

**WaterSMART Grant Proposal  
Water and Energy Efficiency Grants**

FON: BOR-DO-19-F005

**Oil Station System Improvements  
Los Banos, California**

**Project Report**

**Applicant:**

Central California Irrigation District  
1335 I Street, P.O. Box 1231  
Los Banos, CA 93635

**Project Manager:**

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April 24, 2019

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# EXECUTIVE SUMMARY

Date: April 24, 2019  
Applicant Name: Central California Irrigation District  
City, County, State: Los Banos, Merced County, California  
Project Name: Oil Station System Improvements

The proposed project will provide improvements to the Oil Station system within Central California Irrigation District (CCID or District). The first 4,255 feet of the Oil Station Pipeline Project is an incomplete RGRCP 36" pipeline that replaced a previous unreinforced cast-in-place concrete pipe cracked in several places that would flood the neighboring walnut orchard at peak flow and a series of existing control and drain inlet boxes. The service area is approximately 1,100 acres and includes a variety of crops including walnuts, corn, alfalfa, and other field crops. Additionally, the service area is steep with highly erodible soils. Irrigation runoff (tailwater) accumulates silt and pesticides and is discharged to the San Joaquin River.

The Proposed Project meets the goals of this Funding Opportunity Announcement by conserving and increasing the quality of valuable irrigation water through tailwater recapture and decreasing the burden on U.S. industry by reducing the impact of waste discharges from commercial irrigated lands into natural waterways.

The Proposed Project, including the agreement, NEPA completion, design and specifications, bid, and construction are estimated to take place from September 2019 to June 2021. The project schedule is estimated to proceed as follows:

- September 2019—Agreement made by Bureau of Reclamation and District to begin Proposed Project.
- October 2019 to January 2020—Finalize CEQA documentation and provide project environmental details to Reclamation for NEPA compliance.
- September 2020—Publish and circulate bid documents, open bids and award contract.
- October 2020 to December 2020—Begin construction process to furnish and install 36" RGRCP pipe, box connections and turnouts with meters.
- June 2021—Submit draft and final project report and As-Built Drawings.

The Project is not part of a Federal facility but receives CVP water through an exchange contract.

Contact for Further Information:

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# TECHNICAL PROPOSAL

## Background Data

The Central California Irrigation District receives its water supply through the Central Valley Project (CVP) via the Delta-Mendota Canal by way of an exchange contract. The average annual water supply to CCID is 532,000 acre feet in a non-critical water year and 424,000 acre feet in a critical (drought) water year. Groundwater and recycled drain water also supplement the District's surface supplies (approximately 65,000 acre feet per year, total).

The water use within the District boundaries is entirely for agricultural irrigation and is obtained through an exchange contract with the U.S. Bureau of Reclamation via the Delta-Mendota Canal. There are 145,000 acres devoted to irrigated crop land within CCID and approximately 600 water users. The major crops consist of cotton, alfalfa, tomatoes, wheat, barley, and other field crops. The District typically delivers 100% of its allocation plus groundwater and recovered drain water, and does not anticipate a significant change in demand in the future.

The District's irrigation system is primarily a gravity flow canal system. CCID has approximately 230 miles of canals and laterals and 4 reservoirs it uses to provide and manage irrigation supplies to 145,000 acres of farmland. In recent years, CCID has constructed more \$31 million in water conservation projects and provided more than \$13 million to growers within the District for irrigation improvements through a funding assistance program (see **Appendix A**). Currently about 15% of the District's irrigated land has converted to drip or other high-efficiency irrigation systems. On-farm efficiency varies widely within the District, depending on crop type, irrigation method, and cultural practices, and a site-specific study on the affected project region has not been performed. The District estimates the typical on-farm efficiency to be in the vicinity of 88%.

This project is consistent with the goals and objectives of the CCID's original plan when the District was formed in 1954 and the plans reformation in 1990 and 2011, as well as the District's long term improvement plan. Additionally, this project is directly in line with the San Luis & Delta-Mendota Water Authority draft Integrated Regional Water Management Plan and the goals of the Bay-Delta Initiative.

The District is also a participating agency within the Westside San Joaquin River Watershed Coalition (Westside Coalition), which helps its members comply with California's Irrigated Lands Regulatory Program (ILRP). The ILRP requires a comprehensive monitoring program which reports water quality exceedances caused by agricultural discharges. Although discharges from the Oil Station system are not directly monitored, other nearby discharges (including Orestimba Creek and the San Joaquin River) are monitored. The Westside Coalition has detected many water quality exceedances for pesticides and other constituents within this region. A primary goal of the Westside Coalition is to reduce the number of exceedances, and the proposed project will help accomplish that by reducing the volume of tailwater drainage discharged from the site.

The District has partnered with the U.S. Bureau of Reclamation on a number of past projects:

- Mendota Dam Automated Gate Project (December 2011). A joint USBR/CCID project to upgrade and automate flow control gates at the Mendota Dam.
- Long-Term Conveyance Agreement (1998-2023). A long term agreement between USBR and CCID to convey water for refuge supplies and assist with refuge delivery conveyance construction.
- Field Evaluation of Groundwater Pumping (2003). A joint project with CCID, USBR, and the San Luis & Delta-Mendota Water Authority to evaluate wells for groundwater production in the Volta area northwest of Los Banos.
- East Ditch and Poso Canal Reservoir Project (2012). A project that will construct two regulating reservoirs to improve delivery efficiency and recover drain water. This project was completed in 2017.

The Oil Station System Improvements is located in Los Banos, California approximately 2.5 miles northwest of the city of Newman. The project latitude is 37.362° and longitude is -121.044°.

### **Project Description**

The goal of the Proposed Project is to address deficiencies of an existing unreinforced concrete pipe system by replacing the pipe with a rubber gasket reinforced concrete pipe (RGRCP). The current pipe is cracked in several places and is near the end of its useful life. Cracking along the entire length of the unreinforced concrete pipeline results in severe leakage that interrupts farming activities and threatens permanent crops adjacent to the pipeline. The new RGRCP pipe will be more durable and able to provide water deliveries at a substantially higher pressure than the existing system. The proposed project contributes to water supply reliability by conserving water that would otherwise be lost to leakage and decreasing the volume of poor quality water that eventually gets discharged into the San Joaquin River. Additionally, the project will improve system reliability by replacing an outdated and dilapidated pipeline with a pressure pipeline that can reliably deliver water.

Below are the different components involved in completing the Proposed Project:

- The existing 36" pipe will be abandoned and removed. Approximately 1,900 feet of 36" RGRCP pipe will be installed from just downstream of the control box as shown in the Project Map.
- Four connections will be made to two existing control boxes. Concrete connections blocks will be installed to prevent leakage at the connections.
- Two turnout pipes will be installed. Flow meters will be attached for the District to keep track of deliveries.

Figure 1: Project Location Map

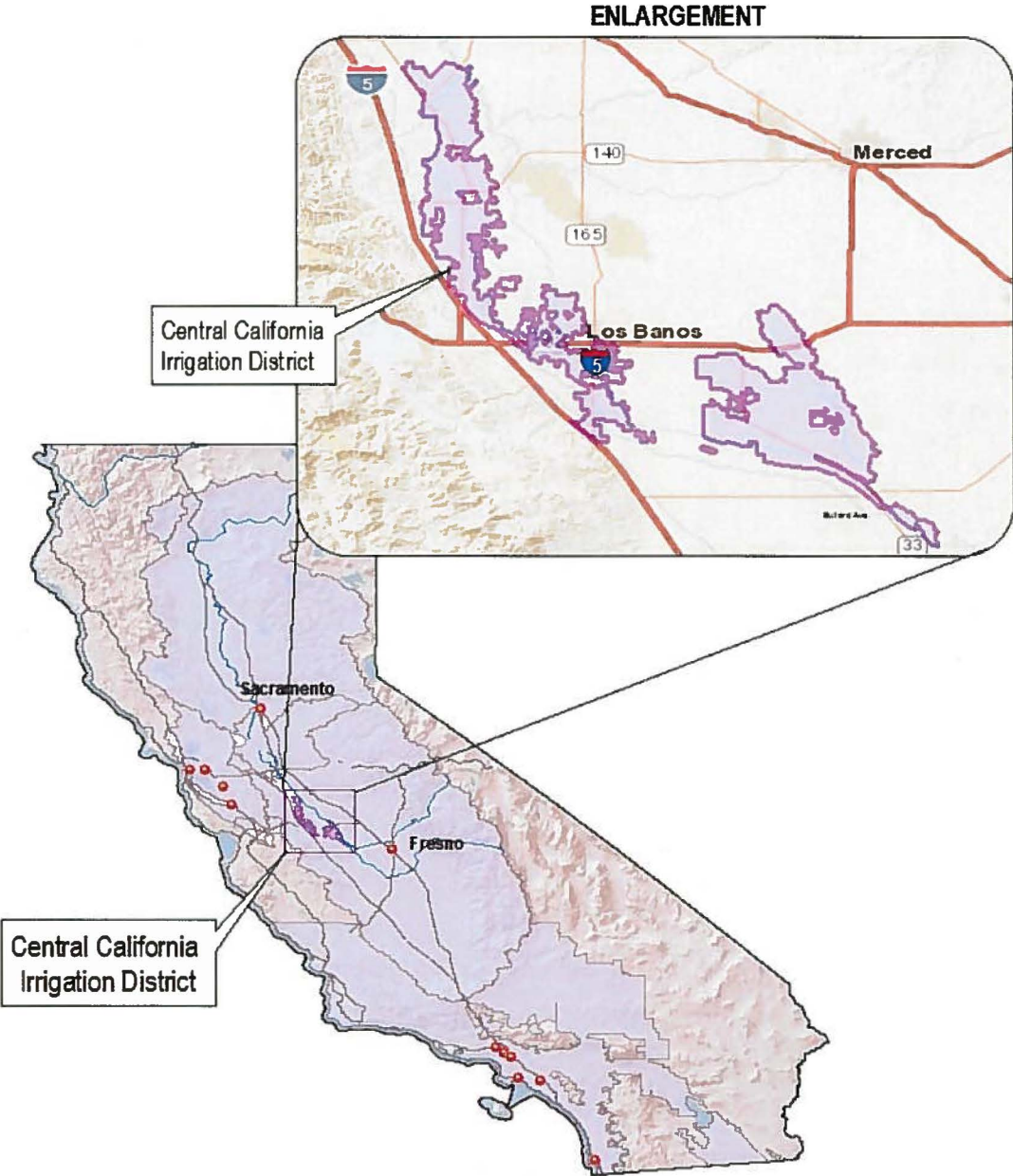


Figure 2: Oil Station Improvements Project Aerial View



## Evaluation Criteria

### A. *Project Benefits*

The Proposed Project will result in quantifiable water savings, calculated by CCID on an annual basis. Water conserved is based on an estimated leakage rate of 0.25 cfs. The calculation for this can be found below:

- Spill Recovery:  $0.25 \text{ cfs loss to leakage (constant)} \times 240 \text{ days} \times 2 \text{ af/cfs-days} = 120 \text{ afy}$
- **Total estimated conserved water: 120 afy.**

These water savings will be realized through a combination of facilities designed to meet actual demands. Flow meter on the turnouts can inform the District that deliveries can precisely meet actual demands. The actual volume of conserved water will be measured by comparing post-project water deliveries to the service area compared to historical deliveries.

Water conserved by the project would remain within CCID's system and be marketed to other water agencies through existing and new agreements. The District monitors water use and calculates use on an annual basis. Water savings will be the difference between water conserved before and after the completion of the project. Meters will be integrated into the project so that deliveries can precisely meet actual demands. The actual volume of conserved water will be measured by comparing post-project water deliveries to the service area compared to historical deliveries. The main performance measure for this project will be total conserved water in acre-feet per year.

Additionally, water supply reliability concerns include reduced deliveries due to operational spill. The current pipe is an unreinforced cast-in-place concrete pipe and set to be replaced by a 36" RGRCP pipe. The Project will increase water supply reliability by being a closed, pressurized system that disallows sediment and other outside constituents to enter in. The proposed project will help both conserve water and maintain the water quality that is used to irrigate crops meant for consumption.

The proposed project will also provide improved water management for the entire Oil Station service area. Completion of the Oil Station Pipeline Project will result in irrigation features that can meet current and predicted future flow demands, assuring growers that CCID can accommodate newer irrigation technologies. Annual water deliveries through the Oil Station System total 3,800 acre feet per year and this is the amount considered in calculation of the better managed fraction. Currently, the pipeline has no functional system in place to measure flow.

Positive benefits to local sectors would include that the Proposed Project is expected conserve 120 afy by eliminating leakage. The water conserved would reduce the District's irrigation demand from the CVP, improve operational efficiency and decrease the amount of poor quality tailwater discharged into the San Joaquin River. Growers within the service area who intend to convert to drip irrigation have already done so and will not utilize any NRCS assistance to EQIP or other programs.



*B. Planning Efforts Supporting the Project*

Over the past 15 years, the District has implemented an aggressive water conservation program, including reservoir projects, canal lining projects and pipe conversion projects. These projects have conserved an estimated 35,000 acre feet per year, which the District has marketed to wildlife refuges and other water users, contributing to the regional water supply sustainability. The District's Water Conservation plan can be found in **Appendix B** (note that this is a large document and only a portion of the document is included in this proposal. The full document is available upon request).

The proposed project conforms to the District's goals by conserving water and eliminating spill from the failing pipe. The water conservation plan requires for growers applying to submit a project design and cost estimate to be considered for approval. The District offers grants for 50% cost-share for all concrete-lining or pipelining up to \$400/acre benefited and 25% cost-share for irrigation enhancements such as: tailwater return systems, micro-sprinklers, drip systems, dairy-related projects and other irrigation efficiency improvements. The proposed project qualifies for the pipelining portion of the water conservation plan.

*C. Project Implementation*

**Acquisition of Right of Way:** The proposed pipeline will be installed within the footprint of the existing pipeline. No additional right of way is required.

**Surveying and Design:** The proposed pipeline replacement has already been surveyed, with design following. Design documents will include plan and profile drawings of the project, trench cross-sections and backfill details, connection block and turnout details and specifications. The specifications will include provisions regarding prevailing wage requirements in compliance with the funding program's requirements.

**Cleanout and Site Preparation:** The proposed project will require all piped sections should be removed along with any service connections.

**Pipeline Construction:** The 36" pipe will be RGRCP pipe. This pipe will be trenched within existing farm roads to an average depth of 6 - 7 feet, providing a minimum of cover of 3 feet. Alignments and grade will be according to the design drawings, with backfill compacted to the degree necessary to protect the pipe.

**Engineering Design Work:** The proposed pipeline is continuation second phase of the Oil Station Pipeline Project, which was completed in 2016 and replaced approximately one mile of the original pipeline. Hydraulic evaluation, inlet & outlet transition turnouts, and pipeline design, as well as development of design drawings and specifications have already been completed for most of the Oil Station Pipeline Project, including both the work completed in 2016 and this proposed project.

**New Policies:** No new policies or administrative actions are required to implement the project.

**Environmental Compliance:** The existing pipeline will be removed (where appropriate) and replaced within its original footprint. The project will be required to comply with the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA). The District anticipates the completion of an initial study/environmental assessment likely resulting in a negative declaration and a finding of no significant impact (FONSI). Compliance costs have not yet been discussed with the local Reclamation office.

*D. Nexus to Reclamation*

The Proposed Project is not connected to Reclamation project activities.

The District does not receive Reclamation project water, but instead receives its allocation through an exchange contract with the Central Valley Project.

The Project is not located on Reclamation lands, nor does it involve Reclamation facilities.

The Project is located near the city of Patterson and on lands served by the Central Valley Project.

The proposed work will conserve water within the Central Valley Project service area.

The project will not affect any tribes.

*E. Department of the Interior Priorities*

The proposed project utilizes science to identify the best practices to manage land and water resources to adapt to changes in the environment. The current unreinforced cast-in-place concrete pipe is an older technology that needs to be updated and replaced. Removing the current pipe and installing a 36" RGRCP pipe will increase flexibility, provide longevity and in the long run, be more cost-effective.

The proposed project reduces the administrative and regulatory burden imposed on U.S. industry and the public by increasing the quality of water being delivered into the San Joaquin River. The State of California's Irrigated Lands Regulatory Program intends to reduce impacts of waste discharges from commercial irrigated lands into waters of the State. By replacing the existing, outdated and failing unreinforced pipe material, the completion of the Oil Station Pipeline Project will help prevent future issues that may result in field reviews, the gathering of documentation, and communicative complications regarding waste discharges from growers in the area.

Similarly, the proposed project supports the White House Public/Private Partnership Initiative to modernize U.S. infrastructure. The proposed project serves American needs by improving water quality, conserving water, and encouraging future infrastructure development. The new 36" RGRCP pipe will be a closed, pressurized system that prevents additional sediment or other harmful constituents from entering the system as well as disallowing valuable irrigation water to leak out.

# PROJECT BUDGET

## Funding Plan and Letters of Commitment

The total estimated cost of the proposed project is \$362,450. This cost was calculated based on the District's recent experience in similar projects. This application is requesting \$75,000 in federal funding assistance and will utilize \$287,450 of District Funds.

- District funds. The District's contribution to the project will be through direct funding of administration, design, and construction of the project. The District has budgeted \$287,450 to complete the project. This funding has been allocated in the District's 2019 budget for the entire project and is available to complete the project.

The District expects to utilize federal funding assistance for a portion of the construction costs and utilize District funding for all other costs, including surveying, design, remaining construction, administration, and inspection.

The District has not yet incurred any costs that would be used to meet its match obligation.

If the funding requested by this application is denied, the proposed project would not be implemented at this time and other funding opportunities will be pursued. Should a lesser amount of funding be provided, the District may implement a portion of the project however some of the benefits would not be realized. **Table 1** summarizes the source and amount of project funding.

**Table 1: Total Project Cost Table**

Funding Source	Funding Amount
Cost to be reimbursed with requested Federal funding	\$75,000
Cost to be paid by Central California Irrigation District	\$287,450
Value of third party contributions	\$0
Total Project Funding	\$362,450

Most of the parcels within the Oil Station service area are using high-efficiency drip irrigation systems and have no need to further upgrade their systems. Because of this, the proposed project does not have letters of commitment.

## Budget Proposal

A completed SF-425C is included at the beginning of this application.

**Table 2: Project Budget**

ITEM	BUDGET ITEM DESCRIPTION	COMPUTATION			NON-FEDERAL FUNDING	USBR FUNDING	TOTAL COST
		QUANTITY	UNIT	UNIT COST			
1	Salaries and Wages	-	-	-	-	-	\$0
2	Fringe Benefits	-	-	-	-	-	\$0
3	Travel	-	-	-	-	-	\$0
4	Equipment	-	-	-	-	-	\$0
5	Supplies/Materials	-	-	-	-	-	\$0
6	<i>Contractual/Construction</i>						
6.1	Surveying (Construction Staking)	50	hours	\$150	\$7,500	\$0	\$7,500
6.2	Engineering (Civil)	75	hours	\$150	\$11,250	\$0	\$11,250
6.3	Engineering (Construction Review)	80	hours	\$150	\$12,000	\$0	\$12,000
6.4	Construction						
6.4.1	Furnish & Install (F&I) 36" RGRCP Pipe	2,000	LF	\$120	\$198,600	\$41,400	\$240,000
6.4.2	F&I Connection to (E) Control Box	4	each	\$6,500	\$18,200	\$7,800	\$26,000
6.4.3	F&I Turnouts	2	each	\$18,000	\$25,200	\$10,800	\$36,000
7	<i>Environmental and Regulatory Compliance</i>						
7.1	Reclamation Costs (assumed)				\$0	\$15,000	\$15,000
7.2	CEQA Costs (Engineering)	50	hours	\$150	\$7,500	\$0	\$7,500
8	Reporting	48	hours	\$150	\$7,200	\$0	\$7,200
9	Indirect Costs				\$0	\$0	\$0
	<b>TOTAL PROJECT COSTS</b>				\$287,450	\$75,000	\$362,450
	<b>PERCENT OF TOTAL COST</b>				79%	21%	

## Budget Narrative

- a. **Salaries and Wages.** Although District staff will likely spend time administering and supervising the project, the District does not intend to separate that time from other daily duties of the staff. No District staff time will be charged to the project.
- b. **Fringe Benefits.** The District will not charge fringe benefits associated with District staff to this project.
- c. **Travel.** No travel is associated with this project.
- d. **Equipment.** No equipment will be purchased as part of this project.
- e. **Materials and Supplies.** No materials or supplies will be charged to this project.
  - **Contractual.** The proposed project will make use of a number of consultants and contractors for its completion.
  - **Surveyor.** The entire pipeline alignment was surveyed during the first phase of the project and additional design surveying is not required. A licensed professional surveyor will be used to set construction stakes for the contractor to use during construction. The cost for this work was estimated from the actual invoicing for construction staking from the first phase of the Oil Station Project and is assumed to be approximately the same for this phase. Invoicing for that project phase was approximately \$7,500. See Item 6.1.
  - **Engineering Design.** Hydraulic evaluation, inlet & outlet transition turnouts, and pipeline design, as well as development of design drawings are substantially complete. A licensed civil engineer will be used to update the design, develop contract documents and specifications, bid the project, and manage construction. Because a substantial part of the design work has already been completed, engineering fees for the completion of the design are estimated to be approximately 1/3 of the costs for the Phase 1 design, amounting to \$11,250. See Item 6.2.
  - **Construction Review, Grade Checking and Reporting.** A licensed civil engineer or Engineer in Training (EIT) will visit the project regularly to check construction projects, verify grades, and review overall construction quality. Base on the Phase 1 project, construction review is expected to take 80 hours over the course of construction. See Item 6.3.
  - **Construction.** A qualified contractor will be selected by the District, likely through a public bidding process. Estimated costs for the construction work are based on the unit costs for recent similar projects or from unit prices provided by contractors familiar with the project
    - a. **Furnish and Install 36" RGRCP pipe.** A new, rubber gasket reinforced concrete pipe (RGRCP) will be installed at the upper end of the system. This pipe will replace the existing 36" pipeline and allow deliveries at the demand flow and pressure. The unit cost for this pipe was estimated from unit costs from the 2016 costs for the Phase 1 Oil Station Pipeline, adjusted for inflation. See Item 6.4.1.
    - b. **Furnish and Install Connection to Existing Control Box.** The new system will include a concrete connection blocks to link the pipe to existing control boxes with gates to manage deliveries and control flow. There are two existing control boxes and four connections. The unit cost for these was based on the bid cost from the Phase 1 Oil Station Pipeline, adjusted for

inflation. See Item 6.4.2.

- c. **Furnish and Install Turnouts.** The new system will include the installation of two turnouts. The pipes will utilize a wafer butterfly valve to control discharges and there will be a flow meter attached. The unit cost for these components are based on the bid cost from the Phase 1 Oil Station Pipeline, adjusted for inflation. See item 6.4.3.
- **Environmental and Regulatory Compliance Costs.** The proposed project will replace an existing facility and is categorically exempt under the California Environmental Quality Act. NEPA will require an Environmental Assessment (EA) that will likely result in a Finding of No Significant Impact (FONSI). The proposed project budget includes consultant costs to develop to provide background documentation to assist in the NEPA review process. A cultural resource review has already been completed in a prior phase of the Oil Station Pipeline Project. All documents and backup information developed through that process, including cultural review, can be provided to Reclamation for the EA. Costs incurred by Reclamation to develop the EA are not known and were assumed to be \$15,000 and the total environmental costs are estimated at \$22,500. See Items 7.1 and 7.2. The environmental compliance costs amount to 6% of the estimated project cost, which is consistent with the nature of the project and environmental costs of past projects. The District has sufficient reserves available to cover additional environmental costs should they be required.
- **Reporting.** Semiannual grant reports are anticipated throughout the course of the project, along with a final grant report. CCID expects the consulting engineer to complete these reports. Based on past grant projects, these reports take approximately 8 hours to complete at a rate of \$150 per hour, with the final report expected to take 16 hours to produce. Four semiannual reports and one final report would total 48 hours of engineering time. See item 8.
- **Indirect Costs.** Indirect costs incurred by the District will not be charged to the project.
- **Total Cost.** The total estimated project cost is \$362,450, amounting to \$75,000 (~21%) in Reclamation funds, \$287,450 (~79%) in District funds. The District has sufficient reserves available in its budget to fund any cost overruns or unforeseen costs should they be required.

## ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

The proposed project will remove an existing 36" concrete pipe and replace it with approximately 1,900 feet of 36" RGRCP. Under the California Environmental Quality Act (CEQA), this project will require an initial study to review potential environmental impact. The District expects that the initial study will result in a negative declaration with minimal or no mitigation requirements, and will complete this work prior to any construction work. Gathered environmental data will be provided to Reclamation to assist with the necessary NEPA documentation.

1. *Will the project impact the surrounding environment?*

The proposed project will involve trenching, placement of pipe and backfill of that trench. During construction, trenching and excavation will generate a small amount of fugitive dust, however standard dust control measures will be implemented to minimize this impact and the construction period will be relatively short. After construction, the majority of the proposed facilities will be below ground and not visible. The piping system will be consistent with other district facilities. Lands surrounding the proposed project are either actively farmed or contain farm support facilities (such as shops and farm houses). The proposed project will not result in the loss of any farm land. Pipe alignments will be located within existing canal-bank or farm roads.

2. *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

There are a number of special status species that could potentially be in the project area, including the San Joaquin kit fox, Fresno kangaroo rat, and others. Because the proposed project alignment is actively traveled maintained and the surrounding area actively farmed, there is limited habitat and it is unlikely that any special status will be in the project area during construction. A qualified biologist will survey the project area prior to construction to determine if there are any special status species in the project area, and will make recommendations for additional actions as required.

3. *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?"*

There are no wetlands in the project boundary. The proposed project will be constructed within the existing farm roads or canal bank roads.

4. *When was the water delivery system constructed?*

The Oil Station system was constructed in 1920's with portions of the system piped in the 1950's. Numerous modifications and repairs have been made to the system since its construction.

5. *Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?*

The Proposed Project will not result in any modifications or effects to individual features of the existing irrigation system, although new piping and control boxes will be installed.

6. *Are any building, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?*

There are no building, structures or features within the District listed in the National Register. The District is not aware of any features that are eligible for listing.

7. *Are there any known archeological sites in the proposed project area?*

There are no known archeological sites in the proposed project area.

8. *Will the project have a disproportionately high and adverse effect on low income or minority populations?*

The proposed project will have no impact on low income or minority populations.

9. *Will the project limit access to or ceremonial use of Indian sacred sites or impact tribal lands?*

There are no tribal lands within the project or its service area. The proposed project will have no impact on tribal lands.

10. *Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species in the area?*

The project will have no impact on noxious weeds or non-native species compared to existing conditions.



## **REQUIRED PERMITS OR APPROVALS**

The project will need to comply with the applicable provisions of NEPA and CEQA as outlined under **Project Tasks**. Encroachment permits will be required where the project pipeline crosses Stanislaus County Roads. These permits will be acquired once the design drawings are complete. The District intends to acquire other required right of way from landowners as necessary.

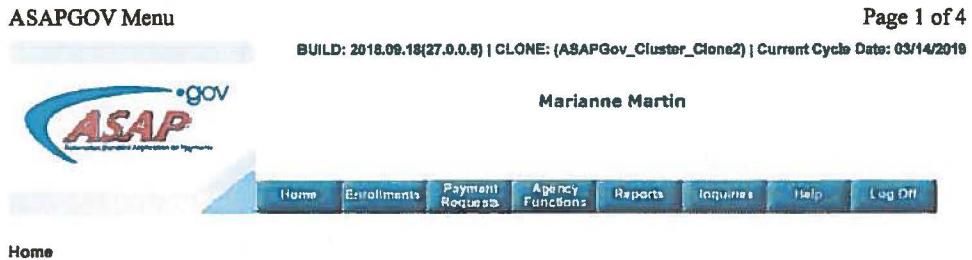
## **OFFICIAL RESOLUTION**

An official resolution has not yet been adopted as of the due date of this application of March 19, 2019. A resolution will be adopted by the next District board meeting in May 2019.

# UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

CCID has an open account in both the System for Award Management (SAM) and Automated Standard Application for Payments (ASAP). The CCID SAM account number is CAGE 4CMM8 and the District is in the process of changing the account manager for their SAM account.

Marianne Martin is the ASAP account manager and a screen-shot of her log-in screen is below.



# **APPENDIX A**

CCID On-Farm Water Conservation Program Assistance Program

## Deadline

**August 9, 2019**

### Conservation Program

#### Step-by-Step

Fill out application on-line or in the office and submit with project design and cost estimate by deadline

All projects will be reviewed by the Water Conservation Committee for preliminary approval

Once notified of approval, submit construction schedule to CCID

Any changes to submitted design **MUST** be provided to CCID *prior* to construction

Upon completion of engineering evaluation, notice to construct will be issued

Periodic inspections throughout construction will be done by CCID

After final inspection, bills are submitted

Completed projects are presented to the Board of Directors and funds are disbursed to the Landowner

For Questions or More Information

Please contact:

Tracey Rosin

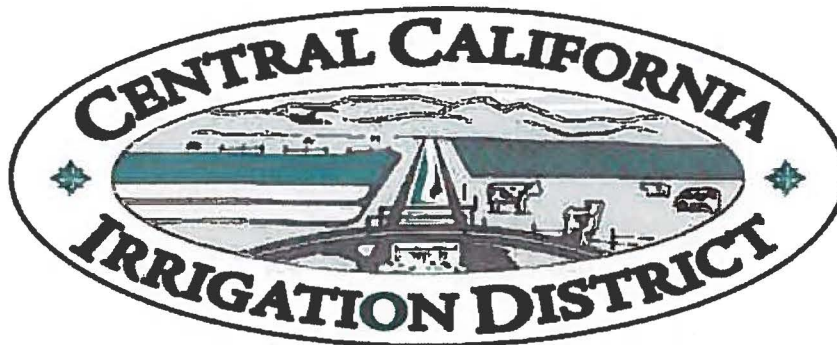
Conservation Coordinator

Phone: (209) 826-1421

Cell: (209) 777-8060

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trosin@ccidwater.org



# 2019 On-Farm Water Conservation Program

The Water Conservation Program deadline for funding requests is August 9, 2019. A project design and cost estimate must be submitted prior to the deadline date to be considered for preliminary approval. All applications will be processed and reviewed collectively in time for October construction. Water Conservation Program Guidelines are available on-line at [www.ccidwater.org](http://www.ccidwater.org). Funding levels may be prorated based on the number of applications received.

**DEADLINE AUGUST 9, 2019**

#### GRANT PROGRAM

##### **50% cost-share**

for all Concrete Lining or Pipelining up to **\$400/acre** benefited

##### **25% cost-share**

for irrigation enhancements up to **\$400/acre** benefited such as:

Tailwater Return Systems, Micro-Sprinklers, Drip Systems, Dairy related projects, other irrigation efficiency improvements

#### LOAN PROGRAM

**3% interest loans up to \$1000/acre benefited for farmer's portion after cost-share grant.**

**One annual payment per year**

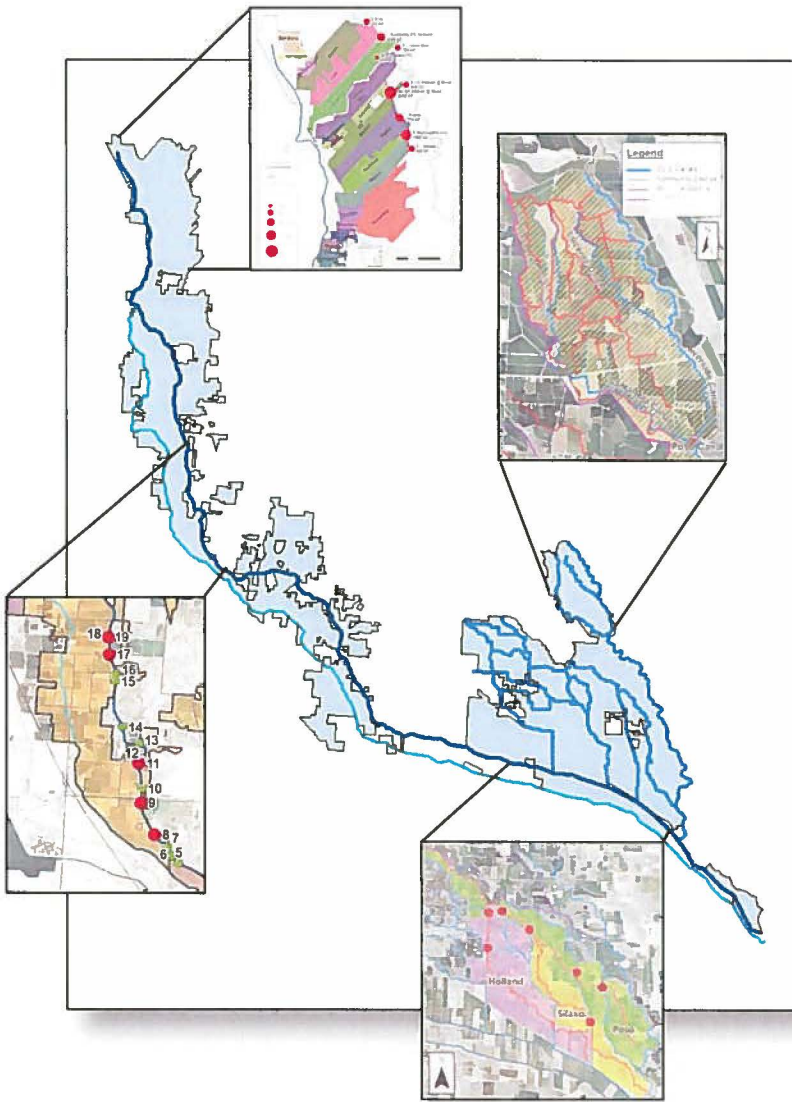
**5 year term for on-farm systems 10 year term for community ditches**

*Contact your local FSA office for additional funding options*

# **APPENDIX B**

Water Conservation Plan (Partial document – complete document available upon request)

## District-Wide *Water Conservation Assessment*



**Central California Irrigation District**  
*Los Banos, CA*

July 2012

# EXECUTIVE SUMMARY

## Background

The Irrigation Training & Research Center (ITRC) of California Polytechnic State University, San Luis Obispo has conducted a study of the opportunities for Central California Irrigation District (CCID) to conserve water and improve service to farmers. For this study, the district was divided into two distinct geographic regions: the northern region and the southern region. The intent of the study was to present options for reducing the drainage water leaving district boundaries in each region. The study analyzed data and developed prioritized recommendations for specific projects.

Central California Irrigation District (CCID) is comprised of approximately 150,000 acres of irrigated land in central California.



Figure 1. Central California Irrigation District

The district has two main canals, the Main Canal and the Outside Canal, and is divided into eight operator sections, shown in **Figure 2**, below. The eight operator sections can be categorized under two large regions: the southern region, containing operator areas 1-4, and the northern region, containing operator areas 5-8. Due to the vastly dissimilar compositions of the two regions, the northern and southern regions of CCID were analyzed separately, and specific recommendations were developed for each region. Three phases of improvement were developed for each region.

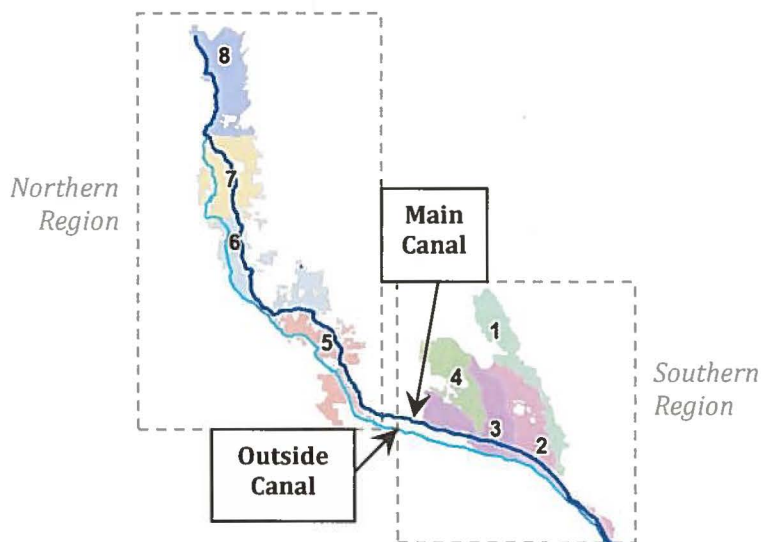


Figure 2. Main canals and operator areas in CCID



## Northern Region

The northern region of Central California Irrigation District is shown in the image below. This region has two district canals: the Main Canal and the Outside Canal. The region is divided into four operator areas, indicated by numbers 5-8 on the map below. The San Joaquin River runs to the east of the district, approaching the district boundary in operator area 8.

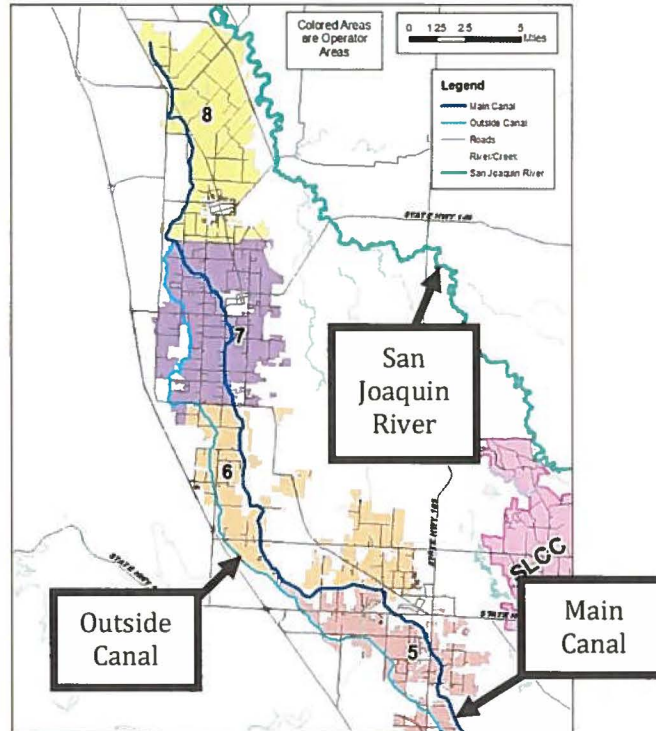


Figure 8. Overview of Northern CCID with operator areas identified.

The northern region does not contain any additional district-operated canals, but is comprised of many farmer-operated community ditches. In some areas, there are separate drainage ditches, and in other areas, the runoff is routed into the community ditches. **Figure 9** shows the community ditch areas to the northeast of the Main Canal, and ditches/pipelines/ drains inside the community ditch areas in the insert.

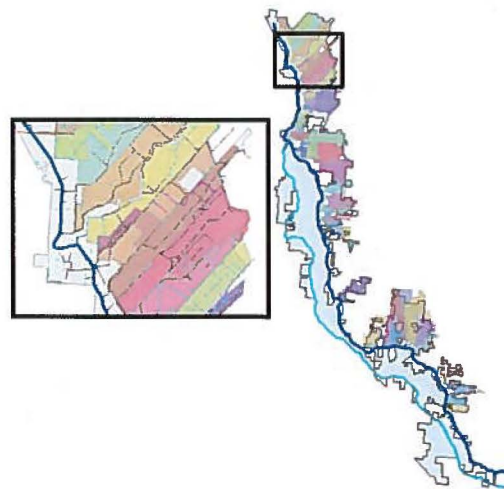


Figure 9. Community ditch areas and ditches/pipelines/drains in Northern CCID

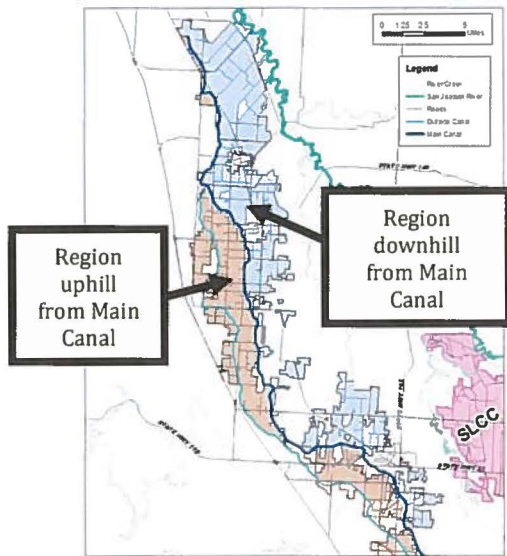


Figure 10. Two regions in Northern CCID

The region uphill from the Main Canal contains drains that run into the Main Canal. These drains are either pumped into the Main Canal or flow under the Main Canal. ITRC examined the drains that flow under the Main Canal and identified five drains that appeared to have significant flows. These siphons are shown on Figure 11.

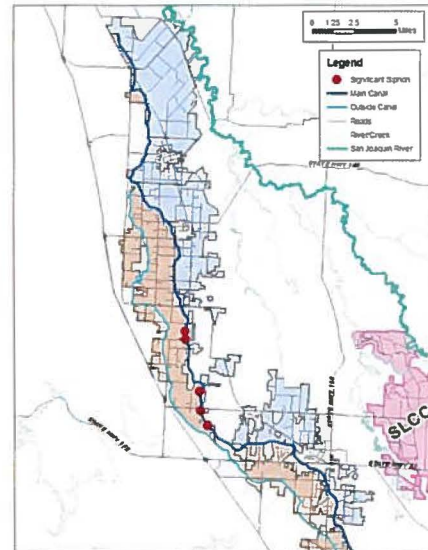


Figure 11. Significant drainage siphons in Northern CCID

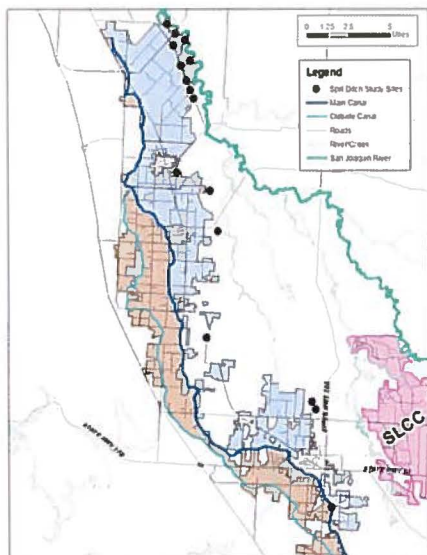


Figure 12. Spill Ditch Study sites in Northern CCID

For initial analysis, Northern CCID was divided into two regions: the region uphill from the Main Canal, and the region downhill from the Main Canal. These two regions are shown in Figure 10.

The region downhill from the Main Canal contains ditches and drains that spill water from the district boundaries. CCID performed a Spill Ditch Study from 2000 to 2008 to characterize the spills leaving the district. The sites were not exhaustive, but selected as drains in key locations to get a sense of magnitude and regional trends. The locations of the sites are shown in Figure 12.

The spills were divided into two categories: (a) spills that flow directly into the San Joaquin River, and (b) spills that flow into marshy pastures or wetlands. The separation between the two was drawn at Stuhr Road, just north of Newman. The two categories are shown Figure 13 on the next page.

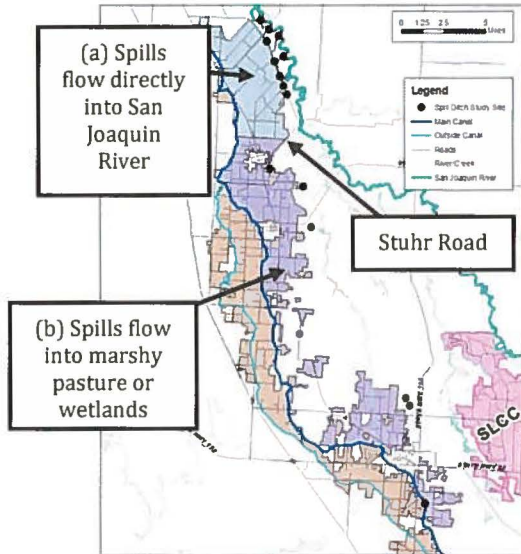


Figure 13. Spills that flow into the river and spills that flow into pasture or wetlands in Northern CCID

In Category (a), there are a number of ditches/drains that spill directly into the San Joaquin River at the northern edge of CCID. The Moran Drain spill area and Oil Station/Amaral Community Ditch area were selected as priorities within the category.

Therefore, for this analysis, spill reduction was divided into three phases in Northern CCID: Phase 1 – Drainage siphons that flow under the Main Canal; Phase 2 – Drains that spill directly into the San Joaquin River; and Phase 3 - Drains that flow into marshy pastures or wetlands. **Table 5**, below, summarizes the components associated with each phase.

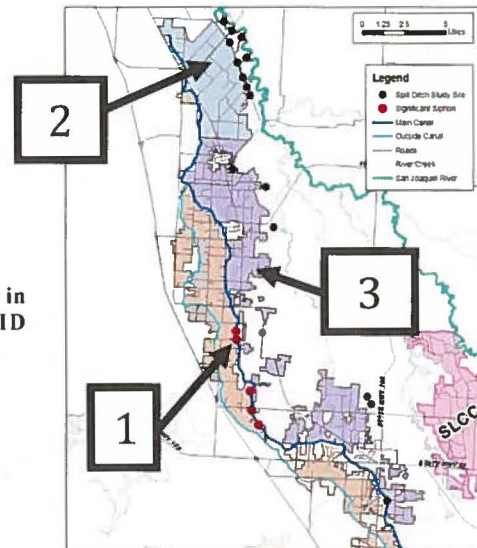


Figure 14. Three phases in Northern CCID

Table 5. Overview of three phases in Northern CCID

Phase	Components
<b>1 – Siphons that Flow Under the Main Canal</b>	Modification of Siphon at Mile Station 43.646
	Modification of Siphon at Mile Station 44.650
	Modification of Siphon at Mile Station 45.813
	Modification of Siphon at Mile Station 49.504
	Modification of Siphon at Mile Station 50.004
<b>2 – Drains that Flow Directly into the San Joaquin River</b>	Moran Drain Area
	Oil Station and Amaral Community Ditch Spills Proposed Modifications
	Other Community Ditch Areas in Phase 2
<b>3 – Drains that Flow into Marshy Pasture or Wetlands</b>	All Community Ditch Areas in Phase 3

## Phase 2 – Drains that flow directly into the San Joaquin River

Phase 2 includes investigation of the community ditches/ drains that flow directly into the San Joaquin River. These ditches are located in the northern-most portion of CCID, in operator area 8. The ditch areas are very intertwined, as fields that receive water from one ditch may have their water drain into another ditch. The figure to the right shows the general locations of the ditch areas (it shows the fields irrigated by a given ditch).

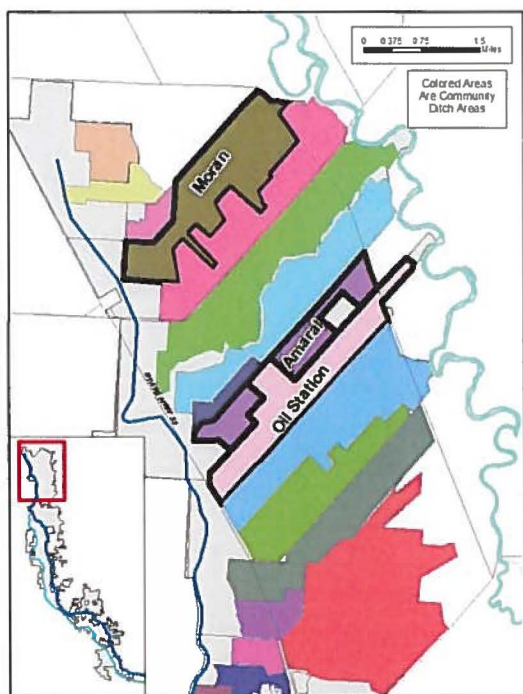


Figure 17. Priority drains in Phase 2 in Northern CCID

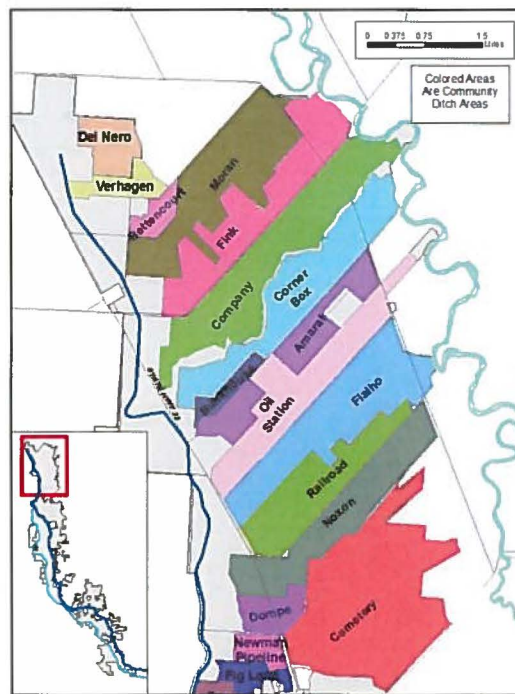


Figure 16. Drains in Phase 2 in Northern CCID

Each of the ditch areas must be investigated thoroughly for recommendations to be developed. Two of the ditch areas were given high priority: (1) the Moran Ditch area, and (2) the Oil Station and Amaral Ditch areas. These areas are outlined and labeled in the figure to the left. Recommendations were developed for the Oil Station and Amaral Ditch areas.

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## OVERVIEW

The Irrigation Training & Research Center (ITRC) of California Polytechnic State University, San Luis Obispo has conducted a study of the opportunities for Central California Irrigation District (CCID) to conserve water and improve service to farmers. For this study, the district was divided into two distinct geographic regions: the northern region and the southern region. The intent of the study was to present options for reducing the drainage water leaving district boundaries in each region. The study analyzed data and developed prioritized recommendations for specific projects.

Central California Irrigation District (CCID) is comprised of approximately 150,000 acres of irrigated land in central California.



Figure 19. Location of Central California Irrigation District

The district has two main canals, the Main Canal and the Outside Canal, and is divided into eight operator sections, shown in **Figure 20**, below.

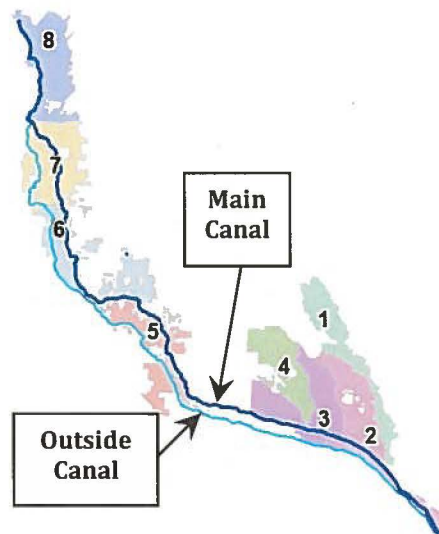


Figure 20. Main canals and operator areas in CCID

The district can be divided into two regions: the southern region contains operator areas 1-4, and the northern region contains operator areas 5-8. The two regions are very dissimilar. The southern region contains additional district-operated canals and large drainage ditches. As is shown in **Figure 21**, below, most of the water that leaves this region of the district flows into San Luis Canal Company (SLCC).

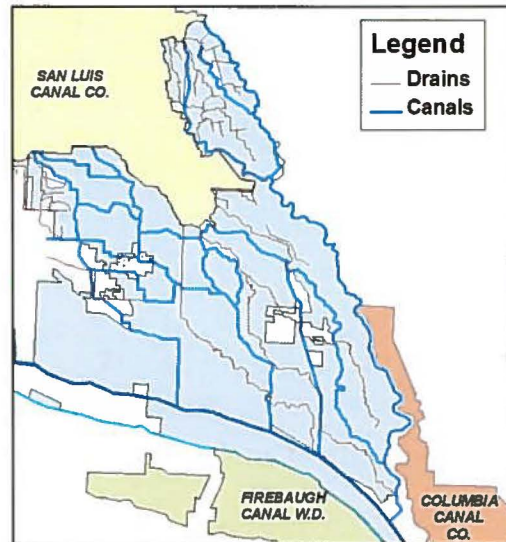


Figure 21. Canals, drains, and surrounding districts in Southern CCID

The northern region does not contain any additional district-operated canals, but is comprised of many farmer-operated community ditches. In some areas, there are separate drainage ditches, and in other areas, the runoff is routed into the community ditches. **Figure 22**, below, shows the community ditch areas to the north-east of the Main Canal, and ditches/pipelines/ drains inside the community ditch areas in the insert.

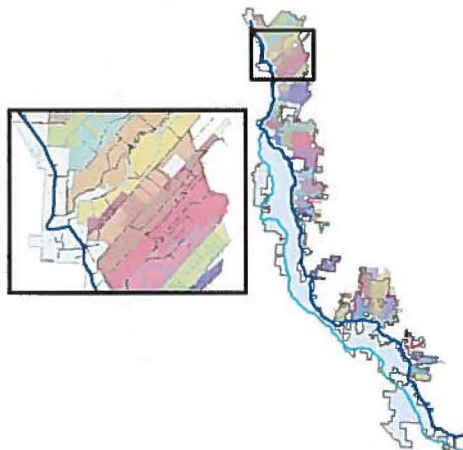


Figure 22. Community ditch areas and ditches/pipelines/drains in Northern CCID

Due to the vastly dissimilar compositions of the two regions, the northern and southern regions of CCID were analyzed separately, and specific recommendations were developed for each region. The following two sections present the recommendations for each region. Each region has three phases of recommendations.



## Phase 2: Drains that Flow Directly into the San Joaquin River

### Characterization of Region

This phase includes spills that flow directly into the San Joaquin River. These spills are all located north of Stuhr Road (just north of Newman). The area is broken into community ditch areas (fields that receive water from a given community ditch), as shown in **Figure 254**, below.

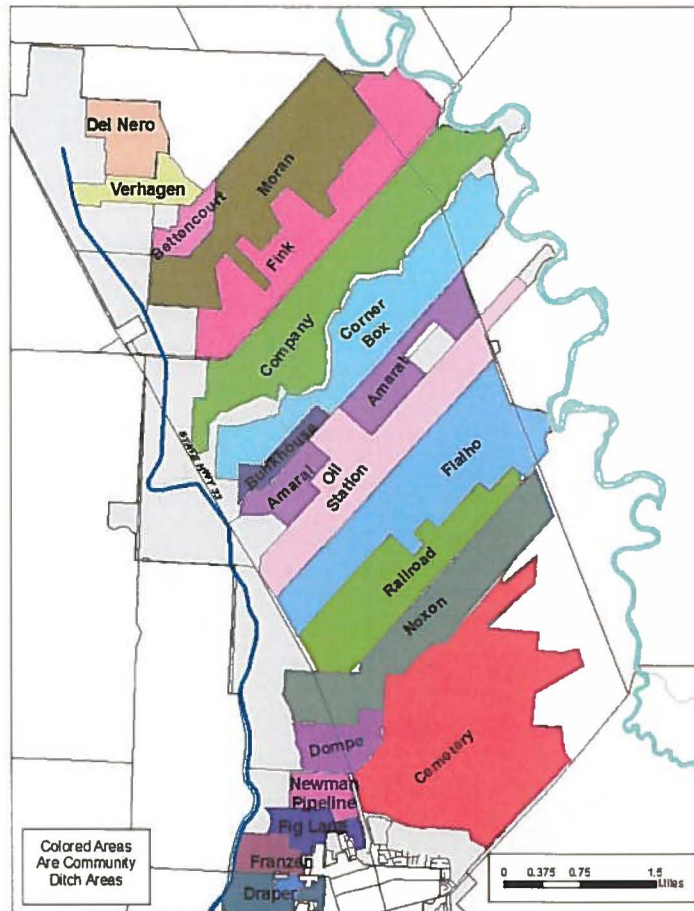


Figure 254. Community ditches in the northern portion of Northern CCID

In general, in this area the drainage water goes back into the community ditches, and spills into the river. Downstream farmers have the opportunity to retrieve the water for use before it spills. CCID Spill Ditch Study Sites 2-9 are located in this area. **Figure 255** shows CCID Spill Ditch Study Sites 2-9 with labels scaled relative to the average annual volume recorded during the Study. **Table 21** summarizes the average annual spill volume recorded for each site. See **Appendix D** for monthly data from the Spill Ditch Study.

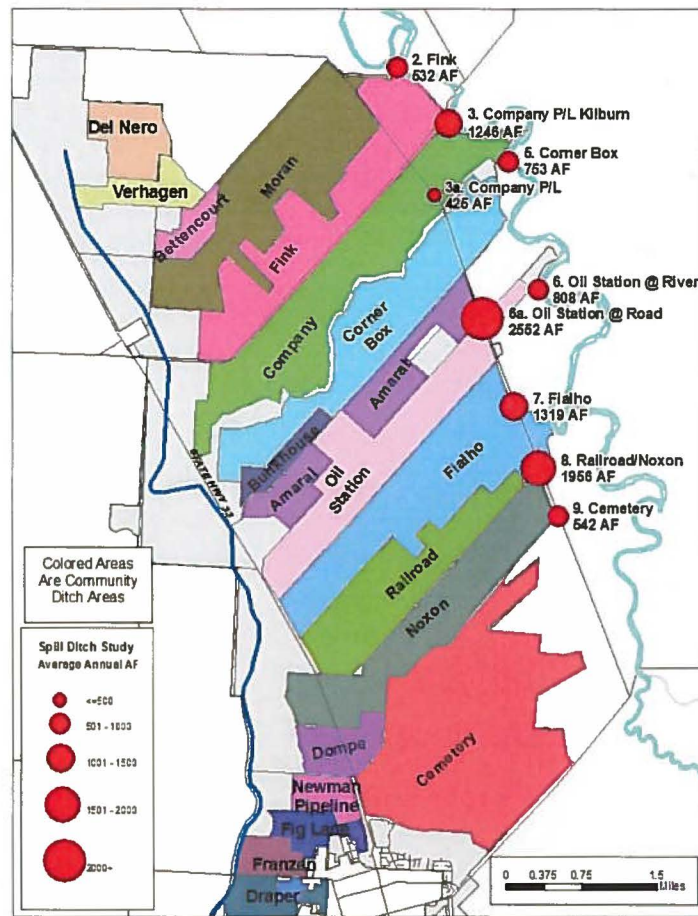


Figure 255. Northern CCID Spill Ditch Study sites 2-9 and community ditch areas

Table 21. Average annual spill from CCID Spill Ditch Study sites 2-9

Site #	Site Name	Average Annual Spill (AF)
2	Fink	532
3	Company @ Kilburn	1,246
3a	Company @ Creek	425
5	Corner Box	753
6	Oil Station	808
6a	Oil Station A	2,552 <sup>a</sup>
7	Fialho	1,319
8	Railroad/Noxon	1,956
9	Cemetery	542

<sup>a</sup>Site 6a was added to monitor flows in the main Oil Station Ditch when access to Site 6 was not available. Other spills are added, and some of the water is diverted to a field and duck ponds before the spill reaches Site 6.

### Context of the Spill Ditch Study Data

It is important to consider the context of the Spill Ditch Study data. The study was performed from 2000 to 2008 with most of the data collected between 2001 and 2006. In Northern CCID, there has been a shift to permanent systems such as drip or microirrigation. These systems essentially eliminate surface runoff, significantly reducing surface drainage water leaving areas. In the Oil Station and Amaral Community Ditch areas, the percent of the acreage with permanent systems has shifted from 18% in 2004 to 33% in 2012. This shift indicates that current actual spill volumes are likely less than the values collected during the study.

### Priority of Areas in the Region

There are two drainage areas that should be given high priority in the region:

1. Moran Drainage Area
2. Oil Station and Amaral Drainage Areas

The following two sections summarize the current situation in each area, and options are presented for the Oil Station and Amaral Drainage Areas.

### Priority Area A: Moran Drain Area

The Moran Drain area should be given high priority within Phase 2. Currently, Patterson Irrigation District (PID) is working on a management plan to reduce spills and pick up drainage water in that area. **Figure 256** shows the acreage that will drain into PID (green hatch) and acreage that will drain into CCID (pink hatch).

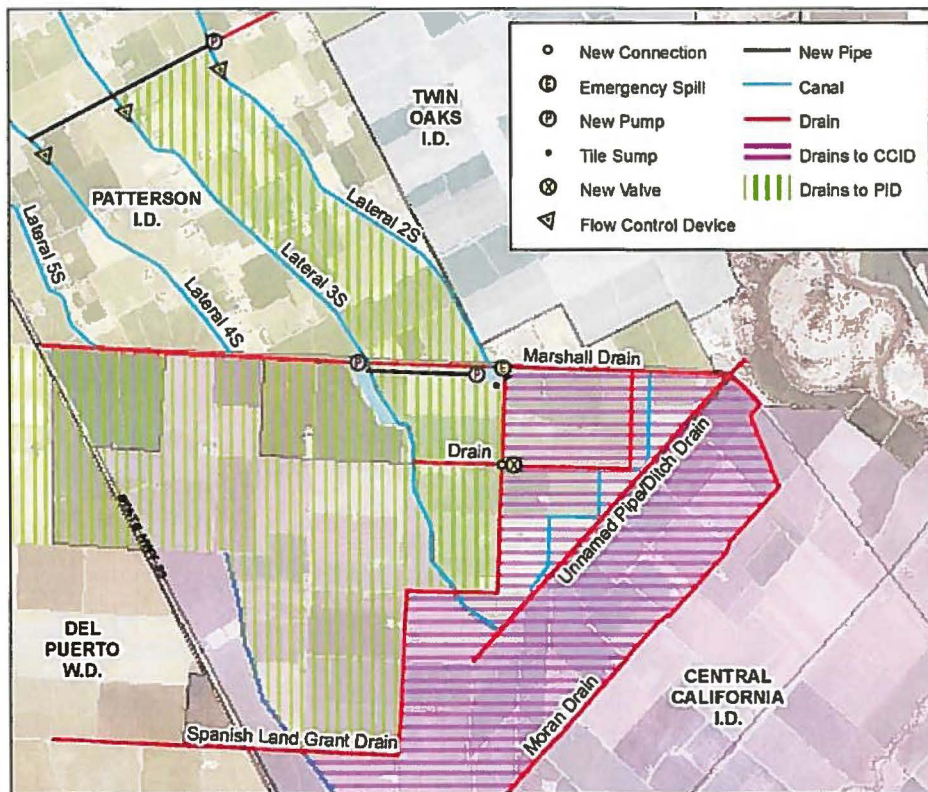
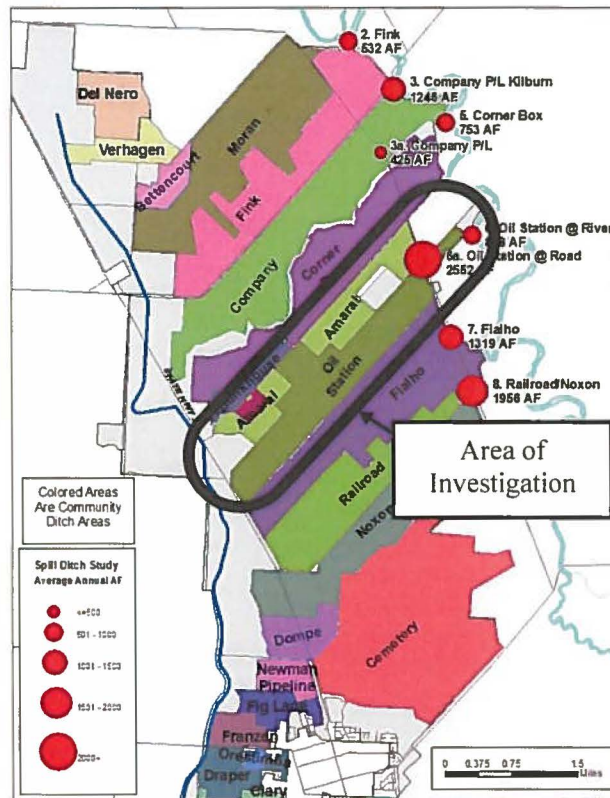


Figure 256. Drainage acreage that will flow into Patterson Irrigation District and CCID with Patterson's new plan

A plan needs to be developed to recover the drainage water from the acreage that will drain into CCID.

**Priority Area B: Oil Station and Amaral Community Ditch Spills**

The Oil Station and Amaral Community Ditch spills (two drains that spill into the San Joaquin River in Northern CCID) were investigated for available opportunities to conserve water and reduce spills into the San Joaquin River. **Figure 257**, below, shows the general location of the investigation.



**Figure 257. Northern CCID area of investigation (Oil Station and Amaral Community Ditch Spills)**

The locations of ditches and pipelines were confirmed as well as the flow of water on/off of fields and out of the district. Photos from site visits are included in **Appendix F**. The following map shows the location of ditches and pipelines in the area as well as the Amaral and Oil Station Community Ditch Spills.

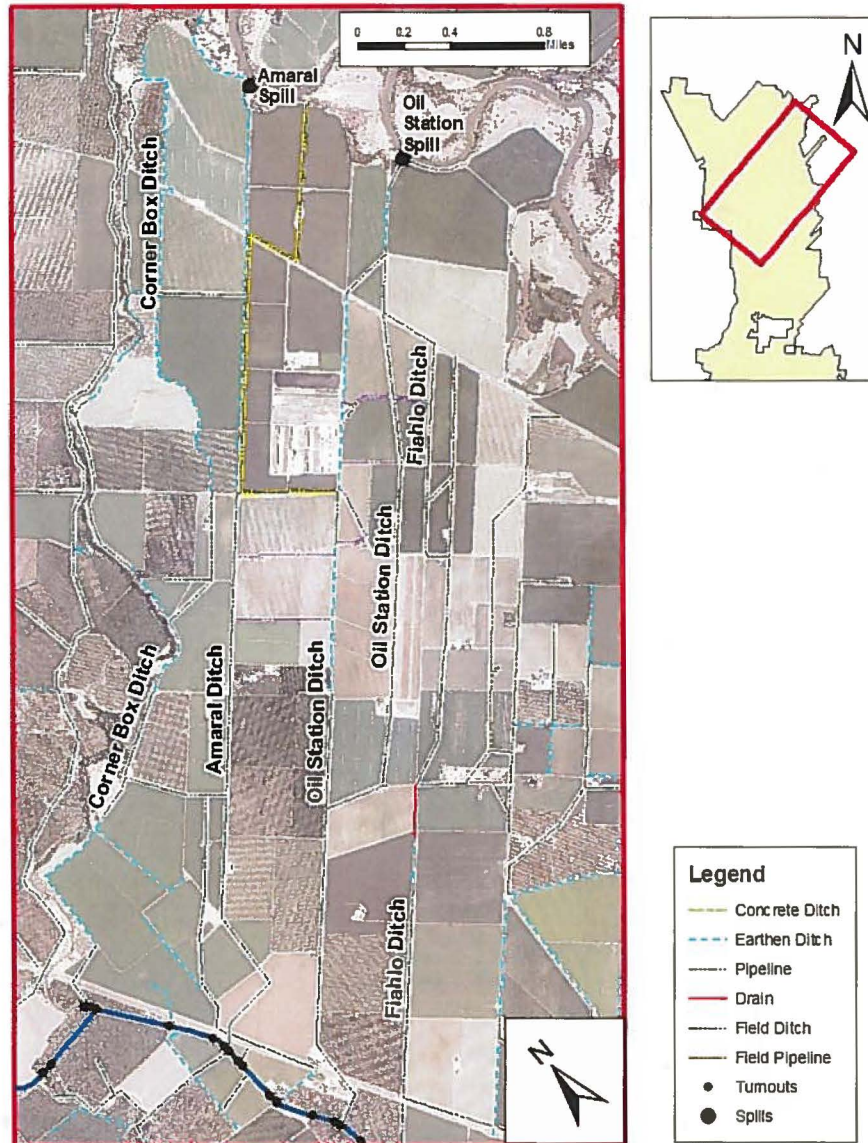


Figure 258. Overview of community ditches and drains in the Oil Station and Amaral areas

The following map shows the fields that receive water from (are fed by) Amaral and Oil Station Community Ditches and the fields that drain into Amaral and Oil Station Community Ditches. Note that there is a lateral of the Fialho Ditch that ultimately drains into the Oil Station Ditch. Because of this, fields that drain into this ditch are designated as “Oil Station”.

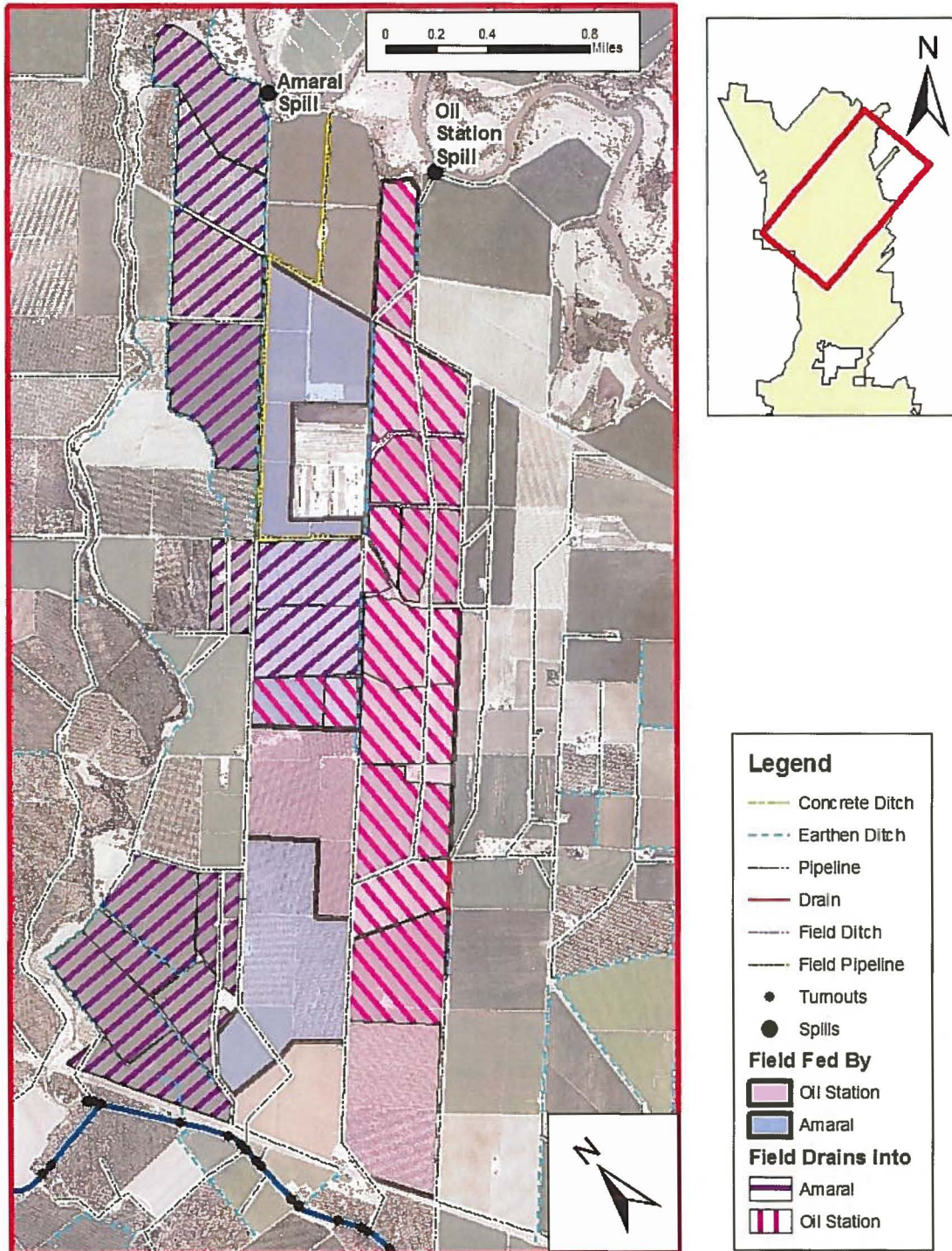


Figure 259. Fields fed by and that drain into Amaral and Oil Station Community Ditches

## Oil Station Community Ditch Spill

### Overview of Existing System

The Oil Station Spill receives water from three ditches. Two of the ditches are the main Oil Station Ditch (shown as “Oil Station 1” in **Figure 263**, below), and a lateral off of the main Oil Station Ditch (shown as “Oil Station 2” in **Figure 263**). The third ditch is a lateral off of the Fialho Ditch (shown as “Fialho Lateral” in **Figure 263**). The three ditches combine together near the last field into one ditch. Extra water in this ditch or any of the upstream ditches can be used by the downstream end fields. The water in the final ditch flows into a box near the river where the water can be diverted to a duck pond or spill into the river. All of the fields that drain into the three ditches receive water from the Oil Station Ditch except two fields near the middle, which receive water from the Amaral Ditch.

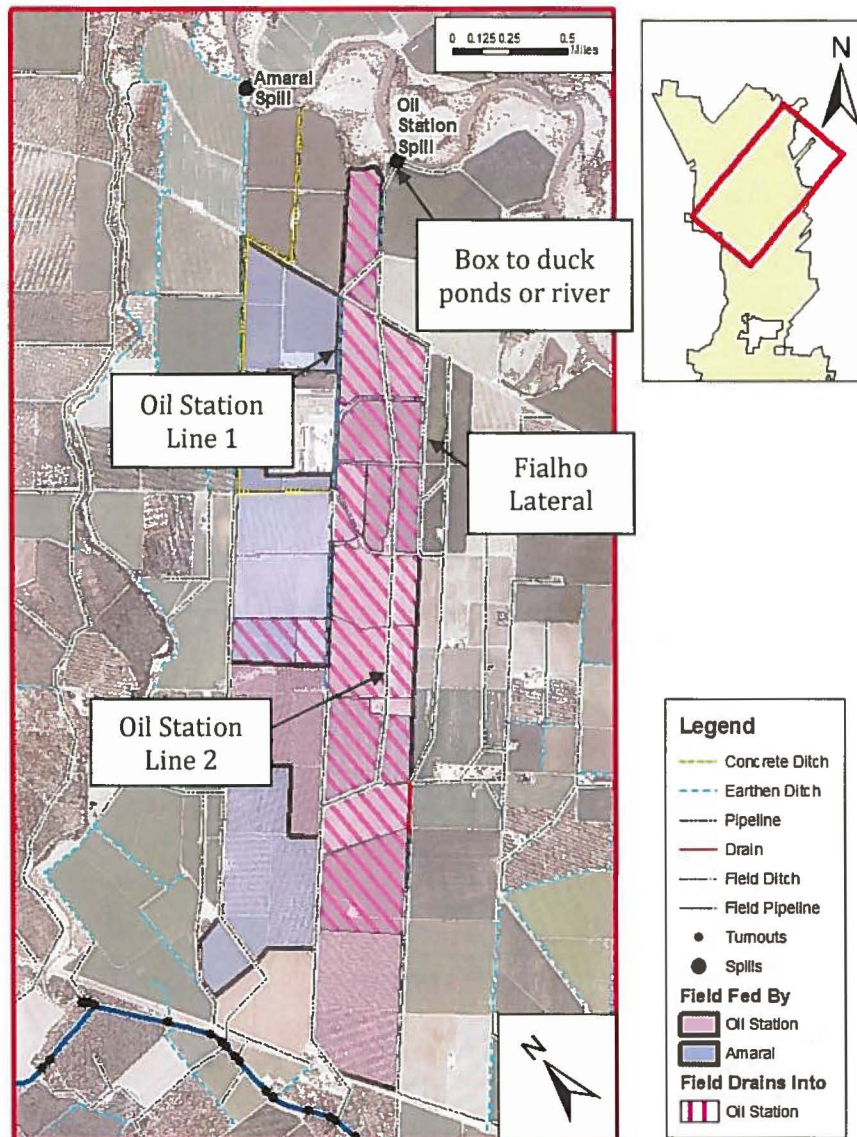


Figure 263. Overview of the Oil Station Community Ditch Spill

*Planned Modifications*

The three fields at the downstream end of the Oil Station Ditch system are currently leased, and the owner has notified lessees of his/her intention to sell the land.

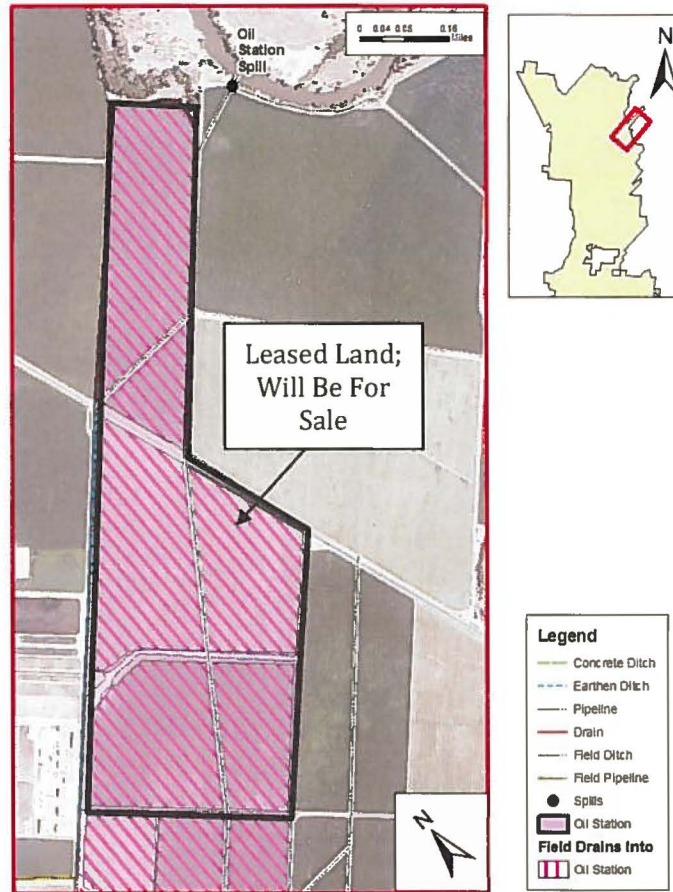


Figure 264. Leased land (will be for sale) in the Oil Station Community Ditch Area



*Recommended Action by the District*

The sale of the land at the downstream end of Oil Station Ditch represents an opportunity for the district to purchase land for a reservoir. The reservoir would reduce spill and make the preserved water available to farmers. The general concept for the reservoir would be to install the reservoir and connect the three ditches/pipelines to it. Water would likely gravity in and be pumped out of the reservoir into a new ditch that connects to the three existing ditches/pipelines, with flow control in each ditch/pipeline leaving the pool adjacent to the reservoir. The details on the location of the reservoir and reuse of the water should be discussed with the existing upstream farmers (for example, should the water be pumped a certain distance uphill for reuse on upstream fields).

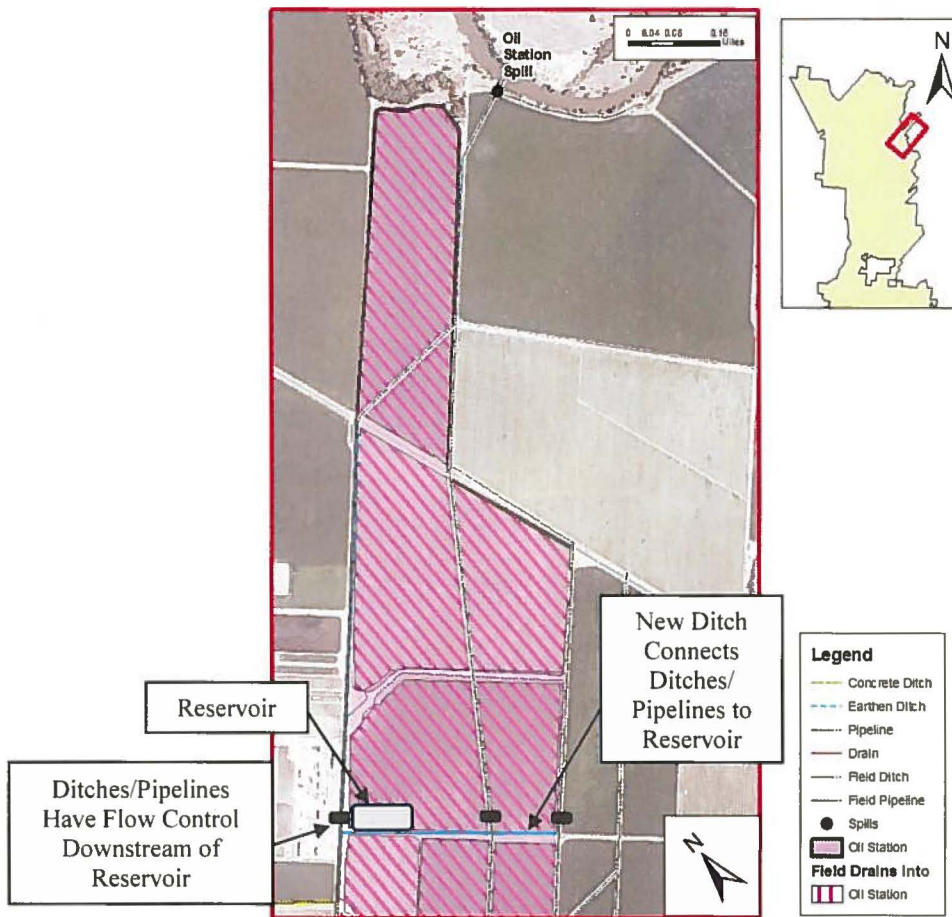


Figure 265. Schematic of recommended enhancements in Area 3 - Not to scale