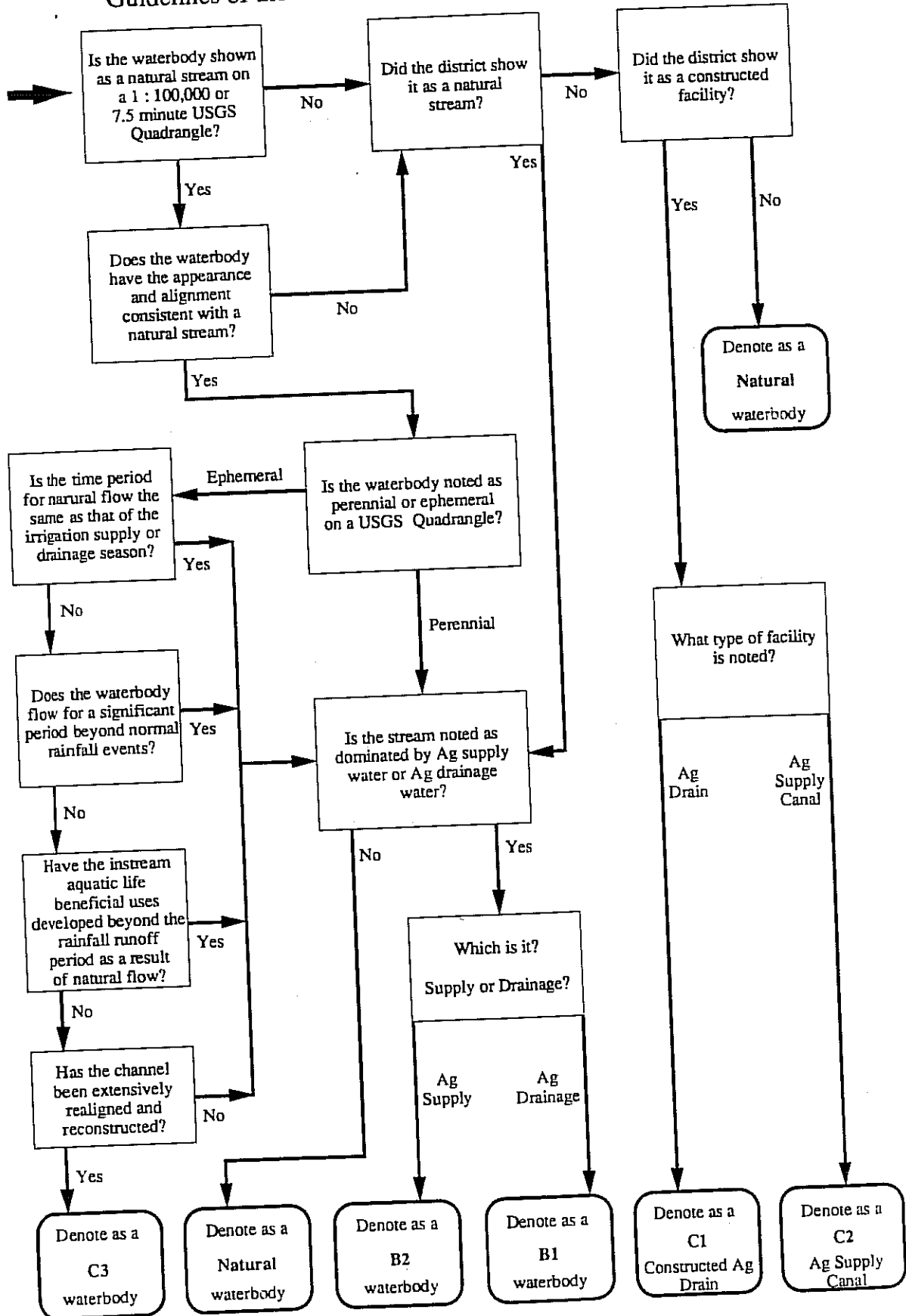
Category (c2): Water bodies that are constructed (canals or channels) to carry irrigation supply water and may, at times, carry blended or recycled agricultural drainage or return flows as supply water.

Category (c3): Natural dry water bodies that have been altered and now only carry agricultural return flows or irrigation supply water. These water bodies may only be dominated by these flows for defined periods each year and the (c3) designation would only apply during this time interval. Water bodies designated under this category must meet all of the following criteria.

- a) In the absence of agricultural return flows or irrigation supply water, the water body is ephemeral and only carries flow during heavy rainfall events or very wet periods.
- b) In the absence of agricultural return flows or irrigation supply water, in-stream aquatic life beneficial uses would not be present.
- c) Shows evidence of extensive in-stream channel modifications including reconstruction and realignment.
- d) Riparian habitat has developed as a result of the presence of agricultural return flows or agricultural supply water.

Figure A-1

Flowchart for Categorization of Water Bodies According to the Guidelines of the California Inland Surface Waters Plan



APPENDIX B

(To be mailed separately)

LATE REVISIONS - 25 SEPTEMBER 1992

Item 11. Consideration of Water Body Designations to Comply with Provisions of the Water Quality Control Plan for Inland Surface Waters of California (ISWP)

Pages 1-18 and 1-19:

Replace final two pages of *Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California*, with the attached two pages to include agencies who had submitted informational reports for the Tulare Lake Basin and whose names had been inadvertently omitted from the original table.

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

TULARE LAKE BASIN Continued:

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

Alpaugh Irrigation District	James Irrigation District
Alta Irrigation District	Jennings Ditch Company
Angiola Water District	John Heinlein Mutual Water Company
Arvin-Edison Water Storage District	Kaweah & St. Johns River Association
Belridge Water Storage District	Kaweah Delta WCD
Berenda Mesa Water District	KCWA Improvement District #4
Buena Vista Water Storage District	Kern Delta Water District
Burrel Ditch Company	Kern River Levee District
Cawelo Water District	Kern-Tulare Water District
City of Bakersfield	Kings County Water District
Consolidated Irrigation District	Kings River Conservation District
Consolidated Peoples Ditch Company	Kings River Water District
Corcoran Irrigation District	Laguna Irrigation District
Crescent Canal Company	Lakeside Ditch Company
Delano-Earlimart Irrigation District	Lakeside Irrigation District
Devil's Den Water District	Last Chance Water Ditch Company
Dudley Ridge Water District	Lemon Cove Ditch Company
Elinor H. Black	Lemoore Canal & Irrigation Company
Elk Bayou Ditch Company	Lewis Creek Water District
Empire West Side Irrigation District	Liberty Canal Company
Evans Ditch Company	Liberty Mill Race Company
Exeter Irrigation District	Lindmore Irrigation District
Farmers Ditch Company	Lindsay-Strathmore Irrigation District
Fleming Ditch Company	Long Canal
Foothill Ditch Company	Lost Hills Water District
Fresno Irrigation District	Lower Tule River Irrigation District
Fresno Metropolitan Flood Control District	Mathews Ditch Company
Friant Kern Water Users Authority	Modoc Ditch Company
Goshen Ditch Company	North Kern Water Storage District
Hamilton Ditch Company	Oakes Ditch Company
Harrell J. Harrel	Orange Cove Irrigation District
Hawkeye Ditch Company	Peoples Ditch Company
Henry Miller Water District	Persion Ditch Company
Hills Valley Irrigation District	Pioneer Water Company
Ivanhoe Irrigation District	Porterville Irrigation District
Jacobs Rancho Water District	Rag Gulch Water District

Table 1. Summary of Category (b) and (c) Water Bodies Within the Central Valley of California

Watershed/Drainage Basin	Mileage	Priority	Water Quality Concerns*
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CATEGORY (c) WATER BODIES CONTINUED

TULARE LAKE BASIN Continued:

Reclamation District 1606	Southern San Joaquin Municipal Utilities District
Reclamation District 1618 (Tulare Lake)	St. Johns Ditch Company
Reclamation District 2071 (North Central)	Stinson Canal & Irrigation Company
Reclamation District 2125 (South Central)	Stone Corral Irrigation District
Reclamation District 685 (Duncan)	Stratford Irrigation District
Reclamation District 739 (Lovelace)	Sweeney Ditch Company
Reclamation District 749 (Tulare Lake)	Terra Bella Irrigation District
Reclamation District 761 (El Rico)	Tranquillity Irrigation District
Reclamation District 761 (Tulare Lake)	Tulare Irrigation Company
Reclamation District 770 (Delta Lands)	Tulare Irrigation District
Reclamation District 780 (Homeland)	Tulare Lake Basin Water Storage District
Reclamation District 812 (Consolidated)	Tulare Lake Drainage District
Reclamation District 825 (Wilbur)	Tule River Association
Reclamation District No. 1601	Uphill Ditch Company
Reed Ditch Company	Vandalia Irrigation Company
Riverdale Irrigation District	Visalia & Kaweah Water Company
Robert E. Harrell	Watchumne Water Company
Rosedale-Rio Bravo Water Storage District	Watson Ditch Company
Saucelito Irrigation District	Westlands Water District
Semitropic Water Storage District	Wheeler Ridge-Maricopa Water Storage District
Sentinel Butte Mutual Water Company	Zalda Reclamation District 801
Shafter-Wasco Irrigation District	

FOOTHILLS

All constructed canals and drains and their tributaries as designated in reports submitted by the following agencies are incorporated into this table by reference.

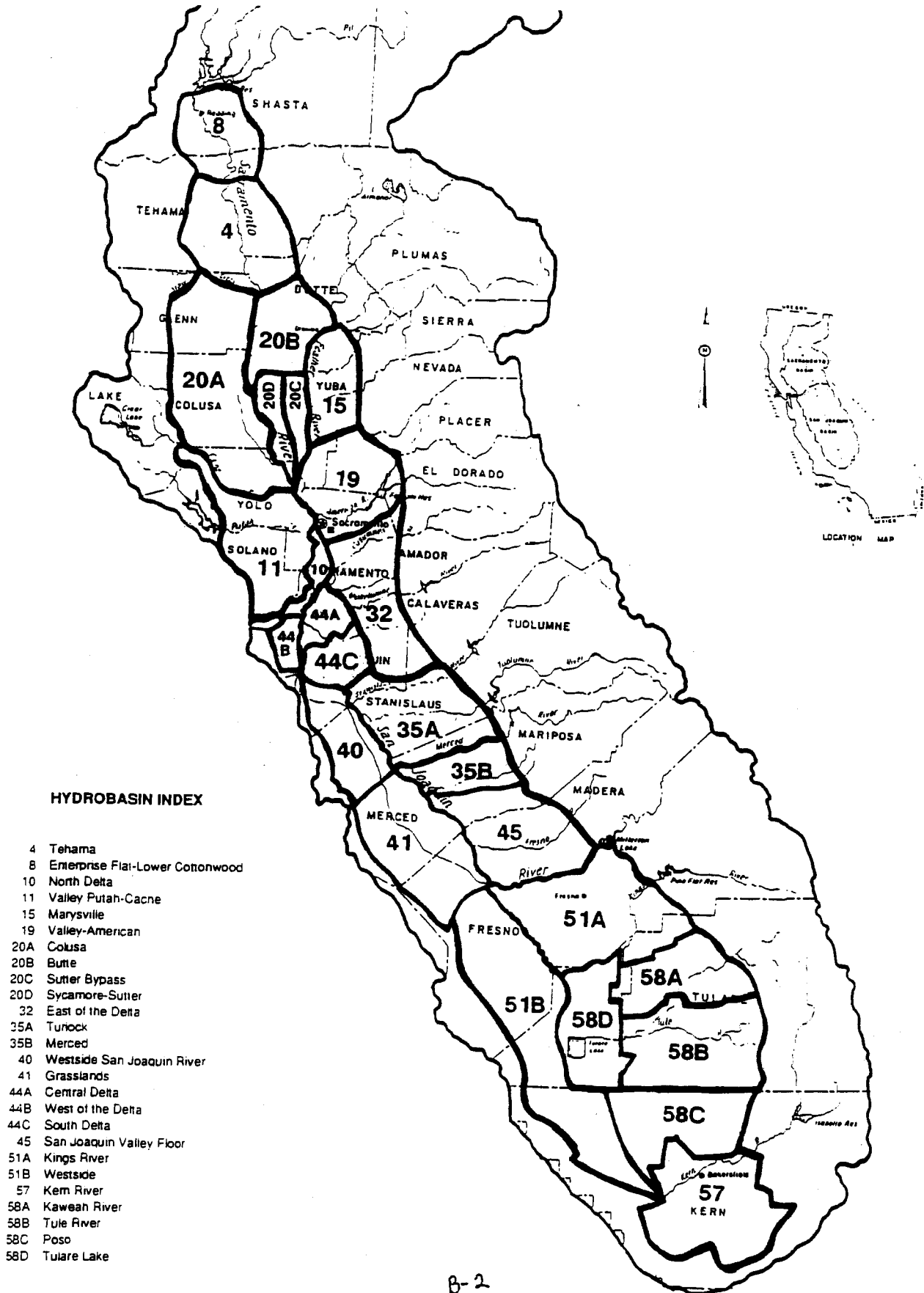
Tuolumne Regional Water District	Placer County Water Agency
Tuolumne Public Utility District	West Lake Resources Conservation District
Northridge Water District	Sierra County Department of Planning
Citrus Heights Irrigation District	Yuba County Water District
Squaw Valley Co. Water District	Plumas County
Tehachapi-Cummings Co. Water District	Plumas County Private Rancher
Fall River Conservation District	Indian-American Valleys RCD
Nevada Irrigation District	Calaveras County Water District
Amador County Water Resources	Big Valley Irrigation District
Jackson Valley Irrigation District	Pit Resource Conservation District
El Dorado Irrigation District	South Fork Irrigation District
Mill Race Group	

HYDROBASINS WITHIN THE
CENTRAL VALLEY, CALIFORNIA

- 4 Tehama
- 8 Enterprise Flat-Lower Cottonwood
- 10 North Delta
- 11 Valley Putah-Cache
- 15 Marysville
- 19 Valley-American
- 20A Colusa
- 20B Butte
- 20C Sutter Bypass
- 20D Sycamore-Sutter
- 32 East of the Delta
- 35A Turlock
- 35B Merced
- 40 Westside San Joaquin River
- 41 Grasslands
- 44A Central Delta
- 44B West of the Delta
- 44C South Delta
- 45 San Joaquin Valley Floor
- 51A Kings River
- 51B Westside
- 57 Kern River
- 58A Kaweah River
- 58B Tule River
- 58C Poso
- 58D Tulare Lake

Figure 1.

Location of Drainage Basins within the Central Valley, California for the Inland Surface Waters Plan.



**SUMMARY OF CHANNELS DOMINATED BY
AGRICULTURAL ACTIVITIES**

DRAINAGE AREA	# AGENCY REPORTS	CATEGORY (b)		CATEGORY (c)	
		# WATER BODIES	LENGTH (MILES)	# WATER BODIES	LENGTH (MILES)
SACRAMENTO					
Drainage Basin 4	2	0	0	1	21
Drainage Basin 11	19	18	190	395	832
Drainage Basin 15	14	15	83	130	387
Drainage Basin 19	4	8	54	267	530
Drainage Basin 20A	18	14	75	1152	1738
Drainage Basin 20B	9	8	120	213	516
Drainage Basin 20C	17	5	19	262	517
Drainage Basin 20D	10	0	0	65	621
Subtotal:	93	68	541	2485	5160
SAN JOAQUIN					
Drainage Basin 35A	6	7	81	441	1707
Drainage Basin 35B	8	17	180	513	905
Drainage Basin 40	25	6	67	107	280
Drainage Basin 41	20	7	141	380	1174
Drainage Basin 45	4	9	70	274	624
Subtotal:	63	46	538	1715	4689
DELTA					
Drainage Basin 10	17	1	5	230	585
Drainage Basin 32	8	7	92	59	123
Drainage Basin 44A	36	0	0	252	560
Drainage Basin 44B	2	3	15	23	56
Drainage Basin 44C	7	2	14	225	225
Subtotal:	70	13	126	789	1548
TULARE LAKE	109	28	268	1068	6460
FOOTHILLS	24	5	39	234	661
Area Subtotal:	359	160	1512	6291	18519
MAJOR WATERWAYS	5	0	0	28	1293
TOTAL:	364	160	1512	6319	19812

SUMMARY OF CHANNELS DOMINATED BY AGRICULTURAL ACTIVITIES

DRAINAGE AREA	CATEGORY (b1)		CATEGORY (b2)		CATEGORY (c1)		CATEGORY (c2)		CATEGORY (c3)	
	# WATER BODIES	LENGTH (MILES)	# WATER BODIES	LENGTH (MILES)	# WATER BODIES	LENGTH (MILES)	# WATER BODIES	LENGTH (MILES)	# WATER BODIES	LENGTH (MILES)
SACRAMENTO										
Drainage Basin 4	0	0	0	0	0	0	1	21	0	0
Drainage Basin 11	15	131	11	67	212	438	176	342	7	51
Drainage Basin 15	5	19	12	82	52	69	69	288	9	30
Drainage Basin 19	7	49	1	5	100	210	160	307	7	13
Drainage Basin 20A	15	69	0	0	633	773	494	756	25	208
Drainage Basin 20B	8	84	3	49	101	219	109	264	3	33
Drainage Basin 20C	5	19	0	0	195	203	61	173	6	140
Drainage Basin 20D	0	0	0	0	9	248	53	364	3	9
Subtotal:	55	371	27	203	1302	2160	1123	2516	60	484
SAN JOAQUIN										
Drainage Basin 35A	6	74	2	7	203	613	237	1077	1	17
Drainage Basin 35B	6	50	12	135	55	78	450	788	8	39
Drainage Basin 40	6	39	1	72	40	62	63	196	4	23
Drainage Basin 41	7	74	2	16	198	499	181	668	1	7
Drainage Basin 45	3	5	7	60	14	45	260	579	0	0
Subtotal:	28	241	24	290	510	1296	1191	3307	14	86
DELTA										
Drainage Basin 10	0	0	1	5	169	481	61	103	0	0
Drainage Basin 32	2	15	6	77	7	19	52	104	0	0
Drainage Basin 44A	0	0	0	0	188	263	64	297	0	0
Drainage Basin 44B	2	6	1	9	7	19	16	38	0	0
Drainage Basin 44C	0	0	2	14	137	126	88	99	0	0
Subtotal:	4	21	10	105	508	908	281	641	0	0
TULARE LAKE										
	8	29	10	144	43	1792	998	4484	27	184
FOOTHILLS										
	4	32	1	7	8	47	226	614	0	0
Area Subtotal:	87	633	61	598	2371	6203	3819	11562	101	753
MAJOR WATERWAYS										
	0	0	0	0	8	269	20	1025	0	0
TOTAL:	87	633	61	598	2379	6472	3839	12587	101	753

* Some water bodies may be included in more than one category at different times of the year due to recycling.

The footnotes listed below are used throughout the following tables

FOOTNOTES

WATER QUALITY CONCERNS:

- 1 = excess sediment in tailwater
- 2 = elevated TDS concentrations
- 3 = elevated boron concentrations
- 4 = elevated selenium concentrations
- 5 = elevated molybdenum concentrations
- 6 = pesticides
- 7 = fertilizers
- 8 = sewage
- 9 = dairy waste
- 10 = urban storm runoff
- 11 = elevated arsenic concentrations
- 12 = elevated chromium concentrations
- 13 = elevated mercury concentrations
- 14 = treated waste water

WATER TYPE:

- WT = wetland discharge
- WW = waste water treatment plant effluent
- Tail = agricultural tail water
- Tile = agricultural tile water
- U = urban storm runoff
- NF = natural flood flows
- OP = operational spill
- GW = ground water
- SW = surface water
- DW = dairy waste

CONSTRUCTION:

- E = earthlined
- C = concrete lined
- P = pipeline

THE DELTA BASINS

The Delta area has been divided into five basins. They are Drainage Basin No. 10, 32, 44A, 44B and 44C. The tidal characteristics of the Delta area are dominant in the North Delta (Basin 10), Central Delta (Basin 44A) and South Delta (Basin 44C) Basins. The areas west of the Delta (Basin 44B) draw water for irrigation mostly from the Delta. The basin east of the Delta (Basin 32) contains water districts which drain from the eastside of the valley into the Delta basins.

The Delta Basins that are influenced by tidal action have unique characteristics. These basins contain highly organic soils and are typically islands surrounded by channels of water. These waters are fed primarily by the Sacramento and San Joaquin Rivers. Water in the Delta meanders through sloughs, cuts, canals and channels. The direction of these flows depends on inflow volumes, tides, export pumping, diversions and other factors. Because of these characteristics, the water bodies do not easily fit the descriptions in the Inland Surface Waters Plan.

An argument can be made for a separate classification system for these Delta Basins. Few water bodies in these Basins are agricultural supply or drainage dominated. Many of the channels in the Delta have been constructed and dredged partially for agriculture but none would fall into category (b) designation. These major water bodies have not been classified as category (b) because of tidal influences and difficulties fitting them into the classification scheme.

Since many of the Delta islands are lower than surrounding lands, water supply methods differ from other irrigated lands in the Central Valley. Rather than a network of canals which supply water to a number of growers, irrigation is typically accomplished by the siphoning of the surrounding water by individual farms. More than 1,800 siphons divert water for crop and livestock production (State Lands Commission, 1991 and DWR 1987). Drainage is almost entirely surface (tail) water with little subsurface (tile) water.

Reclamation districts, found throughout the Delta, are responsible for the system of levees which protect the islands. These districts provided much of the data on drainage. Irrigation supply is the responsibility of individual farms. Therefore, information on water supply canals and irrigation systems may be lacking.

REFERENCES:

- State Lands Commission, 1991. *Delta-Estuary California Inland Coast, A Public Trust*. 208 pp.
Department of Water Resources, 1987. *Sacramento-San Joaquin Delta Atlas*. 71 pp.

TULARE LAKE BASIN

Category (b) Water Bodies

The following information supports our list of waterbodies recommended to be categorized as Category b waterbodies as defined in the Inland Surface Waters Plan. These water bodies are shown on Figures 1 and 2.

Kings River:

The Kings River begins in the highest elevations of the Sierra Nevada in the northeast part of the Tulare Lake Hydrologic Basin. It is dammed near Piedra in the Sierra Nevada foothills to form Pine Flat Reservoir. From the reservoir, it flows in a southwesterly direction towards historic Tulare Lake. About one mile east of where it meets Highway 41, the River splits into North Fork and Clarks Fork. At the Crescent Headworks, the North Fork continues into the Fresno Slough which connects the Kings River to the San Joaquin River during flood periods. (The Basin Plan describes the portion of the Fresno Slough from the Crescent Headworks to the Stinson Weir as the North Fork.) The last eight miles of the Fresno Slough has been reconstructed and will not be discussed here. Approximately three miles downstream of the North Fork/Clarks Fork split, the South Fork splits from the Clarks Fork. The South Fork and Clarks Fork reconverge five miles downstream.

The Kings River downstream of Peoples Weir, excluding the Fresno Slough, is dominated by agricultural supply flows from March through August each year. Aquatic resources in these reaches are enhanced due to these agricultural flows.

The Lower South Fork is dominated from September through February by a mix of ground water (used for irrigation) and agricultural discharges. Any aquatic resources present in the Lower South Fork of the Kings River exist only as a result of these agricultural flows.

The Fresno Slough is normally dry except for flood periods when it conveys Kings River water out of the Tulare Lake Basin. During other periods, the Slough receives small quantities of agricultural discharges which percolate quickly into the stream bed. Any aquatic resources present in the slough during periods of low precipitation exist only as a result of these discharges.

Eastside Streams:

Eastside streams are ephemeral and have water after rainfall events. Several streams on the east side of Fresno and Tulare counties may be dominated by "frost water" during winter months. These streams include Wahtoke Creek, Naveiencia Creek, and Sand Creek. "Frost water" is well water used to prevent the citrus crop from freezing during particularly cold days. The "frost water" may contain agricultural chemicals used in the citrus orchards.

TULARE LAKE BASIN

Traver Creek is normally dry except for flood periods. It currently carries agricultural supply water from the Kings River during the irrigation season and may carry "frost water" during cold spells. Any aquatic resources present in this creek during periods of no precipitation exist only as a result of the supply flows.

Kaweah River:

The Kaweah River system (which includes the St. Johns River, Elk Bayou, Outside Creek, Deep Creek, Elbow Creek, Cottonwood Creek, and Cross Creek) below Terminus Dam is fully appropriated. Except during flood periods, it is dry river bed or dominated by agricultural supply flows during the irrigation season.

Poso Creek:

Poso Creek originates in the Sierra foothills and flows into the valley floor in the general direction of the Tulare Lake Bed. On the valley floor, it is an uncontrolled ephemeral stream which flows only during periods of intense precipitation. The North Kern Water Storage District uses the lower reach of the Poso Creek channel for ground water recharge with Kern River water. Any aquatic resources present in this reach of the creek is the result of these flows.

Buena Vista Aquatic Recreation Area:

The Buena Vista Lake is the natural terminus of the Kern River. Aquatic lakes along the edge of the old lake bed are now used for limited storage and regulation of irrigation waters from the Kern River, the California Aqueduct, and some ground water. All beneficial uses at these lakes are derived from these flows.

Category (C-3) Water Bodies

Kings River:

The Kings River historically distributes into multiple channels as it enters the valley floor. These channels, now reconstructed and with headgates, are dry except for agricultural supply flows. The reconstructed channels include China Slough, Phillips Ditch, Carmelita Ditch, Rice Ditch, Short Ditch #1, McLaughlin Ditch, Farm Ditch #1 and #3, Jacobi Ditch, Fink Ditch, Turner Ditch, Hanke Ditch, Byrd Ditch, Jack Ditch, Cameron Ditch, and Harris Slough Ditch.

At the end of the Kings River, the Fresno Slough traditionally carried Kings River water out of the Tulare Lake Basin and into the San Joaquin River system. Since the Fresno Slough Bypass was constructed, the Fresno Slough has been dry except for agricultural supply water from the Mendota Pool and small amounts of Kings River water.

TULARE LAKE BASIN

Kaweah River:

The Kaweah River historically distributes into multiple channels as it enters the valley floor. Some of these channels remain natural and some have been reconstructed. Reconstructed channels include the Bates Slough, Lewis Creek, Inside Creek, Mill Creek, and Cameron Creek. These channels, except Mill Creek, are dominated by agricultural supply waters. Mill Creek, at different times of the year, may be dominated by agricultural supply waters or domestic and industrial wastewater from facilities in Visalia.

Tule River:

The Tule River historically flowed into the Tulare Lake. Since construction of Success Dam, flows in the Tule River are controlled for agricultural use except during flood releases. The US Corp of Engineers controls flood flows. The Tule River below the Friant-Kern Canal has been reconstructed and is also used for agricultural supply water diverted from the Friant-Kern Canal.

White River:

The White River originates in the Sierra foothills and flows into the valley floor in the general direction of the Tulare Lake Bed. On the valley floor, it is an ephemeral stream which flows only during periods of intense precipitation. The river channel has been reconstructed and occasionally carries agricultural return flows. These flows typically percolate within a short distance of the discharge.

Deer Creek:

Deer Creek is a valley floor, uncontrolled ephemeral stream of which reaches have been reconstructed. It also intermittently carries agricultural supply flows diverted from the Friant-Kern Canal.

Eastside Streams:

Several streams on the east side of Fresno and Tulare counties have been reconstructed for various purposes and may be dominated by "frost water" during winter months. These streams include Surprise Creek, Wooten Creek, Negro Creek, and Long Creek. "Frost water" is well water used to prevent the citrus crop from freezing during particularly cold days. The "frost water" may contain agricultural chemicals used in the citrus orchards.

Hydrographic Units (Drainage Basins for ISWP)

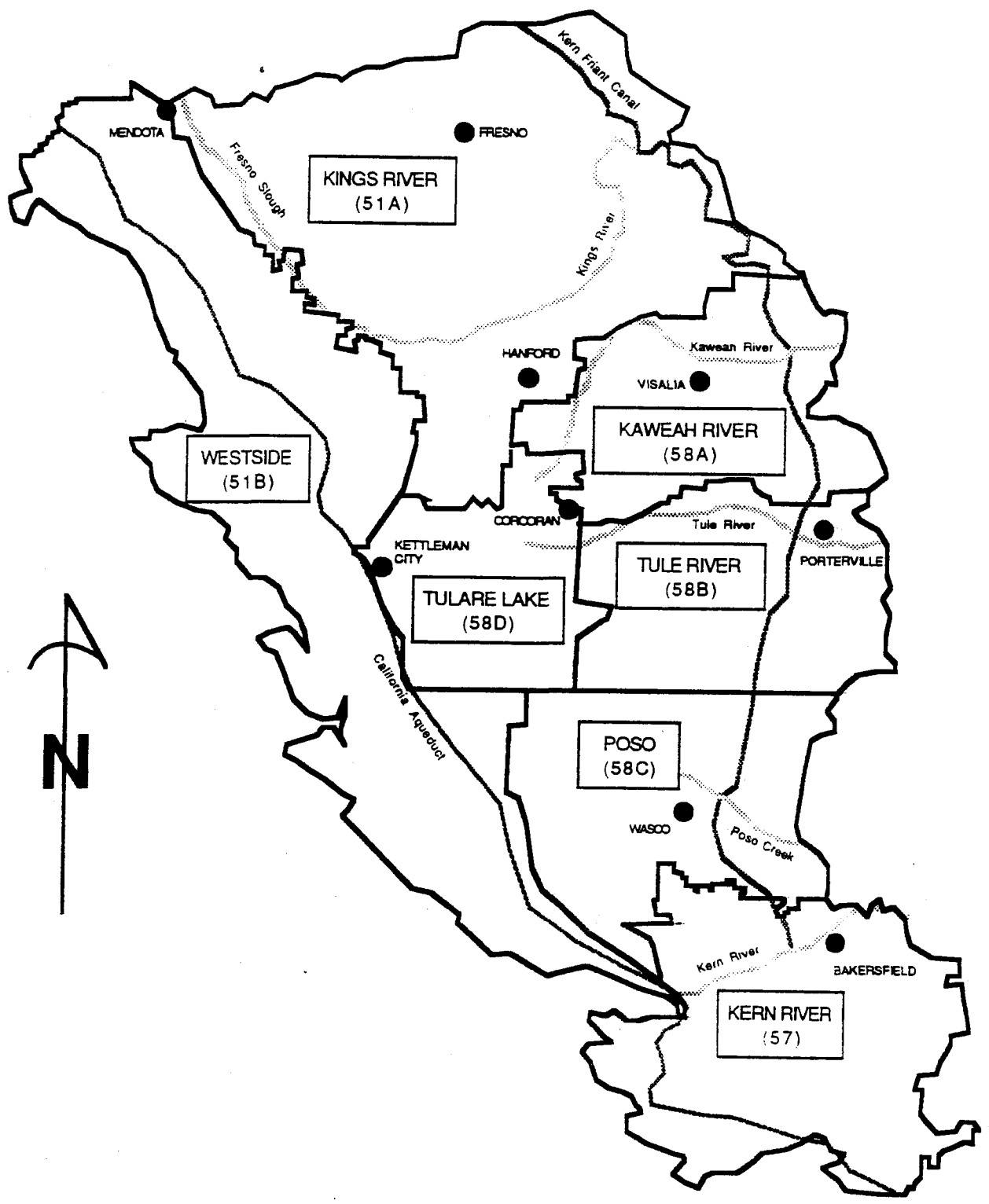


TABLE 1 - C1

MAJOR CONSTRUCTED AGRICULTURAL DRAINAGE WATER FACILITIES
WITHIN THE CENTRAL VALLEY OF CALIFORNIA

Name	Type of Construction	Length (miles)	Acres Drained	Water Type	Flow Period	Water Quality Concerns
Natomas Cross Canal	E	5.0		Sac River, Tail, NF	Jan - Dec	2,3,4
Colusa Basin Drain	E	75.0		Tail, NF	Jan - Dec	2,3,4
Knights Landing Ridge Cut	E	6.0		NF	Jan - Dec	2,3,4
Yolo Bypass	E	16.5		Tail, NF	Jan - Dec	2,3,4
Tisdale Bypass	E	4.5		NF	Jan - Dec	2,3,4
Sutter Bypass	E	32.0		Sac River, Tail, NF	Jan - Dec	2,3,4
Eastside Bypass	E	45.0		Tail, NF	Jan - Dec	2,3,4
San Luis Drain	C	84.8		GW	Oct - Apr	1,2,3,4

TABLE 1 - C2

MAJOR CONSTRUCTED AGRICULTURAL WATER TRANSPORT FACILITIES
WITHIN THE CENTRAL VALLEY OF CALIFORNIA

Name	Type of Construction	Length (miles)	Acres Drained	Water Type	Flow Period	Water Quality Concerns
Natomas Cross Canal	E	5		Sac River, Tail		
Tehema-Colusa Canal	C	110.9		Sac River	Jan - Dec	
Glenn-Colusa Canal		66		Sac River		
California Aquaduct	C	300+		Delta		
Folsom-South Canal	C	26.8			Jan - Dec	
Delta Mendota Canal	EC	116		Friant Dam, Fresno River	Jan - Dec	
Madera Canal		36			Feb - Sep	
Friant-Kern Canal	EC	151.8			Jan - Dec	
Cross Valley Canal		20				
Coalinga Canal	C	14.6			Jan - Dec	
Columbia-Mowry Fac.	EC	1.1			Feb - Sep	
Funks Reservoir	E				Jan - Dec	
Coming Canal	E	21.1		Sac River	Jan - Dec	
San Benito System	P	14.3		San Luis Reservoir	Jan - Dec	
Delta Cross Channel	E	1.2		Delta		
Clear Creek Tunnel	C	10.8		Clear Creek		
Spring Creek Power Cond.	C	3		Sac River		
Cow Creek Unit		70				
Toyon Pipeline	P	6				
Clear Creek South Unit		50		Clear Creek		