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EXECUTIVE SUMMARY

Name: Central California Irrigation District Application Date: January 23, 2015
City: Los Banos County: Merced State: California Congressional Dist.: 16
Project Type: Canal Lining Project

The proposed project will replace the existing Molasses Ditch with a concrete lined canal. The existing ditch is unlined, overrun with vegetation, and oversized – factors that combine to degrade the efficiency of the system and waste water. The proposed project will clean out the existing canal and rebuild it to a properly sized facility with concrete lining to eliminate seepage losses. The new facility will improve water delivery timing and overall system reliability which will help encourage growers to convert to high efficiency irrigation systems.

The existing Molasses Ditch is approximately 3 miles long, serving growers within Central California Irrigation District (CCID or District). The ditch has a capacity of 25 cfs and delivers an average of 3,200 acre feet of irrigation water per year. Seepage losses from the system are estimated at 476 acre feet per year. The proposed project will:

- Replace approximately 2 miles dirt ditch with a new concrete lined canal.
- Replace existing culverts with new pipe crossings at the proper elevations.
- Construct a new water level control structure upstream of the canal split.
- Construct new headworks facilities at the start of the Reach B and C.

The proposed project benefits include:

- Conserve approximately 476 acre feet per year through seepage elimination.
- Reduced aquatic growth which will improve the operational and energy efficiency of the existing high-efficiency irrigation systems within the project's service area.
- Eliminate canal dead storage though a properly engineered canal cross-section and culverts.
- Reduce the delivery time between canal headworks deliveries and farm head-gate deliveries.

The water conserved would reduce the District's irrigation demand from the Central Valley Project, improve operational efficiency and help encourage growers to convert to high-efficiency irrigation systems.

Table 1 summarizes the funding requirements of the proposed project by source.

Table 1: Funding Chart

Funding Source	Funding Amount
Central California Irrigation District (non-federal)	$487,350
Requested Reclamation Funding	$300,000
Total Project Funding	$787,350

BACKGROUND DATA

The Molasses Ditch service area is located within CCID boundaries in Merced County, California, approximately 12 miles East of the City of Los Banos (see **Figure 1**), and is located within the CalFed Solution Area. The system was constructed in the early 1900's as an unlined irrigation ditch, and remains substantially the same. The ditch varies in depth and width but is generally larger than necessary due to historic cleaning efforts which have over-excavated accumulated silt. The system serves approximately 570 acres. Due to its unlined condition which allows aquatic growth, less than 20% of the service area is irrigated with conventional surface irrigation methods. Some of the key deficiencies of the system include:

- Abundant bank vegetation which hampers maintenance, chokes irrigation deliveries, and contributes floating detritus that would plug high-efficiency filters.
- An oversized cross-section which is hydraulically inefficient and requires significant water volume to fill at initial system charge-up
- Improperly located and undersized culverts which create unusable dead storage.
- Absence of a water level control structure to maintain canal water surface elevations for deliveries.
- Earthen bank and bottom which allows for aquatic growth and seepage losses.

Combined, these features fail to provide the dependable service necessary to encourage the growers to convert from current surface irrigation methods to high-efficiency systems like buried drip, as well as contributes to seepage losses.

The Proposed Project will provide improvements to the Molasses Ditch to address these deficiencies and provide the reliability necessary for growers to make improvements to their irrigation systems. The Proposed Project is consistent with the goals of the District.

CCID is not a Reclamation District but 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.

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 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 $30 million in water conservation projects and provided more than $11 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 Districts 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 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 is still ongoing.
- Amaral System Spill Elimination Project (2013). A project to capture tailwater and spill discharges from a canal system. This project is still ongoing.
- Oil Station System Improvements (2014). A project to replace undersized and failing pipe system with a properly sized conveyance. This project is still ongoing.

TECHNICAL PROPOSAL: PROJECT DESCRIPTION

The goal of the Proposed Project is to address the major deficiencies of the existing system and provide a new facility with the capacity, control and reliability necessary to

eliminate seepage and encourage growers to install high-efficiency irrigation systems.

The Project will:

- Replace the existing earthen ditch with a properly engineered, concrete lined canal.
- Replace existing culverts with new pipes that are properly sized and located at the correct elevation.
- Construct a new water level and diversion control structure where the canal splits to Reaches B and C for better operational control.
- Replace turnouts with new structures with trashracks.

Project Tasks:

Environmental Compliance: The proposed project will improve an existing facility with no increase in capacity or use. The project is categorically exempt (per section 15302(c)) from the California Environmental Quality Act (CEQA). A notice of exemption will be filed with Merced County prior to construction. The District is prepared to provide additional information to the U.S. Bureau of Reclamation for NEPA compliance as required, including cultural and biological evaluations of the facilities.

Pre-project Seepage Study: Estimates of seepage losses were made based on the experience of the District's field staff for the project area. A seepage ponding test will be performed before construction to provide a more accurate estimate of seepage losses. This data will be reported to Reclamation as part of the Semi-Annual reports. The seepage study will include a pond in or near the ditch alignment which will be filled with water and the percolation rate (adjusted for evaporation and rainfall) will be measured over a number of days. The data collected during the seepage study will be used to calculate seepage losses for the whole canal.

Surveying and Design: In anticipation of the project, the topographic survey data necessary for design has already been collected. From this data, a hydraulic model will be completed and design documents will be created. Design documents will include plan and profile drawings of the project, canal cross-section details, turnout connection and other 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 be cleared of all vegetation and silt.

Earthwork: The existing channel will be backfilled and compacted to the final design grade according to the drawings. Backfill will be performed in lifts to ensure proper soil density and moisture levels. Surveyed construction stakes will be placed along

the project alignment and final grade will be checked against those stakes. Existing culverts will be removed and replaced during this work.

Prism Excavation and Placement of Lining: The channel prism will be excavated to the appropriate lines and grade according to the drawings. Concrete lining will be placed in accordance with the drawings and specifications.

New Diversion Structure: A reinforced concrete diversion structure will be constructed upstream of the split to Reaches B and C (see Figure 2). This will likely be a long-crested weir or similar structure to maintain upstream water levels while controlling downstream deliveries. The purpose of this new structure is to address long-standing conflicts between water surface levels for upstream deliveries and downstream water demands which has plagued the system for many years.

Reach B and C Headworks Replacement: The existing headworks for Reaches B and C are corrugated steel pipes with canal gates. Both pipes have been too high and are too small for the required deliveries. New, pre-cast concrete head walls and properly sized and located culvert pipes will be installed.

Turnouts: Irrigation turnout connections will be installed according to the drawings using pre-cast concrete gate structures and typical irrigation canal gates.

EVALUATION CATEGORIES

Category 1: Benefits

Evaluation Criterion A: Water Conservation.
The Proposed Project will achieve water conservation primarily though seepage elimination. The concrete lining will effectively eliminate all seepage losses. The quantity of water conserved is discussed below.

Subcriterion A.1: Quantifiable Water Savings.
The Proposed Project will result in quantifiable water savings by lining approximately 3.0 miles of existing dirt ditch. The estimated conserved seepage volume is 476 acre feet per year. The District does not have detailed seepage data on the project and based this estimated volume on the experience of the ditch-tenders and growers operating the system. The seepage volume will be verified by the pre-project seepage study results. The District expects the canal lining to eliminate all seepage.

- **Total estimated conserved water: 476 afy.**

Post-project seepage rates are assumed to be insignificant and the water savings provided by the project will be sustained through the life of the project (thirty years or more for the canal lining). The District intends to market the water conserved and recovered by the proposed project to other water and irrigation districts in the region. The District has a number of existing water transfer agreements through which the water may be transferred and marketed.

Currently this water seeps into a shallow aquifer that is of poorer quality (higher dissolved solids). Water conserved by the project would remain within CCID's system and be marketed to other water agencies through existing and new agreements.

Subcriterion A.2: Percentage of Total Supply
The District's total water supply is 597,000 acre feet per year. The percentage of the District's total supply and the percentage of water delivered through the Molasses Ditch System are calculated below.

Total District Water Supply: (476 afy) ÷ (597,000 afy) = 0.1%
Water Deliveries through Molasses Ditch: = (476 afy) ÷ (3,200) = 15%

The same project features that result in the volume of conserved water described above will provide improved water management for the entire Molasses Ditch service area. The new project features will be sized to meet current and predicted future flow demands, assuring growers that CCID can accommodate newer irrigation technologies. Annual water deliveries through the Molasses Ditch system total 3,200 acre feet per year and this is the amount considered in calculation of the better managed fraction.

Calculation of Water Better Managed Fraction:
(3,200 afy) ÷ (532,000 afy + 30,000 afy + 35,000 afy) = 0.5%
contract drain water groundwater

Evaluation Criterion B: Energy-Water Nexus.
The Proposed Project will not include any renewable energy components. However it will improve system efficiency and reduce the volume of water pumped into the system. See Subcriterion B.2.

Subcriterion B.2: Increasing Energy Efficiency in Water Management
The Proposed Project would conserve 476 acre feet per year through seepage elimination. This would result in a reduction of pumping by 476 to meet the system demand, which originate at the San Joaquin/Sacrament Delta via the Delta Mendota Canal. The approximate lift between the Delta and Molasses Ditch headworks is 102 feet, however details on the pumps used is not available. An estimate was developed using topographic data and an assumed pump efficiency, equating to a power savings of:

476 afy x 102' x 1.024 ÷ 75% efficiency = 49,681 kwh per year.

Evaluation Criterion C: Endangered Species.
The proposed project will not result in a significant change in the surrounding environment and will not have a direct impact to any special status species. However,

by improving water use efficiency, the Proposed Project helps to address the imbalance between water supply and water demand, which affects habitat quality throughout the Central Valley.

Evaluation Criterion D: Water Marketing.
Water conserved through the Proposed Project will be marketed to other water agencies within the Central Valley. Many of the water and irrigation district neighbors to CCID are supplied by Federal water contracts which are subject to sever cut-backs during periods of drought. As a policy, CCID actively engages neighboring water agencies and transfer water to help address local water shortages. The District expects to transfer 100% of the conserved water (476 acre feet per year) through existing agreements with local water agencies (including Westland Water District, Panoche Water District, and Del Puerto Water District). All of the marketed water would be transferred through the Central Valley Project and would be used to make up for irrigation supply shortages. These transfers would continue for the life of the project (30 years or more).

Evaluation Criterion E: Other Contributions to Water Supply Sustainability.
Subcriterion E.2: Expediting Future On-Farm Irrigation Improvements. The Proposed Project will provide improved delivery infrastructure that will increase the system efficiency and reduce aquatic vegetation, resulting in a system that is capable of supporting high-efficiency irrigation systems. **Figure 2** shows the Molasses Ditch service area, including the fields (and acreages) likely to convert to high-efficiency irrigation systems. To date, only one field (113 acres) has planned to convert to a high-efficiency irrigation system (expected to be completed by Spring of 2015). The remaining 13 fields are currently irrigated by flooding furrows using an earthen head ditch and siphon pipe – flooding the field from the higher (head) end and flowing to the lower (tail) end. This method tends to over-irrigate the portion of the field nearest the head ditch and generates a significant volume of surface drainage (tailwater) that can also carry sediment and pesticides off the field and into the environment. A meeting with the three Molasses Service area growers was held on January 7 and during that meeting all of the growers indicated that they would convert to high-efficiency irrigation systems once the ditch improvements were completed (note that one grower is already in the process of converting his system).

The irrigation improvements within the service area would be pressurized buried drip irrigation systems consisting of a pump and filter station, PVC mainline, and buried, perforated polyethylene irrigation tubing. These system irrigate the entire field uniformly and virtually eliminate tailwater discharges. The volume of water conserved though the installation of these systems is difficult to estimate as it is dependent on the pre-project cultural practices of each grower and the specific crop grown (which will change from year to year). Based on a comparison of furrow irrigated cotton and drip irrigated cotton, the potential water savings could be as high as 1.4 af/ac – amounting to approximately 640 acre feet per year in conserved water if the remaining 460 acres within the service area converts to drip. This estimate was made by comparing the applied water of a conventionally-irrigated cotton field against a cotton field irrigated

with buried drip. Both fields were near Firebaugh, approximately 12 miles south of the project site (see **Appendix B**).

Letters from some of the growers in the service area indicating the intent to participate in NRCS funding assistance programs are included in **Appendix C**.

Subcriterion E.3: Building Drought Resiliency. The 2013/14 drought caused unprecedented water supply strain on the entire Central Valley, CCID not excepted. Water supplies to the District were cut by 35%, forcing 15,000 acres (District wide) to be fallowed due to lack of water. Growers relied heavily on groundwater to make up the short fall and groundwater levels have dropped to historic lows – this data is still being collected and is not immediately available.

Although the proposed project will not create any "new" water, it will improve the efficiency of water deliveries and support improved irrigation practices. By lining the Molasses Ditch, seepage losses will be eliminated and the amount of time necessary to fill up the canal for use will be dramatically reduced – allowing the whole system to more accurately match supply to actual demand without losses to seepage. These improvements will better support on-farm efficiency improvements, which in turn, reduce water demand. The combined water savings (up to 1100 acre feet per year) Will reduce the strain on the water system during future droughts and could potentially allow 440 acres of crops (1100 af ÷ 2.5 af/ac crop water demand) to be grown on the same volume of deliveries – reducing field fallowing during future droughts.

Subcriterion E.4: Other Water Supply Sustainability Benefits. The primary benefits of the proposed project have been described above. However there are some additional benefits which would have an impact on overall water supply reliability and sustainability.

- Example for other growers within CCID: Overall, only 15% of the acreage within CCID is irrigated with high-efficiency irrigation systems. The proposed project and subsequent irrigation system improvements will serve as an example to other growers within the District. CCID publishes a monthly newsletter which is circulated to all growers in the District – upon completion, the proposed project will be highlighted in that letter, along with its benefits.
- Reduced drainage discharge: The proposed project is located in the Salt Slough subwatershed, which is a tributary to the San Joaquin River. Both Salt Slough and the San Joaquin River are listed as "Impaired Waterbodies" (303d list) by the Central Valley Regional Water Quality Control Board for a variety of agricultural constituents including pesticides. The primary mechanism for contamination is through tailwater discharges, generated by conventional furrow irrigation methods. The conversion to high-efficiency systems caused by the Proposed Project will practically eliminate tailwater from the Molasses Service Area, which will help improve water quality in the Salt Slough subwatershed.

Evaluation Criterion F: Implementation and Results.

Subcriterion F.1: Project Planning. In 2012, CCID completed a District-Wide Water Conservation Assessment (ITRC, July 2012). This assessment provided a number of specific projects as well as some general improvements that would improve water use efficiency within CCID. Although the Molasses Ditch is not listed as a specific project within the assessment, it is included within the review of the Southerly portion of CCID.

Subcriterion F.2: Readiness to Proceed. In the Fall of 2014 the Molasses Ditch alignment was surveyed and preliminary hydraulic calculations have been developed. Project design is approximately 25% complete. The Proposed Project is Categorically Exempt from the California Environmental Quality Act (CEQA). An estimated schedule is provided below (note that the actual schedule would depend on the completion of NEPA compliance documents):

- May 2015: Anticipated notice of award. CCID would employ a Cultural Resource and biologist to review the project and compile the necessary reports required for NEPA compliance.
- June 2015: Perform seepage study. Provide study results to Reclamation.
- July 2015: Complete design drawings. Submit Cultural and Biological reports to Reclamation to assist with NEPA compliance.
- October 2015: Complete NEPA process. Accept project bids and select construction contractor. Dewater the Molasses Ditch and perform general cleanup.
- November 2015: Begin construction. Backfill and compact existing ditch to design grade.
- December 2015: Excavate design canal cross section and place concrete lining. Construct reinforced concrete diversion structure.
- January 2016: Install road crossings and turnouts. Construct headwork facilities at the start of Reach B and Reach C.
- February 2016: Final cleanup and complete construction.
- September 2016: Submit grant final report.

Subcriterion F.3: Performance Measures. The Proposed Project will improve water use efficiency through two methods – seepage reduction though canal lining and irrigation improvements through conversion to high-efficiency irrigation methods. The impact of these benefits will be measured separately:

- Seepage Reduction: The seepage reduction caused by lining the Molasses Ditch. The pre-project seepage rate will be estimated by a pond study within or adjacent to the existing ditch alignment. The results of the study will be converted to a loss in acre-feet per mile per year to estimate the annual seepage loss for the ditch. Past experience with canal lining projects show that concrete lining virtually eliminates seepage losses so a post-project seepage study is not planned but can be completed if required by Reclamation.
- On-Farm Irrigation Improvements: Although not directly implemented by the Proposed Project, growers within the Molasses Service Area have committed to

converting to high-efficiency irrigation systems. These benefits will be measured by (1) reporting the acreage of new irrigation systems and (2) by comparing the pre-project deliveries to the post project deliveries on an annual basis.

Subcriterion F.4: Reasonableness of Cost. The proposed project will conserve an estimated 476 afy and improve water management of 3,200 afy. The estimated total project cost is $787,350. The typical lifespan of the concrete lining is 30 years. The Reasonableness of Cost calculation is:

Conserved Water:	$787,350 /(476 af/yr x 30 years) = $55.13/af
Managed Water:	$787,350 /(3,200 af/yr x 30 years) = $8.20/af

A breakdown of the project costs is included in the Budget Proposal section. The project costs were estimated from a combination of similar past project costs and unit costs provided by a contractor familiar with the area.

Evaluation Criterion G: Additional Non-Federal Funding:
The Proposed Project cost is $787,350, of which $300,000 in Federal funds is requested and the remaining $487,350 would be funded by CCID. This amounts to 62% of the project funded with Non-Federal funds.

Evaluation Criterion H: Connection to Reclamation Project Activities.
The proposed project is located within the Central Valley, surrounded by water agencies with Federal water contracts through Reclamation, and is connected to a number of Reclamation activities:

- Water supply through Reclamation facilities. CCID is not a CVP contractor but it does receive its water supply through the Delta-Mendota Canal, which is a Federally owned facility.
- Support of other CVP water agencies. Water conserved by this and other projects within CCID is marketed to neighboring water and irrigation districts with Central Valley Project contracts through Reclamation. These contracts are subject to severe water cut-back during even minor drought periods.

PERFORMANCE MEASURES
Water conserved by the project will be measured and reported by CCID through the Performance Measures discussed in Evaluation Subcriterion F.3. Water conserved by the Proposed Project will be combined with other conserved water within the District and Marketed to adjacent water agencies through existing and new water transfer agreements and reported on an annual basis.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE
The proposed project will install concrete lining on an existing canal and no new facilities will be constructed. This project type is Categorically Exempt under the California Environmental Quality Act (CEQA) and the District intends to file a Notice of Exemption with Merced County and the California State Clearinghouse. In addition,

CCID will hire a biologist and cultural resource consultant to gather and report the necessary cultural and biological data to help with the NEPA documentation.

1. *Will the project impact the surrounding environment?*
   The proposed project will involve backfilling the existing ditch, excavating the design canal cross section, placing concrete lining and installing turnouts, constructing concrete structures, and installing new road crossings. During construction, back 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 proposed facilities consistent with the existing landscape. 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.

2. *What endangered or threatened species are in the project area?*
   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 inside the project boundary?*
   There are no wetlands in the project boundary. The proposed project will be constructed within the existing canal footprint.

4. *When was the water delivery system constructed?*
   The existing Molasses Ditch was part of the District's original conveyance system and was likely constructed in the early 20th century (exact date is not known).

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 replace the existing ditch, turnouts and road crossings with new facilities. The Ditch itself was likely constructed in the early 20th century with the turnout structures replaced within the last 30 years.

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 and a cultural resource consultant will review and evaluate the project prior to construction.

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 or 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 crosses Merced County Roads. These permits will be acquired once the design drawings are complete.

OFFICIAL RESOLUTION

An official Resolution is included in **Appendix D** of this application.

PROJECT BUDGET

Funding Plan and Letters of Commitment

The total estimated cost of the proposed project is $787,350. This cost was calculated based on the District's recent experience in similar projects. This application is requesting $300,000 in federal funding assistance and will utilize $487,350 of District Funds. Aside from the District funds budgeted for this project, no other funds will be utilized.

- 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 $487,350 to complete the project. This funding has been allocated in the District's 2015 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 engineering and construction costs and utilize District funding for all other costs, including surveying, design, remaining construction, administration, and inspection.

The District has incurred any costs for surveying and initial design, however these were incurred in early to mid-2014 and are not likely eligible to meet meet its match obligation. CCID expects to hire a cultural resource consultant and biologist in early

2015 as part of the environmental review and intends to use these costs as part of its match obligation, however they have not yet been incurred.

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 2 summarizes the source and amount of project funding.

Table 2: Summary of non-Federal and Federal Funding Sources

Funding Source	Funding Amount
Non-Federal Entities	
Central California Irrigation District (non-federal)	$487,350
Requested Reclamation Funding	$300,000
Total Project Funding	$787,350

BUDGET PROPOSAL

Table 3 shows the project budget proposal. A completed SF-425C is included at the beginning of this application.

Table 3: Project Budget

		COMPUTATION			DISTRICT	RECLAMATION	TOTAL
ITEM	BUDGET ITEM DESCRIPTION	Quantity	Unit	Unit Cost	FUNDING	FUNDING	COST
1	Salaries and Wages	0					$0
2	Fringe Benefits	0					$0
3	Travel	0					$0
4	Equipment	0					$0
5	Supplies/Materials	0					$0
6	Contractural/Construction						
6.1	Surveying (Construction Staking) (1)	8.3	days	$1,200	$10,000	$0	$10,000
6.2	Engineering	29	days	$1,200	$35,000	$0	$35,000
6.3	Construction						
6.3.1	Cleanup and Site Preparation	9,500	linear feet	$5.50	$38,900	$13,350	$52,250
6.3.2	Compacted Embankment	10,000	cubic yards	$7	$35,000	$35,000	$70,000
6.3.3a	4'x54" Lined Canal	4,500	linear feet	$57	$128,250	$128,250	$256,500
6.3.3b	2'x30" Lined Canal	2,700	linear feet	$31	$41,850	$41,850	$83,700
6.3.3c	3'x46" Lined Canal	2,300	linear feet	$47	$54,050	$54,050	$108,100
6.3.4	Diversion Structure at Splits	1	each	$35,000	$31,500	$3,500	$35,000
6.3.5	Reach B Headw orks	1	each	$10,000	$5,000	$5,000	$10,000
6.3.6	Reach C Headw orks	1	each	$10,000	$5,000	$5,000	$10,000
6.3.4	Turnout and Road Crossing Installations	10	each	$6,000	$60,000	$0	$60,000
7	Environmental and Regulatory Compliance						
7.1	Reclamation Costs (assumed)				$0	$14,000	$14,000
7.2	Engineering Consultant	10.0	days	$1,200	$12,000	$0	$12,000
7.3	Biological Consultant	8.0	days	$600	$4,800	$0	$4,800
7.4	Cultural Resources Consultant	16.7	days	$1,200	$20,000	$0	$20,000
8	Other Costs						
8.1	Reporting	5	days	$1,200	$6,000	$0	$6,000
	TOTAL DIRECT COSTS:				$487,350	$300,000	$787,350
9	Indirect Costs (Not charged to the project)				$0	$0	$0
	TOTAL PROJECT COSTS:				$487,350	$300,000	$787,350
	Percent of Total Cost:				61.9%	38.1%	
(1)	Topographic surveying for design w as completed in the summer of 2014 and is not included in this budget						

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.
f. Contractual. The proposed project will make use of a number of consultants and contractors for its completion.

- Surveyor. The topographic survey data needed for design has already been acquired and will not be billed to the project. Construction stakes needed to set the new canal elevations and alignment will be placed by a licensed professional surveyor. The surveyor who completed the design survey estimated the cost to complete the construction staking at $10,000, or approximately 8.3 days at $1,200 per day.

- Engineers. Some preliminary design work has already been completed and is not included in this budget. A licensed civil engineer will be used to finalize the hydraulic evaluation and design drawings and develop the contract documents. The engineer will be responsible to conduct field visits and check construction progress. The billing rate for engineering time varies depending on which particular staff member is performing the work but averages around $1,200 per day. The engineering time was based on the following assumptions:
    a. Civil engineer field review: 4 days
    b. Civil engineer hydraulic design: 1 day
    c. Development of design drawings: 10 days
    d. Development of specifications and contract documents: 10 days
    e. Bidding and project administration: 4 days

- Construction. A qualified contractor will be selected by the District, likely through a 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. Canal Cleanout and Preparation. The existing site will be cleaned of weeds and debris. Existing turnout structures will be removed and hauled off-site for disposal or recycling.
    b. Compacted Embankment. The existing ditch will be backfilled and compacted to the design grade shown on the drawings. Dust and erosion control measures will be implemented as necessary.
    c. Furnish and Install Concrete Lined Canal. Initial design expects that three different canal cross-sections will be constructed. The unit costs for this work was based on the unit cost of a concrete lined canal from another project. This work will include excavation of the design canal prism, and placement of concrete lining.
    d. Furnish and Install Reinforced Concrete Diversion Structure. The Diversion Structure will be designed to maintain upstream water levels while providing the necessary downstream deliveries, and will likely be a cast-in-place concrete long-crested weir. This work will included excavating the site to the necessary dimensions and elevations, constructing forms, placing reinforcement, and pouring concrete.
    e. Furnish and Install Reach B and Reach C Headworks. The headworks for Reaches B and C will be immediately downstream of

the proposed diversion structure and each will include a pre-cast concrete headwall and a high-density polyethylene pipe sized according to the design drawings. Construction work will include excavating each headworks site according to the design drawings, placement of the headwall and pipe, and backfill over the pipe to form a small damn.

f. Furnish and Install Turnouts and Road Crossings. This work will include the placement of a pre-cast concrete headwall (for road crossings) or gate structure (for turnouts), and installation of a high density polyethylene pipe. The unit cost of this work was estimated from a similar project.

- Environmental and Regulatory Compliance Costs. The proposed project will improve an existing facility with no change in purpose or operation and is exempt from CEQA. NEPA compliance will likely require an Environmental Assessment (EA) resulting in a Finding of No Significant Impact (FONSI). The proposed project budget includes consultant costs to develop portions of the EA (estimated at 10 days of engineering time) as well as a consultant to complete the cultural resource and biological review. These reports would be provided to Reclamation for the EA. Costs incurred by Reclamation to finalize the EA are not known and were assumed to be $14,000 and the total environmental costs are estimated at $50,000. 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.

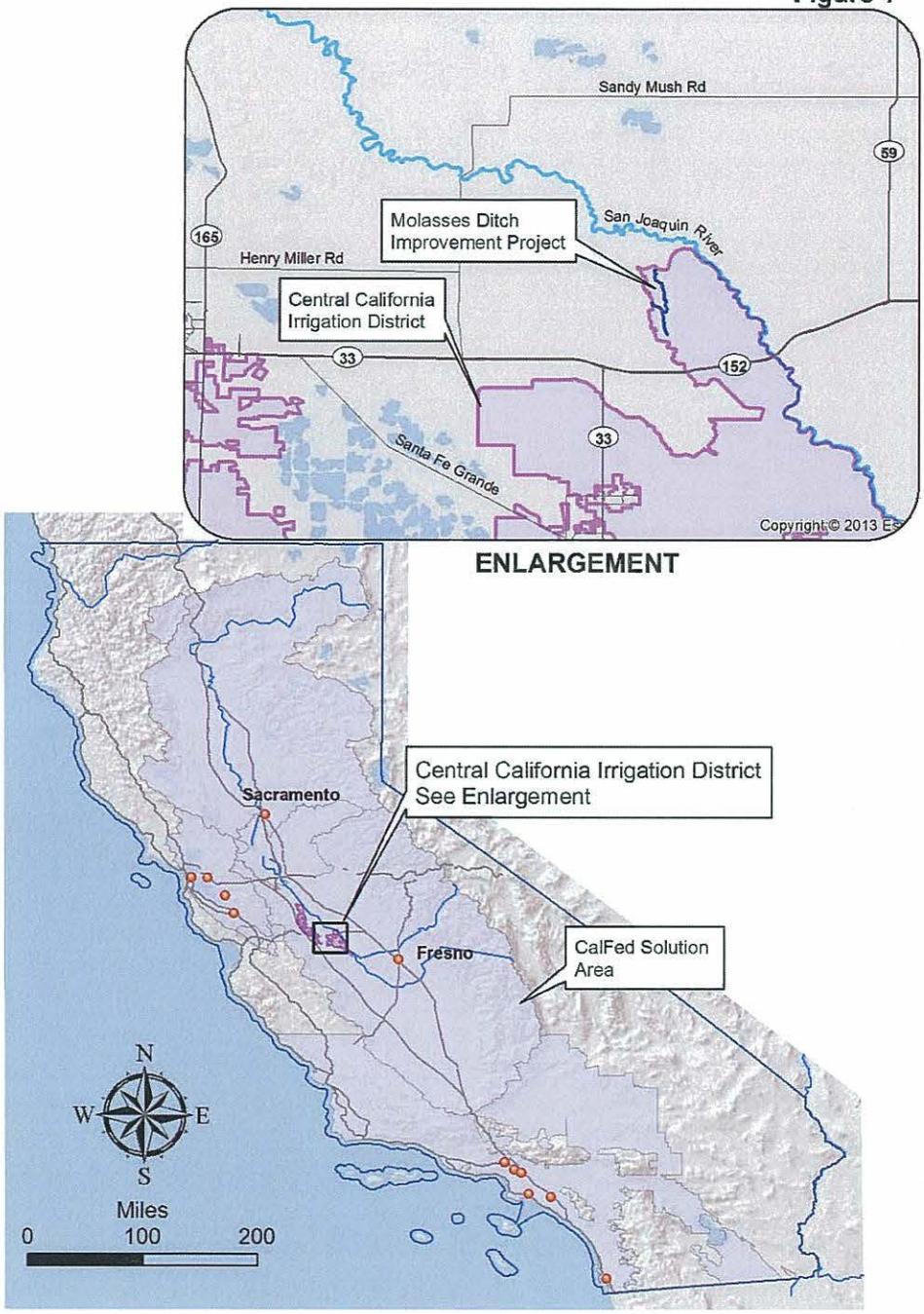
- Other Costs. Other costs include grant contract administration and reporting. These costs were combined in the project budget as Reporting costs and are estimated to total 5 days of engineering time.

- Indirect Costs. Indirect costs incurred by the District will not be charged to the project.

- Total Cost. The total estimated project cost is $787,350, including $300,000 (~38%) in Reclamation funds, $487,350 (~62%) in District funds. The District has sufficient reserves available in its budget to fund any cost overruns or unforeseen costs should they be required

Budget Form.
SF 424C is included at the beginning of this application.

Figure 1



Central California Irrigation District
Molasses Ditch Lining Project
Location Map

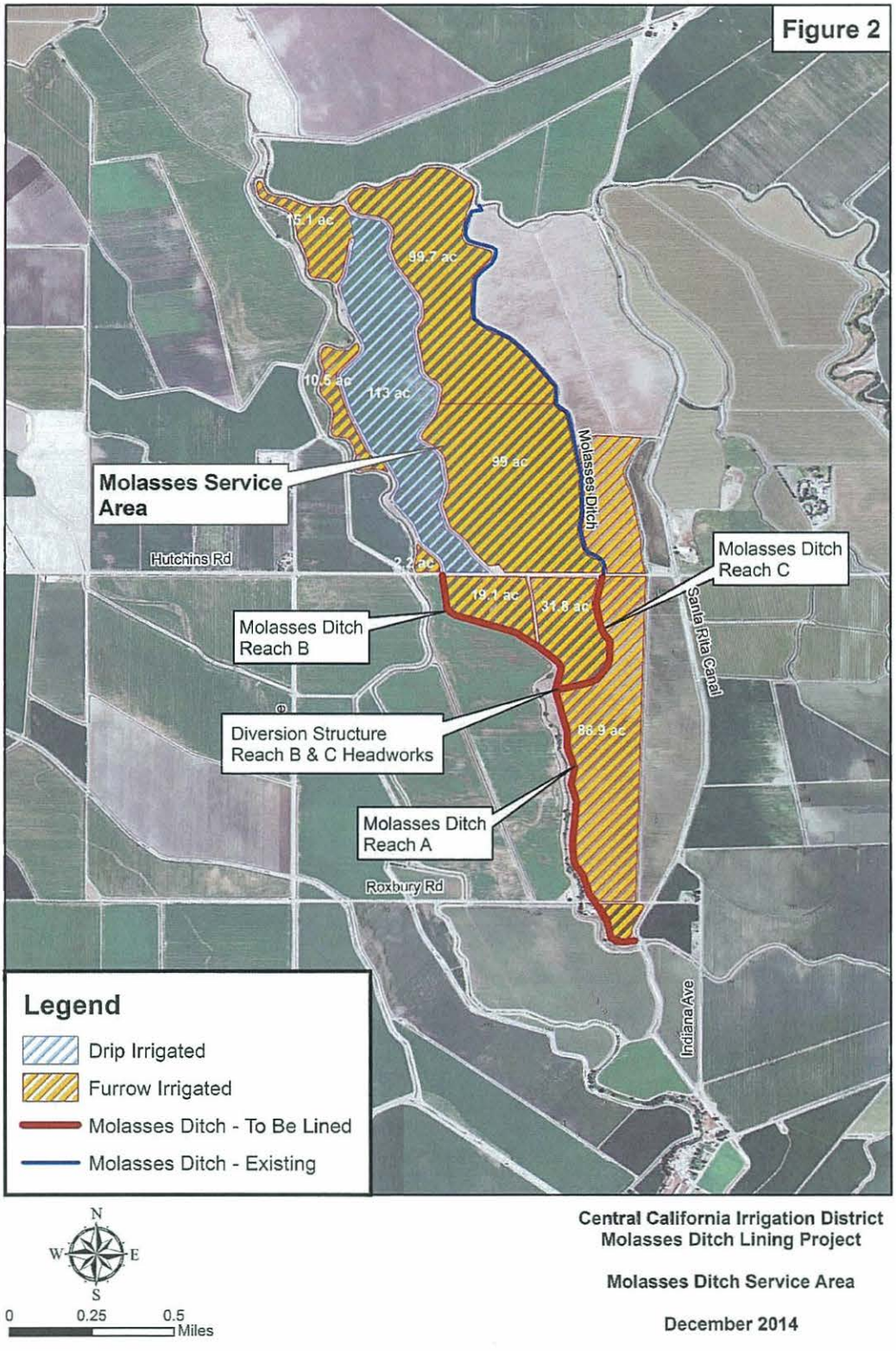


Figure 2
15.1 ac
99.7 ac
10.5 ac
113 ac
99 ac
Molasses Ditch
Molasses Service Area
Hutchins Rd
2.2 ac
19.1 ac
31.8 ac
Molasses Ditch Reach C
Molasses Ditch Reach B
Santa Rita Canal
Diversion Structure Reach B & C Headworks
88.9 ac
Molasses Ditch Reach A
Roxbury Rd
Indiana Ave
Legend
Drip Irrigated
Furrow Irrigated
Molasses Ditch - To Be Lined
Molasses Ditch - Existing
N
W
E
S
0
0.25
0.5
Miles
Central California Irrigation District
Molasses Ditch Lining Project
Molasses Ditch Service Area
December 2014

Appendix A

CCID On-Farm Water Conservation Program

Deadline

August 8, 2014

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 Landowner

For Questions or More Information
Please contact:
Tracey Rosin
Conservation Coordinator
Phone: (209) 826-1421
Cell: (209) 777-8060
Fax: (209) 826-3184
trosin@ccidwater.org

2014 On-Farm Water Conservation Program

The Water Conservation Program deadline for funding requests is August 8, 2014. 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. Funding levels may be pro-rated based on the number of applications received.

DEADLINE AUGUST 8, 2014

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

Estimate of Conserved Water through Irrigation Improvements

SUMMERS ENGINEERING
887 N. Irwin St. – PO Box 1122
Hanford, CA 93232

MEMORANDUM

TO: Chris White, CCID

FROM: Chris Linneman

DATE: December 8, 2014

SUBJECT: Estimated water conservation impacts from high efficiency irrigation systems.

Summers Engineering, Inc. has reviewed historical irrigation delivery data to conventionally irrigated fields and compared them to deliveries to field of similar crops irrigated with high efficiency irrigation systems. These fields were in Firebaugh Canal Water District, a district adjacent to and south of CCID. However, the soil types and cultural practices for growers within both districts are similar.

2011 water delivery data for cotton field irrigated with both conventional siphon pipe/furrows and buried drip were provided, with approximately the same acreage of each irrigation method represented. The water application rates for furrow irrigated cotton were compared to that of cotton irrigated with subsurface drip systems. The average applied water rate for furrow irrigated cotton within the District was 3.5 af/ac, compared to an average of 2.1 af/ac for cotton irrigated with subsurface drip systems. This calculates to a potential water savings of 1.4 af/ac.

The exact impact of improved irrigation systems is difficult to measure since it depends on the crop, soil type, hydrologic conditions and the growers' individual cultural practices. As an approximate estimate, a water savings of up to 1.4 acre feet per acre could be realized.

Appendix C

Letters of Intent to Participate in NRCS Funding

January 7, 2015

Ms. Tracey Rosin
Conservation Coordinator
Central California Irrigation District
1335 West "I" Street
Los Banos, CA 93635

SUBJECT: Molasses Ditch Lining Project – Irrigation System Improvement Funding Assistance.

Dear Tracey,

I operate a farm within the Molasses Ditch service area which is currently irrigated using a conventional surface irrigation method and have been considering upgrading to a high-efficiency drip system as a means to improve yields, conserve water, and eliminate tailwater discharges.

As you indicated in your memo dated 12/31/14, I understand CCID is pursuing a WaterSMART grant opportunity with the U.S. Bureau of Reclamation which might make my farm eligible for NRCS funding in addition to CCID's Water Conservation program. I am very much interested in pursuing the NRCS funding if the grant is awarded.

Very truly yours,

Acreage within the Molasses Service Area: 190 Ac

January 7, 2015

Ms. Tracey Rosin
Conservation Coordinator
Central California Irrigation District
1335 West "I" Street
Los Banos, CA 93635

SUBJECT: Molasses Ditch Lining Project – Irrigation System Improvement Funding Assistance.

Dear Tracey,

I operate a farm within the Molasses Ditch service area which is currently irrigated using a conventional surface irrigation method and have been considering upgrading to a high-efficiency drip system as a means to improve yields, conserve water, and eliminate tailwater discharges.

As you indicated in your memo dated 12/31/14, I understand CCID is pursuing a WaterSMART grant opportunity with the U.S. Bureau of Reclamation which might make my farm eligible for NRCS funding in addition to CCID's Water Conservation program. I am very much interested in pursuing the NRCS funding if the grant is awarded.

Very truly yours,

Acreage within the Molasses Service Area: 198

Appendix D

Official Resolution

RESOLUTION NO. 14-19

RESOLUTION APPROVING APPLICATION FOR FINANCIAL ASSISTANCE
FOR THE MOLASSES DITCH LINING PROJECT THROUGH
THE BUREAU OF RECLAMATION'S WATER SMART GRANT PROGRAM

WHEREAS, the Central California Irrigation District (CCID) is a California special district with authority under the Irrigation Districts Division of the California Water Code to enter into cooperative agreements with the United States; and

WHEREAS, since 1990, CCID has been involved in a multi-faceted program to modernize its canal system in order to conserve water, enhance the efficiency with which it serves its landowners and water users, and help solve water quality problems facing its growers: and

WHEREAS, CCID is presently designing an improvement plan for the Molasses Ditch, a community lateral located northeast of the City of Dos Palos, within Merced County, which has an estimated project cost not to exceed $1.4 million; and

WHEREAS, the United States is offering financial assistance to agencies such as CCID for qualifying projects that will conserve and use water more efficiently, among other benefits, through its WaterSMART Water and Energy Efficiency Grant Program; and

WHEREAS, the Board of Directors of CCID has been informed of the provisions and requirements of the grant program and wishes to pursue funding through the program for the above-described project:

NOW, THEREFORE, BE IT RESOLVED that the above recitals are true; and

BE IT FURTHER RESOLVED that the Board of Directors finds that CCID is capable of providing up to $1.1 million in matching funds or in-kind contributions that may be made a condition of the grant; and

BE IT FURTHER RESOLVED that the President, Secretary and/or Manager are hereby authorized to execute the application form and any other required agreements or documents; and

BE IT FURTHER RESOLVED that CCID will work diligently with its consultants and personnel from the Bureau of Reclamation to meet all applicable program deadlines.

PASSED AND ADOPTED THIS 18th day of December, 2014 by the following vote:

AYES: KIRK JENSEN, CHRIS FAGUNDES, JAMES O'BANION, ERIC FONTANA

NOES: None

ABSENT: STEVE BELL

JAMES O'BANION, President

ATTEST:

GREGG RICE, Secretary

-o0o-

I, GREGG RICE, Secretary of the Board of Directors of CENTRAL CALIFORNIA IRRIGATION DISTRICT, do hereby certify that the foregoing is a true and correct copy of a resolution adopted by said Board of Directors of said District at a regular meeting of the Board held on Thursday, December 18, 2014.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said District this 19th day of December, 20 14.

GREGG RICE, Secretary of the
Board of Directors of the Central
California Irrigation District