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California Regional Water Quality Control Board

BUREAU OF RECLAMATION
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Central Valley Region

Robert Schneider, Chair

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21 September 2001

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TRANSMITTAL OF WASTE DISCHARGE REQUIREMENTS NO. 5-01-234 FOR SAN LUIS & DELTA-MENDOTA WATER AUTHORITY AND UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, GRASSLAND BYPASS CHANNEL PROJECT (PHASE II), FRESNO AND MERCED COUNTIES

Enclosed is an official copy of the Waste Discharge Requirements Order No. 5-01-234 as adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 6-7 September 2001 meeting. The Order was adopted as originally proposed with some minor revisions.

If you have any questions, please contact Matt McCarthy at (916) 255-0735 or you may contact me at (916) 255-3101.

Rudy J. Schnagl

RUDY J. SCHNAGL, CHIEF
Agricultural Unit

Enclosure: Adopted Order
Standard Provisions (Discharger Only)

cc: Interested Parties

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 5-01-234

WASTE DISCHARGE REQUIREMENTS FOR SAN LUIS & DELTA-MENDOTA WATER AUTHORITY AND UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION GRASSLAND BYPASS PROJECT (PHASE II) FRESNO AND MERCED COUNTIES

The California Regional Water Quality Control Board, Central Valley Region, (Regional Board) finds that:

1. The San Luis and Delta-Mendota Water Authority (Authority) submitted a Report of Waste Discharge dated 9 February 2001 for Phase II of the Grassland Bypass Project (Project). This project, which went into operation on 23 September 1996, transports subsurface agricultural drainage, tailwater and storm water runoff via the Grassland Bypass Channel and a portion of the San Luis Drain (Drain) and discharges it to Mud Slough (north). The Drain is owned by the United States Department of the Interior, Bureau of Reclamation (Bureau), and is operated by the Authority. Hereafter, the Authority and Bureau will be jointly referred to as the Discharger.

2. This order covers Phase II of the Project. The Authority previously submitted a Report of Waste Discharge dated 25 August 1997 for Phase I of the Project. Phase I of the Project is interim and is regulated by the Regional Board's waste discharge requirement Order No. 98-171 adopted on 24 July 1998.

3. Within the Authority, a Drainage Activity Agreement has been set up for the purpose of implementing the Project. This agreement includes six irrigation and drainage districts and one unincorporated entity within the Grassland Watershed, a tributary basin to the San Joaquin River. The districts are: Charleston Drainage District, Pacheco Water District, Panoche Drainage District, Broadview Water District, Firebaugh Canal Water District, Widren Water District and the Camp 13 Drainage Area. A complete description of the lands served by the project is provided in Attachment 1. This group is known as the Grassland Area Farmers. The area served by the Project is shown as the Grassland Drainage Area on the map included as Attachment 2. This area includes 1,100 acres of land that was not part of Phase I of the Project.

4. The Project currently serves approximately 97,400 acres of farmland and is designed to route subsurface agricultural drainage containing high levels of selenium and other constituents around wetlands in the Grassland Watershed. This drainage had previously flowed through a variety of wetland channels to Salt Slough and Mud Slough (north), both of which are tributary to the San Joaquin River. The purpose of Phase II of the

Project is to continue the Phase I separation of drainage discharged from the Grassland Drainage Area from wetland water supply conveyance channels for the period 2001-2009 and to facilitate drainage management that maintains the viability of agriculture in the Grassland Drainage Area while promoting continuous improvement in water quality in the San Joaquin River.

5. The Grassland Bypass Channel is a four-mile long earthen ditch that links the combined discharges from the Grassland Drainage Area to the Drain.

6. The Drain is an 85-mile long, trapezoidal concrete canal that starts near Five Points in Fresno County and generally runs northwest to its terminus at the northern end of Kesterson Reservoir near Gustine in Merced County in SE 1/4, SE 1/4, SE 1/4 Section 6 of T8S, R1OE, MDB&M (See map, Attachment 3). Built to transport agricultural drainage water, it had not been used since Kesterson Reservoir was closed in 1986 and converted to upland habitat. Only the lower 28 miles of the Drain, starting at the point where it intersects the Grassland Bypass Channel approximately one half mile west of Russell Avenue, are being used as part of the Project. The Drain has been blocked above this point and the Authority is operating the system to keep other drainage from entering the portion of the Drain being used by the Project.

7. The Project primarily transports and discharges subsurface agricultural drainage flows. Approximately 38,700 acres of the Grassland Drainage Area have subsurface drains that collect shallow groundwater that is generally characterized as being high in salts, boron, selenium and other constituents. Tailwater and storm water runoff also enters the drainage system.

8. The primary source of irrigation water for the Grassland Drainage Area is the Federal Central Valley Project, which imports water from the Sacramento-San Joaquin Delta through the Delta-Mendota and San Luis Canals. This supply is augmented by wells.

9. The Project also serves as an outlet for storm water runoff from both inside and outside of the Grassland Drainage Area. During the winters of 1997 and 1998, flood flows from Panoche Creek, other west side creeks and local rainfall entered the Grassland Drainage Area drainage system and contributed to the discharge. When flows exceeded the capacity of the Project, commingled storm and subsurface drainage water was released from the Grassland Drainage Area to Camp 13 Slough and/or Agatha Canal. Flood flows from Panoche Creek contain sediment with high selenium levels and can contribute to the measured loads of this constituent leaving the Grassland Drainage Area. Pursuant to a contract with the Bureau, the U.S. Geological Survey is developing a model that can be used to better evaluate the sources of selenium discharged from the Grassland Drainage Area during storm events and to evaluate long-term management options.

10. The *Agreement for Use of the San Luis Drain* (Use Agreement) between the Bureau and Authority contains terms and conditions that address Project longevity and water quality. The project will operate for a maximum of eight years and three months. Monthly and annual limits were placed on the loads of selenium that could be discharged and an extensive, multi-agency monitoring program has been established. Details of the monitoring program are provided in the *Compliance Monitoring Program for Use and Operations of the Grassland Bypass Project, September 1996 or latest version,* which was prepared by the Bureau, U.S. Environmental Protection Agency (U.S. EPA), U.S. Fish and Wildlife Service, U.S. Geological Survey, Regional Board, California Department of Fish and Game (CDFG), and the Authority.

11. The Bureau has established an Oversight Committee consisting of the Regional Directors of the Bureau, U.S. Fish and Wildlife Service, U.S. EPA, the Director of CDFG and the Regional Board's Executive Officer. The role of the Oversight Committee is to review the progress of the Project and make recommendations regarding all aspects of the Project. The Bureau has also established teams of representatives from agencies involved with the Project to discuss monitoring efforts, as well as technical and policy issues, on a regular basis.

12. The Use Agreement contains calculated selenium load limits for the Project through December 31, 2009. These load limits are included in the tables under Order B-2. The load limits specify values for both annual and monthly loads of selenium. The load limits are designed to meet the Total Maximum Monthly Load (TMML) limits for Above Normal and Wet water years by 2006, and for Critical, Dry, and Below Normal water years by 2011. The reductions between current load limits and the TMML load limits are calculated according to equations described in the Use Agreement. The equations result in a gradual reduction in loading, with separate calculations for each water year type. In the event that the Regional Board and U.S. EPA adopt revised TMML values, the Use Agreement selenium load values may be revised as described in the Use Agreement to meet the new TMML values.

13. The Bureau is the owner of the real property from which the discharge will occur (e.g. the Drain). The Bureau is ultimately responsible for ensuring compliance with these waste discharge requirements. The Authority is responsible for compliance with these requirements, including day-to-day operations and monitoring. Enforcement actions will be taken by the Regional Board against the Bureau only in the event that enforcement actions against the Authority are ineffective or would be futile, or that enforcement is necessary to protect public health or the environment. In addition, since the Bureau is a public agency, enforcement actions will be taken against it only after it is given the opportunity to use its governmental powers promptly to remedy the violations.

14. The design of the inlet and outlet structures limits the rate of discharge from the Drain to Mud Slough (north) to 150 cubic feet per second (cfs). During water year 2000, the rate of discharge has ranged from 18 to 76 cfs. Just below the discharge point, Mud Slough (north) had flows ranging from 42 to 362 cfs during the same period. The total volume discharged from the Drain in water year 2000 was 31,260 acre-feet.

15. The Regional Board has conducted a surface water monitoring program in the Grassland Watershed and San Joaquin River since 1985, to assess the impacts of subsurface agricultural drainage. Since the start of the Project, samples have been collected in the Drain near the discharge point and both upstream and downstream of the discharge, in Mud Slough (north). Results of the monitoring for the period of 23 September 1996 through 26 April 2001 are:

Constituent	Mud Slough (n) Upstream	San Luis Drain Discharge*	Mud Slough (n) Downstream
Electrical Conductivity (umhos/cm)			
Count	236	1658	237
Min	595	2430	1096
Mean	1444	4608	2764
Median	1415	4550	2690
Max	3460	9790	5530
Constituent	**Mud Slough (n) Upstream**	**San Luis Drain Discharge***	**Mud Slough (n) Downstream**
Boron (mg/L)			
Count	235	1652	235
Min	0.4	1.4	1.1
Mean	1.3	7.3	3.7
Median	1.2	7.3	3.3
Max	3.3	17	8.9
Selenium (µg/L)			
Count	206	1653	236
Min	0.2	15.2	3.1
Mean	0.9	60.7	24.2
Median	0.8	56.0	20.7
Max	2.6	134	104
Molybdenum (µg/L)			
Count	55	55	56
Min	3	7	3
Mean	8	28	15
Median	7	27	15
Max	18	48	26

San Luis Drain data taken from composite daily samples collected by automated sampler.

16. The San Joaquin River at Crows Landing is the compliance monitoring site for the selenium control program in the Grassland Watershed. Results of the monitoring at this site during the period of 23 September 1996 to 26 April 2001 has found:

Constituent	Count	Min	Mean	Median	Max
EC (µmhos/cm)	236	128	921	1006	1830
Boron (mg/L)	236	0.06	0.65	0.67	1.6
Selenium (µg/L)	236	0.14	2.5	2.1	8.2
Molybdenum (µg/L)	49	0.72	4.7	5.0	8.5

During water year 2000, releases from the Drain contributed 97% of the selenium, 55% of the boron, 36% of the salt and 13% of the volume of water discharged to the San Joaquin River from the Grassland Watershed.

17. The Drain contains sediment that was deposited before the start of the Project. This sediment contains trace elements at concentrations that are higher than those found in average California soils and, if flushed from the Drain, would pose a threat to receiving waters. The Project is being managed to minimize the discharge of sediments and the flow limits in this Order will ensure that the velocity of water in the Drain does not result in scouring of bottom sediments. Any selenium that originates in the sediment and is moved into the water column (either attached to sediment or as a result of movement of this constituent from the sediment to the water in a soluble form) will be detected by the monitoring conducted near the point of discharge. The effluent limits apply to selenium from the sediment as well as selenium from the Grassland Drainage Area.

18. The Regional Board has adopted a Water Quality Control Plan, Fourth Edition, for the Sacramento River and San Joaquin River Basins (Basin Plan), which designates beneficial uses, establishes water quality objectives and contains implementation plans and policies for waters of the Sacramento and San Joaquin Basins. These requirements implement the Basin Plan.

19. The beneficial uses of Mud Slough (north), as identified in the Basin Plan, are: limited irrigation supply, stock watering, water contact recreation and noncontact water recreation, sports fishing, shellfish harvesting, warm water aquatic habitat, warm water spawning and wildlife habitat.

20. The Basin Plan contains the following timetable for meeting performance goals and water quality objectives for selenium in Mud Slough (north) and the San Joaquin River and indicates that prohibitions of discharge and waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium:

Compliance Time Schedule for Meeting the 4-day Average and Monthly Mean Water Quality Objectives for Selenium

Selenium Water Quality Objectives (in **bold**) and Performance Goals (in *italics*)

Water Body/Water Year Type	10 January 1997	1 October 2002	1 October 2005	1 October 2010
Salt Slough and Wetland Water Supply Channels listed in Appendix 40 of the Basin Plan	**2 µg/L monthly mean**			
San Joaquin River below the Merced River. Above Normal and Wet Water Year types[1]		*5 µg/L monthly mean*	**5 µg/L 4-day average**	
San Joaquin River below the Merced River; Critical, Dry and Below Normal Water Year types		*8 µg/L monthly mean*	*5 µg/L monthly mean*	**5 µg/L 4-day average**
Mud Slough (north) and the San Joaquin River from Sack Dam to the Merced River				**5 µg/L 4-day average**

[1] The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Resources Control Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, May 1995) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous year's classification will apply until an estimate is made of the current water year.

21. The Basin Plan contains the following prohibition of discharge: "The discharge of selenium from agricultural subsurface drainage systems in the Grassland Watershed to the San Joaquin River is prohibited in amounts exceeding 8,000 lbs/year for all water year types beginning 10 January 1997." The Drain carries most, but not all, of the subsurface agricultural drainage discharged from the Grassland Watershed and during water year 2000 (1 October 1999-30 September 2000), 4,595 pounds of selenium were discharged from the Drain to Mud Slough.

22. The Regional Board has identified the San Joaquin River as a water quality limited segment with respect to selenium and Section 303(d) of the Federal Clean Water Act requires the development of a Total Maximum Daily Load (TMDL) where existing

effluent limitations are not stringent enough to meet water quality standards. The August 2001 Staff Report titled *Selenium Total Maximum Daily Load for the Lower San Joaquin River* contains a TMDL designed to meet the Clean Water Act requirements. The TMDL establishes monthly load limits or TMML values that represent the total load that the San Joaquin River can assimilate without exceeding the applicable water quality objective at a specified frequency. The U.S. EPA allows violations of standards at a frequency no greater than once every three years. The TMML is apportioned among background sources of selenium (wetlands, the Merced River, and the San Joaquin River upstream of Salt Slough), a margin of safety (established as 10% of the TMML) and a load allocation (discharges from the Grassland Drainage Area). The effluent limits in the following table are based on the calculated load allocation needed to meet the water quality objectives in the San Joaquin River at Crows Landing.

Monthly Load Allocations (pounds of selenium) for the Grassland Drainage Area Based on Applicable Selenium Water Quality Objectives for the San Joaquin River at Crows Landing

Month	Effluent Limits which apply no later than					
	1 October 2005		1 October 2010			
	Above Normal[1]	Wet	Critical	Dry/Below Normal	Above Normal	Wet
October[2]	260	328	55	233	260	328
November	260	328	55	233	260	328
December	398	211	152	319	398	211
January	398	211	151	319	398	211
February	472	488	93	185	472	488
March	472	488	92	184	472	488
April	490	506	101	193	490	506
May	497	512	105	197	497	512
June	212	354	69	130	212	354
July	214	356	70	131	214	356
August	225	366	75	137	225	366
September	264	332	57	235	264	332
Total	4162	4480	1075	2496	4162	4480

1 The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Resources Control Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, May 1995) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous year's classification will apply until an estimate is made of the current water year.

2 The monthly load limits are based on the water year classification for October through September applied to the following calendar year, January to December. For example, the October through December 2005 load limits are based on the water year classification for October 2004 through September 2005.

23. The Basin Plan also contains numerical objectives for boron and molybdenum that apply to Mud Slough (north) as listed below:

Constituent	Monthly Mean	Maximum
boron (mg/L)	2.0 (15 March-15 September)	5.8
molybdenum (mg/L)	0.019	0.050

24. Subsurface agricultural drainage from the Grassland Drainage Area is high in boron and molybdenum and discharges from the Drain are resulting in violations of these objectives. This drainage has historically flowed to Mud Slough (north) via other channels and the steps taken to meet the load limits in this Order for selenium discharges are expected to result in reductions in boron and molybdenum discharges.

25. The Basin Plan contains objectives for toxicity and other water quality parameters that apply to this discharge.

26. The numerical water quality objectives for salinity in the San Joaquin River near Vernalis are violated frequently. The discharge from the Project is high in salt. The Use Agreement calculates values for annual and monthly loads of salt for the eight year and three month life of the project. If the applicable salt discharge values are exceeded, a Drainage Incentive Fee that is incorporated into the Use Agreement shall apply. These values apply only until the Regional Board adopts TMDL load limits as part of the TMDL process. After Board approval, TMDL salt load limits will be considered for inclusion in revised WDRs for the Project. Consideration of amended or new WDRs will be done in a public meeting or a public hearing.

27. The Project is part of a long-term effort to improve the management of agricultural subsurface drainage discharges in the Grassland Watershed. The primary focus of the Project has been on the control of the selenium, but the discharge is also causing or contributing to the violations of water quality objectives for other constituents in Mud Slough (north) and the San Joaquin River. Since the Project involves consolidation and rerouting of drainage rather than a new discharge, this Order will address this situation through the development and implementation of drainage management plans.

28. The Basin Plan's selenium control program states that all those discharging or contributing to the generation of agricultural subsurface drainage will be required to submit for approval a Long Term Drainage Management Plan (LTDMP) designed to meet final water quality objectives. Order No. 98-171 required the Discharger to prepare a LTDMP and to update it annually. This Order requires the Discharger to continue to update the plan annually. The information in the plan will serve as the basis for

subsequent Regional Board Orders that set specific deadlines (compliance timetables) for meeting objectives in Mud Slough (north) and the San Joaquin River.

29. An Environmental Impact Statement/Environmental Impact Report (EIS/EIR), required by the California Environmental Quality Act (CEQA), was approved by the Authority on 9 August 2001 for the continued use of the Project for the period 1 October 2001 through 31 December 2009. The Authority has subsequently issued a Notice of Determination.

The environmental analysis for the Project finds that water quality and biota in the last six miles of Mud Slough (north) may be adversely impacted by the Project. Without the Project, agricultural subsurface drainage is intermittently discharged to Mud Slough (north), while with the Project it will be continuously discharged to Mud Slough (north). However, the Project will significantly improve water and habitat quality in wetland water supply channels and this should help offset the impacts to Mud Slough (north). Water quality-related mitigation measures identified in the EIS/EIR documents are listed below.

a) The proposed Project is limited to an eight year and three month duration. A biological, water quality, and sediment monitoring program will be implemented during the life of the project to evaluate the impact of the project. If unacceptable problems or impacts are identified, appropriate actions will be developed.

b) Drainage from the Grassland Drainage Area will be removed from 6.6 miles of the San Joaquin River (between Salt Slough and Mud Slough (north) confluence) and 93 miles of wetland water supply channels as defined in Appendix 40 of the Basin Plan.

c) The amount of drainage water discharged to the San Joaquin River system will be reduced to meet Basin Plan water quality objectives. A plan will be submitted by the drainage entities to the Regional Board, which outlines drainage reduction efforts and the use of the Drain as a drain water conveyance facility as part of the overall program to effectively manage and monitor agricultural drainage discharges. These plans will be submitted on an annual basis.

d) Drainage will be maintained within the Drain north of Check 19, MP 105.72. Additionally, a spill structure will be maintained at Check 19 to permit the removal of accumulated groundwater and storm water in the Drain, upstream of the drainage inflow.

e) A fish barrier is presently maintained by CDFG during certain periods of the year on the San Joaquin River just upstream of the Merced River. This barrier

prevents the straying of salmon to Mud Slough (north) due to the attractive flows caused by the discharge. The ultimate responsibility for preventing the straying of salmon into Mud Slough (north) lies with the Discharger.

f) The discharge from the Drain to Mud Slough (north) will be operated so as to minimize hydraulic turbulence and erosion within Mud Slough (north). If necessary, bank stabilization shall be undertaken and an energy dissipation structure operated and maintained.

g) Control structures will be maintained to prevent inflow of drainage from Mud Slough (north) to the CDFG China Island Unit.

h) The Drain will be operated such that sediments in the Drain are not mobilized. A flow rate not to exceed 1 foot per second has been determined to be the appropriate velocity to achieve this goal. Sediments in the drain will be monitored and will be removed before they exceed hazardous waste levels.

i) An In-Valley Treatment/Drainage Reuse element of the Project will be implemented on up to 6,200 acres of land within the Grassland Drainage Area. This element of the Project is composed of three phases involving water reuse, removal of salt, selenium, and boron, and the disposal of the removed salts to prevent them from discharging into the San Joaquin River. Approximately 17,000 acre-feet, or half of the total drain water produced in the Grassland Drainage Area, will be handled by this element of the Project. Phase I involves the purchase of land and planting to salt-tolerant crops by 2003, Phase II involves the installation of subsurface drainage and collection systems and an initial treatment system, and Phase III involves the completion of construction of treatment removal and salt disposal systems by 2009.

The Regional Board has considered the above CEQA documents in preparing this Order. Since the Project is a short term or interim project that will operate for a maximum of eight years and three months, any proposal to discharge after the eight year and three month period would be considered a different project and will need a new environmental assessment under CEQA.

30. The discharge of subsurface agricultural drainage, tailwater and storm water from agricultural lands to surface water does not require an NPDES permit.

31. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them

with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

32. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge.

33. The Discharger shall implement this waste discharge requirement on the effective date of this Order.

IT IS HEREBY ORDERED that Order No. 98-171 is rescinded and that the San Luis & Delta-Mendota Water Authority and the U.S. Department of the Interior, Bureau of Reclamation, their agents, successors, and assigns and in order to meet the provisions of Division 7 of the California Water Code and regulations adopted thereunder shall comply with the following:

A. Discharge Prohibitions:

1. The discharge of waste classified as 'hazardous' as defined in Section 2521(a) of Title 23, CCR, Section 2510, et sec., is prohibited.

2. The discharge of agricultural subsurface drainage water to Salt Slough and the wetland water supply channels identified in Appendix 40 of the Basin Plan is prohibited unless water quality objectives for selenium are being met.

3. The discharge of selenium from agricultural subsurface drainage systems in the Grassland Watershed to the San Joaquin River is prohibited in amounts exceeding 8,000 lbs/year.

B. Effluent Limitations (Drain Terminus):

1. The rate of discharge shall not exceed 150 cfs.

2. The discharge of selenium from the Grassland Drainage Area and Drain shall not exceed the monthly or annual loads in the following tables:

	2001	2002	2003	2004	2005				2006			
	All Year Types				Critical	Dry/ Below Normal	Above Normal	Wet	Critical	Dry/ Below Normal	Above Normal	Wet
Jan[1]	---	385	359	333	398	398	398	211	373	390	398	211
Feb	---	619	571	523	472	472	472	488	434	443	472	488
March	---	753	685	618	472	472	472	488	434	443	472	488
April	---	577	538	499	490	490	490	506	451	460	490	506
May	---	488	464	439	497	497	497	512	458	467	497	512
June	---	429	397	365	212	212	212	354	198	204	212	354
July	---	429	397	365	214	214	214	356	200	206	214	356
Aug	---	387	363	339	225	225	225	366	210	216	225	366
Sep	350	310	303	297	264	264	264	332	243	261	264	332
Oct	315	308	301	294	260	260	260	328	240	257	260	328
Nov	315	308	301	294	260	260	260	328	240	257	260	328
Dec	353	334	316	298	398	398	398	211	373	390	398	211
Annual	---	5328	4995	4662	4162	4162	4162	4480	3853	3995	4162	4480

1 The monthly load limits are based on the water year classification for October through September applied to the following calendar year, January to December. For example, the October through December 2005 load limits are based on the water year classification for October 2004 through September 2005.

	2007				2008				2009			
	Critical	Dry/ Below Normal	Above Normal	Wet	Critical	Dry/ Below Normal	Above Normal	Wet	Critical	Dry/ Below Normal	Above Normal	Wet
Jan[1]	349	382	398	211	324	374	398	211	270	357	398	211
Feb	396	415	472	488	358	386	472	488	275	323	472	488
March	396	414	472	488	358	386	472	488	274	322	472	488
April	412	431	490	506	373	401	490	506	288	336	490	506
May	419	437	497	512	379	407	497	512	293	341	497	512
June	183	196	212	354	169	187	212	354	138	169	212	354
July	185	197	214	356	171	189	214	356	139	171	214	356
Aug	195	207	225	366	180	199	225	366	147	179	225	366
Sep	223	258	264	332	202	255	264	332	156	249	264	332
Oct	219	255	260	328	199	252	260	328	153	246	260	328
Nov	219	255	260	328	199	252	260	328	153	246	260	328
Dec	349	382	398	211	324	374	398	211	270	357	398	211
Annual	3545	3829	4162	4480	3236	3662	4162	4480	2557	3296	4162	4480
									2702	3325	4162	4480

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1 The monthly load limits are based on the water year classification for October through September applied to the following calendar year, January to December. For example, the October through December 2005 load limits are based on the water year classification for October 2004 through September 2005.

3. In the event this Order is not revised or rescinded prior to 1 January 2010, the TMMLs listed in the column titled "Effluent Limits which apply no later than 1 October 2010" from the table in Finding 23 shall apply if the discharge continues.

C. **Discharge Specifications:**

1. The discharge shall not cause a pollution or nuisance as defined by the California Water Code, Section 13050.

2. The Project will be operated to minimize the discharge of sediment.

3. The Project will be operated to minimize erosion in Mud Slough (north). An energy dissipating structure will be operated and maintained at the discharge point to Mud Slough (north) to dissipate the energy caused by the hydraulic drop. Erosion within the stream, including stream bottom and sides will be prevented and bank stabilization will be undertaken, if necessary.

4. The Project will be operated to prevent the mobilization of drain sediments. A maximum flow rate of 1 foot per second will be used to prevent scouring and mobilization of drain sediments.

D. **Receiving Water Limitations:**

1. Receiving water limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this Order. The discharge from the Project shall not cause to the following in Mud Slough (north):

   a. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or objects in the water.

   b. Oils, greases, waxes, floating material (liquids, solids, foams, and scums), or suspended material to create a nuisance or adversely affect beneficial uses.

   c. Aesthetically undesirable discoloration.

   d. Fungi, slimes, or other objectionable growths.

   e. Deposition of material that causes nuisance or adversely affects beneficial uses.

f. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.

g. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental physiological response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

h. Chemical constituents, including pesticides, to be present in concentrations that cause nuisance or adversely affect beneficial uses.

E. Provisions:

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are attached hereto and by reference are part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

2. The Discharger shall comply with the attached Monitoring and Reporting Program No. 5-01-234.

3. The Discharger shall prepare and submit annual updates to the existing LTDMP for the Project as prepared pursuant to Order No. 98-171. The annual updates are due on 1 January of each year.

4. This Order is subject to periodic review by the Regional Board.

5. The Discharger shall notify the Regional Board at least one week prior to conducting routine maintenance on the Project facilities that may impact the quality of waters discharged by the Project. Where maintenance activities are conducted on an emergency basis, the Regional Board shall be notified of the activities as soon as possible. Additional monitoring may be required to assess the impacts of the maintenance activities.

6. In the event floodwaters enter the Grassland Drainage Area, the Discharger has the option of monitoring the situation and preparing a technical report showing how much of the selenium discharged came from sources outside of the control of the Discharger. This report is due no later than 60 days following the end of a flood event and will be used to assess compliance with the selenium effluent limits.

7. The Discharger shall conduct the chronic toxicity testing specified in the attached Monitoring and Reporting Program No. 5-01-234. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and upon approval conduct the TRE, and this Order will be reopened and a toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included.

8. In the event that monitoring reveals unacceptable impacts, the Discharger, in consultation with the Regional Board, will develop and implement corrective and/or mitigating measures. If the impacts cannot be corrected or mitigated to the satisfaction of the Regional Board, this Order will be reopened and appropriate provisions adopted.

9. Agricultural subsurface drainage discharged to the Drain by the Project will be maintained north of Check 19 (Milepost 105.72). The Dischargers will maintain a dam at Check 19 that will prevent the upstream flow of water. At the same time, the Discharger must provide for the discharge of storm water and groundwater seepage that enters the Drain upstream of Check 19. If necessary, a spill structure will be maintained at Check 19 for the release of this water. A Report of Waste Discharge must be submitted at least 120 days prior to the discharge of water from the section of the Drain upstream of Check 19 to that portion of the Drain being used by the Project.

10. If CDFG fails to operate a barrier which prevents the migration of salmon into Mud Slough (north), the Discharger, in consultation with the Regional Board and CDFG, will design and operate a fish ladder, collection facility and required facilities (freshwater and electrical supply). This system will be used to capture and spawn adult Chinook salmon that stray into Mud Slough (north) as a result of the attractive flows in Mud Slough (north) caused by the discharge.

11. Sediments in the portion of the Drain used to convey agricultural subsurface drainage shall not exceed hazardous waste levels for any constituent.

12. The velocity of water in the Drain shall not exceed one foot per second at any location where sediment could be entrained in the flowing water.

13. In the event the Discharger intends to discharge subsurface agricultural drainage water to Mud Slough (north) or any other surface water after 31 December 2009,

the Discharger shall submit a complete Report of Waste Discharge to the Board no later than 1 January 2009. This report shall address the steps to be taken to meet the TMML limits in Finding 22 of this Order. The report may also present a technical argument for alternative load limits or an alternative approach to meet the water quality objectives for selenium. The Report of Waste Discharge must include a report of compliance with CEQA.

14. In the event of any change in control or ownership of land or waste management facilities related to the Project and presently controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

15. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation, if a corporation, the address and telephone number of the persons responsible for contact with the Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, Gary M. Carlton, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 7 September 2001.

GARY M. CARLTON, Executive Officer

Amended 7 September 2001

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 5-01-234

FOR
SAN LUIS & DELTA MENDOTA WATER AUTHORITY
AND
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GRASSLAND BYPASS PROJECT (PHASE II)
FRESNO AND MERCED COUNTIES

Numerous agencies are involved in conducting monitoring and special studies related to the Grassland Bypass Project. Where available, the Discharger may use data collected by other parties, **however the Discharger is ultimately responsible for compliance with the following monitoring and reporting program.** All data reported must meet the detection limits and recovery criteria for quality assurance samples specified in Attachment 1.

SAN LUIS DRAIN MONITORING

Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B). The time of collection of a grab sample shall be recorded. The following shall constitute the San Luis Drain discharge monitoring program:

Constituent	Unit	Type of Sample	Sampling Frequency
Flow	cfs	daily average	Daily
pH	pH units	grab	Weekly
Electrical Conductivity	µmhos/cm	grab	Weekly
Temperature	degrees F	grab	Weekly
Boron	mg/L	grab	Weekly
Molybdenum	µg/L	grab	Monthly
Nutrient Series			
Nitrate	mg/L as N	grab	Monthly[1]
Ammonia	mg/L	grab	Monthly[1]
Total Kjeldahl Nitrogen	mg/L	grab	Monthly[1]
Total Phosphate	mg/L	grab	Monthly[1]
Ortho Phosphate	mg/L	grab	Monthly[1]
Selenium	µg/L	24-hour composite	Daily
Electrical Conductivity	µmhos/cm	24-hour composite	Daily
Boron	mg/L	24-hour composite	Daily
TSS (total susp. solids)	mg/L	grab	Weekly[2]

[1] Sampling Frequency increases to every other week during the irrigation season (March through August)
[2] Daily during storm events

RECEIVING WATER MONITORING

Receiving water monitoring shall be conducted when there is a discharge from the San Luis Drain. Except for flow, all receiving water samples shall be grab samples. Receiving water samples shall be taken from the following sites:

Site	Description
C	Mud Slough (north) upstream of the San Luis Drain discharge.
D	Mud Slough (north) at the bridge downstream of the San Luis Drain discharge.
G	San Joaquin River at Fremont Ford
N	San Joaquin River at Crows Landing

Constituent	Unit	Type of Sample	Station	Sampling Frequency
Flow	cfs	daily average	D,G,N	Daily
pH	pH units	grab	C,D,G,N	Weekly
Electrical Conductivity	umhos/cm	grab	C,D,G,N	Weekly
Temperature	degrees F	grab	C,D,G,N	Weekly
Selenium	µg/L	grab	C,D,G,N	Weekly
Boron	mg/L	grab	C,D,G,N	Weekly
Molybdenum	µg/L	grab	C,D,G,N	Monthly
Nutrient Series				
Nitrate	mg/L	grab	C,D,G,N	Monthly[1]
Ammonia	mg/L	grab	C,D,G,N	Monthly[1]
Total Kjeldahl Nitrogen	mg/L	grab	C,D,G,N	Monthly[1]
Total Phosphate	mg/L	grab	C,D,G,N	Monthly[1]
Ortho Phosphate	mg/L	grab	C,D,G,N	Monthly[1]

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Sites C and D. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life

Notes on receiving water conditions shall be summarized in the monitoring report.

[1] Sampling Frequency increases to every other week during the irrigation season (March through August)

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing to toxicity in Mud Slough (north). The testing shall be conducted as specified in "Short-Term Methods for Estimating the Chronic Toxicity for Effluents and Receiving Water to Fresh Water Organisms" 3rd edition (USEPA 600-4-91-022) for fatheads and algae and in USEPA-600-D87-080 for *Daphnia magna*. Chronic toxicity grab samples shall be collected at Sites B, C and D. Control water shall be from the Delta-Mendota Canal. Procedures followed will be consistent with Sections 4.6.1.4, 4.6.1.5, 4.6.1.6, 4.6.1.7, 1.4.1.9, and 4.6.1.10 of the *Compliance Monitoring Program for Use and Operations of the Grassland Bypass Project*, September 1996 or latest version by the U.S. Bureau of Reclamation and others. Chronic toxicity monitoring shall include the following:

Species: Pimephales promelas, Ceriodaphnia magna, and Selenastrum capriocornutum

Frequency: Quarterly

STORMWATER MONITORING

Stormwater monitoring will be conducted as specified in the "Storm Event Plan for Operating and Protecting the Grassland Bypass Channel" contained in the Report of Waste Discharge (August 1997). At a minimum, the following components will be completed.

Notification

When heavy rains or storm events are predicted for the region, the Regional Drainage Coordinator will consider the current status of irrigation and drainage operations to determine if the Grassland bypass will be able to accommodate all of the surface runoff, storm water flows, and agricultural drainage water. Upon reaching a decision, and prior to allowing commingled waters to enter Grassland channels, the Regional drainage Coordinator will contact the following individuals to inform them of the situation and to notify them regarding operations during the storm event:

1. Personnel in the Agricultural Unit at the Central Valley Regional Water Quality Control Board in Sacramento;
2. The Manager of the Grassland Water District;
3. The Manager of the Central California Irrigation District;
4. The Manager of the San Luis Canal Company;
5. Personnel at State and Federal Wildlife Areas that utilize water supply channels in the region;
6. Managers of the irrigation and drainage districts participating in the Grassland Basin Drainage Activity Agreement; and
7. The Manager of the Exchange Contractors Water Authority.

Criteria and Associated Actions

Criteria	Action
Anticipated flow through sites PE-14 and FC-5 >100 cfs AND threat of precipitation	--Notification process initiated --Gates to Camp-13 Ditch and/or Agatha Canal opened --Proportional amounts of flow diverted estimated by operators of the Grassland Bypass in consultation with Grassland Water District personnel --Stormwater monitoring program initiated
Combined flow through sites PE-14 and FC-5 falls below 100 cfs and no threat of precipitation	--Flow of water to Grassland Water District terminated --Stormwater monitoring program continued for 1 week

Stormwater Monitoring Sites, Constituents and Frequency

The monitoring program will be conducted at the following internal wetland water supply channels immediately prior to diversion of stormwater into Camp-13 Ditch and Agatha Canal; daily during water diversion; and for 1-week after diversion ceases:

Camp-13 Ditch (J)
Agatha Canal (K)
San Luis Canal at Splits (L2)
Santa Fe Canal at Weir (M2)
Salt Slough at Lander Avenue (F)

Constituent	Unit	Type of Sample	Sampling Frequency
Flow	cfs	daily average	Daily
pH	pH units	grab	Daily
Electrical Conductivity	µmhos/cm	grab	Daily
Temperature	degrees F	grab	Daily
Selenium	µg/L	grab	Daily
Boron	µg/L	grab	Daily
Molybdenum	µg/L	grab	Daily

INTERNAL WETLAND WATER SUPPLY CHANNELS

The Discharger is required to visually survey potential drainage diversions into Camp-13 Ditch and the Agatha Canal weekly and maintain a log of conditions. At any time that drainage diversions are noted into these two channels, the discharger will initiate the *Notification* and *Stormwater Monitoring Sites, Constituents, and Frequencies* components of the stormwater monitoring program.

REPORTING

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly the compliance with waste discharge requirements.

Monthly monitoring reports shall be submitted to the Regional Board no later than 45 days following the end of the month.

The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Board.

The Discharger shall submit a water year annual report to the Board by 31 December of each year. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous water year (01 October through 30 September).

The Discharger shall implement the above monitoring program on the date of this Order.

Ordered by: _____
GARY M. CARLTON, Executive Officer

7 September 2001
(Date)

ATTACHMENT 1

Analysis	Expected Detection Limit (ppb)	Acceptable Blind Duplicate and Spike Recovery Ranges (ppb & %)	
Boron	50	85-115%	
Conductivity	--	90-110%	
Nitrogen			
Ammonia	50	80-120%	
Kjeldahl	60	80-120%	
Nitrate	10	80-120%	
Total	50	80-120%	
pH	--	90-110%	
Phosphorous (total)	50	80-120%	
Phosphate (ortho)	30	80-120%	
Phosphate (total)	30	80-120%	
Settleable Solids	--	85-115%	
Total Dissolved Solids	--	85-115%	
Molybdenum	1	1-10 $\pm$ 2	>10=85-115%
Selenium	0.5	1-10 $\pm$ 1	>10=90-110%

Waste Discharge Requirements Order No. 5-01-234
Grassland Bypass Project

ATTACHMENT 1

DESCRIPTION OF LANDS SERVED BY THE PROJECT

1. Lands within Broadview Water District, the Firebaugh Canal Water District, the Pacheco Water District, the Panoche Drainage District, the Charleston Drainage District and the Widren Water District.

Containing 84,470 acres, more or less.

2. All of those portions of Sections 26, 27, 34, 35 and 36 in T. 11 S., R. 11 E., M.D.B.&M., Sections 31, 32, 33 and 34 in T. 11 S., R. 12 E., M.D.B.&M., Section 1 in T. 12 S., R. 11 E., M.D.B.&M., and Sections, 2, 3, 4, 5, 6, 9, 10, 11 and 12 in T. 12 S., R. 12 E., M.D.B.&M., bounded on the north by the south right-of-way line of the Central California Irrigation District Main Canal, bounded on the east by the boundary of the Central California Irrigation District, bounded on the south by the north right-of-way line of the Central California Irrigation District Outside Canal, and bounded on the west by the Central California District Camp 13 Bypass Canal.

Containing 5,380 acres, more or less.

3. All of those portions of Sections 13, T. 12 S, R. 12 E., M.D.B.&M., and Sections 7, 17, 18 and 19, T. 12 S., R. 13 E., M.D.B.&M., bounded partially on the north and west by the Panoche Drainage District, bounded partially on the west, south and east by the Firebaugh Canal Water District and the Widren Water District, and bounded partially on the north by the southerly right-of-way of the Central California Irrigation District Outside Canal.

Containing 1,410 acres, more or less.

4. All of those portions of Sections 1 and 12, T. 12 S. R. 12 E., M.D.B.&M., Sections 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, and 24 T. 12 S., R. 13 E., M.D.B.&M., and Sections 19, 29, 30, 32, and 33, T. 12 S., R. 14 E., M.D.B.&M., being lands within the Central California Irrigation District bounded on the north and east by the south right-of-way line of the Central California Irrigation District Main Canal, bounded on the south and west by the north right-of-way line of the Central California Irrigation District Outside Canal, bounded on the west by the boundary line of the Central California Irrigation District and bounded on the east by the Southern Pacific Railroad right-of-way line. These lands also known as the Camp 13 Drainage Area.

Containing 5,490 acres, more or less.

5. All of those portions of Sections 3 and 4, T. 12 S., R. 11 E. and Section 34, T. 11 S., R. 11 E., M.D.B.&M., lying southerly of the Central California Irrigation District Outside Canal bounded on the west by the Pacheco Lift Canal, bounded on the south by the Delta Mendota Canal, and bounded on the east by the east line of said section 3.

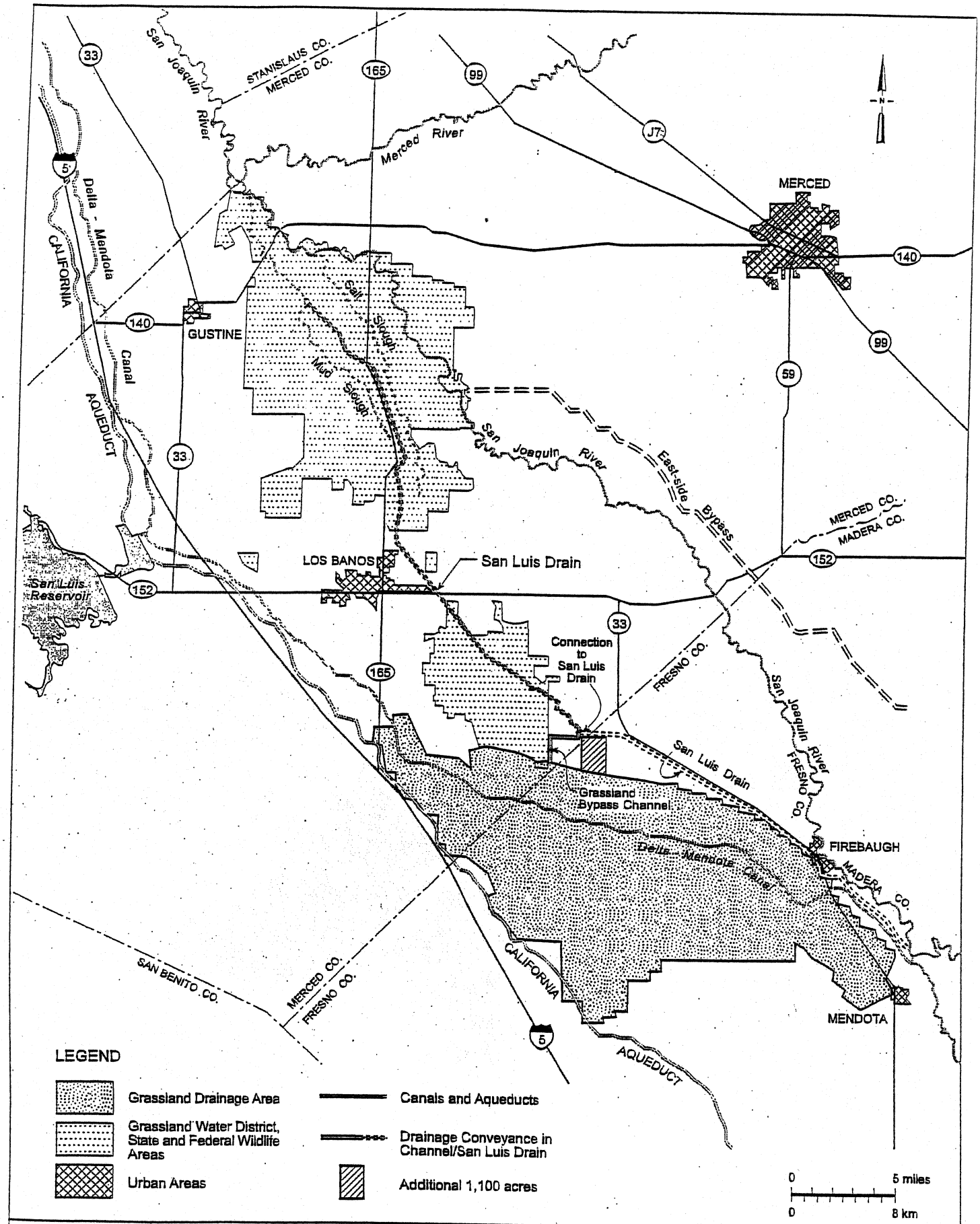
Containing 676 acres, more or less.

6. The west half of sections 27 and 34, T. 11 S., R. 12 E., M.D.B.&M., lying southerly of the San Luis Drain and northerly of the Central California Irrigation District Main Canal, and the east half of Sections 28 and 33 T. 11 S., R. 12 E., M.D.B.&M., also lying southerly of the San Luis Drain and northerly of the Central California Irrigation District Main Canal.

Containing 1,100 acres, more or less.

7. Lands adjacent to right-of ways- that may be acquired in the future necessary for drainage facilities to serve the Drainage Area.

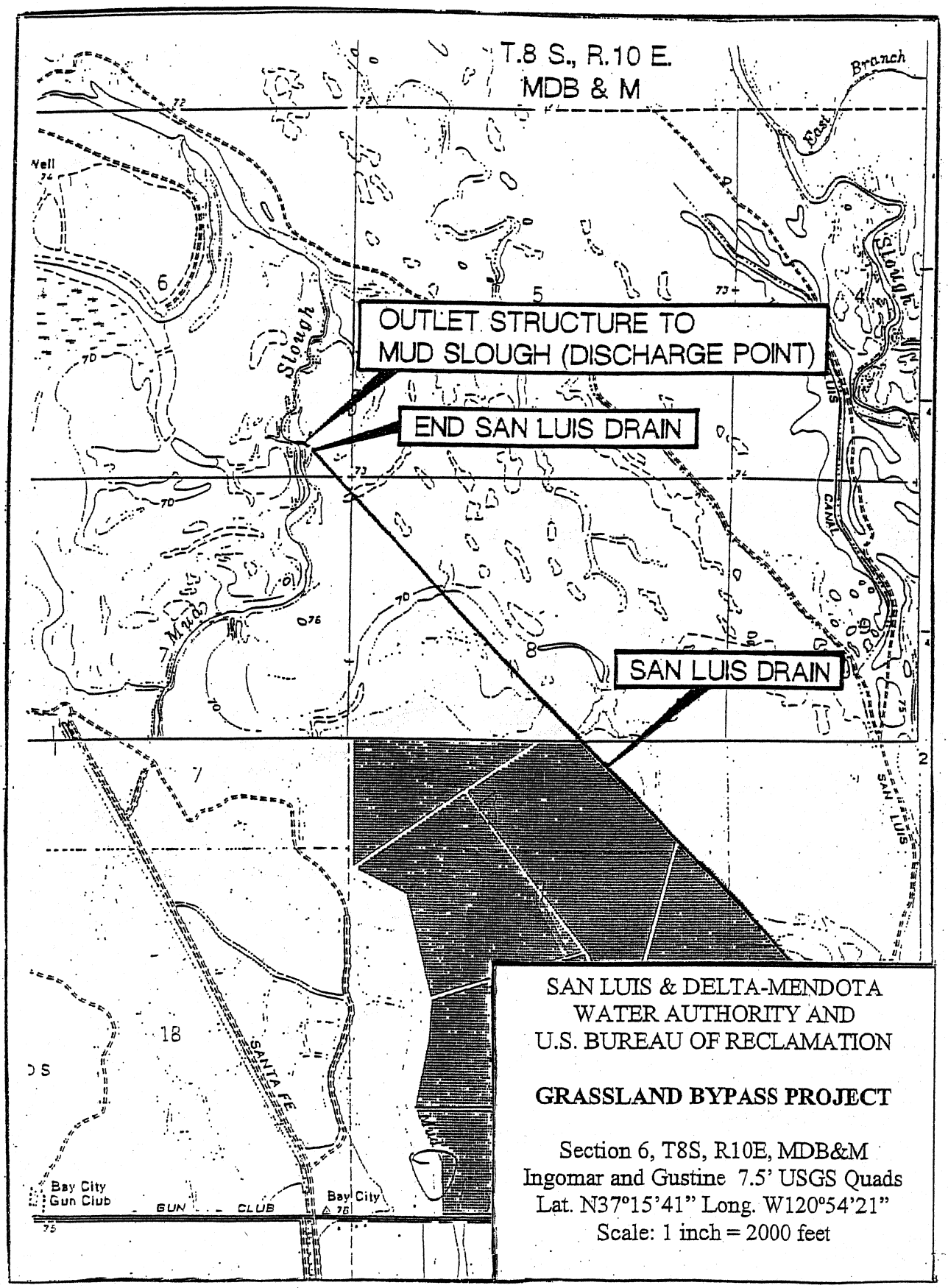
ATTACHMENT 2



Project No. 51-09967052.01	Grassland Bypass Project EIS/EIR	PROJECT FEATURES MAP	Figure 2-1

51-09967052.01-00100/120800/gos

ATTACHMENT 3



INFORMATION SHEET

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY
AND UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GRASSLAND BYPASS PROJECT (PHASE II)
FRESNO AND MERCED COUNTIES

The Grassland Bypass Project (Project) is operated by the San Luis and Delta Mendota Water Authority (Authority) and uses a portion of the San Luis Drain (Drain), which is owned by the U.S. Bureau of Reclamation (Bureau). Within the Authority, a Drainage Activity Agreement has set up a group called the Grassland Area Farmers for the purposes of implementing the Project. This group includes seven irrigation and drainage districts and several adjacent areas that constitute the 97,000 acre Grassland Drainage Area. The participants are: Charleston Drainage District, Pacheco Water District, Panoche Drainage District, Broadview Water District, Firebaugh Canal Water District, Widren Water District, and the Camp 13 Drainage Area (which is part of the Central California Irrigation District).

The Project has a capacity of 150 cubic feet per second and discharges subsurface agricultural drainage from approximately 97,000 acres of agricultural land to Mud Slough (north) at a point six miles upstream of the San Joaquin River confluence. Historically, this subsurface agricultural drainage reached the San Joaquin River via Mud Slough (north) or Salt Slough, but was routed through various channels in the Grassland Water District (GWD). These channels are also used to supply water to wetlands within the GWD and the dual use of the channels as both drainage and supply canals was limiting the ability to provide good quality water to the wetlands. The Project removes the subsurface agricultural drainage from the Grassland Drainage Area from channels that supply wetlands.

Subsurface agricultural drainage from the Grassland Drainage Area has been routed to the Drain through a new facility called the Grassland Bypass Channel. From there, it travels 28 miles to the Drain's terminus and discharges to Mud Slough (north). The Drain has been blocked above the Grassland Bypass Channel to prevent the introduction of other flows.

Through most of the year, the discharge primarily consists of subsurface agricultural drainage that is high in salts, selenium, boron, and other constituents. The Project is also designed to handle irrigation tailwater and local stormwater runoff. During the winters of 1997 and 1998, flood waters from Panoche Creek and other west side streams entered the Grassland Drainage Area, commingled with local subsurface agricultural drainage, and were discharged via the Project and GWD channels.

The Project, which went into operation in September 1996, is consistent with the Basin Plan program for the control of subsurface agricultural drainage from the Grassland Watershed. This program focuses on selenium and generally prohibits the discharge of agricultural subsurface drainage to wetland channels after 10 January 1997. It places a limit on the loads of selenium that can be discharged to the San Joaquin River and states that waste discharge requirements will be used to control discharges of subsurface agricultural drainage from the Grassland Watershed.

There is a compliance timetable that gives dischargers until 1 October 2010 to meet the selenium objective in Mud Slough (north). To back this up, there is also a prohibition of discharge that applies to subsurface agricultural drainage discharges effective 1 October 2010 unless selenium water quality objectives are being met.

While selenium is the primary concern, the drainage also contains boron, molybdenum, high levels of salts and other constituents that can impact receiving waters. The Basin Plan specifies the beneficial uses for Mud Slough (north) and contains numerical objectives for boron and molybdenum as well as narrative water quality objectives that apply to this water body. This Order requires preparation of management plans addressing the steps that will be taken to achieve compliance with these objectives.

The Project will operate through calendar year 2009. An extensive, multi-agency monitoring program has been established to evaluate the impacts of the Project. Any proposal to discharge subsurface agricultural drainage after the eight year and three month period would be considered a different project and will need a new environmental assessment under the California Environmental Quality Act.