Grassland Bypass Project
Technical and Policy Review Team
Determination of Incentive Fees for Winter 2005 Floods

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B. San Luis & Delta-Mendota water Authority, May 31, 2005. Letter to Kirk Rodgers and Rudy Schnagl; Subject: Grassland Bypass Project Floodwaters Report

C. Joe McGahan, December 10, 2001. E-mail message to Laura Allen, et.al. Subject: Panoche Water District Rain Gauge

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I. Introduction

This document is a summary of the analysis conducted by the Technical Policy and Review Team and its recommendations to the Oversight Committee regarding discharges of selenium and salts from the Grassland Drainage Area in Winter 2005.

The Team consists of representatives from the U. S. Environmental Protection Agency, U. S. Bureau of Reclamation, U. S. Fish and Wildlife Service, California Regional Water Quality Control Board, and the California Department of Fish and Game. Staff from the U. S. Geological Survey offered technical support. The Team met six times through conference calls in January and February 2006. The Team met with Dr. Terry Young of Environmental Defense and David Cory of the Grassland Area Farmers on February 14, 2005, to gain insight regarding the background of provisions in the 2001 Use Agreement[1], in particular the application of exemptions specified in it appendices. The Team wanted to follow the terms and conditions of the 2001 Use Agreement, while being consistent with decisions made in 1997 and 1998, to provide a fair and rational analysis of the 2005 situation.

The Team chose a study period of October 1, 2004 through June 30, 2005 to cover the entire winter season to monitor the cumulative effects of rainfall and consequent flows. The Team compared the current data with the 2001 Use Agreement, the 2001 revised TMDL[2], and the 2001 Waste Discharge Requirement[3]. The Team reviewed the exemptions provided in the 2001 Use Agreement, and compared the 2005 data with the previous wet years of 1995, 1997, and 1998.

The Team recognizes the wealth of data readily available from the Grassland Bypass Project Monitoring Program, Storm Water Monitoring per the 2001 Waste Discharge Requirement conducted by the Grassland Area Farmers, as well as weather data from independent sources. The Team is also cognizant of the efforts and success of the Grassland Area Farmers in controlling drainage discharges over the course of the Project (Figure 1). The Team also recognizes that there are many ways to review the situation after the fact.

The purpose of this report is to determine the preliminary Drainage Incentive Fees due according to the terms of the Use Agreement, and to provide information to the Oversight Committee for consideration as to whether the conditions of Winter 2005 were "Unforeseeable and Uncontrollable".

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[1] San Luis & Delta-Mendota Water Authority and the United States, Department of the Interior, Bureau of Reclamation, September 28, 2001. Agreement for Use of the San Luis Drain. Agreement No. 01-WC-20-2075. Included in this report as Attachment A.

[2] California Regional Water Quality Control Board, August 2001. Revised Total Maximum Daily Load for Selenium in the Lower San Joaquin River.

[3] California Regional Water Quality Control Board, September 21, 2001. Waste Discharge Requirements No. 5-01-234 for the San Luis & Delta-Mendota Water Authority and the United States, Department of the Interior, Bureau of Reclamation, Grassland Bypass Channel Project (Phase II), Fresno and Merced Counties.

II. Background

The 2001 Use Agreement for the Grassland Bypass Project specified load values for selenium and salts that can be discharged by the Grassland Area Farmers, represented by the San Luis and Delta-Mendota Water Authority, from the Grassland Drainage Area in any given month and over a full year. The Use Agreement provides exemptions for high rainfall and upper watershed flooding and describes the methods for calculating the attributable discharges. The Use Agreement specifies Drainage Incentive Fees of up to $250,000 when the attributable discharges exceed the load values.

During 2005, the eighth year of operation, the Grassland Bypass Project discharged selenium in excess of the monthly selenium load values in January, February, and March 2005. The monthly salinity load values were exceeded in November 2004 and January 2005.

Beginning in October 2004 and continuing through April 2005, more than twelve and a half inches of rain fell on the Grassland Drainage Area. The recurring string of storms saturated the soils across the Grassland Drainage Area and caused increases in flows in local drains. Over four days in October 2004, 1.5 inches of rain fell that caused a 20 cfs increase in flows discharged from the Grassland Drainage Area into the San Luis Drain. Ten days of rain in early January 2005 resulted in a 40 cfs increase in flow.

In mid-February, 2.2 inches of rain fell on the Grassland Drainage Area over four days. The flow of water increased from 40 cfs in the morning of February 16 to 151 cfs that evening, more than the capacity of the Grassland Bypass Channel. Since more rain was in the forecast, the Grassland Area Farmers were forced to divert flood water into the Agatha Canal for the first time since February 1998. This 270 acre-feet of flood water included approximately fourteen pounds of selenium and 1,140 tons of salts.

As a result, the water discharged from the Grassland Drainage Area in January, February, and March 2005 contained loads of selenium and salts that exceeded the limits specified in the 2001 Use Agreement. Since October 1996, the Grassland Area Farmers have successfully reduced the amount of selenium and salt discharged from the Grassland Drainage Area. The last time the monthly load values were exceeded by more than 5 percent was in September 1998.

On May 31, 2005, the San Luis and Delta-Mendota Water Authority, representing the Grassland Area Farmers, presented a floodwaters report[4] that described the circumstances that led to the exceedances. The report concluded:

> *"Given the uncontrollable nature of the rain induced discharges of January through March of 2005, the fact that the continued succession of storms could not be reasonably anticipated, and the injustice of imposing penalties for unpreventable events, the exceedances occurring in January, February, and March of 2005 should be declared "Unforeseeable and Uncontrollable."*

[4] San Luis & Delta-Mendota Water Authority, May 31, 2005. Letter to Kirk Rodgers, Regional Director, Bureau of Reclamation, and Rudy Schnagl, Central Valley Regional Water Quality Control Board, Subject: Grassland Bypass Project Floodwaters Report. Included in this report as Attachment B.

III. Summary of Data and Determination of Loads of Selenium and Salts.

A. Rainfall on the Grassland Drainage Area

The Drainage Coordinator provided daily rainfall data for the weather station operated by Panoche Water District (WD). These data were compared with daily rainfall data collected at three nearby sites operated by the California Department of Water Resources for the California Irrigation Management System (CIMIS), plus one site near Los Banos operated by the National Weather Service.

Table 1 is a comparison of monthly total rainfall measured at the five weather stations. Figure 2 is a map showing the locations of the weather stations in relation to the Grassland Drainage Area.

The Team noted differences between daily measurements at each station and in the monthly totals for the sites. The differences are partly due to the natural variability of rainfall across the watershed. However, the precision of each site appears to be different. For example, while the Panoche WD rain gauge is located near the Panoche CIMIS site, there were discrepancies in measurements at the sites in October 2004, November 2004, and June 2005.

Appendix F of the Use Agreement states that installation, operation, and maintenance of the rainfall monitoring gage at the Panoche Water District must be approved by the Oversight Committee and must be operated and maintained by the Authority or the Drainage parties at the time of the high rainfall event.

The Drainage Coordinator, in a December 10, 2001, e-mail message, notified representatives for Reclamation and other agencies that the rain gage had been installed. This message is included in this report as Attachment C.

The Oversight Committee has not met since October 2001, and has not approved the installation, operation or maintenance of the rain gage. The TPRT recommends that an ad hoc committee of the Data Collection and Review team inspect the rain gage to ensure that it is collecting accurate data, and recommend its approval by the Oversight Committee.

At this time, the Team accepts the data from the Panoche Water District rain gage to represent rainfall during the study period.

B. Water Discharged from the Grassland Drainage Area

The Team reviewed flow data for Stations A and B of the Grassland Bypass Project, and for the Agatha Canal between October 1, 2004 and June 30, 2005. These data were reported by the San Francisco Estuary Institute[5] in monthly monitoring reports. Table 2 summarizes the monthly total flows of water

[5] http://www.sfei.org/grassland/reports/gbppdfs.htm

passing Stations A and B and also lists the amount of water discharged from the Grassland Drainage Area into the Agatha Canal in February 2005. Figure 3 shows the daily rainfall and subsequent flows in the San Luis Drain.

Station A is where drain water is first discharged in the San Luis Drain. This is a measure of the actual amount of water discharged from the Grassland Drainage Area.

Station B is located at the end of the San Luis Drain, and is the compliance point for loads attributed to the Project specified in the 2001 Waste Discharge Requirement. Flows increase between Stations A and B that typically occurs during winter months due to groundwater seepage into the canal and rainfall directly on the drain.

The daily flow of water from the Grassland Drainage Area into the Agatha Canal came from the 2005 Floodwaters Report. These flow values are similar to weekly instantaneous measurements published by SFEI at the same time.

C. Loads of Selenium Discharged from the Grassland Drainage Area

The Team reviewed the daily loads of selenium in water at Station B published in the monthly monitoring reports. The Grassland Area Farmers calculated the loads in the Agatha Canal in the 2005 Floodwaters Report. The Team confirmed these load calculations.

Table 3 is a summary of the monthly selenium loads discharged from the Grassland Drainage Area Project between October 2004 and December 2005.

D. Loads of Salts Discharged from the Grassland Drainage Area

The Team calculated the daily loads of salts that were discharged from the Grasslands Drainage Area into the San Luis Drain and the Agatha Canal. Table 4 is a summary of the monthly salt loads discharged from the Grassland Drainage Area Project between October 2004 and December 2005.

E. Applicable Selenium Load Values

The 2001 Use Agreement specified the monthly and annual load values of selenium that could be discharged from the Project. The monthly and annual loads were based on a 1996 Regional Board staff report and are identified in Appendix C of the Use Agreement. The 2001 Use Agreement anticipated the then upcoming consideration by the Regional Board of a revised Total Maximum Daily Load (TMML) for Selenium in the Lower San Joaquin River. The Use Agreement provides a mechanism (Appendix D) whereby, if and when the revised TMML were adopted by the Regional Board and approved by EPA, and upon request of the draining parties, the applicable load values would be revised to conform to the revised TMML. By letter of August 4, 2005 (Attachment D), the Authority elected 2005 as the effective year for the revisions of the TMML to be applicable. The 2005 Applicable Selenium Load Values, also called the revised Total Maximum Monthly Load, are listed on Table 5.

F. Applicable Salinity Load Values

The 2001 Use Agreement, Appendix E, specified monthly loads of salts that could be discharged from the Project. These values are also listed in Table 5.

G. Exceedances of Selenium Load Values

Table 6a compares the applicable monthly selenium load values with the loads of selenium discharged from the Grassland Drainage Area. The discharge exceeded the monthly load values in January, February, and March 2005 by 657 pounds of selenium. The loads of selenium discharged in all other months were less than the monthly selenium load values.

The total load of selenium discharged from the Grassland Drainage Area in 2005 was six percent less than the total annual load value.

H. Exceedance of the Salinity Load Values

Table 6b compares the monthly salinity load values with the loads of salts discharged from the Grassland Drainage Area during the study period. The Team estimates that the January 2005 discharge was more than the salinity load value by 1,784 tons.

The Team also calculated that the load of salt discharged from the Project during November 2004 was two percent more than the monthly salinity load value. The 2001 Use Agreement, Appendix H, states that no monthly incentive fee will be assessed if the monthly load value is less than or equal to five percent of the monthly load value. Since the November 2004 salinity exceedance was less than five percent of the Salinity Load Value, no further action is needed by the Oversight Committee regarding the November 2004 salt load discharge.

The total load of salt discharged from the Grassland Drainage Area in 2005 was 21 percent less than the total annual load value.

I. Conclusions

During January, February, and March 2005, the Authority discharged 657 pounds of selenium and 1,784 tons of salt in excess of the applicable limits specified in the 2001 Use Agreement.

The Grassland Area Farmers met the annual load values for selenium and salts in 2005.

IV. Application of Exemptions Provided in the 2001 Use Agreement

The 2001 Use Agreement imposes a "Performance Incentive Fee" of up to $ 250,000 for discharges of salts or selenium in excess of the load values. However, Appendices to the Use Agreement define conditions when all or portions of the discharges may be exempted when calculating attributable discharges subject to the Incentive Fees. The following discusses the application of these exemptions.

A. Appendix F – High Rainfall Exemption

"*This Appendix describes a High Rainfall Exemption that will, under certain specified circumstances, reduce the Attributable Discharge amount defined in Section 1.A. of the Use Agreement. The overall objective of this High Rainfall Exemption is to accomplish the following:*

Respond to the concern that farmers may lose their ability to control discharges to the levels required by the Use Agreement during high-rainfall months.

Protect water quality in the San Joaquin River and the estuary downstream; and

Be consistent with current federal and state policy.

Notwithstanding any other provision of this Appendix or of the Use Agreement, this High Rainfall Exemption is not applicable for any period for which the Oversight Committee, in its sole discretion, has determined that the actual discharge of selenium has caused significant adverse environmental impacts in Mud Slough or at any point downstream of Mud Slough pursuant to Section IV.A.3. of the Agreement.

1. When applicable: If the 3-month cumulative rainfall, measured at the Panoche Water District gauge, equals or exceeds 6 inches in either the current month, or in any of the previous three months; and, if the actual "4-day monthly equivalent low flow at Crow's Landing" during the current month is equal to or exceeds 300% of the "4-day monthly equivalent low flow at Crow's Landing" (i.e., design flow) used to calculate the TMML for that month; provided, that installation, maintenance and operation of a rainfall monitoring gauge at the Panoche Water District has been approved by the Oversight Committee and said station is being operated and maintained by the Authority or the Draining Parties at the time of the high rainfall period."

Appendix F of the 2001 Use Agreement thus provides two triggers for granting an exemption for high rainfall, both of which must be met.

1. Three-Month Cumulative Rainfall Trigger

In the literal reading of the Use Agreement, "3-month cumulative rainfall" is derived by simply adding three consecutive months of rainfall data. Table 7a lists the three-month cumulative rainfall at the Panoche WD rain gauge. Figure 4 shows this data in relation to the six-inch threshold. The rain that fell

during November 2004 - January 2005 was less than 6 inches; the selenium exceedance that occurred in January 2005 would not qualify for this part of the exemption. The rain that fell during December 2004 through February 2005 was more than 6 inches; the selenium exceedance that occurred in February would qualify for this part of the exemption. The phrase *"or in any of the previous three months"* provides a three month trailer, such that once the trigger is met in February, it would apply to the March 2005 selenium exceedance as well.

In the 2005 Floodwater Report, the Drainage Coordinator presented a different calculation of the High Rainfall Exemption. He applied the 3-month cumulative rainfall trigger as a running accumulation of the previous 90 days (pers. comm., Joe McGahan). The calculation of the 90-day cumulative rainfall data is shown on Table 7b. Figure 5 shows this data in comparison with the six-inch threshold. The 90-day running total rainfall at the Panoche WD rain gage first exceeded the 6 inch threshold on January 7, 2005. According to this interpretation, the selenium exceedance that occurred in January 2005 would qualify for this part of the exemption.

The 90-day running total rainfall was more than 6 inches for 43 consecutive days during February and March 2005. By mixing monthly and daily totals, it is not clear how the phrase *"or in any of the previous three months"* applies under this interpretation of the data.

2. Assimilative Capacity in the San Joaquin River Trigger

The second part of the High Rainfall Exemption is based on the assimilative capacity of the San Joaquin River. The 2001 Use Agreement allows an exemption for excess selenium discharges when the "Actual 4-day monthly equivalent low flow" in the river is more than three times the design flow.

A model was developed by Karkoski in 1994[6] to support a Total Maximum Monthly Load for selenium. Karkoski 1994 defined the term "4-day monthly equivalent low-flow" and developed the following equation for calculating this value:

4-day monthly equivalent low flow =
(Actual 4-day low flow x Average Flow) / Total Flow

The Team calculated the "Actual 4-day monthly equivalent low-flow" for January, February and March 2005 using the 1994 TMML model. The calculations show that only January 2005 had sufficient flows for this part of the exemption to apply (Table 8a). This part of the exemption would NOT apply to the selenium exceedances that occurred in February and March because the "Actual 4-day monthly equivalent low flow" during those months was less than 300 percent of the design flow (Tables 8b and 8c).

The 2005 Floodwater Report presented a different analysis, again using daily data to calculate when the actual flows exceeded the threefold design flows on a daily basis. By using this daily calculation method this trigger was met on 31 days in January, 13 days in February, and 17 days in March (61 days).

[6] Karkoski, Joe. June 1994. A Total Maximum Monthly Load Model for the San Joaquin River. Staff Report of the California Regional Water Quality Control Board, Central Valley Region.

3. Discussion

The assimilative capacity trigger appears designed, as stated in Appendix F, to "p*rotect water quality in the San Joaquin River and the estuary downstream"*. The team notes that during January, February, and March the selenium concentration in the San Joaquin River at Crow's Landing met the 5 ppb monthly mean performance goal applicable during this period as well as the long term 5 ppb 4-day average objective. However, the method used by the Authority in the 2005 Floodwaters Report to calculate the actual 4-day monthly equivalent low-flow for the San Joaquin River represents a departure from previous methods. Karkoski (1994) derived a "monthly equivalent of the low 4 day average flow" to compute the design flow for the selenium TMML on the San Joaquin River. This was necessary in order for the regulators to make comparisons between the Regional Board Basin Plan objectives for selenium, which were based on monthly mean values, and USEPA objectives, which were based on a 4 day averaging period. The Regional Board recognized that regulating selenium loads on a monthly basis rather than a daily basis was preferable since the districts generally did not have the infrastructure to make daily adjustments to drainage discharges. Karkoski (1994) describes in detail how the "monthly equivalent of the low 4 day average flow" was calculated during the development of the selenium TMML for the San Joaquin River. This same methodology was used to establish design flows in the applicable revised TMML, and all available information indicates it was this methodology that was used at the time the trigger language was established in the 2001 Use Agreement. The team recommends that the TMML methodology be used to apply this trigger.

The Team discussed possible interpretations of the 3-month cumulative rainfall trigger. The Meriam-Webster Dictionary defines the word "Month" as *"a measure of time corresponding nearly to the period of the moon's revolution and amounting to approximately 4 weeks or 30 days or 1/12 of a year"*. The language in Appendix F reads ". . .equals or exceeds 6 inches ***in*** either the current month . . ." (emphasis added), seeming to open the possibility of interpreting month to mean a collection of days. The flooding of fields during Winter 2005 was caused by steady rainstorms that saturated the topsoil and filled drain collector systems. Decisions in the field were made on a day-to-day basis. The effects of each storm lingered for days and weeks, irrespective of the particular day of one month or the next in which the storm occurs. The six-inch cumulative rainfall trigger appears clearly to be included, as stated in Appendix F, to "*respond to the concern that farmers may lose their ability to control discharges to the levels required by the Use Agreement during high-rainfall months*". The Team notes, however, that it would have been a simple matter to include the words "90-day cumulative rainfall" rather than "3-month cumulative rainfall" if that was the intent of the words in the Use Agreement. The high rainfall exception triggers were established based on an analysis of historical data on a monthly, not daily basis. Had the data been evaluated on a 90-day cumulative rather than a 3-month cumulative basis, a different trigger may have been established. Furthermore, use of a 90-day cumulative rainfall computation opens up additional questions regarding the application of the trigger. For example, if the trigger is applied using cumulative daily data, does the exemption only apply on a daily basis? Does the "3-month" trailer become a "90-day" trailer? The Use Agreement is a carefully crafted document in which parts are interrelated, and thus the team recommends following the specific language of the Agreement.

4. Application of the High Rainfall Exemption

In conclusion, the Team has reviewed the terms of Appendix F that deals with the High Rainfall Exemption for discharges of selenium and salts from the Project. Table 9 summarizes the application of

the exemption triggers, showing both the 3-month cumulative and 90-day cumulative calculation of the rainfall trigger.

The Team finds that both the rainfall and assimilative capacity conditions are NOT met in January, February, and March 2005. Therefore, the attributable loads of 657 pounds of selenium and 1,784 tons of salts are NOT exempt from the Drainage Incentive Fee.

The Team notes that if the "90-day cumulative rainfall" method were used, both the rainfall and assimilative capacity triggers are met in January 2005, but not during February and March 2005.

B. Upper Watershed Exemption

Appendix G of the 2001 Use Agreement provides an exemption from Drainage Incentive Fees for selenium loads from outside the Grassland Drainage Area.

> *"Under certain conditions of high rainfall in the Coastal Range, water carrying selenium loads runs off from the Upper Panoche/Silver Creek watershed, through the channels of the Grassland Area Farmers, and is discharged into the San Joaquin River through the Grassland Bypass and/or the San Luis Drain. The parties to the Use Agreement have agreed that the selenium load from the upper watershed discharged though the Bypass and the San Luis Drain under certain specified conditions should not be included in the computation of Attributable Discharges for purposes of this Use Agreement.*
>
> *Notwithstanding any other provision of this Appendix G or of the Use Agreement, no amount of discharge will be exempted pursuant to this Appendix G until an Upper Watershed Selenium Monitoring System has been developed as described in this Appendix and submitted to and approved by the Oversight Committee."*

Flooding from the Panoche/Silver Creek watershed occurred across land located south of the Grassland Drainage Area, and entered Firebaugh Canal Water District's Third Lift Canal in January and February 2005. This water was diverted south to the Mendota Pool and did not directly discharge through the Grassland Bypass Project and/or the San Luis Drain. Furthermore, the Upper Watershed Selenium Monitoring System required in Appendix G has not been developed and approved by the Oversight Committee. Therefore, this exemption does not apply.

V. Calculation of the Drainage Incentive Fee

Appendix H of the Use Agreement describes how the Incentive Fees must be calculated for monthly exceedances of the Selenium and Salt Load Values:

> *If the monthly exceedance is greater than 5% of the Monthly Load Value the monthly incentive fee will be determined by the following formula:*
>
> > *$250,000/(0.20 x current annual load value) per pound or $500 per pound, whichever is less.*

The rates of the Incentive Fee are:

> $250,000 /(0.20 x 4,566 pounds) = $ 273.76 per pound of selenium
>
> $250,000 /(0.20 x 167,846 tons) = $ 7.45 per ton of salt

The Team calculates the Drainage Incentive Fees for Winter 2005, based on the January, February, and March 2005 Attributable Loads of 657 pounds of selenium and 1,784 tons of salt, to be $179,806. Tables 10a and 10b present the Team's calculations of the monthly Drainage Incentive Fees.

Since the total discharges of selenium and salts from the Grassland Drainage Area in 2005 were less than the total annual load values, there is no Annual Drainage Incentive Fee.

VI. Adjustments of the Incentive Fee

Section IV. 4.B.(2)(b) of the 2001 Use Agreement further describes how the Incentive Fees can be adjusted.

A. Waiver for Uncontrollable and Unforeseeable Events

To be determined by the Oversight Committee. See Chapter VII of this report.

B. Duplicative Regional Board Penalties

The Use Agreement states:

> *In the event that the Regional Board or other regulatory agency imposes a financial penalty which the AUTHORITY or Draining Parties become responsible to pay for discharges of Selenium or Salt that are the subject of Drainage Incentive Fees assessed under this Agreement, the Drainage Incentive Fee owed by such parties shall be reduced by the amount of such other financial penalty. The Oversight Committee shall determine when this payment relief is applicable.*

The Drainage Incentive Fee will be reduced if the Regional Board assesses a financial penalty for violation of terms of the 2001 Waste Discharge Requirement.

C. Incentive Credits

Table 11 is a summary of Incentive Credits of 3,679 pounds of selenium and nearly 238,000 tons of salts earned by the Grassland Area Farmers through their the diligent operation of the Project.

The Team's interpretation of Appendix H of the 2001 Use Agreement is that the Incentive Credits are to be used to offset exceedances of the annual load values. Since the Grassland Area Farmers did not exceed the annual Selenium Load Value for 2005, the Incentive Credits cannot be applied against the monthly attributable loads to reduce the Drainage Incentive Fees.

D. Exceedances of Both Selenium and Salinity Load Values

The Team finds that the loads of selenium and salts discharged from the Grassland Drainage Area during January 2005 exceeded the Load Values for that month. The Incentive Fee for the salt load would be cancelled according to Section IV.2.B.(4)(b)(4).

VII. Determination of Unforeseeable and Uncontrollable Conditions in Winter 2005

A. Introduction

Section IV. 4.B.(2)(b)(1) of the 2001 Use Agreement[7] states that the:

> *"Oversight Committee may waive the Drainage Incentive Fee, in whole or in part, only upon a finding that the Authority has shown that exceedances, in particular months or for the year as a whole, were caused by Unforeseeable and Uncontrollable Events."*

The 2001 Use Agreement defines "unforeseeable and uncontrollable events in Section I.Q:

> *"Unforeseeable and Uncontrollable Events" are events that cannot reasonably be anticipated and are caused by events outside the control of the Authority. Final determinations as to what constitutes Unforeseeable and Uncontrollable Events are made solely by the Oversight Committee."*

The May 31, 2005 letter from San Luis Delta Mendota Water Authority transmitting the Floodwaters Report [8] requests a declaration that the 2005 winter and spring fall under the definition of "Unforeseeable and Uncontrollable Events" (UU) as defined in the 2001 Use Agreement. The letter points to the demonstrated determination and ability of the Grassland Area Farmers to comply with selenium load targets since October 1998, the uncontrollable nature of the rain induced discharges in January through March 2005, the fact that the continued succession of storms could not reasonably be anticipated, and the injustice of imposing penalties for unpreventable events.

There is no clear standard for evaluating what constitutes a UU event. The Technical and Policy Review Team reviewed data and decision documents from 1995, 1997, and 1998 when heavy rainfall caused flooding in the Grassland Drainage Area and the issue of UU events was considered by the Oversight Committee. This chapter provides information on the 2005 conditions in the context of previous "Unforeseeable and Uncontrollable" considerations during the history of the Project. The Team obtained data from a weather station near Los Banos operated by the National Weather Service which lists monthly rainfall at this site between October 1948 and December 2005 (Table 12). Rainfall data from this site were used in the analyses of 1997 and 1998 UU events.

The Team recreated the methods used by the Grassland Area Farmers and the TPRT in 1997 and 1998 to compare recurrence intervals for rainfall at Los Banos. Table 13 is a summary of these calculations.

[7] See Attachment A of this report.
[8] See Attachment B of this report.

B. Water Year 1995

The First Use Agreement[9] for the Grassland Bypass Project (in effect from November 1995 through September 2001) included a provision for waiver of Drainage Incentive Fees for discharges caused by unforeseeable and uncontrollable events similar to the 2001 Use Agreement. That provision cited discussion of unforeseeable and uncontrollable in the FONSI[10]. The 1995 Supplemental Environmental Assessment/FONSI stated:

> *"The standard for "unforeseeable and incontrollable events" is intended to deal with exceedances, for example, caused by flooding of selenium-laden coastal streams entering the drainage system such as occurred in March 1995.*
>
> *Other examples of unforeseeable and uncontrollable events are difficult to define. Some examples of events that are NOT considered unforeseeable and uncontrollable include, but are not limited to:*
> - *heavy drainage discharges caused by greater-than-expected surface water applications*
> - *excessive drainage flows caused by irrigation actions*
> - *individual farmers' irrigation management practices*
> - *distribution system malfunctions*
> - *selenium in sediments in the drain"*

This example was prior to the beginning of the Grassland Bypass Project and the example referred to a heavy rainfall event in the Coast Range which caused extreme flooding out of Panoche/Silver Creek that entered the Grassland Drainage Area during March of 1995. The total rainfall that fell on the Los Banos station in March 1995 was 3.79 inches. The total rainfall that fell between October 1994 and June 1995 was nearly 14 inches.

C. Water Year 1997

High rainfall and localized flooding and storm water runoff occurred in 1997 and the then applicable project load values were exceeded January through June 1997. Between October 1996 and June 1997, 12.06 inches of rain fell on the Los Banos site. Much of the analysis of the 1997 storm event focused on 4-month cumulative rainfall totals[11]. The Grassland Area Farmers calculated the recurrence interval for forty-seven years worth of October – January cumulative rainfall at three weather stations in the Grasslands watershed to show that the period leading up to the January, 1997 storm events was an unusual event. The TPRT expanded this analysis to include all four-month cumulative rainfall at the three sites for the entire rainy season (between October and March). The refined analysis showed that total rain that fell between October 1996 – January 1997 was not unique, and could be expected to occur

[9] U.S. Bureau of Reclamation and the San Luis & Delta-Mendota Water Authority. November 1995. Agreement for Use of the San Luis Drain. Agreement No. 6-07-20-W1319.

[10] U. S. Bureau of Reclamation, November 1995. Finding of No Significant Impact and Supplemental Environmental Assessment, Grassland Bypass Channel Project – Interim Use of the San Luis Drain for Conveyance of Drainage Water through the Grassland Water District and Adjacent Grassland Areas. Page 17.

[11] U.S. Bureau of Reclamation, December 2, 1997. Letter to Daniel Nelson, San Luis & Delta-Mendota Water Authority; Subject: Grassland Bypass Channel Project Incentive Fee Assessments.

once every two to three years. The Oversight Committee determined that conditions in 1997 had not been "Unforeseeable and Uncontrollable".

D. Water Year 1998

High rainfall, localized flooding and storm water runoff again occurred in 1998. Applicable project load values were exceeded January through July, 1998. Between October 1997 and June 1998, 23.97 inches of rain fell on the Los Banos station, by far the wettest year of record. In late-1998, the Grassland Area Farmers presented calculations that showed February 1998 to be the wettest month on record at Los Banos and two other local weather stations. The GAF calculations were based on "Rain-Years" (July – June) and the wettest fifty months on record[12]. The Oversight Committee determined that "Unforeseeable and Uncontrollable" conditions occurred between February and June of 1998.

E. Water Year 2005

Between October 2004 and June 2005, 15.36 inches of rain fell on the Los Banos station. The methods used by the Grassland Area Farmers and the TPRT in 1997 and 1998 were used to calculate the monthly and annual recurrence intervals with data from the weather station at Los Banos. The method used in 1997 was used to calculate the recurrence intervals for cumulative rainfall during four-month intervals between the months of October through March for 1995, 1997, 1998, and 2005.

F. Recurrence Intervals and Probabilities of Exceedance

1. Annual Rainfall

The Team calculated the recurrence intervals for total annual rainfall during rain-years (July – June) 1950 – 2005 at the Los Banos station (Figure 6). The calculations show that the 15.43 inches of rain that fell on Los Banos between July 2004 and June 2005 was ranked fifth out of fifty-seven years of record and the recurrence interval for that amount of rain is approximately twelve years. By comparison, the 12.06 inches of rain that fell between July 1996 and June 1997 was ranked twelfth, and the 23.97 inches of rain that fell between July 1997 and June 1998 was ranked first in the period of record. In other words, the rain that fell on Los Banos in 2005 was more than that of 1997, but less than 1998.

The Oversight Committee determined that 1998 qualified as an Unforeseeable and Uncontrollable (U/U) event due to excessive rainfall. As listed in Table 13, Water Year 1998 has a recurrence interval of 59 years with an exceedance probability of two percent. This means that there is approximately a two percent chance in any given year that the precipitation will equal or exceed 23.97 inches at the Los Banos rain gauge.

[12] Grassland Area Farmers, June 11, 1998. Memo to the Grassland Bypass Project Oversight Committee.

The Oversight Committee determined that 1997 was not a U/U event. The recurrence interval for 1997 was calculated to be 5 years, with a corresponding probability of 20 percent (i.e. a 20 percent chance in any given year that the annual precipitation at Los Banos will exceed 12.06 inches). By this metric, the threshold for a U/U event due to excessive rainfall as measured at the Los Banos gauge would presumably fall somewhere between these two events. The recurrence interval for the 2005 annual rainfall (15.43 inches) at Los Banos was calculated to be 12 years, with an exceedance probability of 8% (i.e. there is an 8 % chance of exceedance in any given year). If the probability threshold for declaring a U/U event were 10 percent (i.e. a 10 percent chance of occurring in any given year), then the 2005 annual rainfall at Los Banos would qualify as U/U. However, if the probability threshold for declaring U/U were 5 percent, (i.e. a 5 percent chance of occurring in any given year) then the 2005 event would not qualify as a U/U event.

The Team looked at the 1995 annual rainfall, since the events of March 1995 were cited as the standard for a U/U event in the 1995 Supplemental Environmental Assessment/FONSI for the first Grasslands Bypass Project. During 1995 intense rainfall from January through March resulted in the discharge of selenium laden floodwater into the project area. Although the storms of 2005 did not have the intensity of those in 1995, the monthly distribution of rainfall as measured at Los Banos was more uniform from October to June, and the total annual rainfall at the Los Banos gauge in 2005 exceeded the 1995 total by 1.47 inches (10 percent). The 4-month cumulative rainfall at Los Banos during 2005 also exceeded that of 1995 during January and February. If the annual rainfall as measured at Los Banos in 1995 were to be considered as a guide for determining a U/U event, then 2005 would certainly merit serious consideration as a U/U event due to excessive rainfall.

2. 4-Month Cumulative Rainfall

The Team used the 1997 method to calculate the recurrence intervals for cumulative rainfall during four-month intervals between the months of October through March for 1995, 1997, 1998, and 2005. The results are plotted on Figure 7. The recurrence intervals for four-month periods in Winter 2005 ranged from 6.6 to 8.6, with probabilities between 12 percent and 16 percent, well below four-month periods in 1995, 1997, and 1998.

3. Monthly Rainfall

The Team calculated the recurrence intervals for monthly rainfall using National Weather Service data for Los Banos from October 1948 to December 2005 (687 months). The monthly calculations are summarized in Table 13 and plotted on Figure 8. During February 1998, 8.08 inches of rain fell, making it the wettest month of record. The recurrence interval for that much rain was calculated to be 688 months (57 years). High monthly rainfall totals were also recorded in January 1995 and January 1997. The monthly recurrence intervals for 2005 ranged from 1.6 months to 10.6 months, with corresponding exceedance probabilities of 63% to 9 %. The highest recurrence intervals (10.6 months) occurred in December 2004 and February 2005.

G. Uncontrollable Conditions

The monthly rainstorms of 2005 may not have been particularly rare by examination of recurrence intervals, but the question remains about whether the Grassland Area farmers were confronted with local flooding that they could not control. This is a question of field operations, control of drains and sumps along muddy roads in remote locations with relatively dangerous field conditions. The Grassland Area Farmers followed the rules set in the 2001 Use Agreement and Storm Water Monitoring section of the 2001 Waste Discharge Requirement. Accessible sumps were shut off and daily notices were sent by fax to affected parties describing each situation. Preliminary calculations and analytical results were shared with Reclamation and Regional Board staff.

The Grassland Area Farmers have successfully controlled selenium within the Grassland drainage Area and have consistently met annual selenium load values specified in the 2001 Use Agreement since October 1998. Despite the effects of the rainfall that occurred in 2005, by April the load values were again achieved. The Grassland Area Farmers ended 2005 with selenium discharges six percent below the annual selenium load value, and twenty-one percent below the annual salinity load value.

H. Conclusions

Viewed on a total annual rainfall basis, the 2005 Water Year falls between Water Year 1998, which was declared "Unforeseeable and Uncontrollable", and Water Year 1997 which was found not to qualify as "Unforeseeable and Uncontrollable. When viewed on a monthly rainfall and 4-month cumulative monthly rainfall basis, the 2005 Water Year does not appear to be particularly unusual. The Grassland Area Farmers appear to have taken all reasonable measures available to them to control the discharges.
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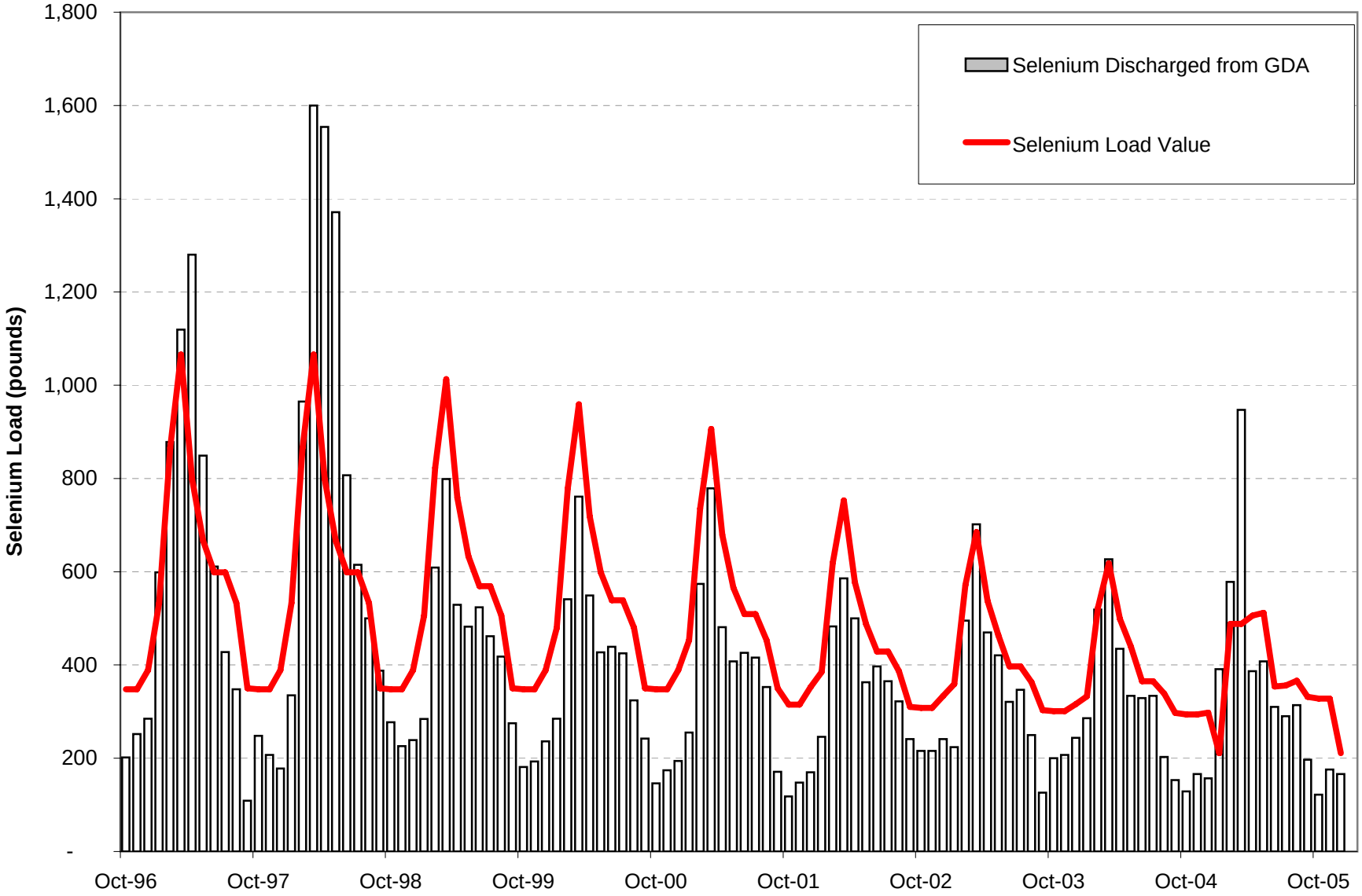
Figures

Figure 1. Selenium Loads Discharged From the Grassland Drainage Area



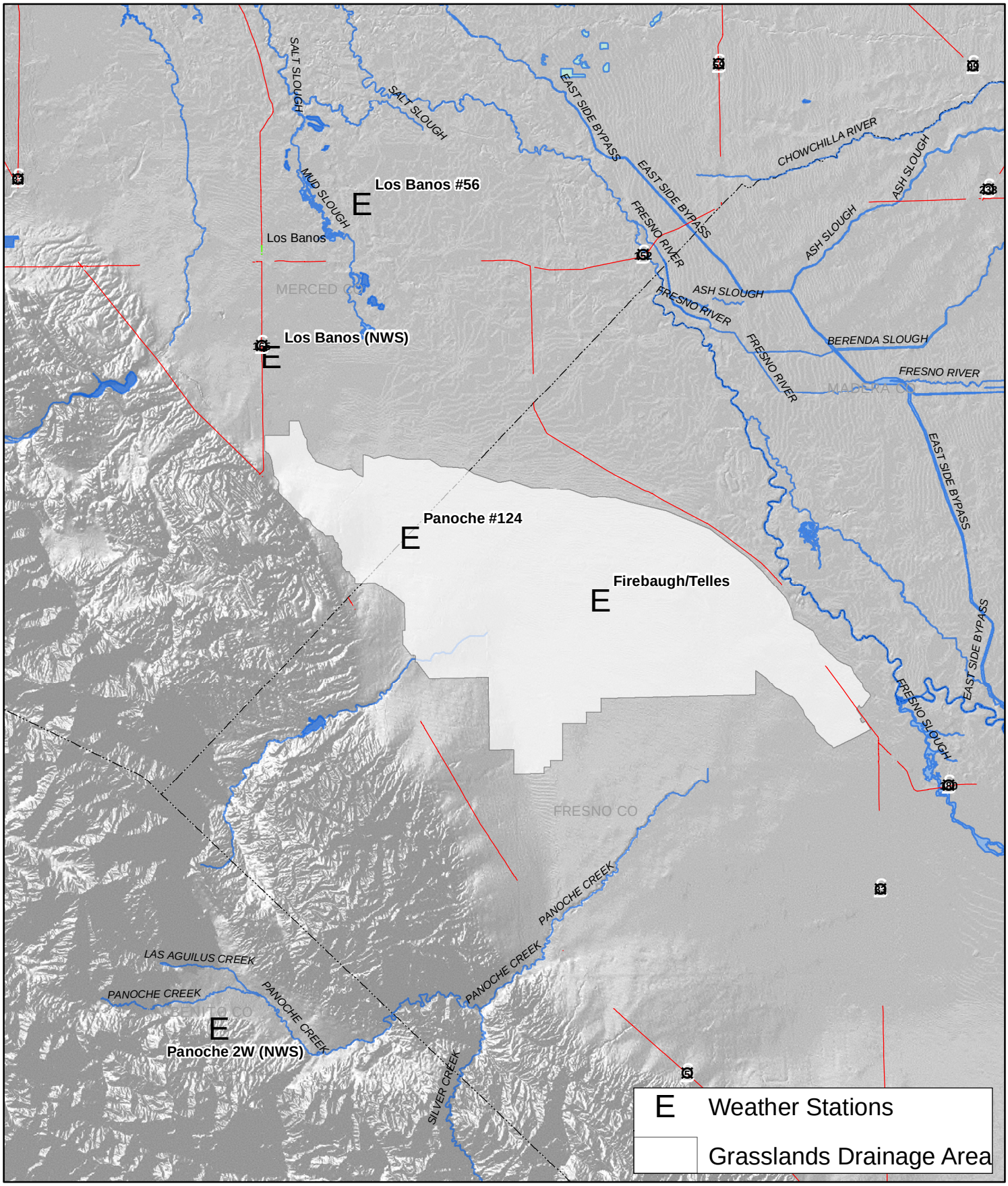


Figure 1. Weather Stations in the Grassland Watershed

0 2.5 5 10 Miles

Date: February 14, 2006
Author: serysian
SCCAO GIS
Path Name: K:\ceacock\projects\stations\cimis.mxd

Figure 3. Grassland Bypass Project
Comparison of Daily Rainfall and Flow in the San Luis Drain

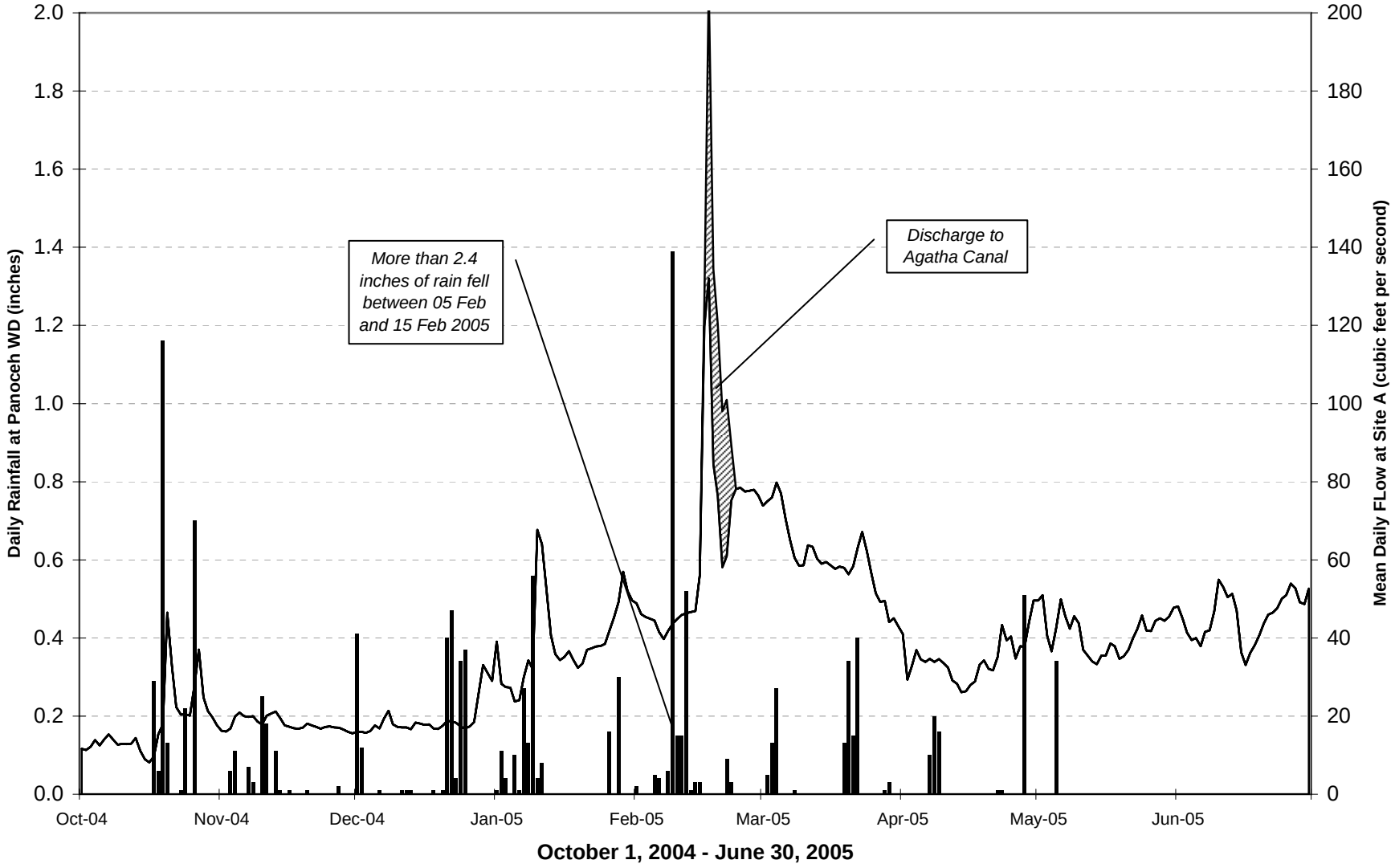


Figure 4. Panoche Water District Rain Gauge
3-Month Cumulative Rainfall

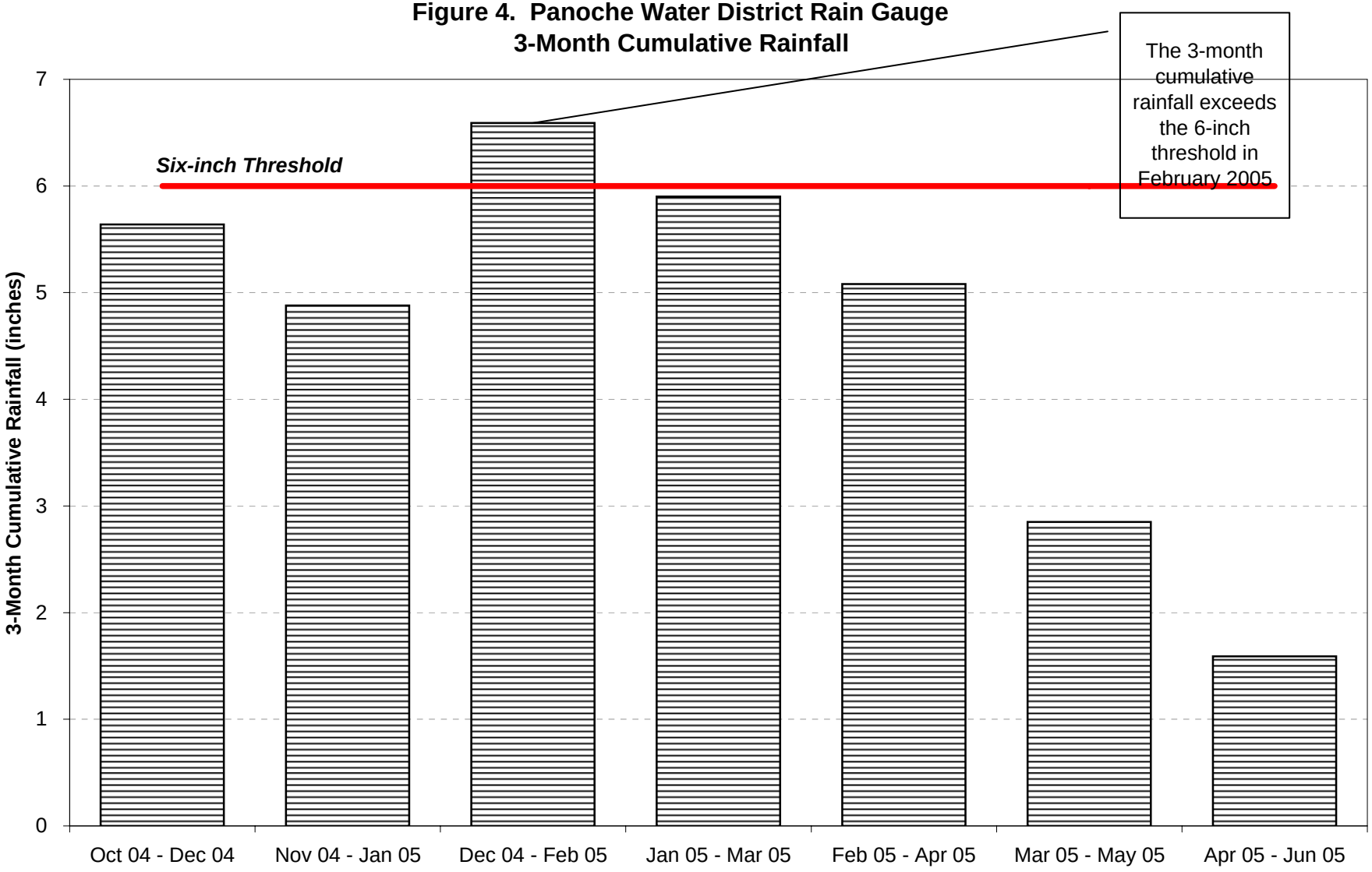


Figure 5. Panoche WD Rain Gauge
90-day Cumulative Rainfall

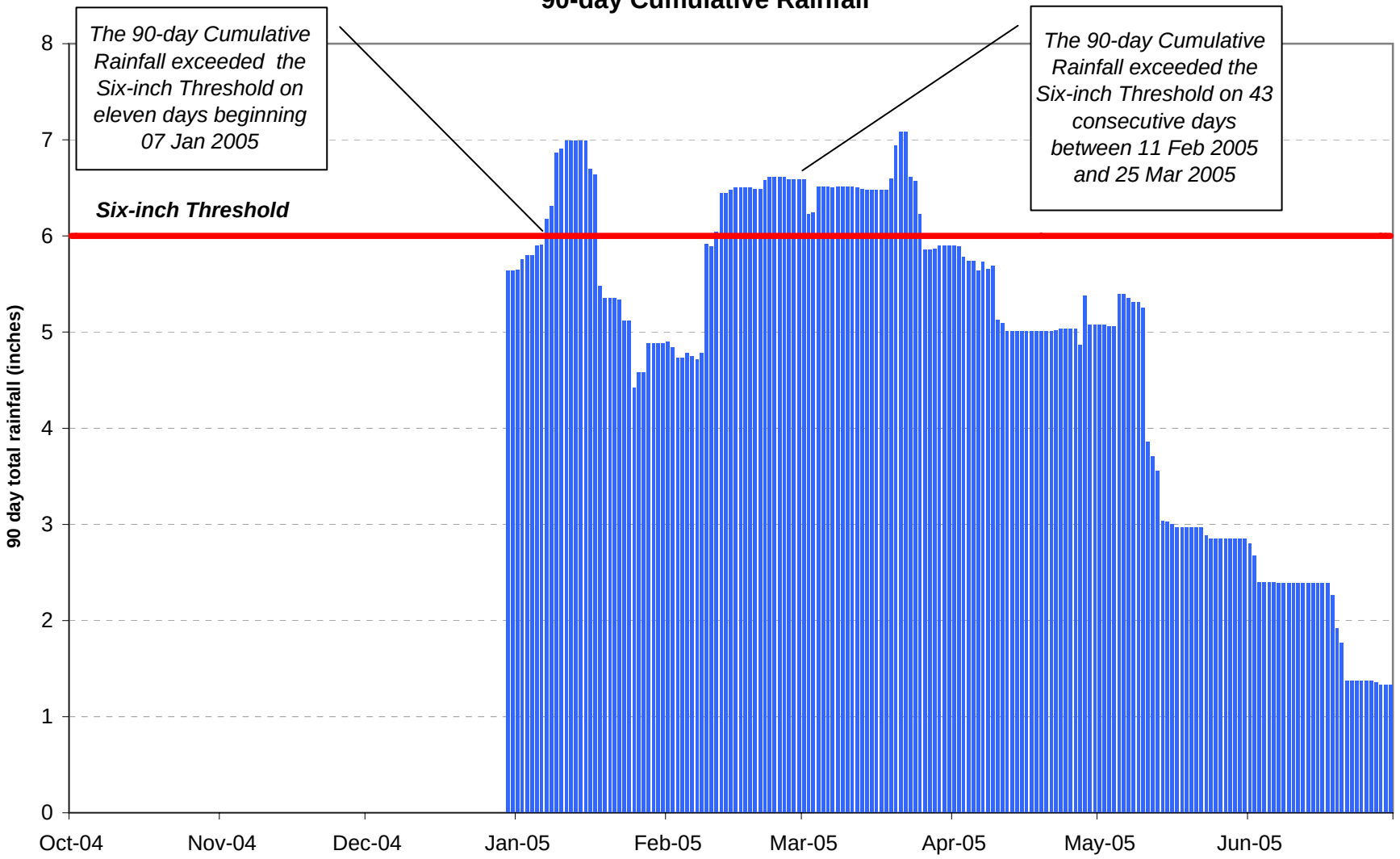


Figure 6. Los Banos NWS
Total Annual Precipitation 1948 - 2005 (July - June)

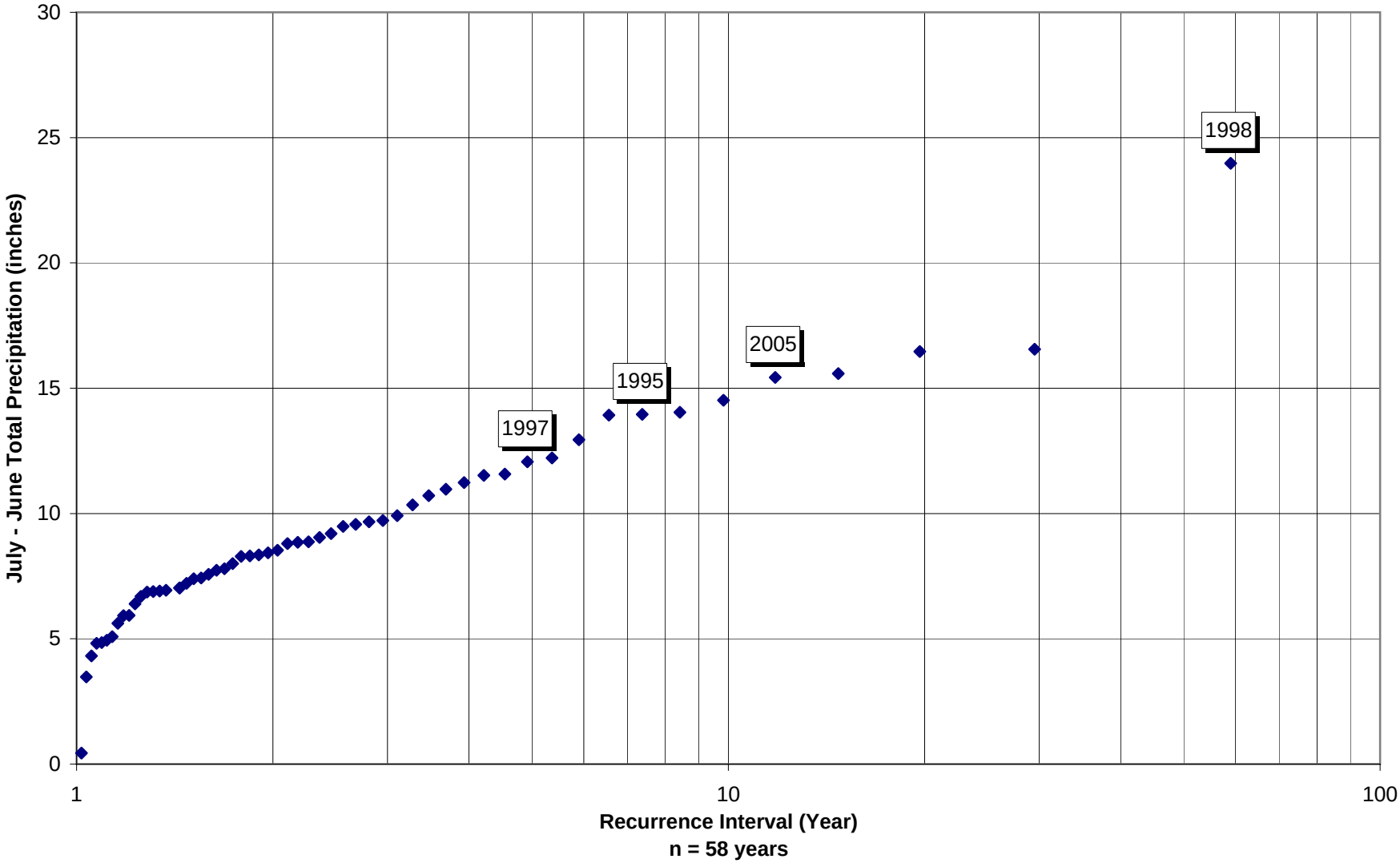


Figure 7. Los Banos NWS
4 Month Cumulative Rainfall 1948 - 2005

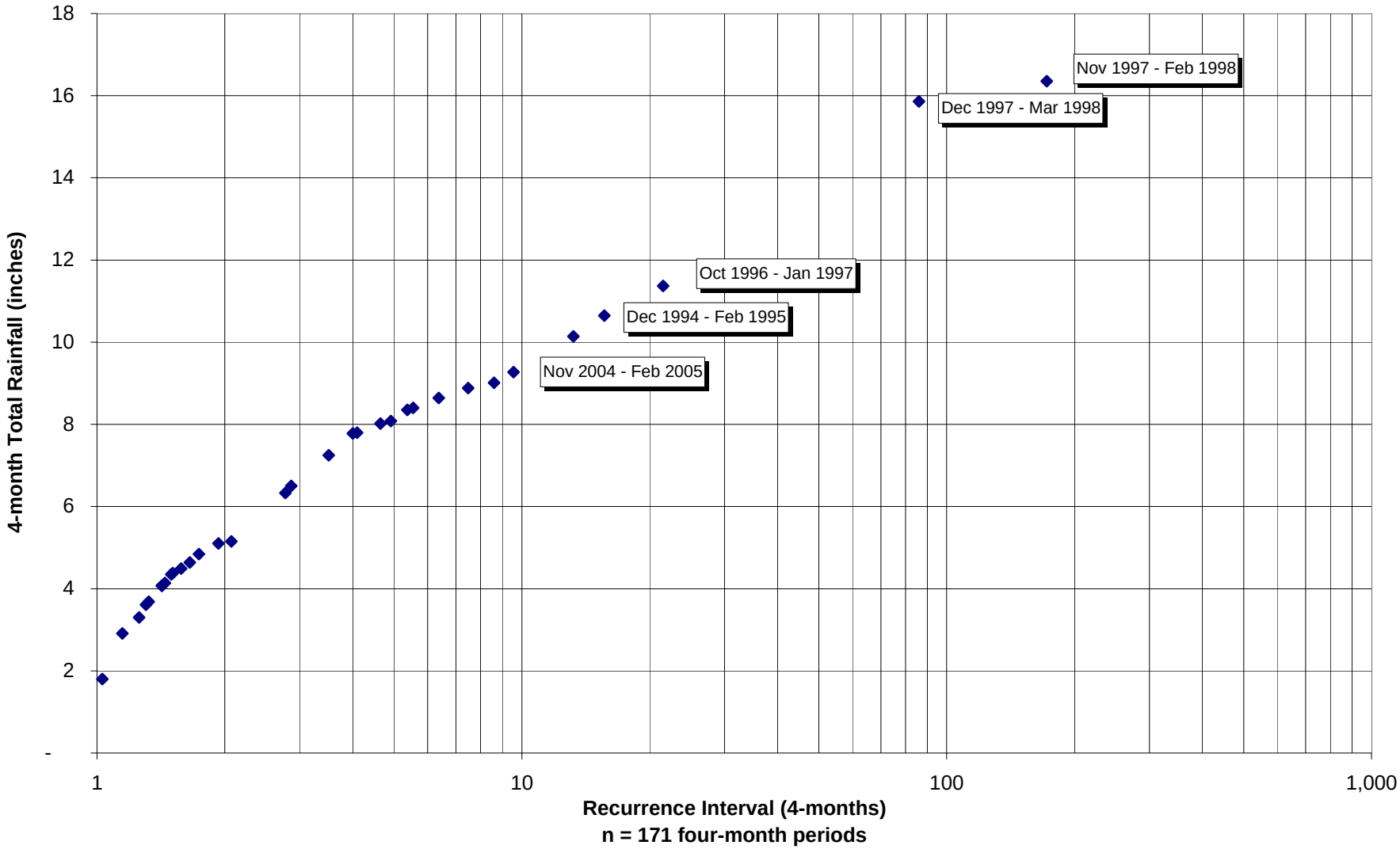
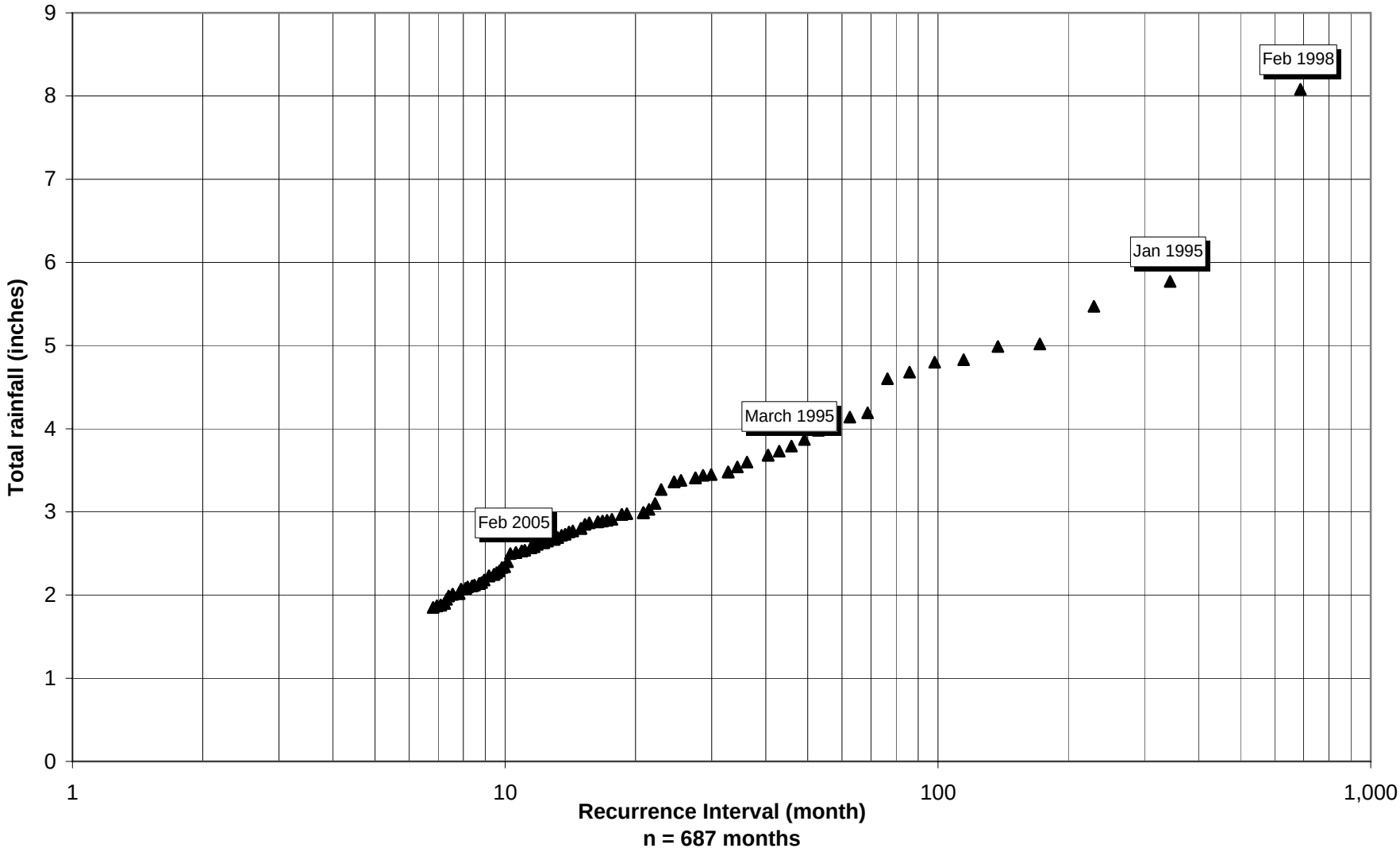


Figure 8. Los Banos NWS
Total Monthly Rainfall October 1949 - December 2005



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Tables

Grassland Bypass Project
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Table 1. Total Monthly Rainfall at Five Weather Stations in the Grasslands Watershed

	Panoche WD [1] rain gauge inches	Panoche [2] CIMIS 124 inches	Firebaugh [3] CIMIS 007 inches	Los Banos [4] CIMIS 056 Inches	Los Banos [5] NWS inches
Oct-04	2.57	1.36	2.33	2.31	2.14
Nov-04	0.86	0.14	0.80	1.23	2.14
Dec-04	2.21	1.77	1.85	2.12	2.51
Jan-05	1.81	1.67	1.94	2.16	1.85
Feb-05	2.57	2.51	2.65	2.68	2.51
Mar-05	1.52	1.41	1.82	1.79	2.01
Apr-05	0.99	0.95	0.84	0.95	0.72
May-05	0.34	0.32	0.75	0.85	1.41
Jun-05	0.00	0.02	0.00	0.02	0.07
Total	12.87	10.15	12.98	14.11	15.29

Note:
Panoche WD rain gauge is located 230 feet from CIMIS 124 Panoche

Data sources:
(1) Grassland Area Farmers, Rain Gauge operated by Panoche WD
(2) California Department of Water Resources, CIMIS 124 Panoche
(3) California Department of Water Resources, CIMIS 007 Firebaugh/Telles
(4) California Department of Water Resources, CIMIS 056 Los Banos
(5) National Weather Service, Los Banos. URL = http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosb+nca

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Table 2. Water Discharged from the Grassland Drainage Area

	San Luis Drain Site A [1] acre-feet	San Luis Drain Site B [2] acre-feet		Agatha Canal [4] acre-feet
Oct-04	1,100	1,570		
Nov-04	1,070	1,510		
Dec-04	1,060	1,550		
Jan-05	2,410	2,820		
Feb-05	3,480	3,670		269
Mar-05	3,730	3,910		
Apr-05	2,060	2,120		
May-05	2,540	2,580		
Jun-05	2,710	2,760		
Jul-05	2,750	2,860		
Aug-05	2,910	3,070		
Sep-05	1,600	1,790		
Oct-05	810	1,220	[3]	
Nov-05	850	1,310	[3]	
Dec-05	1,020	1,520	[3]	
2005 Total	26,870	29,630		269

Data Source:
(1) San Luis & Delta-Mendota Water Authority
(2) US Geological Survey preliminary flow data
(3) San Luis & Delta-Mendota Water Authority, San Luis Drain Terminus (Station B2)
(4) 2005 Floodwaters report

Grassland Bypass Project
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Table 3. Loads of Selenium Discharged from the Grassland Drainage Area

	San Luis Drain Site B [1] pounds		Discharged from the GDA into the Agatha Canal [3] pounds
Oct-04	129		
Nov-04	166		
Dec-04	157		
Jan-05	391		
Feb-05	578		14
Mar-05	947		
Apr-05	387		
May-05	408		
Jun-05	310		
Jul-05	290		
Aug-05	314		
Sep-05	207		
Oct-05	122		
Nov-05	176		
Dec-05	158	[2]	
2005 Total	4,288		14

Data Source:
(1) San Francisco Estuary Institute (SFEI)
(2) Estimate from Grassland Area Farmers preliminary data
(3) 2005 Floodwaters Report

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Table 4. Loads of Salts Discharged from the Grassland Drainage Area

	San Luis Drain Site B [1] tons		Discharged from the GDA into the Agatha Canal [3] tons
Oct-04	5,530		
Nov-04	6,470		
Dec-04	6,560		
Jan-05	12,310		
Feb-05	15,970		1,139
Mar-05	20,050		
Apr-05	11,100		
May-05	12,040		
Jun-05	11,000		
Jul-05	12,100		
Aug-05	12,190		
Sep-05	7,450		
Oct-05	5,490	[2]	
Nov-05	6,100	[2]	
Dec-05	6,360	[2]	
2005 Total	132,160		1,139

Data Source:
(1) Calculated from USGS flow and EC data
(2) Estimates from Grassland Area Farmers flow and EC data measured at San Luis Drain terminus (Station B2)
(3) 2005 Floodwaters Report, Table 2.

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Table 5. Applicable Selenium and Salt Load Values

	2001 Use Agreement [1] pounds of selenium	Alternate TMML [2] pounds of selenium	Revised TMML [3] pounds of selenium	Salinity Load Values [4] tons of salts
Oct-04	294	294	294	5,781
Nov-04	294	294	294	6,332
Dec-04	298	298	298	7,782
Jan-05	289	211	289	10,526
Feb-05	440	488	488	18,455
Mar-05	496	488	496	21,352
Apr-05	433	506	506	17,653
May-05	400	512	512	17,659
Jun-05	308	354	354	18,191
Jul-05	310	356	356	19,283
Aug-05	299	366	366	16,225
Sep-05	291	332	332	9,006
Oct-05	260	328	328	5,665
Nov-05	260	328	328	6,205
Dec-05	211	211	211	7,626
Annual Selenium Load for 2005 (Wet Year)	3,997	4,480	4,566	167,846

Data Source:
(1) 2001 Use Agreement, Appendix C.
(2) 2001 WDR, Page 12.
(3) 2001 Use Agreement, Appendix D.
(4) 2001 Use Agreement, Appendix E.

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Table 6a. Exceedance of Selenium Load Values

	Revised Selenium TMML [1] pounds	Selenium discharged from the San Luis Drain (Site B) [2] pounds	Selenium discharged to the Agatha Canal [2] pounds	Total Load of Selenium Discharged by the Project pounds	Exceedance of Monthly Selenium Load Value pounds	Percent Exceedance		Percent Reduction
Oct-04	294	129		129				-56%
Nov-04	294	166		166				-44%
Dec-04	298	157		157				-47%
Jan-05	289	391		391	102	35%	[3]	
Feb-05	488	578	14	592	104	21%	[3]	
Mar-05	496	947		947	451	91%	[3]	
Apr-05	506	387		387				-24%
May-05	512	408		408				-20%
Jun-05	354	310		310				-12%
Jul-05	356	290		290				-19%
Aug-05	366	314		314				-14%
Sep-05	332	207		207				-38%
Oct-05	328	122		122				-63%
Nov-05	328	176		176				-46%
Dec-05	211	158		158				-25%
2005 Selenium Load Value	4,566							
2005 Selenium Load				4,302				
Percent Exceedence/Reduction				-6%	[4]			

Notes:
(1) from Table 5
(2) from Table 3
(3) Exceedance more than 5 percent of Selenium Load Value; Drainage Incentive Fee will be assessed per 2001 Use Agreement Appendix H 2.B.
(4) Total Annual Selenium Load is less than the Total Annual Selenium TMML; no Annual Drainage Incentive Fee will be charged.

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Table 6b. Exceedance of Salinity Load Values

	Salinity Load Values [1] tons	Salt Load discharged from the San Luis Drain (Site B) [2] tons	Salt Load discharged to the Agatha Canal tons	Total Salt Discharge tons	Exceedance of Load Value tons	Percent Exceedance		Percent Reduction
Oct-04	5,781	5,530		5,530				-4%
Nov-04	6,332	6,470		6,470	138	2%	[3]	
Dec-04	7,782	6,560		6,560				-16%
Jan-05	10,526	12,310		12,310	1,784	17%	[4]	
Feb-05	18,455	15,970	1,139	17,109				-13%
Mar-05	21,352	20,050		20,050				-6%
Apr-05	17,653	11,100		11,100				-37%
May-05	17,659	12,040		12,040				-32%
Jun-05	18,191	11,000		11,000				-40%
Jul-05	19,283	12,100		12,100				-37%
Aug-05	16,225	12,190		12,190				-25%
Sep-05	9,006	7,450		7,450				-17%
Oct-05	5,665	5,490		5,490				-3%
Nov-05	6,205	6,100		6,100				-2%
Dec-05	7,626	6,360		6,360				-17%
2005 Salinity Load Value	167,846							
2005 Salinity Load				133,299				
Percent Exceedence/Reduction				-21%	[5]			

Notes:

(1) from Table 5

(2) from Table 4

(3) Nov 2004 Salinity Exceedance is less than 5 percent of Salinity Load Value; No Drainage Incentive Fee assessed per 2001 Use Agreement App. H 2.B.

(4) Jan 2005 Salinity Exceedance more than 5 percent of Salinity Load Value; Drainage Incentive Fee will be assessed per 2001 Use Agreement App. H 2.B.

(5) 2005 salinity load is less than annual salinity load value; no annual drainage incentive fee will be assessed.

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Table 7a. Appendix F - High Rainfall Exemption - 3-Month Cumulative Rainfall Trigger

	Rainfall on Panoche WD [1] inches	3-month Cumulative Rainfall inches	3-month Cumulative Rainfall exceeds 6 inches? [2]
Oct-04	2.57		
Nov-04	0.86		
Dec-04	2.21	5.64	No
Jan-05	1.81	4.88	No
Feb-05	2.57	6.59	Yes
Mar-05	1.52	5.90	Yes [3]
Apr-05	0.99	5.08	Yes [3]
May-05	0.34	2.85	Yes [3]
Jun-05	0.26	1.59	No

Data sources:

(1) from Table 1, Rain Gauge operated by Panoche WD

(2) 2001 Use Agreement, Appendix F

(3) 2001 Use Agreement, Appendix F - once met, the triggger is also met in each of the three months succeeding months

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Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
10/1/2004			
10/2/2004			
10/3/2004			
10/4/2004			
10/5/2004			
10/6/2004			
10/7/2004			
10/8/2004			
10/9/2004			
10/10/2004			
10/11/2004			
10/12/2004			
10/13/2004			
10/14/2004			
10/15/2004			
10/16/2004			
10/17/2004	0.29		
10/18/2004	0.06		
10/19/2004	1.16		
10/20/2004	0.13		
10/21/2004			
10/22/2004			
10/23/2004	0.01		
10/24/2004	0.22		
10/25/2004			
10/26/2004	0.70		
10/27/2004			
10/28/2004			
10/29/2004			
10/30/2004			
10/31/2004			
11/1/2004			
11/2/2004			
11/3/2004	0.06		
11/4/2004	0.11		
11/5/2004			
11/6/2004			
11/7/2004	0.07		
11/8/2004	0.03		
11/9/2004			
11/10/2004	0.25		
11/11/2004	0.18		
11/12/2004			
11/13/2004	0.11		

Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
11/14/2004	0.01		
11/15/2004			
11/16/2004	0.01		
11/17/2004			
11/18/2004			
11/19/2004			
11/20/2004	0.01		
11/21/2004			
11/22/2004			
11/23/2004			
11/24/2004			
11/25/2004			
11/26/2004			
11/27/2004	0.02		
11/28/2004			
11/29/2004			
11/30/2004			
12/1/2004	0.41		
12/2/2004	0.12		
12/3/2004			
12/4/2004			
12/5/2004			
12/6/2004	0.01		
12/7/2004			
12/8/2004			
12/9/2004			
12/10/2004			
12/11/2004	0.01		
12/12/2004	0.01		
12/13/2004	0.01		
12/14/2004			
12/15/2004			
12/16/2004			
12/17/2004			
12/18/2004	0.01		
12/19/2004			
12/20/2004	0.01		
12/21/2004	0.40		
12/22/2004	0.47		
12/23/2004	0.04		
12/24/2004	0.34		
12/25/2004	0.37		
12/26/2004			
12/27/2004			
12/28/2004			
12/29/2004			
12/30/2004		5.64	
12/31/2004		5.64	

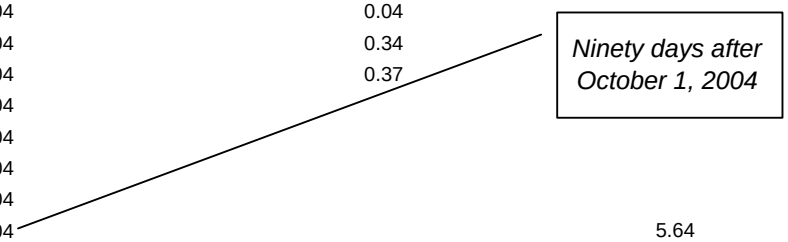

Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
1/1/2005	0.01	5.65	
1/2/2005	0.11	5.76	
1/3/2005	0.04	5.80	
1/4/2005		5.80	
1/5/2005	0.10	5.90	
1/6/2005	0.01	5.91	
1/7/2005	0.27	6.18	yes
1/8/2005	0.13	6.31	yes
1/9/2005	0.56	6.87	yes
1/10/2005	0.04	6.91	yes
1/11/2005	0.08	6.99	yes
1/12/2005		6.99	yes
1/13/2005		6.99	yes
1/14/2005		6.99	yes
1/15/2005		6.99	yes
1/16/2005		6.70	yes
1/17/2005		6.64	yes
1/18/2005		5.48	
1/19/2005		5.35	
1/20/2005		5.35	
1/21/2005		5.35	
1/22/2005		5.34	
1/23/2005		5.12	
1/24/2005		5.12	
1/25/2005		4.42	
1/26/2005	0.16	4.58	
1/27/2005		4.58	
1/28/2005	0.30	4.88	
1/29/2005		4.88	
1/30/2005		4.88	
1/31/2005		4.88	
2/1/2005	0.02	4.90	
2/2/2005		4.84	
2/3/2005		4.73	
2/4/2005		4.73	
2/5/2005	0.05	4.78	
2/6/2005	0.04	4.75	
2/7/2005		4.72	
2/8/2005	0.06	4.78	
2/9/2005	1.39	5.92	
2/10/2005	0.15	5.89	
2/11/2005	0.15	6.04	yes
2/12/2005	0.52	6.45	yes
2/13/2005	0.01	6.45	yes
2/14/2005	0.03	6.48	yes
2/15/2005	0.03	6.50	yes
2/16/2005		6.50	yes
2/17/2005		6.50	yes

90-day cumulative rainfall exceeded the six-inch threshold on January 7, 2005

90-day cumulative rainfall exceeded the six-inch threshold on February 11, 2005

Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
2/18/2005		6.50	yes
2/19/2005		6.49	yes
2/20/2005		6.49	yes
2/21/2005	0.09	6.58	yes
2/22/2005	0.03	6.61	yes
2/23/2005		6.61	yes
2/24/2005		6.61	yes
2/25/2005		6.61	yes
2/26/2005		6.59	yes
2/27/2005		6.59	yes
2/28/2005		6.59	yes
3/1/2005		6.59	yes
3/2/2005	0.05	6.23	yes
3/3/2005	0.13	6.24	yes
3/4/2005	0.27	6.51	yes
3/5/2005		6.51	yes
3/6/2005		6.51	yes
3/7/2005		6.50	yes
3/8/2005	0.01	6.51	yes
3/9/2005		6.51	yes
3/10/2005		6.51	yes
3/11/2005		6.51	yes
3/12/2005		6.50	yes
3/13/2005		6.49	yes
3/14/2005		6.48	yes
3/15/2005		6.48	yes
3/16/2005		6.48	yes
3/17/2005		6.48	yes
3/18/2005		6.48	yes
3/19/2005	0.13	6.60	yes
3/20/2005	0.34	6.94	yes
3/21/2005	0.15	7.08	yes
3/22/2005	0.40	7.08	yes
3/23/2005		6.61	yes
3/24/2005		6.57	yes
3/25/2005		6.23	yes
3/26/2005		5.86	
3/27/2005		5.86	
3/28/2005	0.01	5.87	
3/29/2005	0.03	5.90	
3/30/2005		5.90	
3/31/2005		5.90	
4/1/2005		5.90	
4/2/2005		5.89	
4/3/2005		5.78	
4/4/2005		5.74	
4/5/2005		5.74	
4/6/2005		5.64	

Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
4/7/2005	0.10	5.73	
4/8/2005	0.20	5.66	
4/9/2005	0.16	5.69	
4/10/2005		5.13	
4/11/2005		5.09	
4/12/2005		5.01	
4/13/2005		5.01	
4/14/2005		5.01	
4/15/2005		5.01	
4/16/2005		5.01	
4/17/2005		5.01	
4/18/2005		5.01	
4/19/2005		5.01	
4/20/2005		5.01	
4/21/2005		5.01	
4/22/2005	0.01	5.02	
4/23/2005	0.01	5.03	
4/24/2005		5.03	
4/25/2005		5.03	
4/26/2005		5.03	
4/27/2005		4.87	
4/28/2005	0.51	5.38	
4/29/2005		5.08	
4/30/2005		5.08	
5/1/2005		5.08	
5/2/2005		5.08	
5/3/2005		5.06	
5/4/2005		5.06	
5/5/2005	0.34	5.40	
5/6/2005		5.40	
5/7/2005		5.35	
5/8/2005		5.31	
5/9/2005		5.31	
5/10/2005		5.25	
5/11/2005		3.86	
5/12/2005		3.71	
5/13/2005		3.56	
5/14/2005		3.04	
5/15/2005		3.03	
5/16/2005		3.00	
5/17/2005		2.97	
5/18/2005		2.97	
5/19/2005		2.97	
5/20/2005		2.97	
5/21/2005		2.97	
5/22/2005		2.97	
5/23/2005		2.88	
5/24/2005		2.85	

Table 7b. Alternate Calculation of High Rainfall Exemption - 90 day Cumulative Rainfall

date	Panoche WD tipping bucket [1]	90-day cumulative rainfall	Is 90-day cumulative rainfall more than 6 inches? [2]
5/25/2005		2.85	
5/26/2005		2.85	
5/27/2005		2.85	
5/28/2005		2.85	
5/29/2005		2.85	
5/30/2005		2.85	
5/31/2005		2.85	
6/1/2005		2.80	
6/2/2005		2.67	
6/3/2005		2.40	
6/4/2005		2.40	
6/5/2005		2.40	
6/6/2005		2.40	
6/7/2005		2.39	
6/8/2005		2.39	
6/9/2005		2.39	
6/10/2005		2.39	
6/11/2005		2.39	
6/12/2005		2.39	
6/13/2005		2.39	
6/14/2005		2.39	
6/15/2005		2.39	
6/16/2005		2.39	
6/17/2005		2.39	
6/18/2005		2.26	
6/19/2005		1.92	
6/20/2005		1.77	
6/21/2005		1.37	
6/22/2005		1.37	
6/23/2005		1.37	
6/24/2005		1.37	
6/25/2005		1.37	
6/26/2005		1.37	
6/27/2005		1.36	
6/28/2005		1.33	
6/29/2005		1.33	
6/30/2005		1.33	
Total More than 6 inches:			54

Notes:

(1) Grassland Area Farmers, Rain Gauge operated by Panoche WD

(2) 2001 Use Agreement, Appendix F - once met, the trigger is also met in each of the three months suceeding months

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Table 8a. Summary of daily water flows on the San Joaquin River at Crows Landing. Calculations represent the January 2005 4-day average flows for determining the High Rainfall Exemption as described in the *Agreement for Use of the San Luis Drain* and for determination of incentive fees for winter 2005.

	Crows Landing Mean Daily Flow [1] cfs/day	Crows Landing Mean Daily Flow acre-feet	Crows Landing 4-day Average Flow acre-feet
1/1/2005	2,350	4,661	
1/2/2005	2,760	5,474	
1/3/2005	3,020	5,990	
1/4/2005	3,220	6,387	5,628
1/5/2005	3,420	6,784	6,159
1/6/2005	3,370	6,684	6,461
1/7/2005	3,210	6,367	6,555
1/8/2005	3,060	6,070	6,476
1/9/2005	3,310	6,565	6,422
1/10/2005	3,830	7,597	6,650
1/11/2005	5,010	9,937	7,542
1/12/2005	5,710	11,326	8,856
1/13/2005	6,090	12,080	10,235
1/14/2005	6,190	12,278	11,405
1/15/2005	5,900	11,703	11,846
1/16/2005	5,220	10,354	11,603
1/17/2005	4,530	8,985	10,830
1/18/2005	3,950	7,835	9,719
1/19/2005	3,490	6,922	8,524
1/20/2005	3,100	6,149	7,473
1/21/2005	2,800	5,554	6,615
1/22/2005	2,580	5,117	5,936
1/23/2005	2,380	4,721	5,385
1/24/2005	2,080	4,126	4,879
1/25/2005	1,840	3,650	4,403
1/26/2005	1,690	3,352	3,962
1/27/2005	1,640	3,253	3,595
1/28/2005	2,030	4,027	3,570
1/29/2005	2,500	4,959	3,898
1/30/2005	3,060	6,070	4,577
1/31/2005	2,920	5,792	5,212
Total Monthly Flow		210,767	
Average flow		6,799	
Minimum 4-day flow			3,570

Actual 4-day Monthly Equivalent Low Flow = (3,570 / 6,799) x 210,767 = [2] **110,679**
4-Day Monthly Equivalent Low Flow at Crow's Landing (Design Flow) [3] 19,260
300% of Design Flow = 3 x 19,260 = **57,780**

Conclusion: Actual 4-day monthly equivalent low-flow is more than 300% of the Design Flow.

Data Sources:
(1) San Francisco Estuary Institute, US Geological Survey Data.
(2) Actual 4-day Monthly Equivalent Low Flow = (Minimum 4-day flow / Average flow) x Total Monthly flow (Karkoski 1994).
(3) Published flow from CVRWQCB (2001) Revised Selenium TMDL for the Lower San Joaquin River.

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Table 8b. Summary of daily water flows on the San Joaquin River at Crows Landing. Calculations represent the February 2005 4-day average flows for determining the High Rainfall Exemption as described in the *Agreement for Use of the San Luis Drain* and for determination of incentive fees for winter 2005.

	Crows Landing Mean Daily Flow[1] cfs/day	Crows Landing Mean Daily Flow acre-feet	Crows Landing 4-day Average Flow acre-feet
2/1/2005	2,720	5,395	
2/2/2005	2,520	4,998	
2/3/2005	2,170	4,304	
2/4/2005	1,940	3,848	4,636
2/5/2005	1,770	3,511	4,165
2/6/2005	1,700	3,372	3,759
2/7/2005	1,630	3,233	3,491
2/8/2005	1,570	3,114	3,307
2/9/2005	1,500	2,975	3,174
2/10/2005	1,470	2,916	3,060
2/11/2005	1,410	2,797	2,950
2/12/2005	1,360	2,698	2,846
2/13/2005	1,320	2,618	2,757
2/14/2005	1,280	2,539	2,663
2/15/2005	1,270	2,519	2,593
2/16/2005	2,040	4,046	2,931
2/17/2005	2,260	4,483	3,397
2/18/2005	2,950	5,851	4,225
2/19/2005	3,560	7,061	5,360
2/20/2005	4,410	8,747	6,536
2/21/2005	4,800	9,521	7,795
2/22/2005	4,660	9,243	8,643
2/23/2005	4,230	8,390	8,975
2/24/2005	3,850	7,636	8,698
2/25/2005	3,510	6,962	8,058
2/26/2005	3,160	6,268	7,314
2/27/2005	2,850	5,653	6,630
2/28/2005	2,630	5,217	6,025
Total Monthly Flow		139,916	
Average flow		4,997	
Minimum 4-day flow			2,593

Actual 4-day Monthly Equivalent Low Flow = (2,593 / 4,997) x 139,916 =[2] **72,616**

4-Day Monthly Equivalent Low Flow at Crow's Landing (Design Flow)[3] 45,623

300% of Design Flow = 3 x 45,623 = **136,869**

Conclusion: Actual 4-day monthly equivalent low-flow is less than 300% of the Design Flow

Data Sources:
(1) San Francisco Estuary Institute, US Geological Survey Data.
(2) Actual 4-day Monthly Equivalent Low Flow = (Minimum 4-day flow / Average flow) x Total Monthly flow (Karkoski 1994).
(3) Published flow from CVRWQCB (2001) Revised Selenium TMDL for the Lower San Joaquin River.

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Table 8c. Summary of daily water flows on the San Joaquin River at Crows Landing. Calculations represent the March 2005 4-day average flows for determining the High Rainfall Exemption as described in the *Agreement for Use of the San Luis Drain* and for determination of incentive fees for winter 2005.

	Crows Landing Mean Daily Flow [1] cfs/day	Crows Landing Mean Daily Flow acre-feet	Crows Landing 4-day Average Flow acre-feet
3/1/2005	2,620	5,197	
3/2/2005	2,710	5,375	
3/3/2005	2,710	5,375	
3/4/2005	2,670	5,296	5,311
3/5/2005	2,580	5,117	5,291
3/6/2005	2,410	4,780	5,142
3/7/2005	2,290	4,542	4,934
3/8/2005	2,180	4,324	4,691
3/9/2005	2,100	4,165	4,453
3/10/2005	2,000	3,967	4,250
3/11/2005	1,920	3,808	4,066
3/12/2005	1,830	3,630	3,893
3/13/2005	1,750	3,471	3,719
3/14/2005	1,670	3,312	3,555
3/15/2005	1,590	3,154	3,392
3/16/2005	1,540	3,055	3,248
3/17/2005	1,480	2,936	3,114
3/18/2005	1,530	3,035	3,045
3/19/2005	1,540	3,055	3,020
3/20/2005	1,490	2,955	2,995
3/21/2005	1,540	3,055	3,025
3/22/2005	1,860	3,689	3,188
3/23/2005	2,410	4,780	3,620
3/24/2005	3,130	6,208	4,433
3/25/2005	4,170	8,271	5,737
3/26/2005	4,960	9,838	7,274
3/27/2005	5,650	11,207	8,881
3/28/2005	6,340	12,575	10,473
3/29/2005	7,050	13,984	11,901
3/30/2005	7,400	14,678	13,111
3/31/2005	7,370	14,618	13,964
Total (acre-feet)		183,454	
Average (acre-feet/day)		5,918	
Minimum 4-day flow (acre-feet)			2,995

Actual 4-day Monthly Equivalent Low Flow = (2,995 / 5,918) x 183,454 = [2]	**92,848**
4-Day Monthly Equivalent Low Flow at Crow's Landing (Design Flow) [3]	45,623
300% of Design Flow = 3 x 45,623 =	**136,869**

Conclusion: Actual 4-day monthly equivalent low-flow is less than 300% of the Design Flow.

Data Sources:
(1) San Francisco Estuary Institute, US Geological Survey Data.
(2) Actual 4-day Monthly Equivalent Low Flow = (Minimum 4-day flow / Average flow) x Total Monthly flow (Karkoski 1994).
(3) Published flow from CVRWQCB (2001) Revised Selenium TMDL for the Lower San Joaquin River.

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Table 9. Appendix F - High Rainfall Exemption - Summary

	3-month cumulative rainfall more than 6 inches [1]	Actual 4-day monthly equivalent low flow more than 300% Design Flow? [3]	Qualify for Appendix F High Rainfall Exemption?
Jan-05	No	Yes	No
Feb-05	Yes	No	No
Mar-05	Yes	No	No

	90-day cumulative rainfall more than 6 inches? [2]	Actual 4-day monthly equivalent low flow more than 300% Design Flow? [3]	Qualify for Appendix F High Rainfall Exemption?
Jan-05	Yes	Yes	Yes
Feb-05	Yes	No	No
Mar-05	Yes	No	No

Sources:
(1) Table 7a.1
(2) Table 7a.2
(3) Tables 7b.1, 7b.2, and 7b.3

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Table 10a. Calculation of Incentive Fees - Selenium

	Selenium Load Value [1] pounds	Load of Selenium Discharged by the Project [2] pounds		Exceedance of Selenium Load Values pounds	Exceedance as Percent of Selenium Load Value	Is Exceedance Less than 5 percent of Monthly Selenium Load Value?	Appendix F. High Rainfall Exemption pounds	Appendix G. Upper Watershed Exemption pounds	Attributable Discharge of Selenium pounds	Selenium Incentive Fees [5]
Jan-05	289	391		102	35%	No	0	0	102	$27,924
Feb-05	488	592	[3]	104	21%	No	0	0	104	$28,416
Mar-05	496	947		451	91%	No	0	0	451	$123,466
Apr-05	506	387		0					0	$0
May-05	512	408		0					0	$0
Jun-05	354	310		0					0	$0
Jul-05	356	290		0					0	$0
Aug-05	366	314		0					0	$0
Sep-05	332	207		0					0	$0
Oct-05	328	122		0					0	$0
Nov-05	328	176		0					0	$0
Dec-05	211	158	[4]	0					0	$0
Total	4,566	4,302		657			0		657	$179,806

Table 10b. Calculation of Incentive Fees - Salts

	Salinity Load Value tons	Load of Salts Discharged by the Project [6] tons		Exceedance of Salinity Load Values tons	Exceedance as Percent of Salinity Load value	Is Exceedance Less than 5 percent of Monthly Salinity Load Value?	High rainfall Exemption tons	Upper Watershed Exemption	Attributable Discharge of Selenium tons	Salinity Incentive Fees [8]
Jan-05	10,526	12,310		1,784	17%	No	0	0	1,784	$13,291
Feb-05	18,455	17,109	[7]	0	0%			0	0	$0
Mar-05	21,352	20,050		0	0%			0	0	$0
Apr-05	17,653	11,100		0					0	$0
May-05	17,659	12,040		0					0	$0
Jun-05	18,191	11,000		0					0	$0
Jul-05	19,283	12,100		0					0	$0
Aug-05	16,225	12,190		0					0	$0
Sep-05	9,006	7,450		0					0	$0
Oct-05	5,665	5,490		0					0	$0
Nov-05	6,205	6,100	[4]	0					0	$0
Dec-05	7,626	6,360	[4]	0					0	$0
Total (tons)	167,846	133,299		1,784			0		1,784	$13,291

Adjustments to the Incentive Fees:

Waiver for Uncontrollable and Unforeseeable Events	To be determined
Duplicative Regional Board Penalties	To be determined
Incentive Credits (annual exceedances only)	Not applicable
Exceedances of both Selenium and Salinity Load Values	($13,291)
Total Incentive Fee	**$179,806**

Notes:

(1) from Table 5
(2) San Francisco Estuary Institute
(3) Includes 14 pounds discharged from the GDA to Agatha Canal
(4) Preliminary estimates from Grassland Area Farmers
(5) Selenium Incentive Fee =
= $250,000 / (0.20 x annual load value) or $500 per pound, whichever is less
= $250,000 / (0.20 x 4566) = $273.76 per pound
(6) Calculated from USGS and SLDMWA preliminary flow and salinity data
(7) Includes 1,139 tons of salts discharged from the Grassland Drainage Area into the Agatha Canal
(8) Salinity Incentive Fee =
= $250,000 / (0.20 x annual load value) or $500 per ton, whichever is less
= $250,000 / (0.20 x 167846) = $ 7.45 per ton

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Table 11. Determination of Incentive Credits

Calendar Year	Annual Selenium Load [2] pounds	Annual Selenium Load Value pounds		Percent Reduction	Incentive Credit pounds		Attributable Salt Load [6] tons	Annual Salinity Load Value [7] tons	Percent Reduction	Incentive Credit tons
2001 [1]	436	983	[3]	56%	547		10,347	22,105	53%	11,758
2002	4,176	5,328	[3]	22%	1,152		113,974	190,300	40%	76,326
2003	4,007	4,995	[3]	20%	988		115,028	180,785	36%	65,757
2004	3,672	4,664	[3]	21%	992		123,197	171,271	28%	48,074
2005[8]	4,302	4,566	[4]	6%	0	[5]	132,160	167,846	21%	35,686
Total Incentive Credits 2001 - 2005[8]					3,679					237,601

Data sources:

(1) October 2001 - December 2001 only
(2) San Francisco Estuary Institute
(3) 2001 Use Agreement, Appendix C
(4) 2001 Use Agreement, Appendix D
(5) Reduction must be more than 10 percent to qualify for Incentive Credit per 2001 Use Agreement Appendix J.
(6) US Geological Survey preliminary flow and salinity data for Station B and SLDMWA data for Station B2
(7) 2001 Use Agreement, Appendix E

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Table 12. Source Data - National Weather Service, Los Banos 1949 - 2005
URL: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosb+nca

LOS BANOS, CALIFORNIA
Monthly Total Precipitation (inches)

File last updated on Dec 15, 2005
*** Note *** Provisional Data *** After Year/Month 200509
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
s if any month in that year has more than 5 days missing

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1948	0 z	0 z	0 z	0 z	0 z	0 z	0	0	0	0.41 b	0	1.42	1.83
1949	0.72	1.06	2.11	0	0.97	0	0	0	0	0	1.28	1.17	7.31
1950	1.82	0.83	0.56	0.72	0.02	0	0.03	0	0.59	0.81	1.36	1.43	8.17
1951	0.96	0.96	0.57	0.5	0	0	0	0	0	0.6	1.54	2.97	8.1
1952	3.44	0.47	2.02	1.88	0.02	0	0	0	0.16	0	1.26	2.85	12.1
1953	0.4	0.01	0.19	1.01 g	0.17	0.05	0	0	0	0	0.94	0.21	1.97
1954	1.66	1.05	1.95	0.81	0.27	0	0	0	0	0	1.32	1.42	8.48
1955	2.8	0.74	0.27	0.87	0.85	0.02	0	0	0	0.03	0.76	5.47	11.81
1956	2.99	0.25	0	1.19 a	0.54	0	0	0	0.16	0.24	0	0.16	5.53
1957	1.77	1.32	1.66	0.8	1.16	0.16	0	0	0.07	1.07	0.18	1.79	9.98
1958	2.54	3.68	4.04	1.9	0.27	0.04	0	0	0.47 a	0.01	0.07	0.27	13.29
1959	1.69	2.63	0.1	0.38	0	0	0	0.05	1.33	0	0	0.38	6.56
1960	1.43	2.67	0.53	1	0.01	0	0	0	0.07	0	2.23	0.22	8.16
1961	1.62	0.83	1.12	0.22	0.6	0	0.02	0	0	0	1.49	1.22	7.12
1962	1.46	4.8 a	0.73 a	0	0	0	0	0	0	0.2	0.12	1.55	8.86
1963	1.55	3.48	1.33	1.83	0.19	0.09	0	0	0.05	1.07	1.22	0.12	10.93
1964	0.66	0.02	0.87	0.45	0	0.39	0	0	0.24	2.69	1.08	2.76	9.16
1965	0.75	0.37	0.74	2.08	0	0	0	0.28	0	0.07	4.83	1.53	10.65
1966	0.71	0.82	0.07	0.2	0.29	0	0.17	0	0.06	0	1.67	2.88	6.87
1967	2.1	0.3	1.17	3.03	0.06	0.08	0	0	0.02	0.07	1.35	1.03	9.21
1968	0.84	1.18	1.13	0.18	0.12	0	0	0	0	0.48	1.65	1.87	7.45
1969	4.68	4.19	0.4	0.77	0	0	0	0	1.49	1.46	0.71	0.72	14.42
1970	2.99	0.55	1.25	0.03	0	0	0	0	0	0.35	2.25	2.02	9.44
1971	0.51	0.33	0.59	0.77	0.98	0	0	0	0.02	0.29	0.72	1.54	5.75
1972	0.4	0.27	0	0.23	0	0.01	0	0	0.08	0.62	4.99	0.86	7.46
1973	2.87	3.6	1.45	0.05	0	0	0	0	0.03	1.17	1.14	2.07	12.38
1974	1.63	0.33	1.9	0.58	0	0	0.43	0	0	0.87	0.45	2.11	8.3
1975	0.17	2.73	1.83	0.98	0	0	0.04	0.22	0.01	1.01	0.08	0.14	7.21
1976	0.19	1.1	0.41	1.04	0	0.08	0	0.73	1.99	0.84	0.74	0.75	7.87
1977	0.71	0.3	0.37	0.02	1.04	0.25	0	0	0.09	0.14	0.26	2.57	5.75
1978	4.14	3.48	3.98	1.66	0.14	0	0	0	0.29	0	1.33	0.5	15.52
1979	2.27	2.67	2.23	0.19	0.19	0	0.02	0	0	0.64	0.69	0.67	9.57
1980	2.9	3.1	1.16	0.45	0.28	0	0	0	0	0.05	0	0.48	8.42
1981	1.69	1	2.88	0.77	0	0	0	0	0	0.7	2.99	0.67	10.7
1982	1.6	1.27	3.41	1.48	0	0.1	0	0	0.7	0.81	2.61	1.45	13.43
1983	3.73	2.18	3.68	1.24	0.16	0	0	0.1	2.77	0.43	2.12	2.63	19.04
1984	0.12	0.88	0.33	0.08	0	0.02	0	0	0	0.71	2.53	1.58	6.25
1985	0.56	0.35	1.13	0.05	0	0.12	0	0	0.01	0.48	2.98	0.94	6.62
1986	0.88	3.27	2.8	0.18	0.03	0	0	0	0.66	0	0	0.52	8.34
1987	1.45	2.5	2.97	0.1	0.11	0	0	0	0	0.84	0.32	2.34	10.63
1988	1.62	0.61	0.12	2.4	0.5	0.29	0	0	0	0	0.63	1.63	7.8
1989	0.6	0.93	0.64	0.39	0	0	0	0.12	1.42	0.85	0.28	0.01	5.24
1990	1.54	1.19	0.47	0.25	1.87	0	0	0	0.08	0.13	0.39	0.53	6.45
1991	0.2	1.44	3.36	0.46	0.3	0.05	0	0.21	0	0.48	0.26	0.77	7.53
1992	1.09	3.38	2.15	0	0	0.01	0.52	0	0	0.3	0.02	1.66	9.13
1993	5.02	3.36	2.01	0.14	0.52	0.38	0	0	0	0.14	0.53	0.83	12.93
1994	1.6	2.53	0.19	0.58	1.17	0	0	0	0.1	0.37	1.22	0.66	8.42
1995	5.77	0.43	3.79	0.87	0.63	0.12	0.03	0	0	0	0	2.02	13.66
1996	2.33	3.45	1.47	0.71	0.9	0.06	0	0	0	1.46	1.77	3.54 b	15.69
1997	4.6	0.23	0.03	0.28	0.15	0	0	0	0	0.08	2.57	2.29	10.23
1998	3.41	8.08	2.08	1.16	3.87	0.43	0	0	0	0.66	0.94	0.45	21.08
1999	1.25	1.5	1.44	0.71	0.08	0	0	0	0	0	0.46	0.33	5.77
2000	2.89	2.65	0.63	1.19	0.14	0.14	0	0	0.09	2.58	0.22	0.16	10.69
2001	1.88	1.81	1.3	0.83	0	0	0	0	0.1	0.27	1.15	2.25	9.59
2002	0.82	0.16	0.84 a	0.14	0.2 a	0	0	0	0.05	0	1.17 d	3.47 j	3.38
2003	0.58 a	1.16	0.7	0.81	0.47	0	0	0.08	0	0.04	0.92 d	2.91 d	7.67
2004	1.23 b	2.72	0.39	0.05	0.19	0	0	0	0.07	2.14	2.14	2.51	11.44
2005	1.85 a	2.51 b	2.01	0.72	1.41	0.07	0	0.04	0.14	0.09	0.17	1.17 t	9.01
						Period of Record Statistics							
MEAN	1.82	1.75	1.36	0.72	0.37	0.05	0.02	0.03	0.23	0.5	1.14	1.43	9.63
S.D.	1.32	1.53	1.12	0.67	0.63	0.1	0.09	0.11	0.54	0.62	1.1	1.07	3.32
SKEW	1.05	1.47	0.86	1.29	3.41	2.42	4.73	4.99	3.07	1.84	1.53	1.08	1.33
MAX	5.77	8.08	4.04	3.03	3.87	0.43	0.52	0.73	2.77	2.69	4.99	5.47	21.08
MIN	0.12	0.01	0	0	0	0	0	0	0	0	0	0.01	5.24
NO YRS	57	57	57	56	57	57	58	58	58	58	58	56	54

Grassland Bypass Project
Technical Policy & Review Team
Determination of Unforeseeable and Uncontrollable Conditions during Winter 2005

Table 13. Summary of Statistical Analysis of Los Banos NWS
Period of Record: October 1948 - December 2005
Frequency: Monthly

Annual Total Precipitation (July - June) (n = 57)

	Total Precipitation (inches)	Exceedence Probability (%)	Recurrence Interval (Years)	Rank	Unforeseeable and Uncontrollable?
1994 - 1995	13.96	14	7.4	8	
1996 - 1997	12.06	20	5.0	12	No
1997 - 1998	23.97	2	59.0	1	Yes
2004 - 2005	15.43	8	12.0	5	

4-Month Cumulative Rainfall (n = 171)

	Total Precipitation (inches)	Exceedence Probability (%)	Recurrence Interval (4-months)	Rank
Dec 1994 - Mar 1995	10.65	6.4	15.6	11
Oct 1996 - Jan 1997	11.37	4.7	21.5	8
Nov 1997 - Feb 1998	16.35	0.6	172.0	1
Dec 1996 - Mar 1998	15.86	1.2	86.0	2
Nov 2004 - Feb 2005	9.01	11.6	8.6	20

Individual Months (n = 687 months)

	Total Precipitation (inches)	Exceedence Probability (%)	Recurrence Interval (Months)	Rank	Unforeseeable and Uncontrollable?
Oct-94	0.37	47.4	2.1	326	
Nov-94	1.22	23.8	4.2	164	
Dec-94	0.66	38.1	2.6	262	
Jan-95	5.77	0.3	344.0	2	
Feb-95	0.43	45.1	2.2	310	
Mar-95	3.79	2.2	45.9	15	Yes [1]
Apr-95	0.87	30.7	3.3	211	
May-95	0.63	39.0	2.6	268	
Jun-95	0.12	58.9	1.7	405	
Oct-96	1.46	19.6	5.1	135	
Nov-96	1.77	15.6	6.4	107	
Dec-96	3.54	2.9	34.4	20	
Jan-97	4.60	1.3	76.4	9	
Feb-97	0.23	52.5	1.9	361	
Mar-97	0.03	66.4	1.5	457	
Apr-97	0.28	50.0	2.0	344	
May-97	0.15	57.3	1.8	394	
Jun-97	0.00	70.2	1.4	483	
Oct-97	0.08	61.6	1.6	424	
Nov-97	2.57	8.7	11.5	60	
Dec-97	2.29	10.3	9.7	71	
Jan-98	3.41	3.6	27.5	25	
Feb-98	8.08	0.1	688.0	1	
Mar-98	2.08	12.4	8.1	85	
Apr-98	1.16	25.6	3.9	176	
May-98	3.87	2.0	49.1	14	
Jun-98	0.43	45.1	2.2	310	
Oct-04	2.14	11.5	8.7	79	
Nov-04	2.14	11.5	8.7	79	
Dec-04	2.51	9.4	10.6	65	
Jan-05	1.85	14.7	6.8	101	
Feb-05	2.51	9.4	10.6	65	
Mar-05	2.01	13.2	7.6	91	
Apr-05	0.72	35.6	2.8	245	
May-05	1.41	21.5	4.7	148	
Jun-05	0.07	62.9	1.6	433	

Data Source:
National Weather Service, Los Banos
URL: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosb+nca
Formulae:
Exceedence Probability = Rank / (1 + Number of Observations)
Recurrence Interval = 1 / Exceedence Probability
Rank = Position of observation in list of all observations in numerical order
Notes:
(1) Cited in 1995 Use Agreement as the standard for "unforeseeable and incontrollable events"

Grassland Bypass Project
Technical and Policy Review Team
Determination of Incentive Fees for
Winter 2005 Floods

Attachment A. San Luis & Delta-Mendota Water Authority and the United States, Department of the Interior, Bureau of Reclamation, September 28, 2001. Agreement for Use of the San Luis Drain. Agreement No. 01-WC-20-2075.

Agreement No. 01-WC-20-2075

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

and

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY
Los Banos, California

AGREEMENT FOR USE OF THE SAN LUIS DRAIN

FOR THE PERIOD
OCTOBER 1, 2001 THROUGH DECEMBER 31, 2009

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

AGREEMENT FOR USE OF THE SAN LUIS DRAIN

THIS AGREEMENT is entered into this 28th day of September, 2001, in accordance with the Act of Congress approved June 17, 1902 (32 Stat. 388) and all Acts amendatory thereof and supplemental thereto, all such Acts commonly known as and referred to as the Federal Reclamation Law, by the United States of America (UNITED STATES), acting by and through its Bureau of Reclamation, Mid-Pacific Region (RECLAMATION), Department of the Interior, represented by the officer executing this Agreement, and the San Luis & Delta-Mendota Water Authority (AUTHORITY), a joint powers Authority, duly organized, existing and acting pursuant to the laws of the State of California, acting by and through its Executive Director.

RECITALS

A. The UNITED STATES has acquired land and constructed the San Luis Drain, as a feature of its Central Valley Project.

B. The AUTHORITY has requested that the UNITED STATES permit it to continue using a portion of the San Luis Drain (as hereinafter defined and hereinafter referred to as the "Drain") for the discharge and transportation of a maximum flow of 150 cubic feet per second ("CFS") of drainage water to Mud Slough.

C. The AUTHORITY and RECLAMATION have evaluated potential environmental consequences of the proposed continued use of the Drain to convey drainage water, as set forth in this Agreement, and have completed the necessary environmental reviews in accordance with the AUTHORITY'S responsibilities under the California Environmental Quality Act ("CEQA") and RECLAMATION's responsibilities under the National Environmental Policy Act ("NEPA"). On the basis of their environmental reviews of the proposed action, the AUTHORITY issued an Environmental Impact Report ("EIR") and Notice of Determination ("NOD"), filed on August

14, 2001, and RECLAMATION issued an Environmental Impact Statement ("EIS") and Record of Decision ("ROD") on _____.

It is the intention and objective of RECLAMATION and the AUTHORITY, among other things, to ensure that continued use of the Drain as provided in this Agreement results in improvement in water quality and environmental conditions in the San Joaquin River, delta, and estuary relative to the quality that existed prior to the term of this Agreement, insofar as such quality or conditions may be affected by drainage discharges from the Drainage Area (as hereinafter defined), and to ensure that such continued use of the Drain does not reduce the ability to meet the salinity standard at Vernalis compared to the ability to meet the salinity standard that existed prior to the term of this Agreement.

It is the further intention and objective of RECLAMATION and the AUTHORITY, among other things, to pursue planning to identify by 2006 the means to meet water quality objectives in Mud Slough by the Regional Board's Basin Plan (as hereinafter defined) compliance date. These efforts will be coordinated with the California Department of Fish and Game and the United States Fish and Wildlife Service to accommodate their activities relating to endangered and non-endangered species in or adjacent to Mud Slough.

D. The AUTHORITY has entered into an agreement with its members, known as the Grassland Basin Drainage Management Activity Agreement, and into memoranda of understanding with certain other parties described in section I.D. (collectively, the "Activity Agreement"), all of which have a need for continued use of the San Luis Drain. RECLAMATION has no objection to the AUTHORITY entering into such agreements.

E. The UNITED STATES has no objection to such continued use of the Drain and RECLAMATION land as such continued use is, at this time, not incompatible with the purpose of the Drain and the purpose for which the RECLAMATION land was withdrawn or acquired and is being administered by the UNITED STATES.

F. The AUTHORITY has entered into Contract No. 8-07-20-X0354 (the "Transfer Agreement"), with RECLAMATION, whereby the AUTHORITY is responsible for, among other things, the operation and maintenance of the San Luis Drain to the extent described in the Transfer Agreement and according to the terms set forth therein; the scope of AUTHORITY's responsibility for operation and maintenance of the San Luis Drain and of its authority delegated by RECLAMATION will be as set forth in the Transfer Agreement, except that the terms of this Agreement providing any more specific responsibilities and authority supersede the Transfer Agreement for that portion of the Drain subject to this Agreement.

G. RECLAMATION anticipates that any long-term use of the Drain beyond the term of this Agreement will require further specific planning and compliance with all environmental laws, including the National Environmental Policy Act and the Endangered Species Act. Reclamation intends to assure that any such future long-term use will be consistent with a long-term drainage management plan for the Draining Parties that provides for compliance with water quality objectives, including without limitation, objectives for selenium and salinity in the receiving waters.

H. This Agreement is the successor to and supersedes the First Use Agreement between RECLAMATION and the AUTHORITY (as hereinafter defined), which earlier agreement was based in part on a Negative Declaration issued by the AUTHORITY on December 26, 1990, and supplemented by an Addendum on July 13, 1995, and on a Finding of No Significant Impact issued by RECLAMATION on November 3, 1995 ("FONSI").

AGREEMENT

Subject to the following terms, conditions, and limitations, the UNITED STATES grants permission to the AUTHORITY to continue to enter upon, use, operate and maintain the Drain, including check structures and all other land and facilities appurtenant to the Drain for the purpose of conveying drainwater flows from the Drainage Area, from Milepost 105.72, Check 19 to the terminus and into Mud Slough. In addition, RECLAMATION grants permission to use Drain rights-of-way from the terminus (Kesterson Reservoir) to Check 19, as reasonably required in accordance with this Agreement. "Land" includes land owned and/or controlled by the United States and land in which the United States holds an interest that is affected by the AUTHORITY's activities under this Agreement.

I. DEFINITIONS AND REFERENCED TERMS

For purposes of this Agreement:

A. "Attributable Discharge" means the amount of selenium load or salt load, whichever is applicable, discharged from the Drain, plus any storm event discharges to the Grassland Water District from the Drainage Area, minus any amount exempted pursuant to the high rainfall exemption as specified in Appendix F (attached hereto and incorporated herein), and minus any amount exempted pursuant to the upper watershed exemption as specified in Appendix G (attached hereto and incorporated herein).

B. "Drainage Area" means those lands identified in Appendix A (attached hereto and incorporated herein) within the geographic area shown on Appendix B which are within the boundaries of districts identified as "Draining Parties" or whose owners have become Draining Parties.

C. "Drainage Oversight Committee" or "Oversight Committee" means the Oversight Committee formed pursuant to the First Use Agreement that is composed of agency managers from RECLAMATION, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, California Department of Fish and Game, and the Regional Water Quality Control Board, and which continues to exercise the functions described in this Agreement.

D. "Draining Parties" means the AUTHORITY member agencies which have entered into the Grassland Basin Drainage Management Activity Agreement with the AUTHORITY and with the parties to various Memoranda of Understanding ("MOUs") by the terms of which the parties who would discharge into the Drain have agreed to abide by the terms of this Agreement. Members of the AUTHORITY which have entered into the Grassland Basin Drainage Management Activity Agreement include the 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, the parties to that certain MOU with the AUTHORITY referred to as the Camp 13 Drainers (now Camp 13 Drainage District), and any other parties which may enter into MOU's with the AUTHORITY including the owners of certain additional lands, described in Appendix A hereto, from which lands drainage waters historically entered channels utilized to provide water to wetland habitat in the Grassland Water District and state and federal refuges.

E. "First Use Agreement" means that certain agreement for use of the San Luis Drain between the United States, Department of the Interior, Bureau of Reclamation and the San Luis & Delta Mendota Water AUTHORITY entered into November 3, 1995, Agreement No. 6-07-20-W1319 and any amendments thereto, including Amendment to the Use Agreement for Use of the San Luis Drain dated September 30, 1998 and, Second Amendment to the Agreement for Use of the San Luis Drain dated December 30, 1998.

F. "Regional Board Basin Plan" means the Regional Water Quality Control Board's Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

G. "Regional Water Quality Control Board" or "Regional Board" means the California Regional Water Quality Control Board, Central Valley Region.

H. "Salinity" or "salinity" means the content of dissolved mineral salts, measured by determining the amount of total dissolved solids or by measuring the electrical conductivity and through appropriate conversion factors estimating the total dissolved solids.

I. "Salts" or "salts" means the products, other than water, of the reaction of an acid with a base; such products found in soils, when dissolved in water, break up into cations (e.g., sodium, calcium) and anions (e.g., chloride, sulfate).

J. "Salt Load" or "salt load" means the total mass of salts in a given volume of water entering or leaving an area.

K. "San Luis Drain" or the "Drain" mean the drain owned by the United States and consisting of approximately 28 miles from the terminus (Kesterson Reservoir) to Milepost 105.72, Check 19 (near Russell Avenue).

L. "Selenium" or "selenium" means the metalloid element, assigned atomic number 34, in all of its chemical forms, including but not limited to selenate, selenite, selenomethionine and elemental selenium. An essential nutrient in low concentrations, it bioaccumulates in the food web and can have significant adverse effects on sensitive predators.

M. "Selenium Load" means the total mass of selenium in a given volume of water entering or leaving an area.

N. "Total Dissolved Solids" or "TDS" shall mean the non-filterable portion of the material residue remaining after a liquid sample is evaporated.

O. "TMML" means the Total Maximum Monthly Load. For purposes of this Use Agreement, initial TMML values will be those contained in the Regional Board March 1996 Staff Report titled, "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges." In the event that the Regional Board subsequently submits revised TMML values to the U.S. Environmental Protection Agency and those values are formally approved by the U.S. Environmental Protection Agency, those revised TMML values may become the TMML values for purposes of this Use Agreement in accordance with Appendix D.

P. "Unacceptable Adverse Environmental Effects" shall be determined by RECLAMATION, based upon available data and science and after consultation with the Oversight Committee, after considering applicable federal and state laws (e.g. Migratory Bird Treaty Act, Endangered Species Act, Clean Water Act, Porter-Cologne Act), as well as the impacts in Mud Slough or at any point downstream of Mud Slough, including adjacent wetland and riparian areas.

Q. "Unforeseeable and Uncontrollable Events" are events that cannot reasonably be anticipated and are caused by events outside the control of the Authority. Final determinations as to what constitutes Unforeseeable and Uncontrollable Events are made solely by the Oversight Committee.

R. "Waste Discharge Requirements" or "WDR" means the terms and conditions for discharges of drainage issued by the Regional Board pursuant to California law.

II. PURPOSE AND SCOPE OF USE

A. RECLAMATION and the AUTHORITY have entered into this Agreement to

1. continue the separation of unusable agricultural drainage water discharged from the Grassland Drainage Area from wetland water supply conveyance channels for the period 2001-2009; and,

2. facilitate drainage management that maintains the viability of agriculture in the project area and promotes continuous improvement in water quality in the San Joaquin River.

B. The lands to be served pursuant to this Agreement are only those lands located within the geographic area in Appendix A and shown in Appendix B (attached hereto and incorporated herein), which consists of approximately 97,400 acres, together with additional lands not to exceed 1,100 acres whose owners choose to become Draining Parties.

C. The AUTHORITY shall be permitted to use the Drain for the discharge into and transportation of drainage water from the Draining Parties within the Drainage Area, in accordance with the terms and conditions of this Agreement.

D. The AUTHORITY may incorporate terms into the Activity Agreement or MOUs or may promulgate bylaws, rules or regulations thereunder concerning the sharing of responsibilities, costs and obligations arising from this Agreement and for the payment of fees as compensation to the AUTHORITY for its performance of its obligations and responsibilities under this Agreement, but in no event shall any such Activity Agreement or MOU entered into between the AUTHORITY and the Draining Parties include rights and responsibilities which are inconsistent with the specific terms and conditions of this Agreement, or which are in violation of any laws or regulations applicable to this Agreement.

III. PERMITS AND RESPONSIBILITIES

A. Permits and Approvals. The AUTHORITY shall be responsible for obtaining all permits and other approvals necessary for its continued use, operation and maintenance of the Drain in accordance with the terms and conditions of this Agreement, the Drainage Operation Plans of the Draining Parties as submitted to the Regional Board, the Waste Discharge Requirements issued to the AUTHORITY and Draining Parties by the Regional Board on September 7, 2001, and any subsequent WDR issued in relation to this Agreement, or any alternative form of requirements of the Regional Board, and all applicable local, state and federal laws and regulations.

B. Discharges into and from Drain. The AUTHORITY shall be responsible for ensuring that only drainage water from the Drainage Area pursuant to the terms of the Activity Agreement

or MOU enters the Drain, and that such drainage water is controlled and monitored to ensure that its quality and composition comply with this Agreement and all applicable federal, state and local standards, requirements, regulations and laws. During its use of the Drain under this Agreement, the AUTHORITY shall be solely responsible for and have sole authority over the proper management and disposal of all discharges into and from the Drain, subject to this Agreement and all applicable laws and regulations.

C. Check 19. For purposes of this project the AUTHORITY shall not use the Drain in any manner that will affect water levels in or cause drainage water to flow into the portions of the Drain south of Check 19. Management and control of the operation of Check 19 shall be in accordance with the Transfer Agreement.

D. Silt Removed by RECLAMATION. RECLAMATION, in its discretion, shall, at any time during the term of this Agreement, have the option of either removing the sediment and organic materials now deposited in the Drain, or, of delegating this responsibility to the AUTHORITY. If RECLAMATION elects to remove the sediment during the term of this Agreement, RECLAMATION shall endeavor to conduct and coordinate such activities in a manner which will not unreasonably interfere with the AUTHORITY's use of the Drain. In any event, unless directed otherwise by RECLAMATION, the AUTHORITY shall be responsible for the management, removal and disposal, at its own and sole expense, of all sediment, organic materials and other substances accumulating in the Drain as a result of its use of the Drain pursuant to the First Use Agreement and this Agreement. Any costs incurred by either RECLAMATION or the AUTHORITY for the management, removal and disposal of the sediment and other materials in the Drain shall be apportioned between RECLAMATION and the AUTHORITY on the basis of the total volume of materials and the total concentration of contaminants in those materials in the Drain attributable to each party's use of the Drain.

E. Payment of Direct Costs. AUTHORITY shall pay to RECLAMATION such specific items of direct costs reasonably incurred by RECLAMATION for work associated with this Agreement as are normally charged by RECLAMATION under similar agreements and properly and equitably are chargeable to the AUTHORITY, plus a percentage of direct cost to cover RECLAMATION administrative and general overhead in accordance with the procedures approved by RECLAMATION. AUTHORITY shall pay the total annual costs within sixty (60) days following its receipt of a detailed cost statement from RECLAMATION for each year during the term of this Agreement.

F. Water Conservation Programs. All Draining Parties discharging into the Drain pursuant to this Agreement that are subject to Federal Reclamation law shall be implementing an effective water conservation and efficiency program based on that Draining Party's water conservation plan that has been determined by RECLAMATION to meet the conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

G. Management Plans. The AUTHORITY shall develop the following plans:

1. A Salinity Management Plan within one year from the commencement of this Agreement for consideration by the Oversight Committee.

2. A Long Term Management Plan as required by the Regional Board that provides for compliance with water quality objectives, including objectives for selenium and salinity in the receiving waters.

3. A Mud Slough Compliance Plan by 2006 for consideration by the Oversight Committee, to identify how water quality objectives in Mud Slough will be met by the Regional Board's Basin Plan compliance date.

4. A revised Sediment Management Plan by 2005 for consideration by the Oversight Committee.

H. Environmental Commitments:

1. Operational Commitments. The AUTHORITY commits to the following:

(a) Spill Prevention. The structure in the San Luis Drain at Check 19 has been modified to prevent drainage waters from flowing southerly and to provide a mechanism to allow any groundwater that has seeped into the San Luis Drain south of Check 19 to be discharged downstream as necessary to prevent overtopping. The Drain will continue to be operated and maintained to prevent drainage water from flowing south of Check 19 and to allow groundwater from south of Check 19 to spill into the Drain as necessary to prevent overtopping.

(b) Downstream Users Notification. The AUTHORITY will make flow and monitoring data available to downstream entities that have requested it. The AUTHORITY will provide advance notice to such parties of operations that may cause sudden changes in flow or quality and will develop procedures to coordinate with such parties on such operations. The AUTHORITY will work cooperatively with downstream entities regarding the timing of discharges and establish procedures that will ensure advance notice to, and coordination with, downstream diverters of upcoming releases.

(c) Regional Archeology. Any proposed construction areas will be evaluated and cleared by Reclamation's Regional Archeologist. If, during construction, subsurface or previously unidentified archeological resources are encountered, activities will immediately be halted and the Regional Archeologist notified. Appropriate clearance will be obtained prior to resumption of work.

(d) Protection of China Island. The AUTHORITY has coordinated with the California Department of Fish and Game regarding the design and construction of retainer dikes or other measures to protect Fish and Game's China Island Wildlife Area and the

immediately adjacent portion of the San Joaquin River from drainage water discharged from the Drainage Area. Any construction activities will incorporate these measures. In addition, the AUTHORITY will obtain permission, by means of a Memorandum of Agreement, from the California Department of Fish and Game relating to use of Mud Slough (North) within the boundaries of the China Island Wildlife Area. Said MOA may be modified from time to time with the mutual consent of the parties thereto.

(e) Mud Slough. In the event RECLAMATION or the AUTHORITY receive notification from appropriate local, state or federal authorities that a potential public health risk exists in Mud Slough or the San Joaquin River associated with drainage from the Drainage Area, RECLAMATION and the AUTHORITY will notify resource management agencies in the affected area. RECLAMATION and the AUTHORITY will, in collaboration with such resource management agencies jointly develop and implement a program to protect public health that is acceptable to those agencies. All costs of developing and implementing said program to protect public health will be borne by the AUTHORITY.

(f) Sediment. Selenium already contained in sediments in the Drain is a source of concern because flows may suspend and transport sediments; selenium may migrate into the water column; and sediments may act as a sink, and selenium may concentrate into sediment. To avoid re-suspending sediment in the Drain, the maximum rate of flow in the Drain shall be 150 cfs. Under normal operations, flows will be slow enough to not cause sediment movement. Monitoring activities will detect any movements or selenium migration. In the event that selenium in sediments migrates into the water column, such selenium will be included in the total annual load discharged by, and attributed to, the Authority. If monitoring results indicate that the Drain behaves like a sink, the measured loads will be used to estimate total selenium concentration within the sediments, and the information will be used to determine if the sediments must be removed from the Drain. Sediments will be removed well before composite concentrations indicate hazardous material values. The specific details of responses to monitoring results that indicate any of these scenarios exist will be presented in any sediment management plan required by the Regional Board.

2. Load Reduction Assurances

(a) Selenium Load Values. The Selenium Load Values in Appendix C are hereby incorporated and made a part of this Agreement. These Values specify both annual and monthly Selenium Loads.

(1) In the event that the Regional Board submits to the U.S. Environmental Protection Agency a TMML for selenium that is different from that contained in the Regional Board March 1996 Staff Report titled, "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges," and the revised TMML receives formal approval from the U.S. Environmental Protection Agency, the Selenium Load Values may be revised according to

Appendix D (attached and incorporated herein); in the event the Load Values in Appendix D become operational, the Load Values in Appendix C shall be replaced with the Selenium Load Values determined in accordance with Appendix D.

(2) To determine if Selenium Load Values are being met, the Attributable Discharge of selenium will be compared to the Selenium Load Value for the time period under consideration. Selenium load will be measured at the terminus of the Drain (referred to as "Site B"), except that load discharged to the Grassland Water District from the Drainage Area during storm events will be measured at the discharge points into the Grassland Water District, and selenium load to be exempted under Appendices F or G will be determined as described in those Appendices.

(3) If the Attributable Discharge of Selenium exceeds the applicable Selenium Load Value in any given month or year during the term of this Agreement, a Drainage Incentive Fee shall be calculated in accordance with the Performance Incentive System as stated in section IV.B. of this Agreement, and the Agreement may be subject to termination pursuant to Section VII.B.

(b) Salinity Load Values and Goals: The Salinity Load Values in Appendix E are hereby incorporated and made a part of this Agreement. These Values specify both annual and monthly salt loads.

(1) The Salinity Load Values are only calculated for the first four years of the term of this Agreement because they are intended to guide reductions in salt discharges until such time as the Regional Board adopts its own numeric limits on salt discharges to achieve compliance with water quality objectives for the San Joaquin River. In the event that the Regional Board does not adopt such limits on salt discharges during the four year period, the Salinity Load Values for years five to eight of the term of this Agreement shall be calculated as described in Appendix I to this Agreement, until the Regional Board's numeric limits do take effect.

(2) To determine if Salt Load Values are being met, the Attributable Discharge of salts will be compared to the Salt Load Value for the time period under consideration. Salt load will be measured at the inlet to the Drain (referred to as "Site A"), except that salt load discharged to the Grassland Water District from the Drainage Area during storm events will be measured at the discharge points in to the Grassland Water District, and load to be exempted under Appendices F and G will be determined as described in those Appendices.

(3) If the Attributable Discharge of Salinity exceeds the applicable Salinity Load Value in any given month or year during the term of this Agreement, a Drainage Incentive Fee shall be calculated in accordance with the Performance Incentive System as stated in section IV.B. of this Agreement.

(4) The Salinity Discharge Goals described in Appendix E are lower than the Salinity Load Values because they exactly match percentage reductions in Selenium Load Values and have not been adjusted upwards to reflect the imperfect correlation between discharges of salts and of selenium. The Salinity Discharge Goals are intended to provide a measurement of progress toward reducing salinity discharges commensurate with selenium discharges, but carry no legally enforceable consequences.

3. Record of Decision. The Authority will implement those commitments contained in the ROD.

IV. DRAINAGE OVERSIGHT COMMITTEE AND PERFORMANCE INCENTIVE SYSTEM

A. Role of Drainage Oversight Committee

The Oversight Committee will meet annually, or more frequently as needed. The Oversight Committee reviews progress and operation of the project including drainage reduction goals, progress in achieving water quality objectives, monitoring data, etc. It makes recommendations to the Draining Parties, RECLAMATION, and/or the Regional Board, as appropriate, regarding all aspects of the project, including modifications to project operation, appropriate mitigative actions, and termination of the Agreement if necessary. It carries out other functions required of it under this Agreement, which include determining the occurrence and extent of load exceedances, the Drainage Incentive Fees that are payable and actions or projects to be funded with Drainage Incentive Fees. For example, if any Draining Party resumes discharges into channels cleaned up through the Project, the Oversight Committee can determine appropriate remedies, up to and including termination of this Agreement.

1. The Oversight Committee will appoint and be assisted by a technical committee as determined necessary or appropriate by the Oversight Committee.

2. The Oversight Committee may appoint one or more subcommittees comprised of experts to help in the analysis of biological or water quality monitoring data or other information relevant to the drainage issue as necessary or appropriate to assist in carrying out its role.

3. If the Oversight Committee determines, based on monitoring data or otherwise, that adverse environmental impacts have occurred and the Oversight Committee finds those impacts to be significant, the Oversight Committee will identify appropriate mitigative actions. Appropriate mitigative actions, depending on the situation, would include, but not necessarily be limited to, interruption of a specific identified contamination pathway through hazing or habitat manipulation; increased management, enhancement, and recovery activities

directed at impacted species in channels cleaned up as a result of the project; and/or, establishment and attainment of more stringent contaminant load reductions. The costs of mitigation, as well as any required clean-up, shall be borne by the Draining Parties.

4. The Oversight Committee shall also make other determinations as specified in this Agreement including without limitation those described in Sections VII.B. and VII.F.

B. Performance Incentive System

The performance incentive system shall be implemented by means of the following:

1. Drainage Incentive Fee Account. RECLAMATION shall maintain at a nationally-chartered bank or other independent third party trustee an account known as the Drainage Incentive Fee Account. Disbursements shall be made from said Drainage Incentive Fee Account only at the direction of the Oversight Committee.

2. Calculation of Drainage Incentive Fees. Based upon information from the monitoring program established pursuant to Section V of this Agreement, RECLAMATION shall calculate the Attributable Discharge for each year and month. Drainage Incentive Fees shall be calculated based on Attributable Discharge.

(a) Preliminary and Final Calculations - Drainage Incentive Fees.

(1) Within sixty (60) days of the close of the transition period established under Section VIII.A of this Agreement and of each calendar year thereafter for the duration of this Agreement, RECLAMATION shall, based on the monitoring results, determine whether an Annual Drainage Incentive Fee or any Monthly Drainage Incentive Fees are due for such period, and if due, shall calculate the preliminary Annual Incentive Fee or Monthly Incentive Fees in accordance with Appendix C ("Selenium Load Values"), Appendix E ("Salinity Load Values"), Appendix H ("Performance Incentive System for Selenium and Salt"), and Appendix I ("Alternate Salinity Load Values for 2001-2009") of this Agreement (attached hereto and incorporated herein). RECLAMATION shall immediately submit such calculations to the Oversight Committee.

(2) Within (ninety) 90 days of the close of the transition period established in Section VII.A. of this Agreement and of each calendar year thereafter for the duration of this Agreement, the Oversight Committee shall, with the advice of any technical committee it may establish, determine the Annual Drainage Incentive Fee and any Monthly Drainage Incentive Fees. Such Annual Drainage Incentive Fee and any Monthly Drainage Incentive Fees shall be the amount calculated by RECLAMATION for each such fee reduced by the amount, if any, that is waived by the Oversight Committee pursuant to subsection (b)(1) of this section, and/or reduced or credited pursuant to subsections (b)(2), (b)(3), or (b)(4) of this section.

(3) The Annual Drainage Incentive Fees shall not exceed the Annual Drainage Incentive Fee cap of $250,000 per year, and the total of the Monthly Drainage Incentive Fees in any given year shall not exceed the Monthly Drainage Incentive Fee cap of $250,000 per year.

(4) The Oversight Committee's determination of the Annual Drainage Incentive Fee shall be transmitted to the AUTHORITY in writing immediately.

(b) Adjustment of Incentive Fees.

(1) Waiver for Uncontrollable and Unforeseeable Events. The Oversight Committee may waive the Drainage Incentive Fee, in whole or in part, only upon a finding that the AUTHORITY has shown that exceedances, in particular months or for the year as a whole, were caused by Unforeseeable and Uncontrollable Events.

(2) Duplicative Regional Board Penalties. In the event that the Regional Board or other regulatory agency imposes a financial penalty which the AUTHORITY or Draining Parties become responsible to pay for discharges of Selenium or Salt that are the subject of Drainage Incentive Fees assessed under this Agreement, the Drainage Incentive Fee owed by such parties shall be reduced by the amount of such other financial penalty. The Oversight Committee shall determine when this payment relief is applicable.

(3) Incentive Credits. In order to provide incentive to reduce selenium and salinity discharges beyond the current annual Load Values, a credit toward future incentive fees will be given if the annual selenium Attributable Discharge or the annual salinity Attributable Discharge is are below the annual Load Value for such constituent. The incentive credit will be determined as set forth in Appendix "J" to this Agreement.

(4) Exceedances of both Selenium and Salinity Load Values. In the event that both the applicable Selenium Load Values and Salinity Load Values are exceeded in any given month or year, only the incentive fee for exceeding the Selenium Load Values shall be imposed.

3. Deposit of Incentive Fees. Within sixty (60) days of the receipt of the Oversight Committee's determination, the AUTHORITY shall deposit the amount of the Drainage Incentive Fee in the Drainage Incentive Fee Account. Failure to deposit said amount in the Drainage Incentive Fee Account within ninety (90) days of receipt of the Oversight Committee's decision shall constitute grounds for immediate termination of this Use Agreement.

4. Disposition of Incentive Fees. The Oversight Committee shall determine the disposition of funds deposited in the Drainage Incentive Fee Account. Such determination shall be made only after consultation with the Draining Parties and any other interested parties, and

may be based on recommendations from subcommittees established by the Oversight Committee. These funds are to be used for such programs or actions as the Oversight Committee determines will assist in meeting Selenium Load Values, Salinity Load Values and Discharge Goals, water quality objectives in the Drainage Area, and/or will enhance wildlife values in the Drainage Area or adjacent areas. In determining the disposition of Account funds, the Oversight Committee shall give special consideration to programs or actions identified in the San Joaquin Valley Drainage Program Report, as supplemented. It is intended that programs or actions funded through the Drainage Incentive Fee Account will be supplemental to, and shall not replace, budgeted actions of the AUTHORITY or of RECLAMATION to accomplish drainage reduction targets. At its discretion, the Oversight Committee may accumulate funds in the Drainage Incentive Fee Account until sufficient funds have accumulated to fund larger programs or actions. Upon making its determination as to the disposition of funds in the Drainage Incentive Fee Account, the Oversight Committee shall instruct RECLAMATION to make such disbursements from the Account to such persons and in such amounts as are consistent with that determination.

5. Treatment of Incentive Fees Upon Termination. Drainage Incentive Fees owed by the AUTHORITY pursuant to subsection IV.B. and any funds held in the Drainage Incentive Fee Account as of the date of termination of this Agreement shall be paid, held, administered and disposed of in accordance with subsection IV.B.4. Except for Drainage Incentive Fees owed on the date of termination, the AUTHORITY shall have no obligation for Drainage Incentive Fees under the Agreement following the termination hereof.

V. MONITORING

A. The AUTHORITY shall be responsible for implementing a comprehensive monitoring program that meets the following objectives:

1. to provide water quality data for purposes of determining the Draining Parties' compliance with Selenium Load Values and Salinity Load Values as set forth in this Agreement;

2. to provide biological data to allow an assessment of whether or not any environmental impacts constitute Unacceptable Adverse Environmental Effects that have resulted from this Agreement; and

3. to provide data on sediment levels, distribution, and selenium content.

The monitoring program shall consist of the monitoring program established by the parties during the First Use Agreement, as such program may be modified by the parties after consultation with the agencies represented by the Oversight Committee. The Oversight Committee in consultation with the AUTHORITY shall resolve disagreement as to proposed modifications. Such modifications shall not constitute an amendment of this Agreement. Data collected in the course of the monitoring program may be utilized as appropriate to meet

requirements of biological opinions issued in relation to this Agreement; the balance of data to meet the requirements of such biological opinions will be developed by alternate studies pursuant to Section III.H.3. of this Agreement. RECLAMATION and the AUTHORITY will compile the results of the monitoring program into an Annual Report and present it for review by the Oversight Committee.

B. On a regular basis, and in no event less frequently than monthly, the results of the monitoring program, including the monitoring results pertaining to the discharges of selenium and salts being delivered from the Drain to Mud Slough, shall be submitted to RECLAMATION, to the Oversight Committee, and to other interested parties.

C. Results of the monitoring program will be reviewed annually or as required to implement this Agreement, by the Oversight Committee.

D. The AUTHORITY shall be responsible for implementing this monitoring program; provided that, nothing contained in this Agreement is intended to extend monitoring requirements downstream of Crows Landing ("Site N") on the San Joaquin River.

VI. CONSTRUCTION, OPERATION AND MAINTENANCE

A. The AUTHORITY shall be responsible for the construction, installation, operation, maintenance, and ultimate removal, if such removal is required by RECLAMATION, of any new facilities necessary for the AUTHORITY's use of the Drain; for the operation and maintenance of all existing features of the Drain; for the repair of any damage to the Drain arising out of its use of the Drain; and for the restoration of any land requiring restoration as a result of the AUTHORITY's use of the Drain.

B. The AUTHORITY shall furnish to RECLAMATION for approval the plans and specifications for all facilities or structures that are to be constructed on Land of the UNITED STATES. The AUTHORITY shall not commence construction or installation of any such facility prior to submitting the plans and specifications to RECLAMATION for review and obtaining written approval, which approval shall not unreasonably be withheld.

C. RECLAMATION shall promptly furnish to the AUTHORITY copies of documents, drawings and other records available to RECLAMATION which are appropriate or necessary for the AUTHORITY's use of the Drain in accordance with this Agreement, as requested by the AUTHORITY in writing. The AUTHORITY shall revise such drawings to reflect new facilities and any modifications to existing facilities installed by the AUTHORITY and shall promptly furnish a copy of each revised drawing to RECLAMATION.

D. The Parties acknowledge and agree that the Draining Parties shall be responsible to the AUTHORITY for payment of all operation and maintenance, administration, and construction costs arising from performance by the AUTHORITY pursuant to this Agreement,

provided, that payment for baseline operation and maintenance and administration costs incurred by the AUTHORITY for the Drain pursuant to the Transfer Agreement shall be budgeted, and repayment responsibility shall be allocated, in accordance with the terms of the Transfer Agreement without regard to this Agreement.

VII. TERM, REVISION AND TERMINATION

A. Term. This Agreement shall become effective on October 1, 2001, and unless sooner terminated in accordance with its terms, shall remain in effect through December 31, 2009.

1. The term shall commence with a transition period of three (3) months, from October 1, 2001 through December 31, 2001. For purposes of calculating the Annual Drainage Incentive Fees under section IV.B.2(a) and Annual Exceedances under Section VII. B.1 of this Agreement, the transition period shall be treated as an annual period wherein the sum of the three monthly selenium load values and the three monthly salinity load values, set forth in Appendix C and Appendix E to this Agreement is equivalent to the Annual Selenium Load Value and the Annual Salinity Load Value.

2. The balance of the term shall consist of eight consecutive calendar years, the first of which shall commence on January 1, 2002.

B. Termination for Exceedance of Selenium Load Values

1. Annual Exceedances. If the calculated annual Attributable Discharge of selenium loads exceeds by 20% or more the annual Selenium Load Values, RECLAMATION shall terminate this Agreement unless the Oversight Committee, after consulting with the Draining Parties, any other stakeholders, and any technical committee established by the Oversight Committee, makes an affirmative finding that the AUTHORITY has shown that such exceedance was caused by Unforeseeable and Uncontrollable Events.

2. Monthly Exceedances. This Agreement may be terminated on account of monthly Attributable Discharge in excess of Selenium Load Values only pursuant to the conditions set forth in Paragraphs VII.C and VII.D of this Agreement.

3. Salinity Exceedances. No annual or monthly exceedances of salinity shall be the basis of termination pursuant to this section VII.B.

C. Termination by Prohibition of Discharge. This Agreement shall terminate immediately upon any final order or action by the California State Water Resources Control Board, Regional Board, Environmental Protection Agency, or any other federal, State or local government entity with jurisdiction over the drainwater discharges contemplated by this Agreement which prohibits or substantially prohibits the discharge of drainage water by the AUTHORITY into the San Luis Drain, Mud Slough, or the San Joaquin River.

D. Termination for Cause. This Agreement will be reviewed at least annually for compliance with its terms and conditions and, except as otherwise set forth herein, shall be subject to termination upon a finding that the AUTHORITY failed to comply with any of the terms or conditions of this Agreement or if Unacceptable Adverse Environmental Effects occur. For purposes of this paragraph, if RECLAMATION determines, based on available data and science and after consultation with the Oversight Committee and the AUTHORITY, that Unacceptable Adverse Environmental Effects have occurred due to the use of the Drain, RECLAMATION shall notify the AUTHORITY of its determination and provide the AUTHORITY an adequate opportunity to refute this determination. If, in RECLAMATION's judgement, the AUTHORITY fails to provide sufficient evidence refuting RECLAMATION's determination, RECLAMATION shall terminate this Agreement.

E. Termination after Notice. Except as otherwise set forth herein, RECLAMATION may terminate this Agreement upon failure of the AUTHORITY or a Draining Party to comply with any of the terms, conditions and limitations of this Agreement, if such noncompliance is continuing sixty (60) days after written notice to the AUTHORITY of such noncompliance. The requirement of continuing noncompliance for sixty (60) days after written notice does not apply to violation of terms, conditions and limitations of this Agreement, where such provisions state requirements that, if violated, cannot be cured by subsequent AUTHORITY action.

F. Termination for Resumption of Discharge to Wetland Channels. The parties to this Agreement agree that a critical purpose of this Agreement is the removal of drainage water from the channels utilized to provide water to wetland habitat in the Grassland Water District and state and federal wildlife refuges. In the event that any of the Draining Parties withdraw from the Grasslands Basin Drainage Management Activity Agreement and resume the discharge of drainage water into those channels, or if any individuals within the Drainage Area who have commenced using the Drain resume the discharge of drainage water into those channels, the Oversight Committee shall review the impact of such resumed discharge and shall recommend appropriate remedies, up to and including termination of this Agreement. In making its evaluation, the Oversight Committee shall give special consideration to the existence of exceedances of water quality standards in the channels and to the probable causes of such exceedances.

G. Termination by the Authority. This Agreement may be terminated by the AUTHORITY upon thirty (30) days' written notice to RECLAMATION.

H. Termination upon Completion of Drain. In the event that construction of the San Luis Drain, including both the Drain as defined herein and segments that are not subject to this Agreement, is completed as an out-of-valley drainage facility, discharge permits obtained, and environmental compliance completed during the term of this Agreement, or any extension hereof, this Agreement shall terminate.

VIII. RESTORATION

Upon termination of this Agreement, at the discretion of the UNITED STATES, the AUTHORITY shall remove without delay, and at the expense of the AUTHORITY, all equipment and improvements and other facilities constructed or placed upon the Land, and shall restore said Land to as nearly the same condition as existed prior to the issuance of this Agreement and repair any damage to the Drain arising out of its use of the Drain. In the event the AUTHORITY fails to remove all equipment, improvements or facilities within a reasonable time, not to exceed sixty (60) days, the UNITED STATES may remove them and restore the land and repair the Drain at the expense of the AUTHORITY.

IX. MISCELLANEOUS

A. The AUTHORITY's use of the Land shall be subject to existing valid rights to such Land held by third parties.

B. RECLAMATION, in its discretion, may, at any time during the AUTHORITY's use of the Drain under this Agreement, have access to, or make modifications to the Drain and issue such outgrants as easements, leases, licenses or permits, so long as such access, modifications or outgrants do not unreasonably interfere with the AUTHORITY's intended use of the Drain under this Agreement; specifically, during the AUTHORITY's use of the Drain under this Agreement, RECLAMATION will not use or authorize the use of the Drain in such a manner as to reduce the AUTHORITY's use of the Drain with an authorized maximum flow of 150 CFS of drainage water.

C. The AUTHORITY shall continue to carry out the operation and maintenance obligations of the AUTHORITY described in the Transfer Agreement created pursuant to such agreement consistent with the guidelines provided by existing design operating criteria, standard operating procedures and/or manufacturer's technical memorandums, except that any terms of this Agreement providing more specific operation and maintenance responsibilities shall supersede the Transfer Agreement.

D. This Agreement shall not be construed to affect the positions of RECLAMATION nor of AUTHORITY nor any of the Draining Parties within the Drainage Area discharging into the Drain pursuant to this Agreement concerning the question of ultimate liability for costs initially funded by the UNITED STATES in undertaking management actions with respect to the Drain, nor shall this Agreement affect the positions of the UNITED STATES, the AUTHORITY nor any other Draining Party utilizing the Drain concerning any contractual or legal obligation of RECLAMATION to provide drainage service pursuant to the San Luis Act.

E. This Agreement does not constitute a contract or an amendment of a contract as described in Section 203(a) of the Reclamation Reform Act of 1982 and the implementing rules and regulations, nor does it constitute a new contract nor an amendment of a contract for the

delivery of water from the Central Valley Project within the meaning of Sections 105 and 106 of Public Law 99-546 (100 Stat. 3050, et seq.), nor does this constitute an amendment of the Second Amended Contract for Exchange of Waters dated February 14, 1968, between the United States of America and Central California Irrigation District, Columbia Canal Company, San Luis Canal Company and Firebaugh Canal Company.

F. The UNITED STATES shall not be liable for any claims for damages, cleanup, or remedial actions arising from or attributed to discharges from the Drain by or on behalf of the AUTHORITY or the Draining Parties during the AUTHORITY's use of the Drain pursuant to the term of the First Use Agreement or this Agreement.

G. The UNITED STATES, its agents, employees, licensees and permittees shall not be liable for any damages to the property of the AUTHORITY under this Agreement by reason of any act committed on the land, save and except any damages to said property caused by or resulting from the negligent or willful act or omission of the UNITED STATES, its agents, employees, licensees and permittees to the extent provided by the Federal Tort Claims Act, 28 U.S.C. 2671 et seq.

H. The AUTHORITY shall hold the United States free and harmless from, and indemnify it against, any and all direct treatment and clean-up costs, losses, damages, claims and liabilities related thereto arising from the AUTHORITY's, or any one or all of the Draining Party's performance or nonperformance under this Agreement; provided, that RECLAMATION shall exercise care to prevent any harm to personal and real property in carrying out its rights and responsibilities under this Agreement, and shall cooperate to the extent authorized by law in the resolution of any claims pursuant to the Federal Tort Claims Act, 28 U.S.C. Section 2671 et seq., arising from these activities; provided further the AUTHORITY shall have no obligation under this Section IX.H to provide a defense to the United States, nor to indemnify it for legal fees or costs incurred in legal proceedings instituted against the United States relating to use of the Drain.

I. Notwithstanding anything in this Agreement to the contrary, the AUTHORITY is authorized to enter into agreements with other entities, including but not limited to one or more of the Draining Parties, pursuant to which the AUTHORITY is or will be indemnified and/or held harmless with regard to all or any portion of the AUTHORITY's obligations under this Agreement.

J. Nothing in this Agreement shall create any rights in favor of any person or entity that is not a signatory to this Agreement, save and except for rights created pursuant to the Grassland Basin Drainage Management Activity Agreement and any MOUs between the AUTHORITY and the Draining Parties within the Drainage Area.

K. The expenditure of any money or the performance of any obligation of RECLAMATION under this Agreement shall be contingent upon appropriation or allotment of

funds. Absence of appropriation or allotment of funds shall not relieve the AUTHORITY from any obligation under this Agreement. No liability shall accrue to the RECLAMATION in case funds are not appropriated or allotted.

L. No member of or delegate to Congress, or official of the AUTHORITY shall benefit from this Agreement other than as a water user or landowner in the same manner as other water users or landowners in the AUTHORITY.

M. If any of the provisions of this Agreement shall be finally determined to be invalid or unenforceable in whole or in part, the remaining provisions hereof shall remain in full force and effect and be binding upon the parties hereto. The parties agree to reform the Agreement to replace any such invalid or unenforceable provision with a valid and enforceable provision that comes as close as possible to the intention of the stricken provision.

N. The terms and conditions in Sections III.D, E, and H; VI.D; VIII; and IX.D through H, J and K of this Agreement shall survive the use of the Drain and/or completion of the performance under this Agreement by the AUTHORITY and the Draining Parties and the termination of this Agreement for any cause.

THE UNITED STATES OF AMERICA

DATED: 9/28/01

By _____
Kirk C. Rodgers
Acting Regional Director,
Mid-Pacific Region, Bureau of Reclamation

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY

DATED: 9/28/01

By _____
Daniel G. Nelson
Executive Director

AGREEMENT FOR USE
OF THE
SAN LUIS DRAIN

APPENDIX "A" - Description of Lands

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. 12S., R. 11 E., M.D.B.&M., and Sections 2,3,4,5,6,9,10,11 and 12 in T. 12S., R. 12E., 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 Section 13, T. 12S, R. 12E, M.D.B.&M., and Sections 7, 17, 18 and 19, T. 12S., R. 13E., 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 Wildren Water District, and bounded partially on the north by the southerly right-of-way line 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. 12S. R. 12 E., M.D.B.&M., Sections 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17 and 24, T. 12S., R. 13E., M.D.B.&M. And Sections 19, 29, 30, 32, and 33, T. 12S., R. 14E., 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 District.

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.

AGREEMENT FOR USE
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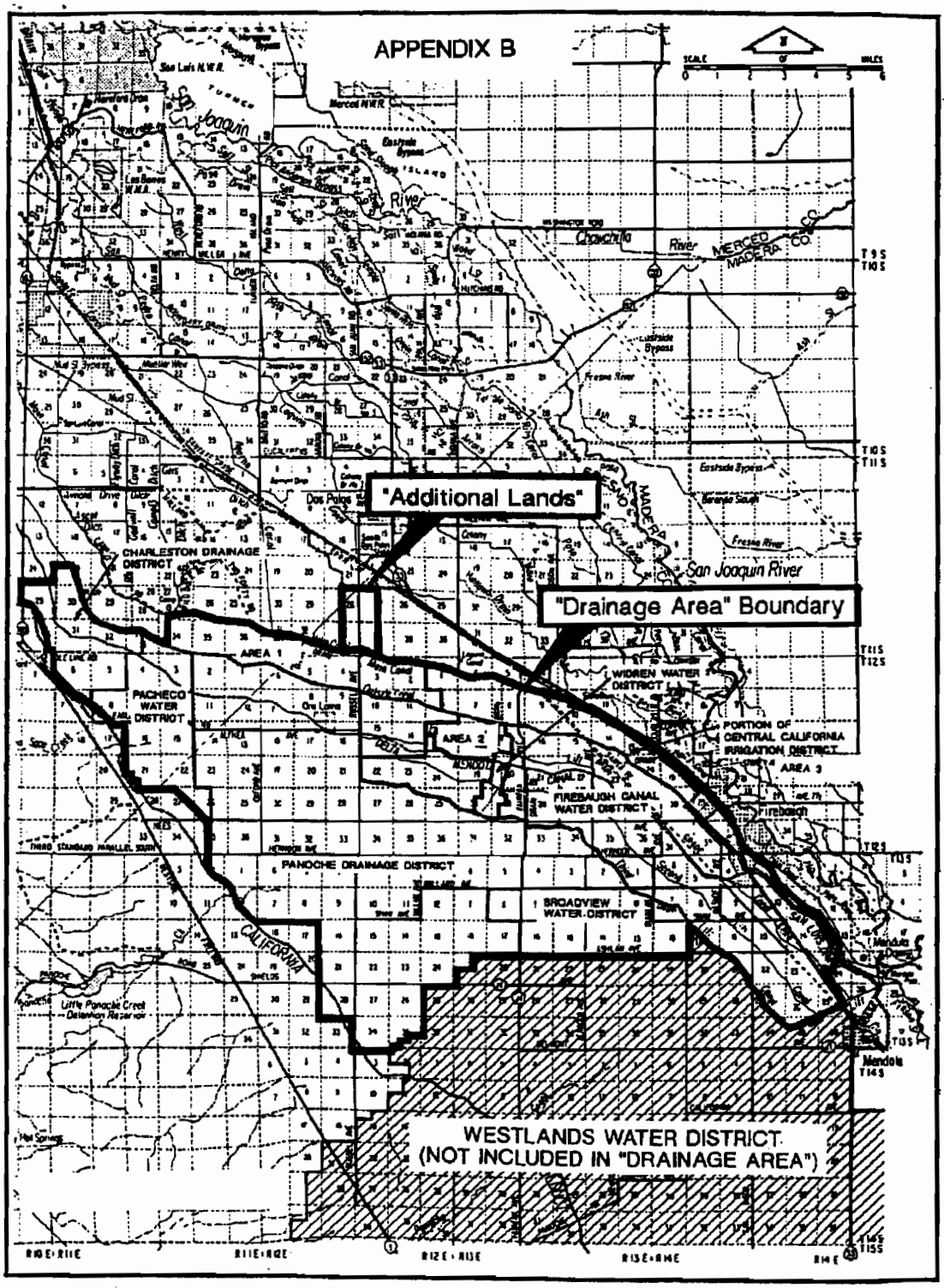
SAN LUIS DRAIN

APPENDIX "B" - Geographic Location


APPENDIX B
"Additional Lands"
"Drainage Area" Boundary
WESTLANDS WATER DISTRICT
(NOT INCLUDED IN "DRAINAGE AREA")
CHARLESTON DRAINAGE DISTRICT
PACHECO WATER DISTRICT
PANOCHE DRAINAGE DISTRICT
WIDREN WATER DISTRICT
FIREBAUGH CANAL WATER DISTRICT
BROADVIEW WATER DISTRICT
PORTION OF CENTRAL CALIFORNIA IRRIGATION DISTRICT
AREA 1
AREA 2
AREA 3
San Joaquin River
Chowchilla River
Fresno River
MERCED CO.
MADERA CO.
Firebaugh
Mendota

AGREEMENT FOR USE
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APPENDIX "C" - Selenium Load Values

Note: As used in this Appendix, the term Dry Years includes years classified as Critically Dry, Dry and Below Normal and the term Wet Years includes those classified as Above Normal and Wet. 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) using data from the Department of Water Resources Bulletin 120 series.

Selenium Wet Year Load Values in pounds									
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan		385	359	333	289	211	211	211	211
Feb		619	571	523	440	297	297	297	297
March		753	685	618	496	297	297	297	297
April		577	538	499	433	315	315	315	315
May		488	464	439	400	322	322	322	322
June		429	397	365	308	212	212	212	212
July		429	397	365	310	214	214	214	214
Aug		387	363	339	299	225	225	225	225
Sep		310	303	297	291	264	264	264	264
Oct	315	308	301	294	260	260	260	260	260
Nov	315	308	301	294	260	260	260	260	260
Dec	353	334	316	298	211	211	211	211	211
Annual	983	5328	4995	4662	3996	3088	3088	3088	3088

Selenium Dry Year Load Values in pounds									
	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan		385	359	333	289	211	211	198	185
Feb		619	571	523	440	297	297	265	234
March		753	685	618	496	297	297	265	233
April		577	538	499	433	315	315	282	249
May		488	464	439	400	322	322	288	255
June		429	397	365	308	212	212	188	165
July		429	397	365	310	214	214	190	166
Aug		387	363	339	299	225	225	200	175
Sep		310	303	297	291	264	264	229	193
Oct	315	308	301	294	260	260	260	225	190
Nov	315	308	301	294	260	260	260	225	190
Dec	353	334	316	298	211	211	211	198	185
Annual	983	5328	4995	4662	3996	3088	3088	2754	2421

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APPENDIX "D" - Revisions of TMML for Selenium

As specified in Section III.H.2.(a)(1) of the Use Agreement, if the Regional Board submits to the U.S. Environmental Protection Agency a TMML that is different from that contained in the Regional Board's March 1996 Staff Report titled, "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges," and the revised TMML ("Alternate TMML") receives formal approval from the U.S. Environmental Protection Agency, then upon the request of the Draining Parties the Selenium Load Values shall be revised as follows:

1. The revised Selenium Load Values will be effective on January 1 of the year selected by the Draining Parties. (In other words, the revised load values may be applicable retroactively in some months of the first year.)

2. As used in this Appendix, Water Year classifications 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) using data from the Department of Water Resources Bulletin 120 series. "Wet Years" shall mean those years classified as Above Normal and Wet. "Dry Years" shall mean those years classified as Critically Dry, Dry and Below Normal.

3. Revision of Values for Wet Years:

a. The revised annual load value will equal the sum of the monthly load values.

b. Prior to October 2005, the revised monthly load value will be the higher of the following:

i. The applicable Selenium Load Value in Appendix C; or

ii. The amount of discharge allocated to the Draining Parties for that month and year in that water year type pursuant to the alternate TMML (hereinafter the "alternate TMML load value for that month.")

c. During and after October 2005, the revised monthly load value will equal the alternate TMML load value for that month and year in that water year type.

4. Revisions of Values for Dry Years

a. The annual load value will equal the sum of the monthly load values.

b. Prior to October 2005, the revised monthly load value will equal the load value that would be applicable during the driest of the wet year types pursuant to 3.b. above. (In other words, if wet years are divided into two types -- wet years and above normal years – then the monthly load value in a dry, below normal, or critical year would be the same as the above normal load value.)

c. From October 2005 through December 2005, the revised monthly load value will equal the alternate TMML load value for that month in the driest of the wet year types.

d. From January 2006 through December 2006, the revised monthly load value will be calculated as follows:

Let A=the revised monthly load value
Let B=the alternate TMML load value for that month during the driest of the wet year types.
Let C=the alternate TMML load value for that month in year 2011 for the applicable dry year type.

Then A=B-0.1(B-C)

In other words, the revised monthly load value will be reduced from the alternate TMML load value for that month during the driest of the wet year types by 10% of the difference between the alternate TMML value for the driest of the wet year types and the alternate TMML load value for the applicable dry year type.

e. From January 2007 through December 2007, the revised monthly load value will be calculated as follows:

A=B-0.2(B-C)

f. From January 2008 through December 2008, the revised monthly load values will be calculated as follows.

A=B-0.3(B-C)

g. From January 2009 through December 2009, the revised monthly load values will be calculated as follows:

A=B-0.52(B-C)

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APPENDIX "E" - Salinity Load Values and Goals

Salinity Load Values in tons					
	2001	2002	2003	2004	2005
January		11,935	11,338	10,741	10,526
February		20,924	19,877	18,831	18,455
March		24,208	22,998	21,788	21,352
April		20,015	19,014	18,014	17,653
May		20,021	19,020	18,019	17,659
June		20,624	19,593	18,562	18,191
July		21,862	20,769	19,676	19,283
August		18,396	17,476	16,556	16,225
September		10,210	9,700	9,189	9,006
October	6,423	6,423	6,102	5,781	5,665
November	7,036	7,036	6,684	6,332	6,205
December	8,646	8,646	8,214	7,782	7,626
Total	**22,105**	**190,301**	**180,786**	**171,271**	**167,845**

Salinity Discharge Goals in tons					
	2001	2002	2003	2004	2005
January		9,548	8,951	8,354	8,139
February		16,739	15,693	14,647	14,270
March		19,367	18,156	16,946	16,510
April		16,012	15,011	14,011	13,650
May		16,017	15,016	14,015	13,655
June		16,500	15,468	14,437	14,066
July		17,490	16,397	15,304	14,910
August		14,716	13,797	12,877	12,546
September		8,168	7,658	7,147	6,963
October	5,138	5,138	4,817	4,496	4,381
November	5,629	5,629	5,277	4,925	4,798
December	6,917	6,917	6,485	6,052	5,897
Total	**17,684**	**152,241**	**142,726**	**133,211**	**129,785**

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APPENDIX "F" - High Rainfall Exemption

This Appendix describes a High Rainfall Exemption that will, under certain specified circumstances, reduce the Attributable Discharge amount defined in Section I.A. of the Use Agreement. The overall objective of this High Rainfall Exemption is to accomplish the following:

- Respond to the concern that farmers may lose their ability to control discharges to the levels required by the Use Agreement during high-rainfall months.
- Protect water quality in the San Joaquin River and the estuary downstream; and
- Be consistent with current federal and state policy.

Notwithstanding any other provision of this Appendix or of the Use Agreement, this High Rainfall Exemption is not applicable for any period for which the Oversight Committee, in its sole discretion, has determined that the actual discharge of selenium has caused significant adverse environmental impacts in Mud Slough or at any point downstream of Mud Slough pursuant to Section IV.A.3. of the Agreement.

1. When applicable: If the 3-month cumulative rainfall, measured at the Panoche Water District gauge, equals or exceeds 6 inches in either the current month, or in any of the previous three months; and, if the actual "4-day monthly equivalent low flow at Crow's Landing" during the current month is equal to or exceeds 300% of the "4-day monthly equivalent low flow at Crow's Landing" (i.e., design flow) used to calculate the TMML for that month; provided, that installation, maintenance and operation of a rainfall monitoring gauge at the Panoche Water District has been approved by the Oversight Committee and said station is being operated and maintained by the Authority or the Draining Parties at the time of the high rainfall period.

2. Calculation of Exemption for Selenium

a. The amount of discharge that is exempted is limited by a monthly and annual ceiling as follows:

i. The monthly ceiling is the lesser of the following:

a) A selenium load in pounds that, in the absence of all other discharges, would result in a 1.5 parts per billion selenium concentration at Crows Landing, based on the actual "4-day monthly equivalent low flow" in acre feet for that month; *i.e.* (monthly

ceiling)=(actual Crows Landing 4-day monthly equivalent low flow measured in acre feet for that month)x(1.5 ppb)x 0.002718); or

b) The highest selenium load discharged the same month of 1997, 1998, or 1999 as shown in the attached Table F-1.

ii. The annual ceiling is the amount fixed by the Basin Plan above which the discharge of selenium from agricultural subsurface drainage systems in the Grassland watershed to the San Joaquin River is prohibited, currently 8,000 pounds per year.

b. Monthly and Annual Amounts Exempted:

i. The amount of selenium discharge excused in any month would be the lesser of the following:

a) the difference between the monthly ceiling and the Selenium Load Value for that month; or

b) the difference between i) the amount calculated as follows: the amount of selenium discharged from the Drain (measured at the terminus) plus the amount of selenium in any discharges during a storm event to the Grassland Water District (measured at the discharge points) minus any amount of selenium discharge exempted under the Upper Watershed Exemption described in Appendix G and ii) the Selenium Load Value for that month.

ii. The amount of selenium discharge excused in any year would be the lesser of the following:

a) the sum of the monthly amounts excused; or

b) the difference between the annual ceiling and the annual Selenium Load Value.

3. Calculation of Exemption for Salt. When an Excessive Rainfall exemption is granted for selenium, an exemption shall also be granted for salt. The amount of salt exempted shall be calculated as follows:

Salt exemption in tons = selenium exemption in pounds x (average salt: se correlation factor) + 20% [to account for the imperfect correlation between salt and selenium] x (lbs to tons conversion)

Average salt: se correlation factor = (average ratio of monthly salt discharges to monthly selenium discharges from 1986 to 1996) = 44,350

So,

Salt exemption (tons) = selenium exemption (lbs) x 26.6

TABLE F-1

Calculation of Monthly Ceiling for Excessive Rainfall Exemption (pounds of selenium)

Month	1997 Actual	1998 Actual	1999 Actual	Higher of columns 2, 3 & 4
1	2	3	4	5
Jan	672	335	284	672
Feb	926	851	609	926
Mar	1119	1586	799	1586
April	1280	1549	529	1549
May	849	1367	482	1367
June	611	807	524	807
July	428	615	462	615
Aug	348	500	418	500
Sept	109	388	275	388
Oct	248	277	181	277
Nov	207	226	193	226
Dec	178	239	236	239

Note: The data in Table F-1 have been corrected to exclude any loads originating in the upper watershed.

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APPENDIX "G" - Upper Watershed Exemption

Under certain conditions of high rainfall in the Coastal Range, water carrying selenium loads runs off from the Upper Panoche/Silver Creek watershed, through the channels of the Grassland Area Farmers, and is discharged into the San Joaquin River through the Grassland Bypass and/or the San Luis Drain. The parties to the Use Agreement have agreed that the selenium load from the upper watershed discharged though the Bypass and the San Luis Drain under certain specified conditions should not be included in the computation of Attributable Discharges for purposes of this Use Agreement.

Notwithstanding any other provision of this Appendix G or of the Use Agreement, no amount of discharge will be exempted pursuant to this Appendix G until an Upper Watershed Selenium Monitoring System has been developed as described in this Appendix and submitted to and approved by the Oversight Committee.

Measurable upper watershed loads of both selenium and salt that enter the drainage area and are discharged from the drainage area through the Bypass; Drain or wetland channels will be exempted. The measurement of these upper watershed loads shall be in accordance with the "Upper Watershed Selenium Monitoring System" to be submitted for approval by the Oversight Committee.

1. Components of the "Upper Watershed Selenium Monitoring System" (hereinafter "UWSMS"). The UWSMS shall describe, not only the monitoring activities, but also the method of calculating the amount of selenium and salt that is to be excluded. The monitoring activities shall include the following elements:

a. The monitoring procedure to be developed shall ensure that usable data is collected from the area during a rain event. The procedure shall be fully described in the UWSMS plan and shall reflect the best currently-available science that is obtainable at reasonable cost.

b. The current "Storm Event Plan" shall be revised as necessary to accomplish the purposes of this exemption. The revised Storm Event Plan shall require, to the extent physically possible, that drainage sump pump operations and associated discharge of subsurface drainage cease during the period of time covered by the exemption.

c. Any measurable flow at Panoche Creek at I-5 will trigger both 1) the implementation of the UWSMS to quantify the amount of selenium and salt entering the

drainage area from the upper watershed and discharged through the Bypass or Drain and 2) the management of the drainage channels, the Bypass and the Drain in accordance with the Storm Event Plan.

d. The UWSMS will use photographic and field observations to identify and document surface impoundment and sheet flow.

e. Groundwater will be monitored at existing, representative wells.

2. Discretion of Oversight Committee to Revise. When the "Sources of Selenium Study, "which had commenced and was in progress at the commencement of this Agreement is completed, the Oversight Committee shall have the discretion to update the UWSMS, including the method used to calculate the amount of selenium and salt that comes from the upper watershed and discharged through the Bypass, Drain or wetland channels.

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APPENDIX "H" - Performance Incentive System for Selenium and Salt

1. Selenium

A. Annual Incentive Fees:

Annual incentive fees are set as an annually variable flat price per pound of Attributable Discharges that exceed annual load values determined by the following formula:

$250,000/(.20 x current annual load value) per pound or $500 per pound, whichever is less.

Maximum annual incentive fees will be $250,000 per year. Annual incentive fees may be reduced by the credits described in Appendix J.

If there are incentive credits in accordance with Appendix J, the credit will be added to the annual load value as follows:

Amount subject to incentive fees (lbs) = annual Attributable Discharge (lbs) minus the sum of the annual load value (lbs) and the incentive credit (lbs).

B. Monthly Incentive Fees:

Monthly incentive fees are set as an annually variable flat price per pound of Attributable Discharges that exceed Monthly Load Values as follows:

If the monthly exceedance is less than or equal to 5% of the Monthly Load Value there will be no monthly incentive fee.

If the monthly exceedance is greater than 5% of the Monthly Load Value the monthly incentive fee will be determined by the following formula:

$250,000/(0.20 x current annual load value) per pound or $500 per pound, whichever is less.

If the monthly exceedance is greater than 5% of the monthly load value, the monthly incentive fee will apply to the entire monthly exceedance, including the first 5% of the monthly exceedance. Maximum cumulative monthly incentive fees will be $250,000 per year.

2. Salt

A. Annual Incentive Fees:

Annual incentive fees are set as an annually variable flat price per ton of Attributable Discharges that exceed Annual Load Values determined by the following formula:

$250,000/(0.20 x current annual load value) per ton or $7.50 per ton, whichever is less.

Maximum annual incentive fees will be $250,000 per year. Annual incentive fees may be reduced by the credits described in Appendix J.

If there are incentive credits in accordance with Appendix J, the credit will be added to the annual load value as follows:

Amount subject to incentive fees (tons) = annual Attributable Discharge (tons) minus the sum of the annual load value (tons) and the incentive credit (tons).

B. Monthly Incentive Fees:

Monthly incentive fees are set as an annually variable flat price per ton of Attributable Discharges that exceed Monthly Load Values as follows:

If there are monthly Salt Load Value exceedances in the months of October or November, they can be offset (on a ton for ton basis without multipliers) by discharges below load values in the previous April of the same calendar year. The maximum allowable offset in any one year shall be 5000 tons. For the purposes of the initial three-month transition period of this Agreement, an offset of any monthly exceedances in the months of October or November shall be available to the extent that the April 2001 salt discharges are less than the Salinity Load Value for April 2002.

If the monthly exceedance is less than or equal to 5% of the Monthly Load Value, there will be no monthly incentive fee.

If the monthly exceedance is greater than 5% of the Monthly Load Value, the monthly incentive fee will be determined by the following formula:

$250,000/(0.20 x current annual load value) per ton or $7.50 per ton, whichever is less.

If the monthly exceedance is greater than 5% of the monthly load value, the monthly incentive fee will apply to the entire monthly exceedance, including the first 5% of the monthly exceedance.

Maximum cumulative monthly incentive fees will be $250,000 per year.

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"APPENDIX I" - Alternate Salinity Load Values for 2006-2009

For wet and above normal year types the monthly and annual Salinity Load Values for 2006 through 2009 shall be calculated by multiplying the 2005 monthly and annual Salinity Load Values by a reduction factor. That reduction factor shall be defined as the annual Selenium Load Value for the above normal year type for the current year divided by the annual Selenium Load Value for 2005.

For below normal, dry and critical year types, the monthly and annual Salinity Load Values for 2006 through 2009 shall be calculated by multiplying the 2005 monthly and annual Salinity Load Values by a reduction factor. That reduction Factor shall be defined as the annual Selenium Load Value for the below-normal/dry year type for the current year divided by the annual Selenium Load Value for 2005.

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"APPENDIX J" - Calculation and Application of Incentive Credits

In order to provide incentive to reduce selenium or salt discharges beyond the current annual load value, a credit toward future annual incentive fees will be given if annual selenium or salt discharges are below the annual load value. The incentive credit will accrue until applied at the option of the Authority and will be determined each year in the following manner:

a) If the annual Attributable Discharge is 90% or more of the annual Load Value, no incentive credit will be given.

b) If the annual Attributable Discharge is less than 90% of the annual Load Value, then an incentive credit will be given that can be used to offset future incentive fees.

1) If the credit is to be applied in the same water year type in which it was earned, the credit will be equal to the total pounds of selenium or tons of salt, whichever is applicable, by which the Attributable Discharge in the year in which it is earned is less than the annual Load Value in the year in which it is earned.

2) If the credit is to be applied in a different water year type than the water year type in which it was earned, the credit will be equal to the total pounds of selenium or tons of salt (whichever is applicable) by which the Attributable Discharge is less than the annual Load Value multiplied by an adjustment factor. That adjustment factor shall be defined as a ratio with the numerator being the annual Salt or Selenium Load Value for the year and water year type in which the credit is to be applied and with the denominator being the annual Salt or Selenium Load Value for the year in which the credit is to be applied and for the water year type in which the credit was earned.

c) The incentive credit applies only to the calculation of incentive fees and not to any other provision of this Agreement.

Grassland Bypass Project
Technical and Policy Review Team
Determination of Incentive Fees for
Winter 2005 Floods

Attachment B. San Luis & Delta-Mendota water Authority, May 31, 2005. Letter to Kirk Rodgers and Rudy Schnagl; Subject: Grassland Bypass Project Floodwaters Report

May 31, 2005

Kirk C. Rodgers
Regional Director, Mid-Pacific Region
Bureau of Reclamation
2800 Cottage Way, MP-100
Sacramento, CA 95825-1898

Rudy Schnagl
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6114

Subject: Grassland Bypass Project Floodwaters Report

Dear Kirk and Rudy:

As I indicated in my April 13, 2005 letter, October 2004 through March of 2005 have been extremely high rainfall months within the Grassland Drainage Area. The early storms that saturated the soil profile, along with a continued succession of rainfall events into February, never allowed recovery of drainage flows to manageable levels. This resulted in flows that exceeded the capacity of the Grassland Bypass Channel, and the Project was forced to make discharges through the Grassland Water District for a period of 7 days (February 16 to February 22). In addition, the preliminary calculation of discharges from the Grassland Bypass Project indicates that the monthly load limits were exceeded in January, February and March, 2005. We have prepared a technical report, copy attached, to document the occurrences during this period.

This report serves several purposes. First of all, it documents the discharges of drainage water that were made to the grassland channels including the water quality monitoring that was implemented.

Secondly, provision E-6 of the Waste Discharge Requirements No. 5-01-234 provides for "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."

Thirdly we are requesting a declaration that the high selenium loads that we experienced this winter and spring fall under the definition of "Unforeseeable and Uncontrollable Events" (UU) as defined in the Use Agreement (Agreement No. 01-WC-20-2075) paragraph I.P. In 1997 and 1998, the last time drainage discharges were diverted into grassland channels, there was considerable debate over their classification as UU events. Since that time we have demonstrated the determination and ability to comply with

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selenium load targets. This is evidenced by the fact that since October of 1999 the monthly selenium load targets have been met in every month with the exception of a 9 pound (1%) exceedence in March of 2004 (50 of 51 months) and the annual loads have been met in every year (4 consecutive years). The data clearly indicate that the January, February, and March 2005 selenium load exceedances were outside the control of the Grassland Basin Drainers.

Due to the unquestionable commitment of the Grassland Basin Drainers to minimize selenium discharges from the region and despite continuing influences from the extremely high rainfall, our data indicates that loads have been met in April and will be met in May and for the remainder of the year. This extraordinary effort will put us below our annual load target.

Given the uncontrollable nature of the rain induced discharges that occurred in January through March of 2005, the fact that the continued succession of storms could not reasonably be anticipated, and the injustice of imposing penalties for unpreventable events, the exceedances occurring in January, February and March of 2005 should be declared "Unforeseeable and Uncontrollable".

Very truly yours,

Joseph C. McGahan, Watershed Coordinator, Grassland Basin Drainers

Cc: Dan Nelson, San Luis & Delta-Mendota Water Authority
PO Box 2157
Los Banos, CA 93635

Diane Rathman
PO Box 156
Dos Palos, CA 93620

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Firebaugh, CA 93622

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Grassland Bypass Project
Storm Event Operations during Winter 2004/2005

Submitted by the Grassland Area Farmers
May 31, 2005

A string of storms, beginning in October 2004 and continuing through April 2005, dropped over twelve inches of rain on the Grassland Drainage Area. This is more than twice the rainfall received the previous year and 150% of the average. Table 1 summarizes the total monthly rainfall measured at Panoche Drainage District as well as the average rainfall for that month (from 1950 to 1999).

Table 1 – Panoche Drainage District Rainfall

Month	1950-99 Average (in)	2004/05 Rainfall (in)
October 2004	0.4	2.57
November	0.9	0.86
December	1.1	2.21
January 2005	1.6	1.81
February	1.4	2.57
March	1.2	1.52
April	0.6	0.99
May	0.2	0.34
June	0.1	
July	0	
August	0	
September	0.2	
Total	7.8	12.87

Source: Panoche Drainage District Rain Gage

Rainfall events in October 2004 caused a 20 cfs jump in flows in the San Luis Drain and forced the Grassland Area Farmers to turn off any accessible sumps until flows subsided. Storms continued to pass through the Grassland Drainage Area through January, with precipitation occurring on 41 of the 86 days from October 17, 2004 through January 11, 2005. The longest period without precipitation during those 86 days was 10 days (November 28th through December 6th). This recurring string of storms created saturated soil conditions throughout the Grassland Drainage Area.

During the period from February 14th through the 16th, 1.6" of rain fell on the Grassland Drainage Area. Rainfall continued to accumulate through the end of February, for a total monthly precipitation of 2.57". Flow at the inlet to the San Luis Drain (Site A) increased from 47 cfs on Monday, February 14th to 81 cfs on the morning of the 16th (Wednesday). The Grassland Area Farmers shut off sumps that were accessible and notified affected parties (including Grassland Water District, Fish and Game, and the U.S. Fish and Wildlife Service) in accordance with "A Storm Event Plan For Operating the Grassland Bypass Project" dated

August 25, 1997 that drainage diversions into the wetland channels were possible. By 8 pm on Wednesday, February 16, flow at Site A had increased to 151 cfs and the gate to the Agatha Canal was opened to divert drainage through the wetland channels and the storm water sampling program was initiated. Flow at Site A peaked at 159 cfs Wednesday night. By Tuesday, February 22nd, flow at Site A had dropped to 75 cfs and the Agatha gate was closed. Water samples were collected at Salt Slough (at Lander Avenue) starting February 17th and the Agatha Canal (at Mallard Road) starting February 16th, and continued through March 2nd. Additional samples were collected from the Camp 13 Ditch (even though no flow was discharged through Camp 13 Ditch), the San Luis Canal at the Splits, and the Santa Fe Canal at the Splits, starting February 25th and terminating on March 2nd. Samples were analyzed for electrical conductivity, pH, boron, molybdenum, and selenium. With the exception of the Agatha Canal, the selenium results for all channels during the sampled period were less than 5 µg/L, and in most cases were less than 4 µg/L. Table 2 shows the flow and selenium load discharged to the Agatha Canal and Table 3 shows the water quality analyses taken during and after this period. Additionally, the monthly average selenium concentration for January 2005 was 1.24 µg/L and for February 2005 was 2.13 µg/L (see Table 4). This is well below the current applicable basin plan performance goal of 5 µg/L monthly mean. Furthermore, the four-day running average selenium concentration in the San Joaquin River at Crows landing for the period of January 18 through March 3rd 2005 remained at or below 3.13 µg/L (See Table 4). These numbers are well below the long term selenium water quality objective of 5 µg/L 4-day average.

Table 2

GRASSLAND AREA FARMERS
FLOOD FLOWS INTO THE AGATHA CANAL

FEBRUARY 2005

DATE	FLOW AF	Selenium PPM	Selenium Lbs.	Boron PPM	Boron Lbs.	EC umhos/cm	EC Tons	pH	Mo ug/L
2/15/2005	0	0	0	0	0	0	0	0	0
2/16/2005	7	0.00346	0.1	3.30	66	1940	20	7.2	12.8
2/17/2005	75	0.00451	0.9	4.44	909	2580	264	7.0	18.4
2/18/2005	50	0.00350	0.5	3.08	414	1860	125	7.2	11.3
2/19/2005	44	0.02650	3.1	6.57	779	3410	202	7.2	22.8
2/20/2005	40	0.03990	4.3	7.50	807	4220	227	7.2	21.7
2/21/2005	40	0.04380	4.7	8.14	876	4650	250	7.3	24.4
2/22/2005	14	0.00369	0.1	5.22	196	2740	51	7.2	19.2
2/23/2005	0	0.04440	0.0	9.48	0	5060	0	7.6	36.4
TOTAL	**269**		**13.8**		**4,047**		**1,139**		

Source: Flow - Grassland Water District.

Quality - See Table 3

G:\data\SPRDSHTS\GRASLAND\MONITOR\Feb 2005 Rain Event\[03-23-05-Mike G 2005 GWD FLOWS.xls]FEB 05

TABLE 3

Salt Slough at Lander Avenue

	EC	pH	Boron	Molybdenum	Selenium
	(µmhos/cm)		(mg/L)	(µg/L)	(µg/L)
2/17/2005	1400	7.1	0.85	8.05	0.828
2/18/2005	1350	7	0.885	7.28	0.744
2/19/2005	1400	7.1	0.995	7.7	1.01
2/20/2005	1470	7.1	1.14	8.28	1.41
2/21/2005	1570	7.2	1.22	9.15	2.31
2/22/2005	1660	7.2	1.3	11.3	1.82
2/23/2005	1740	7.3	1.27	10	1.55
2/24/2005	1700	7.3	1.08	10	1.58
2/25/2005	1750	7.4	1.1	9.43	1.34
2/26/2005	1750	7.3	1.12	9.32	1.14
2/27/2005	1710	7.4	1.08	9.68	1.73
2/28/2005	1680	7.4	1.04	9.2	1.68
3/1/2005	1500	7.4	0.88	8.45	1.86
3/2/2005	1520	7.4	0.95	8.77	1.72

Camp 13 Ditch

	EC	pH	Boron	Molybdenum	Selenium
	(µmhos/cm)		(mg/L)	(µg/L)	(µg/L)
2/25/2005	1010	7.6	0.92	2.83	2.9
2/26/2005	1040	7.4	0.99	5.28	3.86
2/27/2005	1040	7.4	0.98	2.9	3.82
2/28/2005	839	7.7	0.705	1.75	2.46
3/1/2005	880	7.5	0.795	2.9	1.77
3/2/2005	925	7.5	0.855	2.1	1.97

Santa Fe Canal at Splits

	EC	pH	Boron	Molybdenum	Selenium
	(µmhos/cm)		(mg/L)	(µg/L)	(µg/L)
2/25/2005	2010	7.4	2.4	9.3	2.44
2/26/2005	2060	7.4	2.51	10.3	1.32
2/27/2005	2020	7.3	2.4	10.4	1.38
2/28/2005	1860	7.5	1.92	7.88	1.7
3/1/2005	1940	7.5	2.25	11.2	1.66
3/2/2005	2280	7.5	2.82	14.3	1.86

Agatha Canal at Mallard Road

	EC	pH	Boron	Molybdenum	Selenium
	(µmhos/cm)		(mg/L)	(µg/L)	(µg/L)
2/16/2005	1940	7.2	3.3	12.8	3.46
2/17/2005	2580	7	4.44	18.4	4.51
2/18/2005	1860	7.2	3.05	11.3	3.5
2/19/2005	3410	7.2	6.57	22.8	26.5
2/20/2005	4220	7.2	7.5	21.7	39.9
2/21/2005	4650	7.3	8.14	24.4	43.8
2/22/2005	2740	7.2	5.22	19.2	3.69
2/23/2005	5060	7.6	9.48	36.4	44.4
2/24/2005	3420	7.4	6.1	18.8	24.8
2/25/2005	3420	7.4	6.11	20.2	24.2
2/26/2005	3110	7.4	5.58	16.8	18.6
2/27/2005	3030	7.3	5.38	13.3	14.8
2/28/2005	4120	7.6	9	31.5	9.27
3/1/2005	2270	7.4	3.7	6.68	5.1
3/2/2005	2020	7.5	3.27	4.85	2.83

San Luis Canal at Splits

	EC	pH	Boron	Molybdenum	Selenium
	(µmhos/cm)		(mg/L)	(µg/L)	(µg/L)
2/25/2005	2160	7.8	2.74	5.55	3.49
2/26/2005	2160	7.8	2.85	6.02	3.32
2/27/2005	2070	7.8	2.49	10.3	3.57
2/28/2005	1230	7.4	1.34	5.08	2.2
3/1/2005	1720	7.7	1.8	5.4	3.64
3/2/2005	1660	7.7	1.61	7.8	4.03

Source: Samples taken by the Grassland Area Farmers and analyzed by South Dakota State University.

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Table 4: San Joaquin River at Crows Landing (Site N)
Available Data January 2005 though March 2005
Source: RWQCB (Site Code STC504S)

Site Code	Date	Lab EC	Boron	Se	Se 4-Day Average	Se Monthly Average	Disch'd to Agatha Canal
		(µmhos/cm)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	
STC504S	1/12/2005	NA	NA	NA	NA		
STC504S	1/15/2005	400	0.26	0.6			
STC504S	1/16/2005	478	0.31	0.6			
STC504S	1/17/2005	568	0.36	0.7			
STC504S	1/18/2005	622	0.38	0.8	0.68		
STC504S	1/19/2005	654	0.44	0.9	0.75		
STC504S	1/20/2005	701	0.50	1.0	0.85		
STC504S	1/21/2005	739	0.51	1.1	0.95		
STC504S	1/22/2005	773	0.52	1.3	1.08		
STC504S	1/23/2005	833	0.55	1.3	1.18		
STC504S	1/24/2005	952	0.68	1.5	1.30		
STC504S	1/25/2005	1070	0.75	1.5	1.40		
STC504S	1/26/2005	1140	0.66	1.8	1.53		
STC504S	1/27/2005	1200	0.81	2.1	1.73		
STC504S	1/28/2005	1090	0.71	1.7	1.78		
STC504S	1/29/2005	745	0.50	1.8	1.85		
STC504S	1/30/2005	617	0.40	1.1	1.68		
STC504S	1/31/2005	687	0.45	1.3	1.48	1.24	
STC504S	2/1/2005	839	0.56	1.5	1.43		
STC504S	2/2/2005	962	0.73	1.7	1.40		
STC504S	2/3/2005	1040	0.67	1.5	1.50		
STC504S	2/4/2005	1120	0.68	1.9	1.65		
STC504S	2/5/2005	1200	0.81	2.3	1.85		
STC504S	2/6/2005	1240	0.86	2.4	2.03		
STC504S	2/7/2005	1260	0.77	2.3	2.23		
STC504S	2/8/2005	1310	0.89	2.2	2.30		
STC504S	2/9/2005	1360	0.91	2.1	2.25		
STC504S	2/10/2005	1380	1.0	2.3	2.23		
STC504S	2/11/2005	1420	1.1	2.5	2.28		
STC504S	2/12/2005	1470	1.0	2.9	2.45		
STC504S	2/13/2005	1490	1.0	2.9	2.65		
STC504S	2/14/2005	1450	0.98	3.1	2.85		
STC504S	2/15/2005	1550	1.1	3.6	3.13		
STC504S	2/16/2005	1210	0.80	2.4	3.00		x
STC504S	2/17/2005	1080	0.79	2.1	2.80		x
STC504S	2/18/2005	793	0.61	2.0	2.53		x
STC504S	2/19/2005	778	0.51	1.8	2.08		x
STC504S	2/20/2005	716	0.49	1.1	1.75		x
STC504S	2/21/2005	666	0.48	1.3	1.55		x
STC504S	2/22/2005	747	0.54	1.4	1.40		x
STC504S	2/23/2005	833	0.61	1.5	1.33		
STC504S	2/24/2005	914	0.78	1.4	1.40		
STC504S	2/25/2005	987	0.82	1.9	1.55		
STC504S	2/26/2005	1090	0.91	2.2	1.75		
STC504S	2/27/2005	1170	1.0	2.5	2.00		
STC504S	2/28/2005	1240	1.1	2.9	2.38	2.13	
STC504S	3/1/2005	1250	1.0	3.1	2.68		
STC504S	3/2/2005	1090	0.79	2.8	2.83		
STC504S	3/3/2005	1030	0.80	2.8	2.90		
STC504S	3/4/2005	NA	NA	NA	NA		

In addition to the drainage discharge, rainfall in the coastal range watershed caused Panoche/Silver Creek to run frequently from January through March, 2005. Table 5 shows the total monthly discharge and peak flow of Panoche/Silver Creek during this period. On two occasions, flood waters from Panoche/Silver Creek were diverted into Firebaugh Canal Water District's Third Lift Canal. Although this water was diverted south to the Mendota Pool, rather than discharged through the Grassland Bypass, the ponding likely contributed to increased sump flows.

Table 5: Panoche/Silver Creek Discharge

Month	Peak Flow	Total Discharge
	(cfs)	(AF)
January	91	1107
February	238	1343
March	64	306

Source: USGS Gaging Station at Panoche Creek and I-5

An analysis has been performed to determine the impact of rainfall and applied irrigation water on drainage discharge for January, February, and March of 2005. Available data for applied water and drainage discharges from Panoche Drainage District are shown in Table 6, below.

Table 6: Applied Water and Drainage Discharge for Panoche Drainage District.

	2004		2005			
	Drainage Discharge (AF)	Applied Water (AF)	Drainage Discharge (AF)	Applied Water (AF)	% Increase in Discharge	% Decrease in Applied Water
January	702	5,209	2,912	2,703	315%	48%
February	1,696	5,869	2,454	3,829	45%	35%
March	1,304	4,707	2,275	2,608	74%	45%

Source: Panoche Drainage District

It is apparent from Table 6 that the increase in drainage production from Panoche Drainage District is caused entirely by the 5.9" of rainfall that occurred during these three months, as well as by the 5.64" that fell in the earlier months. Panoche Drainage District is one of the seven districts within the Grassland Drainage Area, and is approximately 40% of the total area. Although data for other districts is not presented here, results are likely similar.

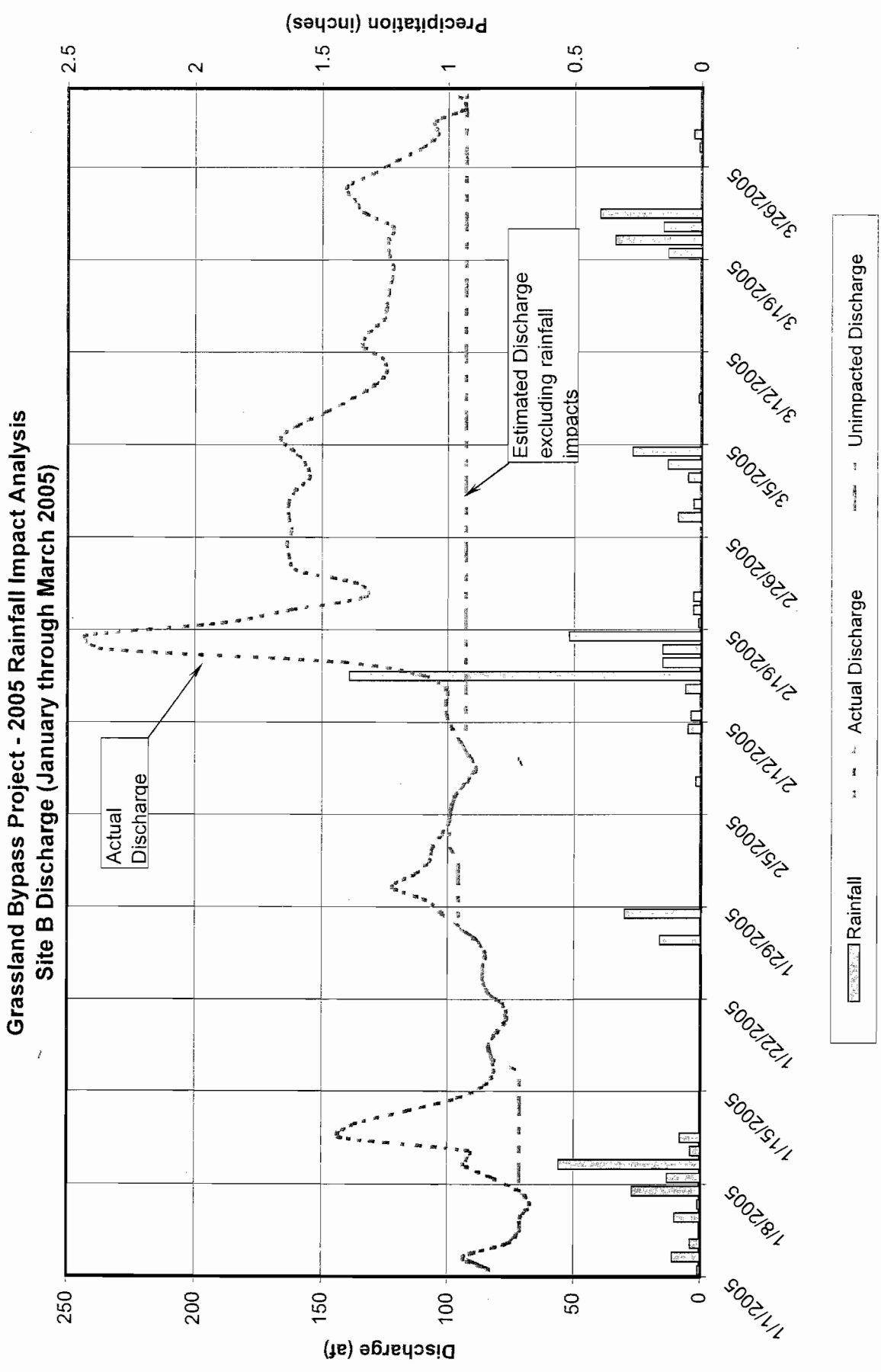
A graphical analysis was performed on the outlet of the San Luis Drain (Site B) to estimate the discharge volume that is caused by rainfall. This is shown in Figure 1. It is estimated that the rainfall contributed 2,600 acre feet and more than 650 pounds of selenium to the drainage discharge. An additional 270 acre feet and 13 pounds of selenium were discharged into the wetlands through the Agatha Canal (Table 2). The estimated rainfall impact includes the drainage volume increase cause by rain, but does not include any drainage reduction that might have occurred through drainage management activities (such as reuse and recirculation). The amount of management activities implemented, and their impact are dependent on a variety of factors including weather conditions and the amount of irrigation deliveries. Table 7, below, shows the estimated drainage discharge and selenium load that would have occurred without the rain events.

Table 7: Estimated 2005 Discharge and Load, Ignoring Rainfall Impacts

	Site B Discharge (incl. GWD)	Site B Selenium 2005 Load Actual (incl. GWD)	Site B Selenium 2005 Load w/o rain impacts	Site B Selenium Allocation WDR's	Site B Selenium Allocation UA
	(acre feet)	(lbs)	(lbs)	(lbs)	(lbs)
January	2,836	391	211	211	289
February	3,975	592	436	488	440
March	4,050	996	564	488	496

It is likely that, under drier circumstances, the Grassland Area Farmers would have implemented management practices that could significantly reduce the volume and load discharged from the above numbers. However, the wet conditions precluded the use of district recirculation systems or reuse on the San Joaquin River Water Quality Improvement Project.

FIGURE 1


Grassland Bypass Project - 2005 Rainfall Impact Analysis
Site B Discharge (January through March 2005)
Discharge (af)
Precipitation (inches)
Actual Discharge
Estimated Discharge excluding rainfall impacts
Rainfall
Actual Discharge
Unimpacted Discharge
1/1/2005
1/8/2005
1/15/2005
1/22/2005
1/29/2005
2/5/2005
2/12/2005
2/19/2005
2/26/2005
3/5/2005
3/12/2005
3/19/2005
3/26/2005

Crows Landing Flow
Source: CDEC

Date	Crows Landing Ave daily Flow	Crows Landing Ave 4-day flow	Crows Landing Monthly Equiv. 4-day flow	Load Value	lbs/day at 1.5 ppb Se Conc. At Crows Landing	Actual Site B plus Grassland selenium Discharge	Exemption Amount
	cfs/day	cfs/4 day ave	AF/month	lbs/day	lbs/day	lbs/day	lbs
1	2	3	4	5	6	7	8
12/29/2004	846						
12/30/2004	1090						
12/31/2004	1680						
01/01/2005	2403	1505	**92362**	9.3	12.1	9.4	0.1
01/02/2005	2762	1984	**121763**	9.3	16.0	12.0	2.7
01/03/2005	3022	2467	**151409**	9.3	19.9	9.0	-
01/04/2005	3227	2854	**175148**	9.3	23.0	8.9	-
01/05/2005	3422	3108	**190784**	9.3	25.1	8.4	-
01/06/2005	3371	3261	**200129**	9.3	26.3	7.3	-
01/07/2005	3205	3306	**202938**	9.3	26.7	7.6	-
01/08/2005	3066	3266	**200467**	9.3	26.4	10.2	0.9
01/09/2005	3312	3239	**198779**	9.3	26.1	11.5	2.2
01/10/2005	3847	3358	**206083**	9.3	27.1	10.5	1.1
01/11/2005	5033	3815	**234134**	9.3	30.8	17.5	8.2
01/12/2005	5716	4477	**274798**	9.3	36.1	16.7	7.4
01/13/2005	6091	5172	**317442**	9.3	41.7	13.1	3.8
01/14/2005	6183	5756	**353288**	9.3	46.5	9.5	0.2
01/15/2005	5885	5969	**366362**	9.3	48.2	9.6	0.3
01/16/2005	5205	5841	**358521**	9.3	47.2	9.7	0.4
01/17/2005	4513	5447	**334306**	9.3	44.0	9.9	0.6
01/18/2005	3936	4885	**299826**	9.3	39.4	9.9	0.5
01/19/2005	3478	4283	**262891**	9.3	34.6	10.8	1.5
01/20/2005	3091	3755	**230451**	9.3	30.3	11.1	1.7
01/21/2005	2795	3325	**204089**	9.3	26.8	12.1	2.8
01/22/2005	2583	2987	**183327**	9.3	24.1	13.3	4.0
01/23/2005	2408	2719	**166908**	9.3	22.0	13.2	3.9
01/24/2005	2156	2486	**152560**	9.3	20.1	13.0	3.7
01/25/2005	1950	2274	**139593**	9.3	18.4	13.3	4.0
01/26/2005	1815	2082	**127809**	9.3	16.8	15.4	6.1
01/27/2005	1751	1918	**117727**	9.3	15.5	16.4	6.2
01/28/2005	2130	1912	**117328**	9.3	15.4	17.7	6.1
01/29/2005	2535	2058	**126305**	9.3	16.6	18.0	7.3
01/30/2005	3062	2370	**145440**	9.3	19.1	19.7	9.8
01/31/2005	2918	2661	**163348**	9.3	21.5	17.9	8.6
				Total	844	383	94.0

Design Four-day average low flow, Wet Year, Dec-Jan
19,260 AF
300% 57780 AF
Days greater than design in **bold**
Monthly load value 289 lbs Se

Criteria:

Actual discharge greater than load value	Flow greater than 300% cap	Cap equal to load at 1.5 ppb at Crows Landing

Notes:

Column 8 If all criteria met, lesser of actual discharge minus load value or 1.5 ppb cap minus load value

Crows Landing Flow
Source: CDEC

Date	Crows Landing Ave daily Flow	Crows Landing Ave 4-day flow	Crows Landing Monthly Equiv. 4-day flow	Load Value	lbs/day at 1.5 ppb Se Conc. At Crows Landing	Actual Site B plus Grassland selenium Discharge	Exemption Amount
	cfs/day	cfs/4 day ave	AF/month	lbs/day	lbs/day	lbs/day	lbs
1	2	3	4	5	6	7	8
01/29/2005	2535						
01/30/2005	3062						
01/31/2005	2918						
02/01/2005	2712	2807	**155606**	16.9	22.7	15.5	-
02/02/2005	2527	2805	**155495**	16.9	22.6	15.3	-
02/03/2005	2236	2598	**144047**	16.9	21.0	16.4	-
02/04/2005	2038	2378	131850	16.9	19.2	16.2	-
02/05/2005	1892	2173	120485	16.9	17.5	16.2	-
02/06/2005	1830	1999	110825	16.9	16.1	15.4	-
02/07/2005	1738	1875	103922	16.9	15.1	15.1	-
02/08/2005	1663	1781	98725	16.9	14.4	14.8	-
02/09/2005	1583	1704	94442	16.9	13.8	15.7	-
02/10/2005	1543	1632	90464	16.9	13.2	17.2	-
02/11/2005	1465	1564	86680	16.9	12.6	18.6	-
02/12/2005	1410	1500	83174	16.9	12.1	18.5	-
02/13/2005	1354	1443	80000	16.9	11.6	19.0	-
02/14/2005	1307	1384	76729	16.9	11.2	18.1	-
02/15/2005	1300	1343	74442	16.9	10.8	19.7	-
02/16/2005	2122	1521	84310	16.9	12.3	25.5	-
02/17/2005	2323	1763	97741	16.9	14.2	43.7	-
02/18/2005	2964	2177	120707	16.9	17.6	31.8	-
02/19/2005	3570	2745	**152169**	16.9	22.2	20.7	3.9
02/20/2005	4429	3322	**184144**	16.9	26.8	22.7	5.8
02/21/2005	4797	3940	**218434**	16.9	31.8	21.9	5.1
02/22/2005	4650	4362	**241802**	16.9	35.2	15.9	-
02/23/2005	4220	4524	**250811**	16.9	36.5	28.8	11.9
02/24/2005	3842	4377	**242675**	16.9	35.3	30.8	13.9
02/25/2005	3502	4054	**224726**	16.9	32.7	31.2	14.3
02/26/2005	3158	3681	**204047**	16.9	29.7	32.8	12.9
02/27/2005	2845	3337	**184989**	16.9	26.9	32.8	10.1
02/28/2005	2622	3032	**168080**	16.9	24.5	32.5	7.6
				Total	580	623	85.4

Design Four-day average low flow, Wet Year, Feb-May
45,623 AF
300% 136869 AF
Days greater than design in **bold**
Monthly load value 488 lbs Se

Criteria:

Actual discharge greater than load value	Flow greater than 300% cap	Cap equal to load at 1.5 ppb at Crows Landing

Notes:
Column 8 If all criteria met, lesser of actual discharge minus load value or 1.5 ppb cap minus load value

Crows Landing Flow
Source: CDEC

Date	Crows Landing Ave daily Flow	Crows Landing Ave 4-day flow	Crows Landing Monthly Equiv. 4-day flow	Load Value	lbs/day at 1.5 ppb Se Conc. At Crows Landing	Actual Site B plus Grassland selenium Discharge	Exemption Amount
	cfs/day	cfs/4 day ave	AF/month	lbs/day	lbs/day	lbs/day	lbs
1	2	3	4	5	6	7	8
02/26/2005	3158						
02/27/2005	2845						
02/28/2005	2622						
03/01/2005	2624	2812	**172616**	16.0	22.7	34.4	6.7
03/02/2005	2714	2701	**165803**	16.0	21.8	34.0	5.8
03/03/2005	2707	2667	**163685**	16.0	21.5	34.6	5.5
03/04/2005	2670	2679	**164422**	16.0	21.6	36.5	5.6
03/05/2005	2572	2666	**163624**	16.0	21.5	37.4	5.5
03/06/2005	2406	2589	**158897**	16.0	20.9	38.2	4.9
03/07/2005	2286	2484	**152437**	16.0	20.0	34.6	4.0
03/08/2005	2180	2361	**144918**	16.0	19.1	31.9	3.1
03/09/2005	2100	2243	**137675**	16.0	18.1	31.0	2.1
03/10/2005	2002	2142	**131476**	16.0	17.3	30.8	-
03/11/2005	1920	2051	125860	16.0	16.6	31.7	-
03/12/2005	1831	1963	120504	16.0	15.8	34.3	-
03/13/2005	1743	1874	115026	16.0	15.1	32.8	-
03/14/2005	1663	1789	109824	16.0	14.4	33.3	-
03/15/2005	1586	1706	104699	16.0	13.8	35.2	-
03/16/2005	1535	1632	100157	16.0	13.2	36.3	-
03/17/2005	1482	1567	96152	16.0	12.6	46.6	-
03/18/2005	1527	1533	94065	16.0	12.4	35.1	-
03/19/2005	1544	1522	93420	16.0	12.3	34.3	-
03/20/2005	1490	1511	92730	16.0	12.2	34.3	-
03/21/2005	1548	1527	93743	16.0	12.3	32.3	-
03/22/2005	1874	1614	99067	16.0	13.0	35.2	-
03/23/2005	2415	1832	112433	16.0	14.8	34.2	-
03/24/2005	3156	2248	**137998**	16.0	18.1	32.1	2.1
03/25/2005	4193	2910	**178585**	16.0	23.5	29.3	7.5
03/26/2005	4975	3685	**226170**	16.0	29.7	25.4	9.4
03/27/2005	5661	4496	**275980**	16.0	36.3	23.2	7.2
03/28/2005	6355	5296	**325068**	16.0	42.8	25.4	9.4
03/29/2005	7062	6013	**369093**	16.0	48.5	23.6	7.6
03/30/2005	7398	6619	**406274**	16.0	53.4	22.7	6.7
03/31/2005	7368	7046	**432468**	16.0	56.9	24.6	8.6
				Total	692	1005	101.7

Design Four-day average low flow, Wet Year, Feb-May
45,623 AF
300% 136869 AF
Days greater than design in **bold**
Monthly load value 496 lbs Se

Criteria:

Actual discharge greater than load value	Flow greater than 300% cap	Cap equal to load at 1.5 ppb at Crows Landing

Notes:

Column 8 If all criteria met, lesser of actual discharge minus load value or 1.5 ppb cap minus load value

Grassland Bypass Project
Technical and Policy Review Team
Determination of Incentive Fees for
Winter 2005 Floods

Attachment C. Joe McGahan, December 10, 2001. E-mail message to Laura Allen, et.al. Subject: Panoche Water District Rain Gauge

Joe McGahan

From: Joseph McGahan [jmcgahan@summerseng.com]
Sent: Monday, December 10, 2001 2:30 PM
To: 'Laura Allen'; Diane Rathman; Lisa Holm; Richard Denton; John Kopchik; 'Bill Loudermilk'; Angela Sherry; Terry Young; Tom Hagler; Eugenia McNaughton; Michael Delamore; Steven Schwarzbach; 'Andy Gordus'; 'Rudy Schnagl'; Stephen Palmer; 'Dennis Falaschi'
Subject: Panoche Water District Rain Gauge

As part of the High Rainfall Exemption in Appendix F of the 2001 Use Agreement there is a requirement for a "Panoche Water District" rain gauge. An automatic gauge has been installed using equipment designed for the National Weather Service. Attached are photographs and backup information on the gauge. The data downloads to a data collection device which can be remotely accessed. There is also a backup rain gauge for verification of data. If anyone should have any questions please call.

Panoche Rain Gauge

Grassland Bypass Project – Panoche Water District Rain Gage

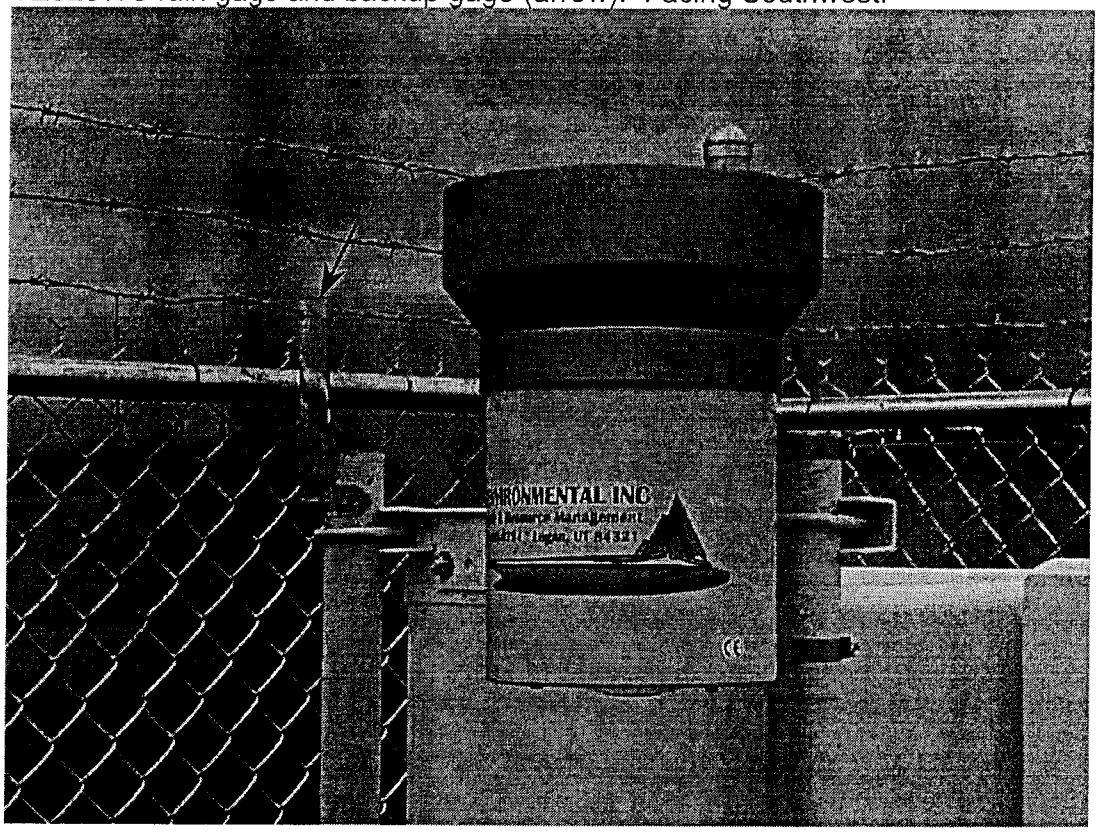
Location: The rain gage is located at the Panoche Water District office on Althea Avenue, in Section 14, Township 12 South, Range 11 East.

System: The rain gage is a tipping bucket rain sensor designed for the National Weather Service by Intermountain Environmental, Inc. The gage has an 8" orifice and measures rainfall in increments of 0.01". The rain gage is connected to an on-site data logger that is capable of remote data collection. The data logger is programmed to collect every hour and summarize every 24 hours. A manually read backup rain gage has also been installed on site. A six foot chain link fence enclosure was installed to protect against theft and vandalism.

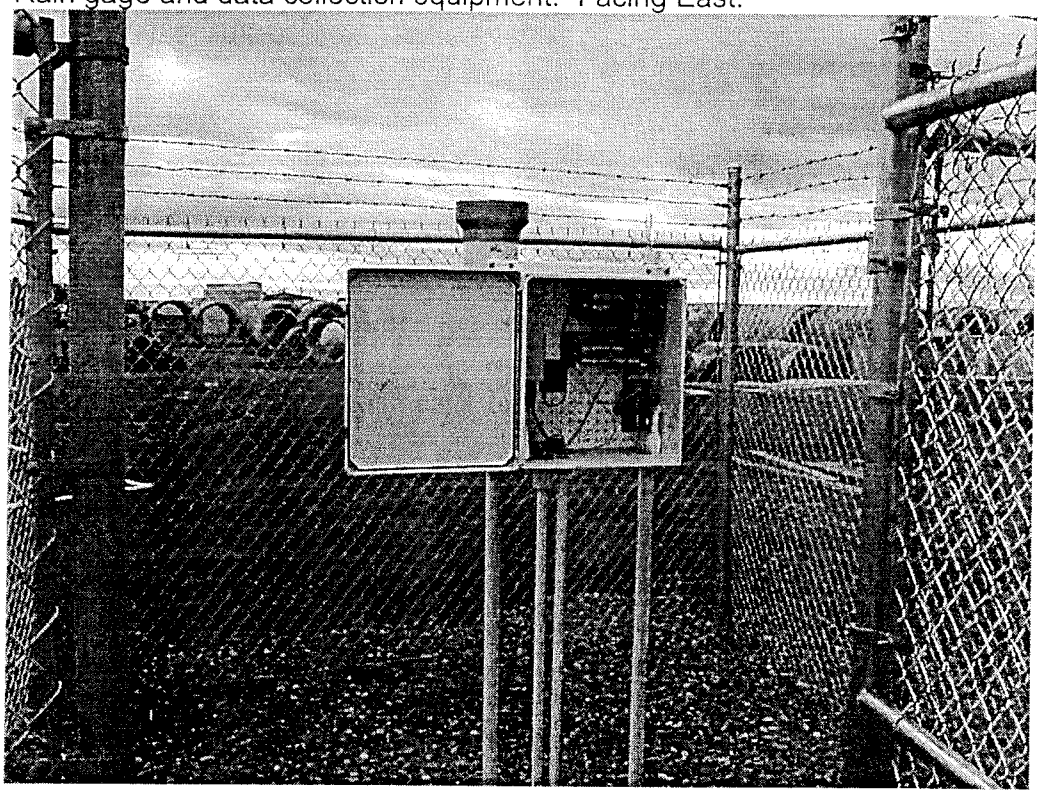
Equipment:

- TE525WS tipping bucket rain gage
- CR10X Data Logger with modem

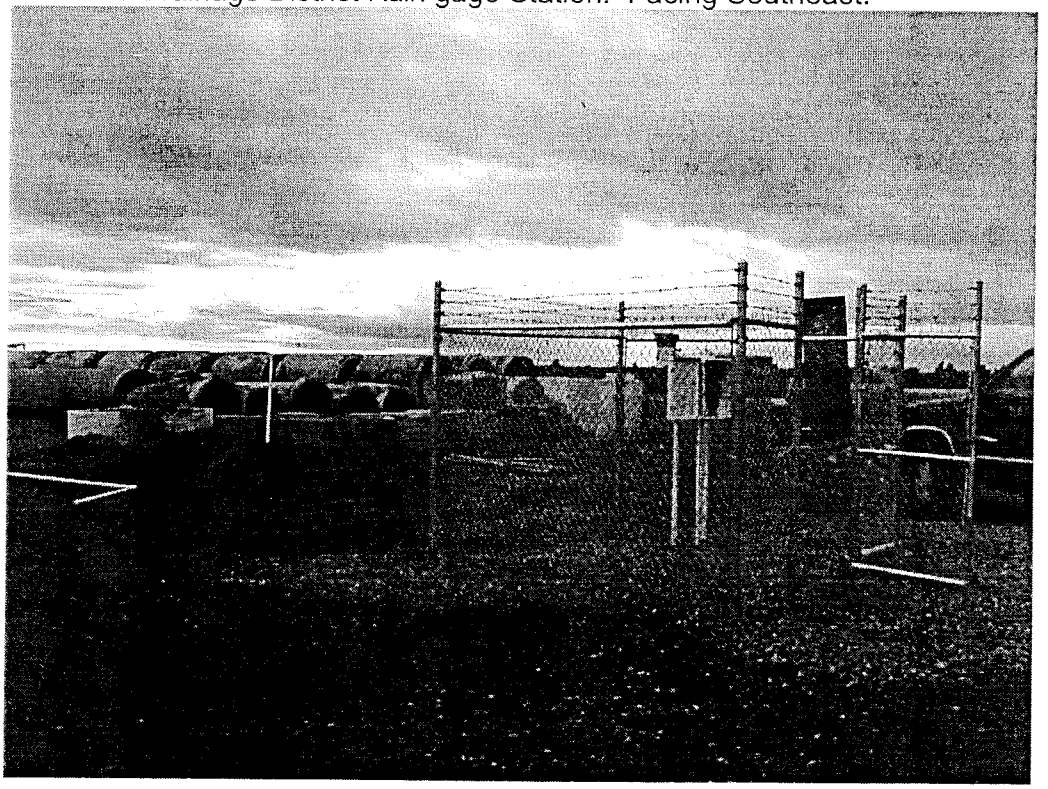
TE525WS rain gage and backup gage (arrow). Facing Southwest.

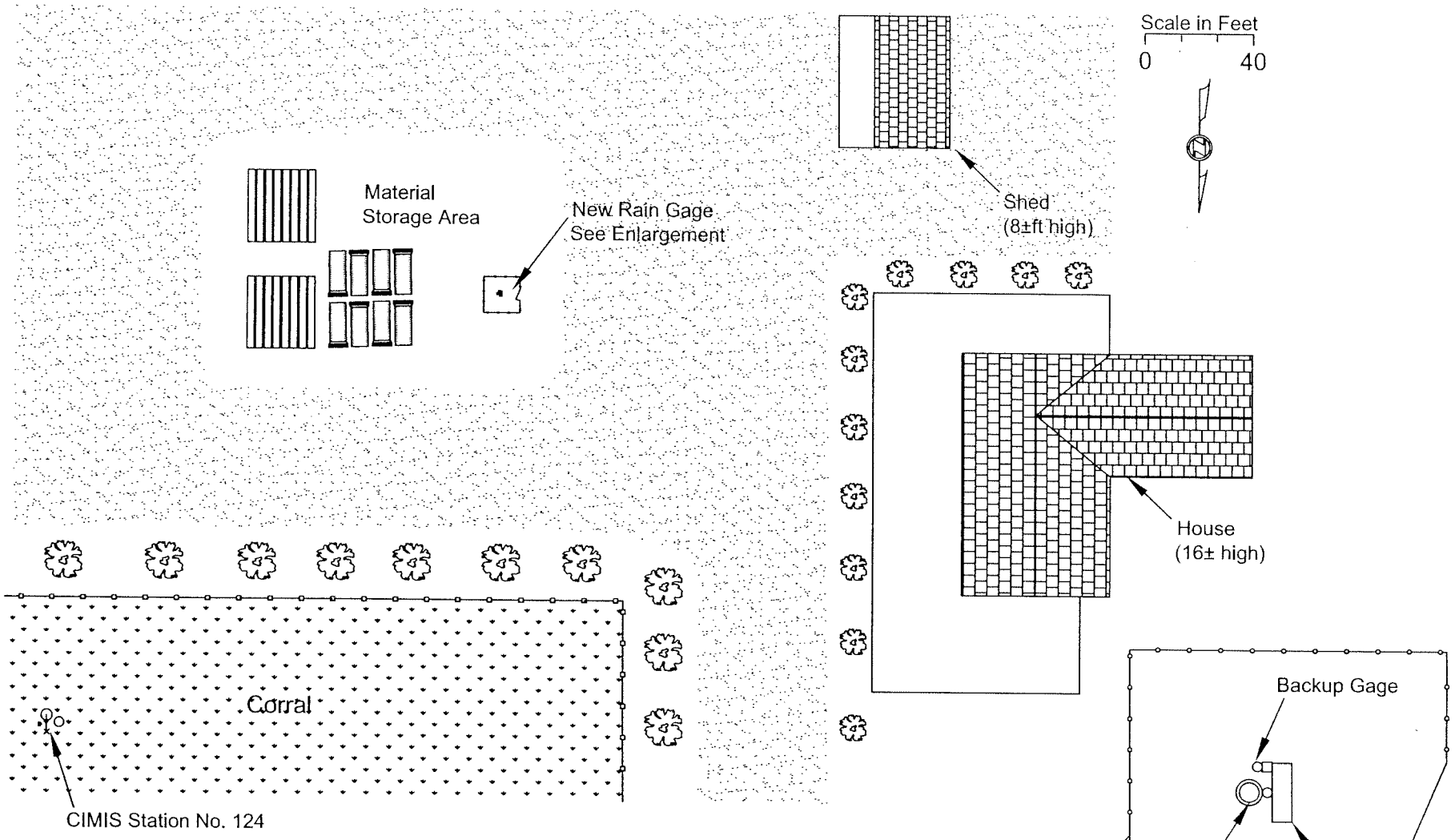


Rain gage and data collection equipment. Facing East.



Panoche Drainage District Rain gage Station. Facing Southeast.

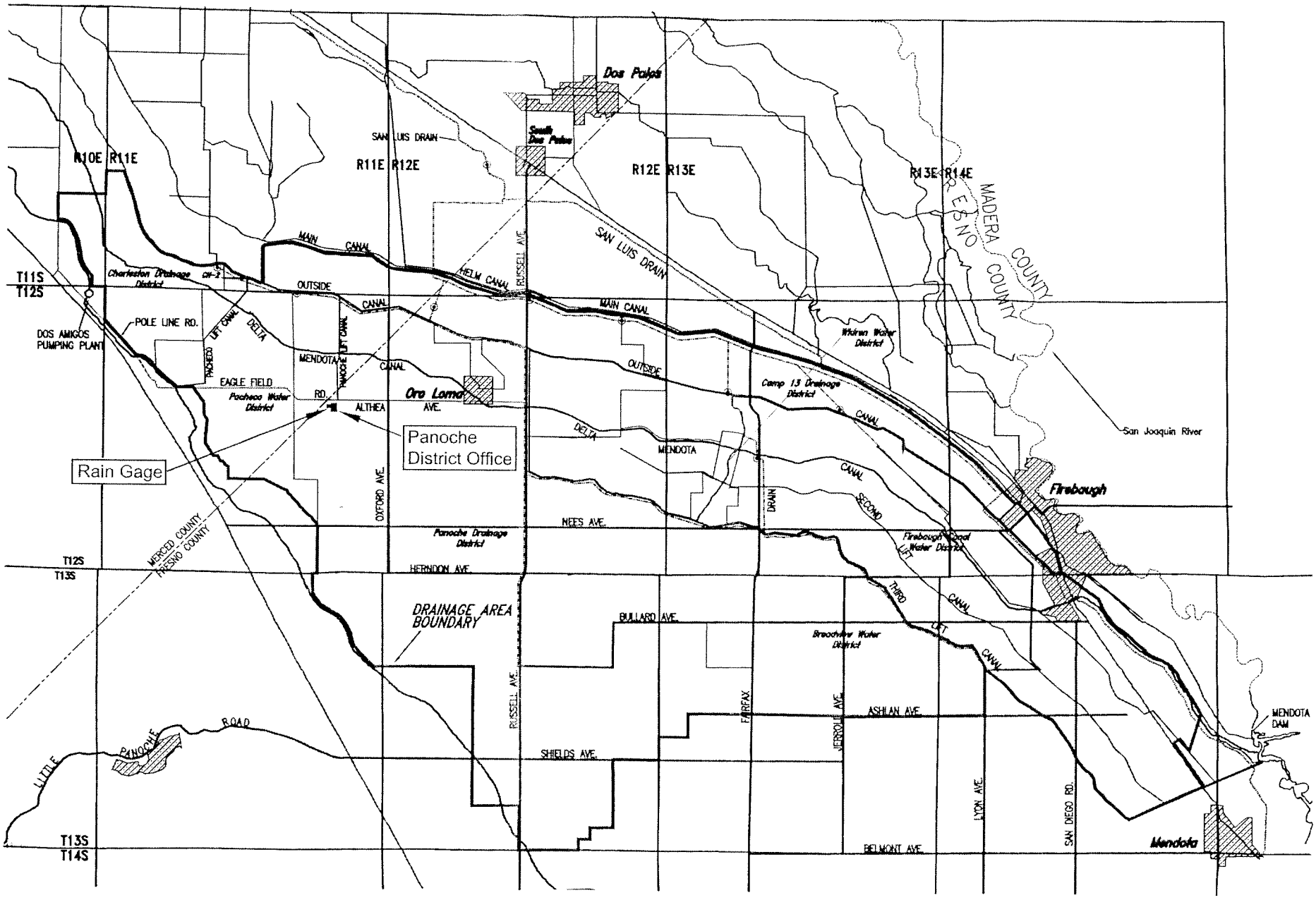




Grassland Bypass Project
Panoche Water District Rain Gage

Enlargement - Rain Gage and Enclosure

SUMMERS ENGINEERING, INC.
Consulting Engineers
HANFORD CALIFORNIA
NOVEMBER 2001



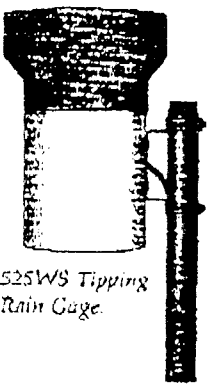
Grassland Bypass Project
Panoche Water District Rain Gage

SUMMERS ENGINEERING, INC.
Consulting Engineers
HANFORD CALIFORNIA
NOVEMBER 2001

Rain Gages & Snowfall Conversion Adapter

Models TE525WS, TE525, TE525MM, CS705

The TE525 series tipping bucket rain gages are manufactured by Texas Electronics. Both the TE525WS (8" orifice) and TE525 (6" orifice) measure in 0.01 inch increments; the TE525MM measures in 0.1 mm increments. These gages funnel precipitation into a bucket mechanism that tips when filled to a calibrated level. A magnet attached to the tipping mechanism actuates a switch as the bucket tips. The momentary switch closure is counted by the pulse-counting circuitry of Campbell Scientific dataloggers.



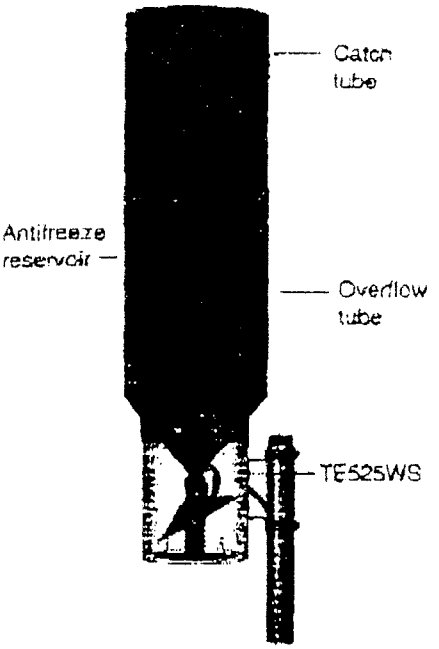
The TE525WS Tipping Bucket Rain Gage.

The CS705 Snowfall Conversion Adapter

Campbell Scientific's CS705 consists of an antifreeze reservoir, overflow tube, and catch tube. Snow captured in the catch tube dissolves into the antifreeze. As the snow melts, a mixture of melted snow and antifreeze flows through the overflow tube into the tipping bucket. The liquid is then measured by the tipping bucket mechanism.

The CS705 possesses inherent delays and is not suitable for real-time precipitation measurements. Three factors contribute to the delays: temperatures of air and liquid in the reservoir, surface tension in the overflow tube, and the form of the precipitation. For rainfall at 25°C, a delay of minutes is expected after the gage receives a minimum accumulation of ~0.03". For snowfall, a delay of hours to tens of hours is expected. The longest delays should be expected for low density snows at very cold air temperatures. However, all precipitation falling into the catch tube eventually flows through the overflow tube and is measured by the tipping bucket gage below.

The CS705's specially shaped cylinder allows it to mount to any 6- or 8-inch tipping bucket rain gage. The CS705 will not directly install on the TE525MM; the MM funnel must first be replaced with an 8-inch funnel.



Transparent view of CS705 snowfall adapter and a TE525WS rain gage

Mounting

The gage mounts to a user-supplied mast or pole with two 3-inch hose clamps. Accurate measurements require the gages to be level.

Ordering Information

TE525WS-L__	8-inch diameter; 0.01 inch tips; user-specified lead length.* Enter lead length (in feet) after L.
TE525-L__	6-inch diameter; 0.01 inch tips; user-specified lead length.* Enter lead length (in feet) after L.
TE525MM-L__	24.5 cm diameter; 0.1 mm tips; user-specified lead length.* Enter lead length (in feet) after L.
CS705-A	Snowfall conversion adapter and four gallons of 1:1 propylene glycol and ethanol (PGE).
CS705	Snowfall conversion adapter without antifreeze.

**A 25' lead length is recommended for most applications, e.g. TE525WS-L25.*

CAMPBELL SCIENTIFIC, INC.
815 W. 1600 N. · Logan, Utah 84321-1784 · (435) 753-2342 · FAX (435) 750-9540 · www.campbellsci.com

TE525WS

Tipping Bucket Specifications

Sensor type:	Tipping bucket/magnetic reed switch
Material:	Anodized aluminum
Temperature:	0° to +50°C
Resolution:	1 tip
Cable:	2-conductor shielded cable

	TE525WS	TE525	TE525MM	
Rainfall per tip:	0.01" (0.254 mm)	0.01" (0.254 mm)	0.004" (0.1 mm)	
Orifice diameter:	8" (20.3 cm)	6.06" (15.4 cm)	9.66" (24.5 cm)	
Height:	10.5" (26.7 cm)	9.5" (24.1 cm)	11.5" (29.21 cm)	
Weight:	2.5 lbs. (1.1 kg)	2.5 lbs. (1.1 kg)	2.7 lbs. (1.2 kg)	
Accuracy:				
Up to 1 inch/hr:	±1%	±1%	Up to 10 mm/hr:	±1%
1 to 2 inch/hr:	+0, -2.5%	+0, -3%	10 to 20 mm/hr:	+0, -3%
2 to 3 inch/hr:	+0, -3.5%	+0, -5%	20 to 30 mm/hr:	+0, -5%

CS705 Specifications (see notes below)

Material:	Powder-coated aluminum
Capacity:	8" of liquid @ -20°C operating temperature (assuming 1:0 starting ratio of antifreeze:water)
Catch tube height:	10" (25.4 cm)
Catch tube diameter:	8.25" (20.96 cm)
Antifreeze reservoir capacity:	2½ gallons (see note 3)
Antifreeze reservoir height:	14" (35.6 cm)
Antifreeze reservoir diameter:	8.25" (20.96 cm)

Notes:

1) *The TE525 requires recalibration when the CS705 is added or removed; the TE525WS does not. A retrofit kit is available to convert a TE525 to a TE525WS; contact CSI for more information.*

2) *The CS705 is not compatible with the TE525MM or the CS700 rain gages.*

3) *Although any antifreeze will work for the CS705, Campbell Scientific (CSI) recommends a 1:1 mixture of propylene glycol and ethanol (PGE). PGE is more environmentally friendly. PGE is available from CSI in a package of four, one-gallon containers.*

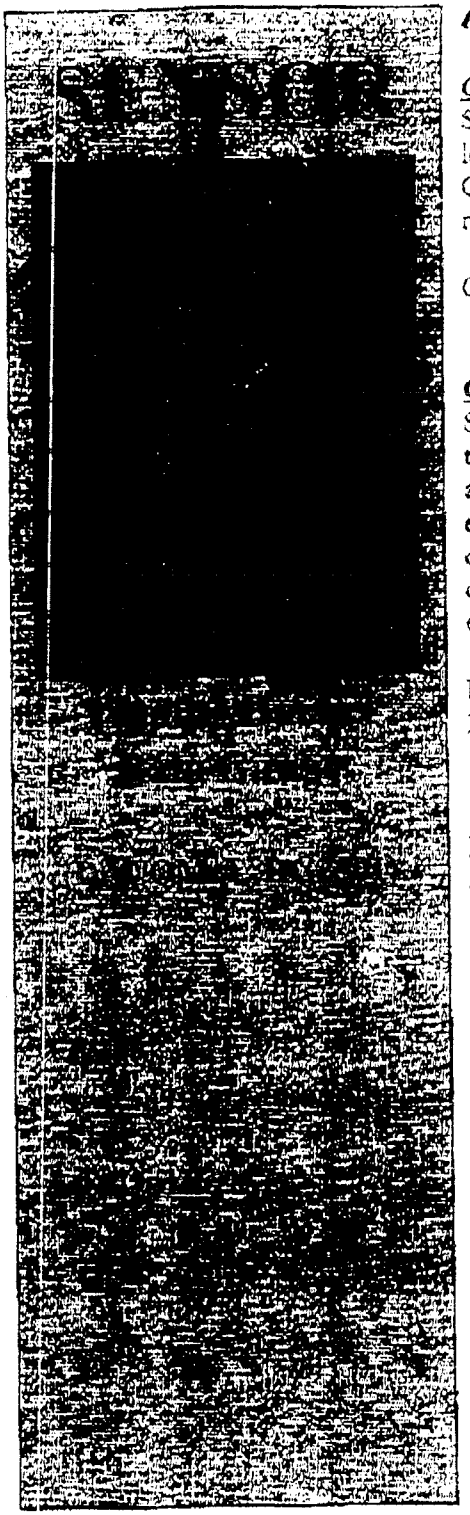
4) *It is recommended that waste from the tipping bucket gage be captured and disposed of properly in accordance with local, state, and federal regulations.*

CAMPBELL SCIENTIFIC, INC.
815 W. 1800 N. • Logan, Utah 84321-1784 • (435) 753-2342 • FAX (435) 750-9540
Offices also located in: Australia • Brazil • Canada • England • France • South Africa

Principle of Operation

This sensor was designed for the National Weather Service to provide a reliable, low-cost tipping bucket rain sensor. Its simplicity of design assures trouble-free operation, yet provides accurate rainfall measurements. The tipping bucket mechanism activates a sealed reed switch that produces a contact closure for each 0.01" or 1mm of rainfall. The gauge has an 8" orifice and is manufactured of aluminum. Enclosure surfaces are powder coated gloss white. The funnel has a screen to prevent debris from entering the gauge. It is shipped complete with mounting brackets.

The spent water drains out of the bottom of the housing, hence, the sensor requires no attention or service of any sort. This sensor is factory calibrated and due to the nature of its operation should not require field calibration and more often then 3 years. Occasional clearing of debris from the filter screen may be required.



Ordering Information:

Cable Length:
Standard 25 ft. Other standard cable lengths are 50, 75, and 100 feet. Custom cable lengths can be order but may not be returned.

Cable Part #: CBL0220

Cable Termination:
Sensors come standard with bare leads that are tinned. DACOM Storm Sentry and Weather Sentry Systems require either military or mini-circular plastic connectors. Order one of the following connector termination seperately for each sensor:

MC14-6F	6-pin Military
EN3C6M	6-pin Mini Circular

Cable Shielding:
Cable can also be ordered with aluminum conduit shielding. Contact your DACOM distributor for pricing.

IEI
Intermountain Environmental, Inc.
601 W. 1700 S., Suite B., Logan, Utah, 84321
Ph. (435) 755-0774 FAX (435) 755-0794
E-mail: info@imntn.com www.imntn.com

Grassland Bypass Project
Technical and Policy Review Team
Determination of Incentive Fees for
Winter 2005 Floods

Attachment D. San Luis & Delta-Mendota Water Authority, August 4, 2005. Letter to Kirk Rodgers; Subject: Revisions of TMML for Selenium

August 4, 2005

Kirk Rodgers
Regional Director
United States Bureau of Reclamation
2800 Cottage Way, MP-100
Sacramento, CA 95825-1898

Subject: Agreement No. 01-WC-20-2075, Revisions of TMML for Selenium

Dear Kirk,

In accordance with the above agreement titled, "Agreement For Use Of The San Luis Drain" for the period October 1, 2001 through December 31, 2009, we are requesting a revision of the TMML for selenium as described in Appendix D of this document. Appendix D states in part, "As specified in Section III.H.2. (a)(1) of the Use Agreement, if the Regional Board Submits to the U.S. Environmental Protection Agency a TMML that is different from that contained in the Regional Board's March 1996 Staff Report titled, "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges," and the revised TMML ("Alternate TMML") receives formal approval from the U.S. Environmental Protection Agency, then upon the request of the Draining Parties the Selenium Load Values shall be revised as follows:..."

The Regional Board submitted to the Environmental Protection Agency a TMDL for selenium on February 28, 2002. By letter of March 28, 2002 the EPA approved this TMDL (letter attached).

We have therefore made an analysis of the monthly load value for selenium in the Use Agreement based on Appendix D and in accordance with the Regional Board's approved TMDL. Appendix D-3.b. also provides that "Prior to October 2005, the revised monthly load value will be the higher of the following:

i. The applicable Selenium Load Value in Appendix C; or
ii. The amount of discharge allocated to the Draining Parties for that month and year in that water year type pursuant to the alternate TMML (hereinafter the "alternate TMML load value for that month.")"

842 SIXTH STREET
SUITE 7
P.O. BOX 2157
LOS BANOS, CA
93635
209 826-9696
209 826-9698 FAX

Based on our analysis, the revised load values for 2005 should be per the attached table which reflects the "higher" of the two values per Appendix D-3.b. of the Use Agreement. Since 2005 has been classified as a "Wet" year in accordance with Appendix C of the Use Agreement, only wet year numbers are shown. For 2006 through 2009 the selenium load values should be as indicated in the attached table excerpted from pages 11 and 12 of the Waste Discharge Requirements No. 5-01-234.

Page 2 of Appendix D, Item 1 states that "The revised Selenium Load Values will be effective on January 1 of the year selected by the Draining Parties. (In other words, the revised load values may be applicable retroactively in some months of the first year.)"

We hereby select 2005 as the effective year for the revisions of the TMML to be applicable, with the revised Selenium Load Values effective January 1, 2005. These revised load values will be applicable through December 2009, which is the ending date of the Use Agreement.

Very truly yours,

Joseph C. McGahan
Drainage Coordinator
Grassland Basin Drainers

JCM/mm

Cc: Dan Nelson, San Luis & Delta-Mendota Waer Quthroity
Rudy Schnagl, Regional Water Quality Control Board
Mike Delamore, USBR Fresno

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 28 2002

Mr. Gary M. Carlton
Executive Officer
Central Valley Regional Water Quality Control Board
3443 Routier Road
Sacramento, CA 95827-3098

Dear Mr. Carlton:

Thank you for submitting the total maximum daily load (TMDL) to address selenium impairment of the Lower San Joaquin River in the San Joaquin Basin, California. The submission letter to EPA is dated February 28, 2002. Based on our review, EPA concludes that the TMDL adequately addresses the pollutant of concern and, upon implementation, will result in attainment of water quality standards. The TMDL includes allocations as needed, takes into consideration seasonal variations and critical conditions, and provides an adequate margin of safety. The State has provided adequate opportunities for public review and comment on the TMDL and the Basin Plan Amendments on which it is based. All required elements are adequately addressed; therefore, the TMDL is hereby approved.

The attached review discusses the basis for the TMDL approval decision in greater detail. We appreciate the Regional Board's work to complete and adopt the TMDL and look forward to our continuing partnership in TMDL development. If you have questions concerning this approval, please call me at (415) 972-3572 or Debra Denton at (916) 341-5520.

Sincerely,

for Alexis Strauss
Director
Water Division

Enclosure

cc: Stan Martinson, SWRCB

Staff Report Supporting Approval of TMDL:
Selenium- Lower San Joaquin River, CA
March 28, 2002

Background

The Lower San Joaquin River was listed on the state's 1998 Clean Water Act 303(d) list for impairment due to selenium. The Clean Water Act requires TMDLs for waters on the 303(d) list.

In 1996, Central Valley Regional Water Quality Control Board (CVRWQCB) developed Basin Plan Amendments for the Control of Agricultural Subsurface Drainage to control selenium in the San Joaquin River Basin. The CVRWQB adopted the amendments under resolution 96-147. The State Water Quality Resources Control Board subsequently adopted the amendments under resolution 96-078. These Basin Plan Amendments included provisions for the control of selenium in the Lower San Joaquin River, although they were not designed to adopt the TMDL itself. EPA Region 9 has previously approved these amendments.

The 1996 Basin Plan Amendments included most components of a TMDL for selenium in the Lower San Joaquin River. The CVRWQCB has, therefore, based the Lower San Joaquin River TMDL for selenium on the 1996 Basin Plan Amendments. Implementation measures were included in the Basin Plan Amendments and in the process of being implemented.

TMDL Review

On February 28, 2002, the CVRWQCB submitted the final TMDL to EPA for approval. Pursuant to Clean Water Act Section 303(d) and 40 CFR 130.2 and 130.7, EPA reviewed the State TMDL submittal package to ensure that all required TMDL elements have been adequately addressed.

EPA's review is presented in the attached checklist for the Lower San Joaquin River, which documents EPA's findings that all required elements and an adequate level of technical justification for each element are included in the State TMDL submission. Therefore, the TMDL should be approved.

TMDL Checklist

State: California
Waterbodies: Lower San Joaquin River
Pollutant(s): Selenium (Se)
Date of State Submission: February 28, 2002
Date Received By EPA: March 28, 2002
EPA Reviewer: Debra Denton

Review Criteria	Comments
1. Submittal Letter: State submittal letter indicates final TMDL(s) for specific water(s)/pollutant(s) were adopted by state and submitted to EPA for approval under 303(d).	Submittal letter, p. 1: TMDL is for Selenium in the Lower San Joaquin River (SJR). Lower SJR was listed on the State's 1988 303(d) list for impairment due to selenium. The TMDL is a distillation of information from the 1996 basin plan objective (BPA) for Se objectives and implementation plan for achieving those objectives. Amendment was approved by USEPA on May 24, 2000.
2. Water Quality Standards Attainment: TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.	TMDL staff report dated August 2001, p. 6 and 10. TMDL and load allocation are set on a mass loading basis, based on the numeric targets which are set equal to the numeric objective. TMDL will result in attainment of numeric objective with less than one in three year excursion when fully implemented.
3. Numeric Target(s): Submission describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. Numeric water quality target(s) for TMDL identified, and adequate basis for target(s) as interpretation of water quality standards is provided.	TMDL staff report dated August 2001, pg3. TMDL applies as the numeric target the existing numeric objective, 5 ug/l as a four-day average. USFWS supported the 1996 BPA.
4. Source Analysis: Point, nonpoint, and background sources of pollutants of concern are described, including the magnitude and location of sources. Submittal demonstrates all significant sources have been considered.	TMDL Staff report dated August 2001, pg 6. TMDL identifies all likely sources and summarizes data describing Se concentrations associated with sources. Selenium is a naturally occurring element in the soils of the watershed. Selenium is added to the Lower SJR from a wide range of sources including subsurface agricultural return flows, surface agricultural return flows, wetland discharges, groundwater accretions, and tributary inflows. Subsurface agricultural drainage from the Drainage Project Area, for which TMDL load limits are being established, is however the primary source.
5. Allocations: Submittal identifies appropriate wasteload allocations for point sources and load allocations for nonpoint sources. If no point sources are present, wasteload allocations are zero. If no nonpoint sources are present, load allocations are zero.	TMDL Staff report dated August 2001, pg 14-15. TMDL and load allocations (Las) are expressed as annually and seasonally variable mass load limits. The model used to develop these load limits is a simple spreadsheet model that calculates monthly Se load allocations for the primary nonpoint source to the SJR based on critical flow conditions for the SJR at Crows Landing. There are no point sources of selenium so the waste load allocations are zero.

6. Link Between Numeric Target(s) and Pollutant(s) of Concern: Submittal describes relationship between numeric target(s) and identified pollutant sources. For each pollutant, describes analytical basis for conclusion that sum of wasteload allocations, load allocations, and margin of safety does not exceed the loading capacity of the receiving water(s).	TMDL staff report dated August 2001. The TMDL is based on a simple spreadsheet model that computes allowable loads by multiplying the numeric target by the flow level for each season and year type. Therefore, the TMDL is based on a direct and exact quantitative linkage between the applicable standard, numeric target, and water body loading capacity.
7. Margin of Safety: Submission describes explicit and/or implicit margin of safety for each pollutant.	Staff report dated August 2001 pg 21. TMDL provides an explicit 10% MOS is applied to account for errors in flow measurements and selenium concentrations, and uncertainty in the TMML analyses. The selected approach of calculating different TMDLs and allocations for different flow regimes tailors the TMDLs to different receiving water conditions and thereby reduces the level of uncertainty about whether the TMDL will result in standards attainment.
8. Seasonal Variations and Critical Conditions: Submission describes method for accounting for seasonal variations and critical conditions in the TMDL(s)	Staff report dated August 2001, pg 16, TMDL considers annual and seasonal variations in flow regimes by calculating design flows-- the low flow conditions for which an acceptable rate of excursion (one in three year) from the numeric target can be achieved in the SJR for 1969 through 1999.
9. Public Participation: Submission documents provision of public notice and public comment opportunity; and explains how public comments were considered in the final TMDL(s).	The Regional Board held public workshops and hearings for the 1996 Basin Plan Amendments for the control of Agricultural Subsurface Drainage Discharges. The State Board also held approval hearings. Adoption of the Basin Plan Amendment in 1996 enabled implementation of the Lower SJR TMDL. Although these actions were not advertised as a TMDL, all components of the TMDL were part of the Basin Plan Amendments. The State provided ample opportunities for public review of and comment on the TMDL provisions. The State demonstrated that it considered public comments (see responsiveness summary for BPA). Additional meetings were held as part of the *Environmental Impact Statement and Environmental Impact Report for the Grassland Bypass Project that was prepared for the infrastructure needed to continue implementation of the selenium load reductions of this TMDL.* The Regional Board also held a workshop on May 16, 2001 where the TMDL was presented to interested parties and the public was given the opportunity to comment. The Regional Board prepared a responsiveness summary demonstrating how public comments were considered in the final TMDL decision.
10. Technical Analysis: Submission provides appropriate level of technical analysis supporting TMDL elements.	Staff report and responsiveness summaries provided detailed technical justifications for each TMDL element.

Note: **The following criteria do not apply to all TMDLs, but must be applied in the situations noted.**	
11. Monitoring Plan for TMDLs Under Phased Approach (where phased approach is used): TMDLs developed under phased approach identify implementation actions, monitoring plan and schedule for considering revisions to TMDL.	N/A – This is not a phased TMDL.
12. Reasonable Assurances (for waters affected by both point and nonpoint sources): Where point source(s) receive less stringent wasteload allocations because nonpoint source reductions are expected and reflected in load allocations, implementation plan provides reasonable assurances that nonpoint implementation actions are sufficient to result in attainment of load allocations in a reasonable period of time. Reasonable assurances may be provided through use of regulatory, non-regulatory, or incentive based implementation mechanisms as appropriate.	N/A – There are no point sources nor WLAs addressed in this TMDL.
Implementation Plan Review Criteria Pursuant to 40 CFR 130.6 and 303(e)	
13. Clear Implementation Plan: Submittal describes planned implementation actions or, where appropriate, specific process and schedule for determining future implementation actions. Plan is sufficient to implement all wasteload and load allocations in reasonable period of time. TMDL(s) and implementation measures are incorporated into the water quality management plan. Water quality management plan revisions are consistent with other existing provisions of the water quality management plan.	The Water Quality Management Plan (Basin Plan) has been revised to incorporate the Se Objective and associated implementation provisions for the Lower SJR area (see BPA submitted with TMDL). It is expected that the existing load allocations are sufficient to provide complete compliance. The Basin Plan amendments addressing selenium in the Lower SJR area are consistent with the other selenium management actions included in the Plan, and the TMDL implementation plan is generally consistent with other existing provisions of the Basin Plan (e.g., water quality standards and implementation provisions). The implementation provisions provide reasonable assurance that the needed Se loading reductions will occur because the plan establishes an enforceable mechanism under which the dischargers are required to carry out actions sufficient to implement their load allocations.

	2005 Selenium Load Values (pounds)		
	Wet Year		
	Use Agreement-Appendix C	Alternate TMML	Highest Value
Jan	**289**	211	289
Feb	440	**488**	488
March	**496**	488	496
April	433	**506**	506
May	400	**512**	512
June	308	**354**	354
July	310	**356**	356
Aug	299	**366**	366
Sep	291	**332**	332
Oct	260	**328**	328
Nov	260	**328**	328
Dec	211	**211**	211
Monthly Sum	3997	4480	4566

Bold indicates 'higher" value

G:\data\SPRDSHTS\GRASLAND\TMML\[8-4-05 2005 Table.xls]Sheet1

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

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.