FRESNO IRRIGATION DISTRICT

METZLER AND KRUM BASIN EXPANSION RECHARGE BASINS

FRESNO COUNTY, CA

Application Submitted to the United States Bureau of Reclamation for a
WaterSMART: Drought Response Program
Funding Opportunity No. R25AS00013

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OCTOBER 2024

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1 . TECHNICAL PROPOSAL

(A) EXECUTIVE SUMMARY

General Project Information

Proposal Name: Metzler and Krum Basin Expansion Recharge Basins
Date: October 7, 2024
Applicant Name: Fresno Irrigation District
City, County, and State: Fresno, Fresno County, California
Task Area: A
Funding Group: II

Applicant Eligibility

Fresno Irrigation District (FID) is an Irrigation District located in Fresno County, California, and falls under the Category A application.

Project Summary

The Fresno Irrigation District (FID) is a Category A applicant and provides agricultural water to approximately 247,000-acre area in Fresno County, California. The District proposes to expand an existing basin (Krum Basin Expansion) by 24 acres and construct 20 additional acres (Metzler Basin) for a total of 44 acres of recharge basins, monitoring wells, and inlet structures with flow measurement equipment. The project will capture and recharge flood and storm water that would otherwise leave the region. The project will raise groundwater levels, increase groundwater storage, reduce the regional impacts from subsidence, reduce groundwater pumping costs in the local area, and benefit a local disadvantaged community area. Groundwater recharge is estimated to average about 792 AF/year based on local hydrology. There are no project partners for Metzler and the expansion of the existing Krum Recharge Basin.

Additional Information. The project includes components of a Task A Project (recharge basin) and will be implemented by a California Water District. Both basins shall be considered one project for the application. The property is already owned by FID and the CEQA process has been completed and adopted for Krum Basin Expansion and the Metzler CEQA document has been initiated and currently in process, anticipated FID Board adoption by the end of 2024.The project will not include any modification to Federal facilities. An environmental evaluation did not identify significant issues or hurdles to project development. Preliminary design has already started. The project can be completed well within the three-year required term, with an estimated construction start date of November 2026. The total project cost is estimated to be $6,000,000 with a requested grant of $3 million.

Background Information & Water Supply

FID was organized in 1920 and has a service area of approximately 247,000 acres and diverts San Joaquin River and Kings River water into the 680-mile canal and pipeline distribution system for both agricultural and municipal water uses. The District has acquired over 400 acres of land to construct additional recharge basins, including the two proposed project site locations.

FID is identified as a conjunctive use district, meaning growers will be supplied with surface water and supplement with groundwater, often utilizing private wells. **Table 1** outlines the District's water supplies over the last 10 years.

Table 1 – Water Supplies

Year	Surface Water Total (acre-feet)	Agency Groundwater (acre-feet)	Recycled M&I (acre-feet)	Other (acre-feet)	Total (acre-feet)
2014	267,400	11,400	26,600	360	305,760
2015	162,800	0	24,800	100	187,700
2016	451,000	900	9,900	6,100	467,900
2017	519,500	0	0	2,200	521,700
2018	414,000	1,000	8,600	6,300	429,900
2019	566,000	0	0	11,200	577,200
2020	331,200	2,700	5,800	3,200	342,900
2021	174,200	1,500	0	9,900	185,600
2022	353,588	9,846	1,671	4,015	369,120
2023	547,806	0	0	37,777	585,583
Total Average Annual Water Supply for 2014-2023 in AFY =					397,336
Average Annual Water Supply = 397,336 acre-feet					

(B) PROJECT LOCATION

The proposed project includes construction of one new recharge basin and the expansion of an existing basin in the western portion of Fresno County, totaling approximately 44 acres. The sites are located at the NW corner of Shaw and Jameson Avenues, APN 016-450-71S, and the SE corner of McKenzie and Hayes Avenues, APN 326-040-23S. The Metzler site coordinates are 36°48'31.22"N latitude and 119°59'26.60"W longitude. The Krum site coordinates are 36°44'38.41"N latitude and 119°53'30.67"W longitude. Refer to **Appendix A** for an aerial photograph of the project location and parcels. **Figure 1** is a vicinity map of the project.

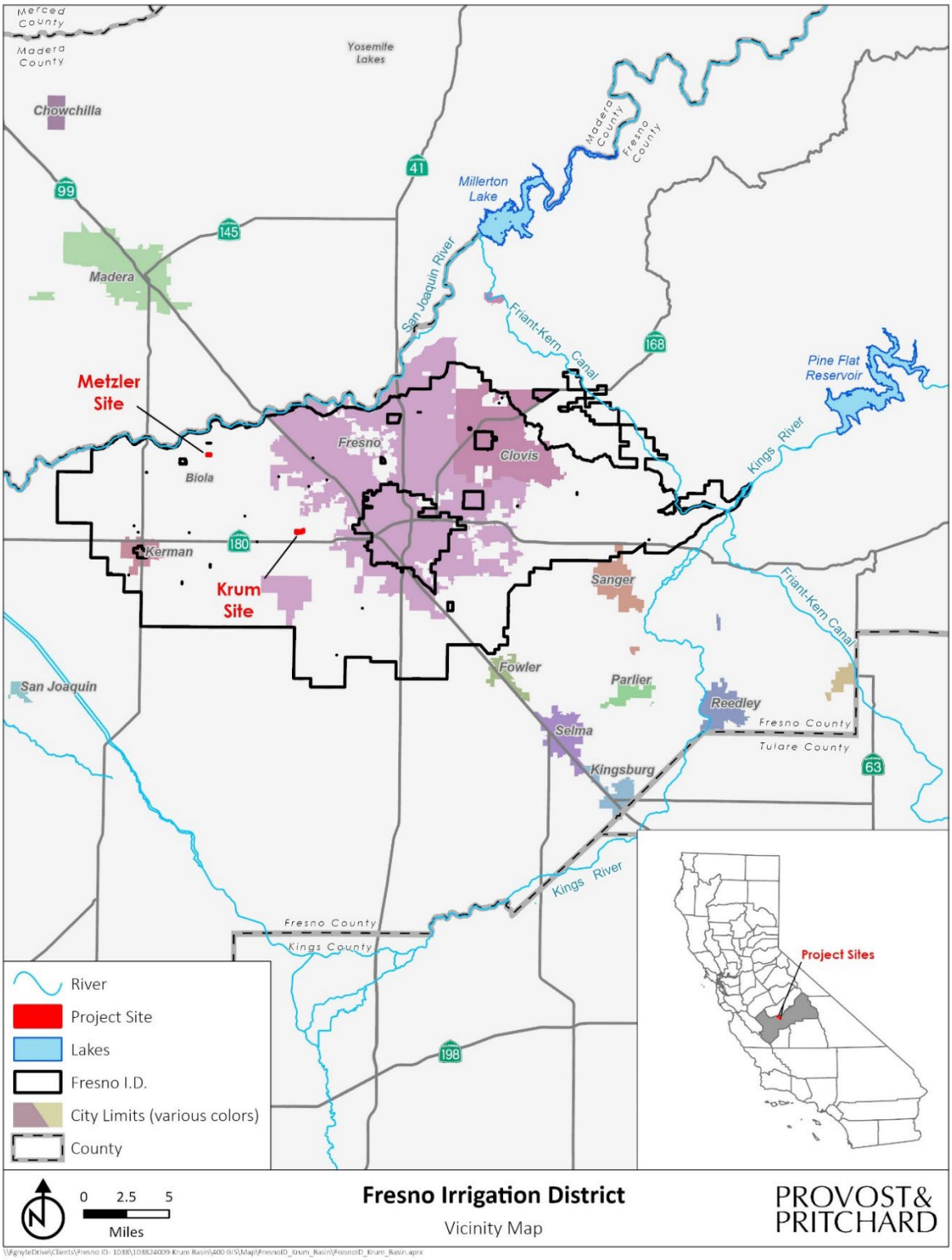


Figure 1 – District Vicinity Map

(C) PROJECT DESCRIPTION

The proposed project includes construction of one new recharge basin and the expansion of an existing basin totaling approximately 44 acres. Water from the Kings River and San Joaquin River (Friant Division of Central Valley Project) will be delivered to the basin. **Appendix A** includes preliminary design drawings and a Basis of Design Memorandum for the project. The proposed project includes the following components:

- Recharge Basin. The Metzler project will include construction of a new earthen recharge basin. The Krum Basin Expansion project will include construction of a new earthen recharge cell (2) adjacent to the existing cell 1.. The levees for both projects will be less than 6 feet tall from existing grade.
- Wells. Two monitoring wells will be installed at the Metzler site, and an existing monitoring well at the Krum site will be utilized to monitor changes in groundwater levels.
- Piping and Connections. For the Metzler site, an inlet structure on the adjacent canal will allow for water to be delivered to the Metzler basin. At the Krum Site, an inlet structure has already been constructed to deliver water into Cell 1. An interbasin structure will allow for water to be transferred from Cell 1 to the Krum Expansion Basin Cell 2.
- Monitoring and Control. The project will include actuated control gates to measure and regulate inflow and a staff gauge in each basin to monitor infiltration rates.

(D) APPLICANT CATEGORY AND ELIGIBILITY OF APPLICANT

Fresno Irrigation District (FID) identifies as a Category A applicant as FID is an Irrigation District located in Fresno County, California.

(E) EVALUATION CRITERIA

EVALUATION CRITERION A - SEVERITY OF DROUGHT OR WATER SCARCITY CONDITIONS AND IMPACTS

- Is the project in an area that is currently suffering from drought or water scarcity, or which has recently suffered from drought or water scarcity? Please describe existing conditions, including when and the period of time that the area has experience drought or water scarcity conditions.

Although 2023 was a historic wet year, it followed a three-year drought period of 2020-2022, which was soon after the worst historic drought of 2012-2016. The District has experienced numerous droughts over the past 22 years according to the US Drought Monitor (https://droughtmonitor.unl.edu). **Figure 2** shows the Drought Severity and Coverage Index for the Fresno, California area for the past 22 years. This index ranges from 0 to 500, with 0 meaning that none of the area is abnormally dry or in drought, and 500 meaning that all of the area is in an exceptional drought. **Figure 2** shows that the area experienced some form of drought the majority of the time since 2000.

Drought conditions in California as of May 24, 2022 are shown below in **Figure 3**. According to this figure, 98% of California is currently experiencing a “Severe”, “Extreme” or “Exceptional” drought. The project site is shown on the figure and is within an area of “Extreme Drought”.

Figure 4 shows the groundwater level decline throughout FID versus surface water diversions. **Figure 5** shows Kings River runoff since 1895, including a trending decline, possibly due to climate change, change in watershed conditions, or some other factor outside of FID's control.

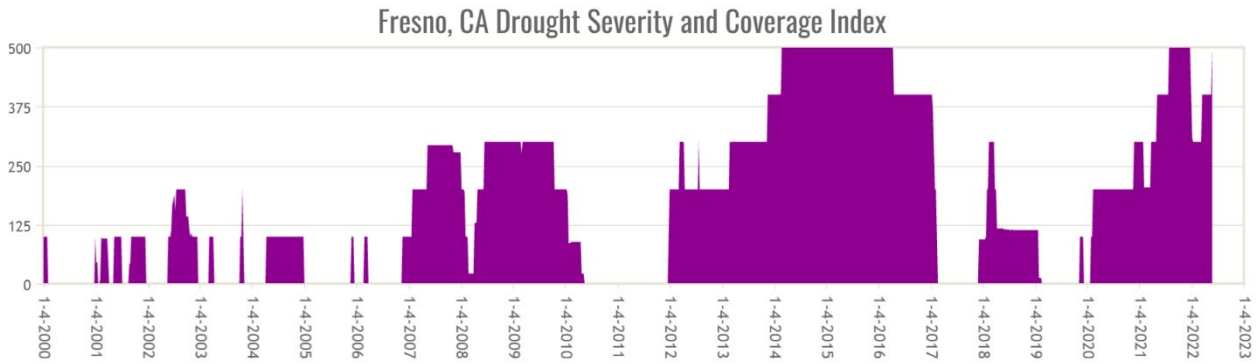


Figure 2 – Drought Severity and Coverage Index for Fresno, California Area

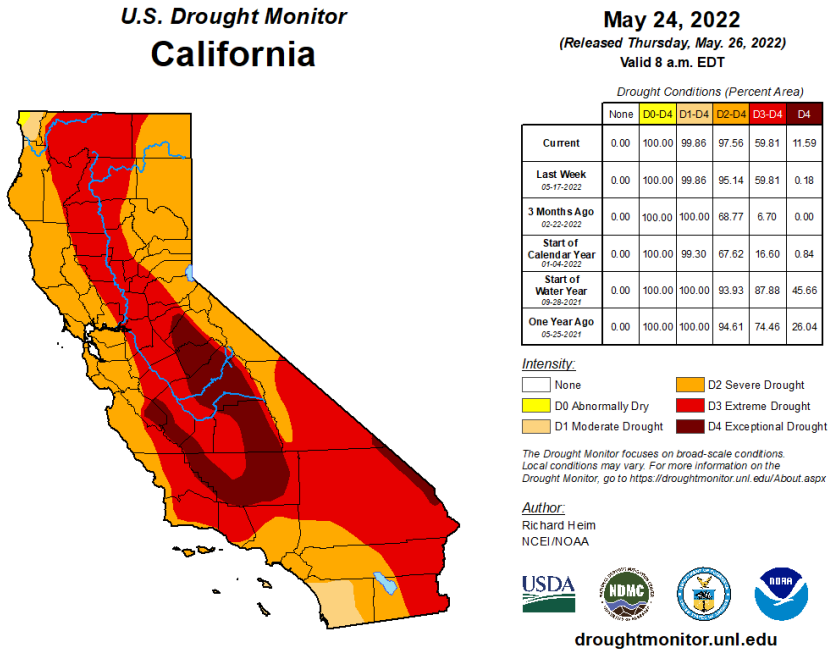
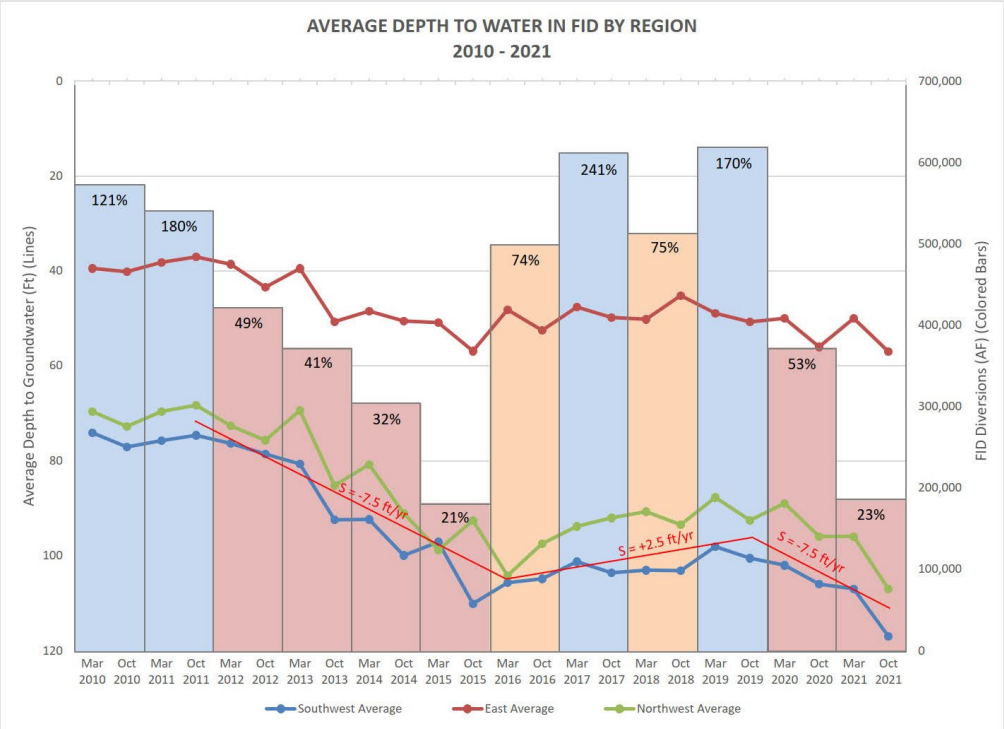


Figure 3 - U.S Drought Monitor Report (May 24, 2022)



Notes: FID Diversions are for calendar year (January - December). Percentages shown are Kings River water year runoff percent of normal.
G:\Reports\FID\Groundwater\Depth to GW\Depth to Groundwater Report

Figure 4 – Groundwater Depth vs Surface Water Diversions

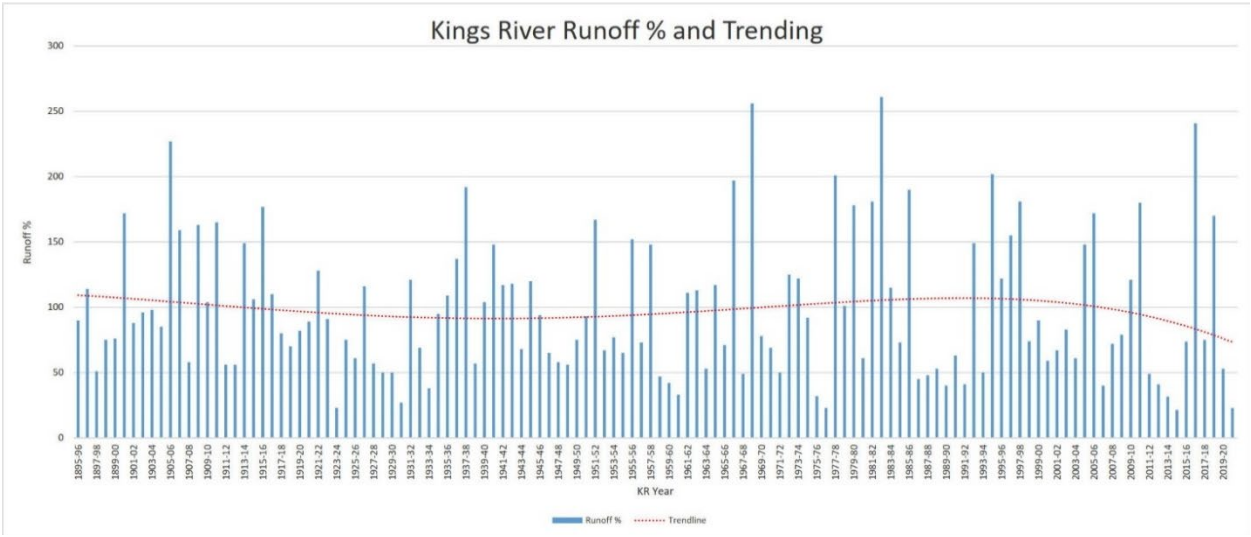


Figure 5 – Kings River Runoff (1895-2022)

- *Describe any projected increases to the severity or duration of drought or water scarcity in the project area resulting from changes to water supply availability and climate change.*

The 2022 North Kings Groundwater Sustainability Plan (Section 3.3.10) included an analysis of future water budgets, including the impacts of climate change by 2030 and 2070. The analysis predicted increases in evapotranspiration of 3% by 2030 and 8% by 2070. The analysis predicted

only minor changes in precipitation or river flow, but also predicted '*a major shift in timing*' of precipitation. The report concluded that '*Maintaining the same level of water supply*' would require '*increased recharge during non-irrigation and low-irrigation periods*.'

1. *What are the ongoing or potential drought or water scarcity impacts to specific sectors in the project area if no action is taken, and how severe are those impacts?*

Agricultural, rural, residential, and municipal water users are impacted by droughts in the FID area. These service sectors could all suffer from the following impacts. These impacts can all be serious due to the severity of droughts in the region.

1. Groundwater level declines and reduction in groundwater storage
2. Reduction in well yield
3. Wells going dry
4. Restrictions on groundwater pumping
5. Higher water costs for water users
6. Mandatory water conservation programs

In addition, agricultural water users could suffer from lower crop yield, crop losses, and land fallowing. During the 2015 drought, FID water deliveries could only be provided for two weeks. For the first time ever, locks and explanatory tags were added to all the turnout control valves to discourage water theft.

- *Whether there are public health concerns or social concerns associated with current or potential drought conditions.*

Public Health Concerns. Public health concerns include impacts to rural, domestic, and municipal water supplies that could prevent residents from having sufficient water for basic health and sanitation needs. During droughts, shallow domestic wells are the most susceptible to going dry. Private domestic pumpers and small communities within the area are dependent on groundwater for their supply in this area and are susceptible to groundwater level declines. The proposed project will raise groundwater levels and reduce demand for groundwater pumping, helping to address these concerns.

Social Concerns. The primary social concerns from drought are impacts to jobs and the economy, and the spread of poverty. Agriculture is the economic driver of the Fresno area. Fresno County is the number one agriculture producing county in the United States. According to the Fresno County Farm Bureau, every $1 generated on the farm produces another $3.50 in the local and regional economy. (https://www.fcfb.org/fresno-county-agriculture). Job security could be jeopardized for farmers, farm workers, as well as those working in agriculture management, food processing, and agricultural equipment and supplies.

- *Whether there are ongoing or potential environmental impacts.*

The reduced flows in local rivers and the reduced storage behind the local dams are impacting, and will continue to impact, endangered and threatened species until the current drought abates. Ongoing and potential environmental impacts include:

- Losses or destruction of fish and wildlife habitat
- Lack of food and drinking water for wild animals
- Increase in disease in wild animals, because of reduced food and water supplies
- Migration of wildlife
- Increased stress on endangered species or even extinction
- Lower water levels in reservoirs, lakes, and ponds
- Loss of wetlands
- Wind and water erosion of soils

- *Whether there are local or economic losses associated with current drought conditions that are ongoing, occurred in the past, or could occur in the future.*

The California Department of Food and Agriculture prepared a report in February 2022 entitled "*Economic Impacts of the 2021 Drought on California Agriculture*". The report covers the entire State, but also has local information on specific hydrologic regions. A copy of the report can be found at: *https://wsm.ucmerced.edu/drought_impact_2021/* . The report notes that the 2020-2021 water years were the second driest two-year period on record. It also states that the drought was marked by warmer temperatures, dry antecedent moisture conditions, higher evapotranspiration rates, and reduced crop yields.

According to the report, the State has had the following impacts the last few years:

- 395,100 acres of idled cropland
- Total economic losses of $1.7 billion
- 14,634 jobs lost
- Surface water cutbacks of 3,008,000 AF in the Tulare Lake Basin Hydrologic Region (where FID is located)

Additional economic losses from drought can include reduced property values, lower tax revenue, and higher water costs for water users. As the 2022 water year was also dry, this compounded the effects of the previous two dry years and caused more severe economic impacts. Although the 2023 year was historically wet, the flooding issues and high flows will only provide shorter term benefits, as more water recharge is required during wet years, which this project will do.

- Whether there are other water-related impacts not identified above (e.g., tensions over water that could result in a water-related crisis or conflict).

Groundwater Sustainability. FID is required to comply with California's Sustainable Groundwater Management Act (SGMA), which requires groundwater basins to achieve sustainability from 2020 to 2040. FID is located in the Kings Groundwater Subbasin, which is considered "critically overdrafted" by the State of California. Groundwater is currently an important reserve water supply for use in droughts when surface water supplies are limited, but

that reserve supply would be lost or limited if groundwater pumping had to be restricted to comply with SGMA. This creates a greater need for projects like the proposed recharge basin.

San Joaquin River Settlement. Friant Division CVP supplies have been recently curtailed due to the settlement agreement on the San Joaquin River. Based on the agreement, all water contractors will be impacted by about 200,000 AF per year. One estimate shows that deliveries to FID would be reduced by an average of 9,000 AF/year. The proposed project will conserve water that can be used to partially compensate for these water allocation reductions.

EVALUATION CRITERION B—PROJECT BENEFITS

Sub-Criterion B1: Project Benefits

- *What is the estimated quantity of additional supply the project will provide and how was this estimate calculated? Clearly state this quantity in AFY as the average annual benefit over ten years (e.g., if the project captures flood flows in wet years, state this and provide the average benefit over ten years or longer including dry years).*

Water recharged at the project will include flood waters and other water supplies that would otherwise flow out of the area either due to inadequate surface storage or lack of demands when the water is available. The water supplies available for recharge include: floodwaters (local stream floodwater, local stormwater, Kings River floodwater, Central Valley Project (CVP) Friant Division Section 215 Water from the San Joaquin River), CVP Friant Division Class II Water, CVP Friant Division Uncontrolled Season water, CVP Friant Division Unreleased Restoration Flow (URF) water, Recovered Water Account, and Kings River Fisheries Management water.

Previous analysis in the 2022 North Kings Groundwater Sustainability Plan (Section 3.4 – Water Supply for Augmentation) determined that these water supplies would be available on average for 120 days every 4 out of 10 years. The project will have a wetted area of 33 acres. The infiltration rate was estimated to be 0.5 feet/day based on the local soils, as well as observed recharge rates at other nearby FID recharge basins, including Wanger Basin, Empire Basin and Lambrecht Basin. This results in the following annual project recharge: 120 days x 4/10 years x 33 acres x 0.5 feet/day = 792 AF/year.

- *What percentage of the total water supply does project's water yield represent? How was this estimate calculated?*

On average, the District's yearly water supply equates to 397,336 AF/Year. The percentage of water recharged would be 792 AF/397,336 AF = 0.20% of the total annual water delivered by FID. In a significantly dry year, similar to 2021, where the District's total supply for the year was 185,600, the water recharged would comprise 792 AF/185,600 AF = 0.43% of the total annual water delivered by FID.

Total Project Water Yield in AFY	792
Average Annual Water Supply in AFY (from ES)	397,336
Percentage Yield	0.20%

- *How will the project build long-term resilience to drought or other water reliability issues? Include factors such as the predictability of supply, variability in availability, and the likelihood of interruptions or failures.*

Long-Term Resilience to Drought. The project will capture and recharge flood and storm waters that typically leave the region. The project will provide an average of 792 AF/yr of groundwater recharge (10-year average). Groundwater recharge is needed to halt the current groundwater overdraft in the region, and help FID achieve groundwater sustainability. The project will provide regional benefits over the entire 247,000-acre District, since new water supplies will increase the allocation for all water users. The project is not intended to provide water supply for population growth or new cropping, but rather to help improve water reliability in future droughts, helping the area reach sustainability.

- *How many years will the project continue to provide benefits?*

Project Life Expectancy. The life expectancy of the project is conservatively estimated to be 50 years based on a combination of FID experience, manufacturer's information, and life expectancies listed for various facilities in *Design and Operation of Farm Irrigation Systems*, ASAE Monograph No. 3, 1981 (pg 58). Over the 50-year life of the basin recharge is estimated to be 39,600 AF. With proper maintenance the facilities could last more than 50 years.

- *Provide a qualitative description of the degree/significance of the benefits associated with the additional water supplies.*

The new water supply is significant for the following reasons:

- **Groundwater Sustainability**. The project is located in the Kings Groundwater Subbasin, which was determined in California Department of Water Resources Bulletin 118-03 to be a "critically overdrafted" basin. FID must also now manage their groundwater sustainably due to new state laws, so utilizing all available water supplies is imperative.
- **Permanent Plantings.** Having a secure water supply is particularly important for FID since about 85% of the irrigable acres are planted in permanent crops, and farmers have little ability to reduce demand or fallow land during droughts. The project will store water for use in droughts and reduce the need for fallowing and vine/tree losses in droughts.
- **Regional Project Benefits.** The project will benefit the entire area served by FID, which covers 247,000 acres. The recharged water will benefit a local area, and the recharged water will potentially benefit a surrounding area of about 7 square miles.
  Disadvantaged Community Benefits. Both project sites are located within a DAC census tract. The Krum basin site is located just south of West Side Fresno, and the Metzler site is located east of the community of Biola. Implementation of these projects will raise community water levels and improve their water quality.

- *How will the project supply help buffer against water shortages, reduce the need for emergency responses, and enhance the resilience of water systems?*

As water is recharged to the aquifer, groundwater levels begin to rise. Increased groundwater levels ensure that grower wells remain reliable in times of water shortage, thus reducing the need for emergency response to mitigate for the shortage. During flood years, the recharge basins may relieve excess flows from neighboring rivers and canals, deducing the risk of flooding community land and roads.

Sub-Criterion B3: Additional Project Benefits

Sub-Criterion B3.a: Climate Change

- *In addition to drought resiliency measures, does the proposed project include other natural hazard risk reductions for hazards such as wildfires or floods?*

The project can lessen flooding on the San Joaquin River and Kings River. The project will primarily recharge stormwater, flood water and high flows from the local streams and rivers. Having additional areas to take flows off the river or local streams in flood events could be the difference in flow that prevents overtopping of a levee or embankment downstream, as experienced in recent years, particularly along the Kings River.

- *Will the proposed project establish and use a renewable energy source?*

The electrical energy supplied to the well pumps in the area is supplied by Pacific Gas & Electric Co. (PG&E), who delivered 50% of their electricity from renewable resources in 2021 that qualify under California's Renewable Portfolio Standard (RPS) (https://www.pge.com/en_US/about-pge/environment/what-we-are-doing/clean-energy-solutions/clean-energy-solutions.page?WT.mc_id=Vanity_cleanenergy retrieved 06/02/2022). Therefore 50% of energy used by the project will be renewable. The District is also considering solar powered operational gates for controls at the site, and may add a solar array.

- *Will the proposed project reduce greenhouse gas emissions by sequestering carbon in soils, grasses, trees, and other vegetation?*

The project will improve water reliability for agriculture as well as the Disadvantaged Communities in the area. The project will help keep lands within FID in agricultural production, which will continue to sequester carbon in the soils.

- *Does the proposed project include green or sustainable infrastructure to improve community climate resilience?*

Energy will be saved by raising groundwater levels and reducing pumping lifts. If it is assumed that the recharged water spreads out over seven square miles, then water levels will rise several feet each year. . Using these criteria energy savings will be about 106,920 KWH which has a value of about $16,000. This also equates to a reduction in greenhouse gasses of 75 metric tons/year (see **Appendix C** for calculations).

- *Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?*

Energy will be saved by raising groundwater levels and reducing pumping lifts for nearby wells. **Appendix C** includes assumptions and calculations showing that the project will reduce greenhouse gasses by 75 metric tons/year.

- *Does the proposed project have a conservation or management component that will promote healthy lands and soils or serve to protect water supplies and its associated uses?*

The project will provide additional storage/recharge capacity that will capture and beneficially use water that would otherwise be lost to the region.

- *Does the proposed project contribute to climate change resiliency in other ways?*

Climate change is expected to result in more precipitation as rainfall and less as snowfall. Hence, the watershed will have a lower ability to serve as a reservoir for storing water. The recharge basin will serve as an alternative way to store water if runoff volumes increase or change because of climate change.

Sub-Criterion B3.b: Ecological Benefits

- *Does the project seek to improve the ecological resiliency of a wetland, river, or stream in the face of climate change? Provide a narrative discussion, quantification, and metrics to support the anticipated improvements in ecological resilience.*

The proposed project will add to FID's portfolio of water supply options, and will reduce demand for other water supplies, or the timing of demand, from the San Joaquin River and Kings Rivers. This may result in providing greater storage capacity available behind the dams on the river or reduce flood flows in the river. This could benefit federally-recognized candidate species, threatened species and endangered species in and around the two rivers. It is not feasible to precisely quantify the project's environmental benefits due to the complexity of river operations and endangered species' habits and life cycles. However, reducing reliance on river water could have a real and tangible benefit to numerous threatened and endangered species.

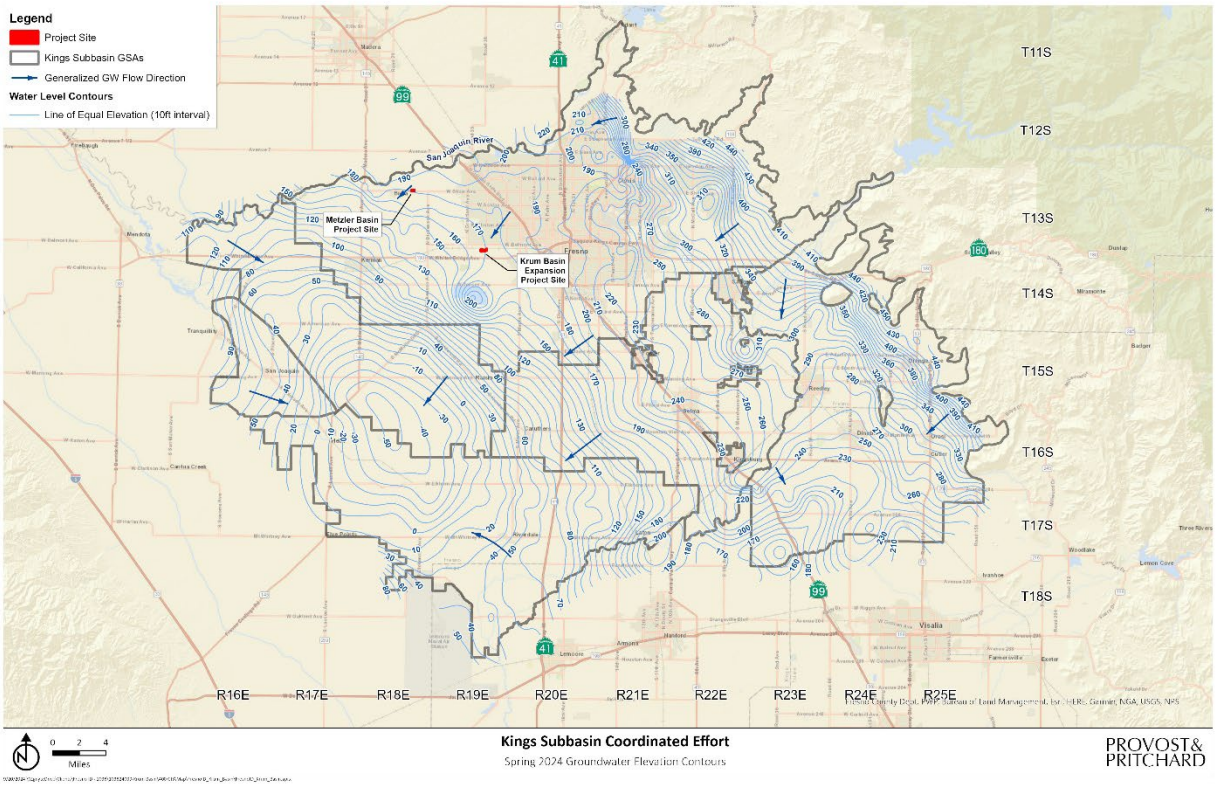


Figure 6 – Groundwater Flow Patterns at Recharge Basin (2024 Groundwater Contours)

- *Identify ecological benefits expected to result from project implementation. Provide a narrative discussion, quantification, and metrics addressing, as applicable, the types and status of species benefited, acreage of habitat improved, restored, or protected, the amount of additional stream flow added, and the improvements in relevant water quality metrics? Support all metrics and quantifications with appropriate calculations.*

FID plans to develop a groundwater bank that stores water and improves wildlife habitat. Accordingly, the project will include numerous design features to enhance habitat for terrestrial, upland, waterfowl, and aquatic species.

Project Features Benefitting Endangered Species

The project sites will be converted to recharge basins that are periodically flooded. This will provide the following benefits to local wildlife:

- Creation of waterfowl, upland, wetland and aquatic habitat
- Resting, roosting, nesting, drinking, and foraging habitat for waterfowl, shorebirds, resident and migratory birds and a variety of other wildlife
- Waterfowl habitat for bird species on the Pacific flyway
- Water supply for terrestrial wildlife
- Reduction in fugitive dust and pesticide applications from changing the land use

The project will also include the following features that will improve wildlife habitat:

- Flat Levee Slopes. Interior levee slopes will be 5H:1V, which will promote the growth of native wetland and upland vegetation to provide wildlife habitat.
- Varying Water Depths. Water depths in the basin will frequently vary, providing a variety of habitat environments for different species, including foraging areas for waterfowl, shorebirds, and other wildlife.
- Interior Levees. Upon completion, the Krum basin expansion will consist of a total of two cells, with the adjoining levee acting as an interior levee. The interior levee will provide a semi-isolated habitat and safer conditions from predation.

These features will significantly improve habitat for local wildlife, which has been highly disturbed for many years due to agricultural activity.

- *Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status? Identify the species of interest, explain how the project will positively impact the species and potential contribute to delisting.*

The addition of 44 acres of new groundwater recharge facilities could create 44 acres of temporary waterfowl habitat when the basins are inundated. These basins could serve as an important source of habitat for migratory waterfowl and resident wading birds in a region which has lost most of its wetlands. When the facilities are not in use, FID's maintenance program will allow herbaceous vegetation to grow within the basins and create potential grassland habitat for native flora and fauna during the dry season. Once the basins are inundated again, the edges of the basins could provide conditions for emergent vegetation that would benefit a number of aquatic and terrestrial species.

Sub-Criterion B3.c: Other Benefits

- *Will the project benefit multiple sectors and/or users? Describe the associated sector benefits.*

The project will benefit multiple sectors including agricultural, rural and urban water users. The project will directly increase water supplies for agricultural water users. The local landowners with domestic wells and nearby disadvantaged communities will benefit from higher groundwater levels and improved water quality. FID also has an agreement with the City of Clovis to provide them a supplemental surface water supply, which would eventually provide them up to 7,000 AF/year. The project could make more water available for this transfer or other water marketing opportunities. The project will also provide operational flexibility for FID to meet its obligations under the Kings River Fisheries Management Program. As part of this program, FID is required to convey water in the Kings River to its diversion point to maintain river flows particularly in non-irrigation periods and longer in drier years.

- *Will the project benefit a larger initiative to address sustainability?*

FID is required to comply with California's Sustainable Groundwater Management Act (SGMA), which requires groundwater basins to gradually achieve sustainability from 2020 to 2040. FID is located in the Kings Groundwater Subbasin, which is considered 'critically overdrafted' by the State of California. Surface water supplies are fully allocated in the area, so new supplies can only be realized by capturing flood waters that normally leave the region during floods and wet years. The project will capture and recharge such flows, and subsequently aid in the stabilization of declining groundwater levels..

- *Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?*

Yes, the project will help FID and the basin to reach sustainability by capturing and recharging flood waters that would then be available for recovery in drier years through nearby wells. The NKGSA's GSP was approved, which has helped reduce tension in the area, however, there continues to be significant work required to reach sustainability by 2040. This project is a critical component of FID's plan to increase recharge in the area, helping to replenish the aquifer and ultimately reduce tensions caused by overdraft.

EVALUATION CRITERION C - PLANNING AND PREPAREDNESS

- *Attach relevant sections of the plan that are referenced in the application, as an appendix to your application.*

See **Appendix A**, as well as the previously mentioned GSP and IRWMP available online through the links reference.

Plan Description and Objective:

The District's Drought Management Plan (2016) is found in **Appendix B**. The Plan is the primary drought management strategy document used by the District, is a supplement to the District's Water Management Plan and is the focus of the discussions below. Supplementary documents

include the Kings Basin Integrated Regional Water Management Plan (IRWMP) (2018) and North Kings Groundwater Sustainability Plan (revised 2022), both regional documents. They both address climate change since that is best addressed on a watershed scale. Project lists have been maintained in the Kings Basin IRWMP for many years and are not included in the Drought Management Plan since the efforts would be duplicative.

These two documents are not provided due to their size but can be found at the following links:

Kings Basin Integrated Regional Water Management Plan:
(https://www.kingsbasinauthority.org/governance/governing-documents/irwmp/

North Kings Groundwater Sustainability Agency
https://northkingsgsa.org/groundwater-sustainability-plan/

- *When was the plan developed and how often is it updated?*

FID's Drought Management Plan was developed in 2016 and is updated every five (5) years in conjunction with FID's Agricultural Water Management Plan that was last updated in 2021.

- *What is the purpose and objective of the plan?*

The purpose of the plan is to detail how water suppliers prepare for droughts and manage water supplies during drought conditions. The objective of the plan is to outline a equitable means of managing supplies and allocation during drought demands.

- *What is the geographic scope of the plan?*

The geographic scope of the plan includes all regions encompassed within the Fresno Irrigation District.

- *Explain how the applicable plan addresses drought.*

The plan identifies FID as a conjunctive use district, meaning that growers will receive surface water supplies and supplement with groundwater supplies, utilizing private wells. As surface supplies vary from year to year based on the hydrological conditions of the Kings River and San Joaquin River watersheds, groundwater pumping also varies, typically increasing in dry years and decreasing in wet years. This plan addresses drought by considering both the available supplies of surface water and groundwater and adjusts the delivery and allocation to its customers.

*Describe the plan's drought-focused elements.*The FID Drought Management Plan was prepared to specifically address drought in FID, and not in a larger regional area. The plan includes the following drought-focused elements (sections):

- Drought Monitoring
- Water Shortage Allocations
- Operational Adjustments (response actions)
- Demand Management (response actions)
- Dry Year Alternative Water Supplies (mitigation actions)
- Stages of Actions

- Coordination and Collaboration
- Revenue and Expenditure Impacts

The two supplementary reports, the Kings Basin Integrated Regional Water Management Plan and North Kings Groundwater Sustainability Plan, include a list of prioritized projects and detailed analysis of climate change impacts.

Plan Development Process:

- *Was the plan developed through a collaborative process?*

The Drought Management Plan acknowledges that FID coordinates and collaborates extensively with others to coordinate operations in all years. This outreach effort includes coordination with Kings River Water Association, cities of Fresno and Clovis, USBR and other partnerships.

- *Who was involved in developing the plan? Identify the specific entities or organization and describe their involvement.*

The Drought Management Plan was developed as a supplemental document to the District's Water Management Plan. The Water Management Plan was adopted at an advertised public hearing in 2021. The plan was adopted by the District Board of Directors, which is composed entirely of local landowners, thus signifying support from local water users. There was no known public opposition to the Plan. In addition, page 11 of the Drought Management Plan includes a section on Coordination and Collaboration that discusses FID's established protocols for working with other agencies during droughts.

The two supplementary documents were both developed with significant outreach and stakeholder involvement. The outreach included public meetings, soliciting public comments, websites, social media, email lists, public notices, public meetings, outreach materials, committees and workgroups. These outreach efforts are described in Section 2.5 of the Kings Basin Integrated Regional Water Management Plan and Section 2.5 of the North Kings Groundwater Sustainability Plan.

- *Was the plan prepared with input from stakeholders with diverse interests (e.g., water, land, or forest management interests; and agricultural, municipal, Tribal, environmental, and recreation uses)? Describe the process used for interested stakeholders to provide input during the development of the plan.*

As noted above, the development of the IRWMP and GSP included significant outreach, stakeholder engagement, technical workgroups comprised of a wide cross section of all stakeholders within the District and area. Groundwater sustainability has become the primary driver of drought management within the area because of the dependence on groundwater within the area. The Plans were adopted by the Board of Directors at public noticed processes that solicited input and engagement.

- *If the plan was prepared by an entity other than the applicant describe whether and how the applicant was involved in the development of the plan or why they were not part of the planning process.*

FID's Drought Management Plan was prepared by FID staff as a supplemental document to the District's Agricultural Water Management Plan.

Plan Support for Project:

- *Does the plan identify the proposed project by name and location as a potential mitigation or water management action?*

The FID Drought Management Plan identifies 'Dry Year Alternative Water Supplies' as a possible mitigation action. The Plan also notes that the District's Class 2 Friant CVP supply is typically only available in wet years. To utilize this supply, the water needs to be captured in wet years and stored for later use in more critical water years.

- *Explain how the proposed project was prioritized in the plan over other potential projects/measures.*

The proposed project was listed as a priority project following a FID memorandum on possible recharge basin sites (see **Appendix A**). The construction of recharge basins has been identified as the highest priority of FID's remaining projects listed in the North Kings GSA's GSP to help the District reach sustainability.

- *Does implementing the proposed project achieve a goal or need identified in the plan?*

The project meets the Drought Management Plan's broad goals of reducing overdraft, finding dry year water supplies, and developing mitigation options for drought.

The Kings Basin IRWMP (Section 5.2) includes specific goals related to the project including the following:

- Regional Goal 1: Halt, and ultimately reverse, the current overdraft
- Regional Goal 2: Increase the water supply reliability, enhance operational flexibility and reduce system constraints
- Regional Goal 4: Provide additional flood protection

- *Is the supported goal or need prioritized within the plan? If so, how is it prioritized?*

The project goal is to capture flood water in wet years for groundwater banking and recovery during dry years from District or neighboring wells. FID's Drought Management Plan supports projects that align with that objective. FID's groundwater recharge and banking program has been the foundation for its drought management activities and this project will continue to expand the program. The proposed project was listed as a priority project following an FID memorandum on possible recharge basin sites (see **Appendix A**). The project has been prioritized by the District as the next highest priority project for funding.

EVALUATION CRITERION D - READINESS TO PROCEED AND PROJECT IMPLEMENTATION

- *Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates within the applicable timeframe.*

Preliminary planning and design began in early 2024 and final design is expected to begin in mid

2025. It is assumed that the grant contract will be signed on September 1, 2025. Recent experience with other USBR grant funded projects is that the NEPA process, particularly the Cultural Review, has been taking 9 months for the USBR and its review partners to complete. The time for this process is considered to be the critical path and has been included in the schedule. It is estimated that all work will be completed by June, 2028, well before the contractual deadline of September 1, 2028. This provides a comfortable buffer in case of unforeseen delays, and it should be noted that if the NEPA process does not take as long as it has been, the project should be able to be completed much sooner. The schedule is consistent with FID's other similar projects. A detailed schedule is included in **Appendix D**.

- *Describe any permits or approvals that will be required (e.g., water rights, water quality, stormwater, other regulatory clearances. Include information on permits or approvals already obtained. For those permits and approvals that need to be obtained, describe the process, including estimated timelines for obtaining such permits and approvals.*

The permits required are described in Section 4, Required Permits or Approvals. Below is a discussion of their impact on the schedule and implementation.

1. CEQA Compliance. The CEQA process has already been completed for the Krum project and near adoption for the Metzler project, with pending Board approval in October 2024. An Initial Study and Mitigated Negative Declaration was completed and the Negative Declaration was adopted for Krum in May 2024 by the District. Because of page limitations, a copy of only the cover page is included in **Appendix E**, but a full copy of the document and supporting studies can be found at https://ceqanet.opr.ca.gov/2024040116.
2. NEPA Compliance. The CEQA process included biological and cultural studies completed with the consideration of additional NEPA and USBR requirements. This provides an important head start for the NEPA process. If required, the schedule includes time for any additional studies or supporting information to be completed.
3. Stormwater Pollution Prevention Plan. The Stormwater Pollution Prevention Plan will be prepared coincident with the project design and specifications.
4. Dust Control Permit. A dust control permit will be obtained from the local air board right after final design is completed.
5. Indirect Source Review. The Indirect Source Review permit will be obtained from the local air board right after final design is completed.
6. Electrical Connection. Approval for electrical connection with the local utility will be required. This process will start during the final design efforts.

- *Identify and describe any engineering or design work performed specifically in support of the project. If design work has commenced, what phase of design is the project currently in (e.g., preliminarily or final and percentage-30%, 60%, 90%, or complete). If additional design is required, describe the planned process and timeline for completing the design.*

Design work for the project has been started and is the preliminary phase. Following is a description of work completed to date on the project. All of this work has helped to validate the feasibility of the project, provided more detail on project features, operations, and project benefits, and provided sufficient detail for a more detailed cost estimate.

- **Groundwater Recharge Planning Memorandum.** In 2024, FID performed a study to

assess the need for future recharge and identify potential recharge sites. The proposed project was identified in the memo and was later identified as a priority project for the Dstrict. **Appendix A** includes a portion of the memo.

- **Land Acquired.** FID has purchased the property for the project and owns the property in full.
- **Basis of Design Memorandum.** FID's consulting engineer prepared a Basis of Design Memorandum for the recharge project (see **Appendix A**). The memorandum outlines the main design criteria, design information, and assumptions related to earthwork, SCADA/electrical, monitoring, structures, general design features, and elevations.
- **Preliminary Project Design**. Preliminary design drawings of the project are included in **Appendix A**. The drawings include details of the basin layout, embankments, inlet structure, outfall discharge, staff gauge, piping, check structure fencing and appurtenances. FID has already hired a consultant for final design.
- **CEQA Process Completed.** The CEQA process has been completed for the Krum Basin Expansion and Metzler is near completion with pending board adoption by the end of 2024. The Initial Study and Mitigated Negative Declaration is completed and Negative Declaration for Krum was adopted May 2024. A copy of only the cover page is included in **Appendix E**, but a full copy of the document and supporting studies can be found at https://ceqanet.opr.ca.gov/2024040116.
- **Preliminary NEPA Analysis.** The Initial Study completed included biological and cultural studies that included NEPA and USBR considerations based on experience from prior project USBR related projects. This provides a head start for the NEPA process and the basis should additional work be needed.

- *Describe any land purchases that must occur before the project can be implemented, and the status of the purchase.*

FID has already purchased the property for the basin project so there are no easements or additional land acquisitions required to complete the project.

- *If the project is completely or partially located on Federal land or at a Federal facility, explain whether the agency supports the project and has granted access to the Federal land or facility, whether the agency will contribute toward the project, and why the Federal agency is not completing the project?*

The Project is not located on Federal land or at a Federal facility.

- *Describe any new policies or administrative actions required to implement the project.*

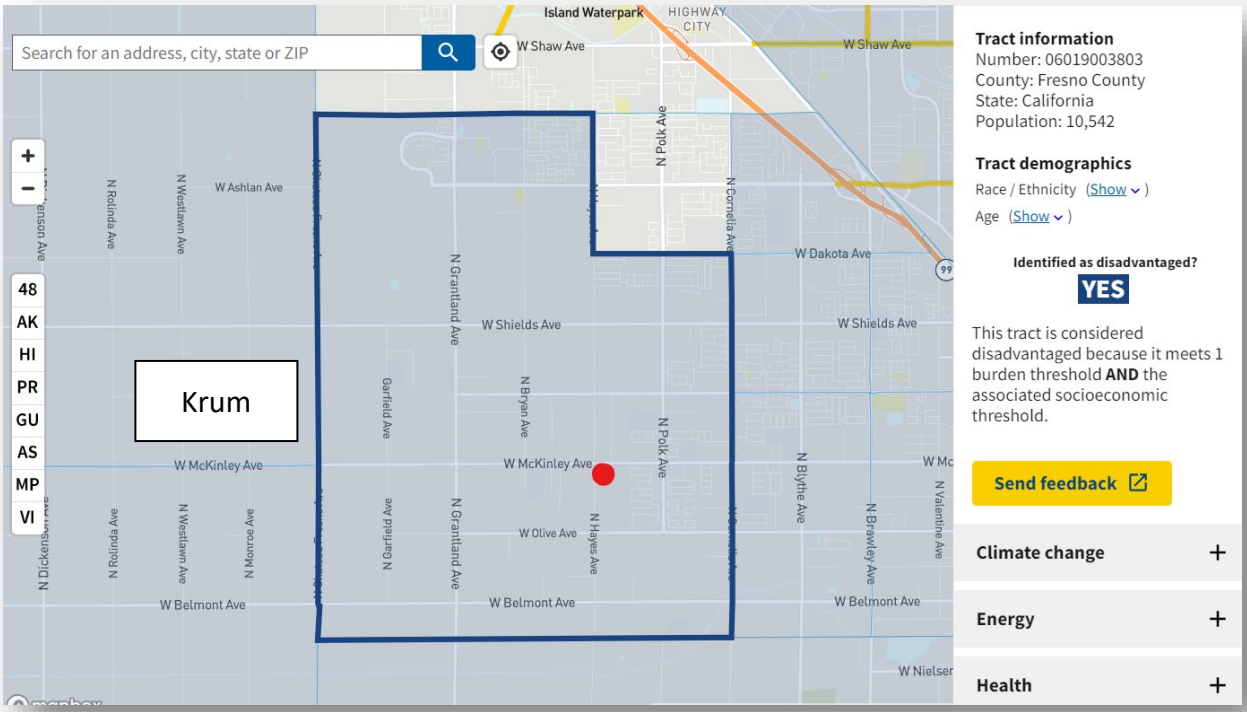
No new policies will be required. FID has constructed numerous similar projects in the past.

EVALUATION CRITERION E - PRESIDENTIAL AND DEPARTMENT OF THE INTERIOR PRIORITIES

Benefits for Disadvantaged Communities:

- *Describe how the proposed project will directly serve and/or benefit a disadvantaged community.*

The project is located within an area identified as disadvantaged using the Climate and Economic Justice Screening Tool (https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5) as shown in **Figure 7**.



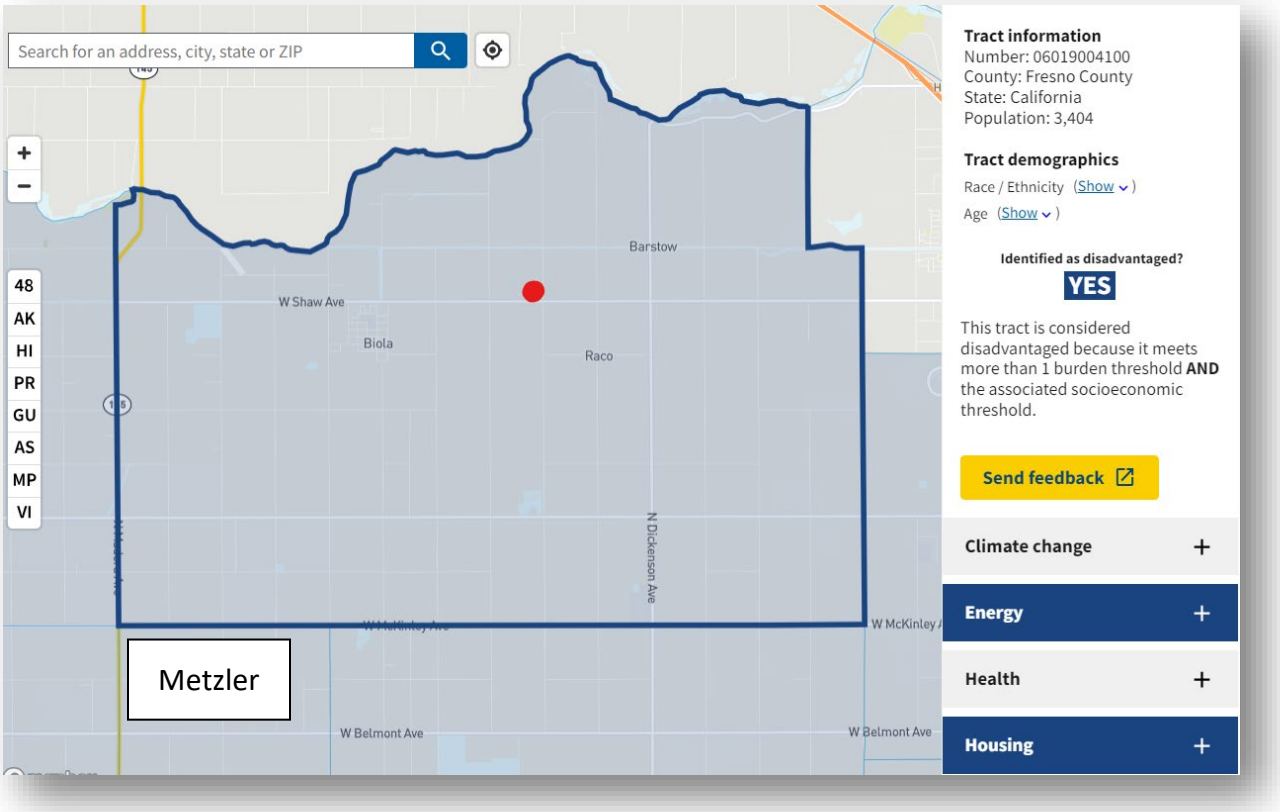


Figure 7 – Climate and Economic Screening Tool Screenshot

Figure 7 shows that the project is located within US Census areas that are considered disadvantaged based on a California Department of Water Resources Statewide dataset. These are areas that have a Mean Household Income (MHI) 80% or less of the State-wide MHI. Therefore, this area also meets the criteria of Section 1015 of the Cooperative Watershed Act, which considers communities disadvantaged if they have less than 100% or the Statewide MHI. These disadvantaged areas cover 163,715 acres, or about 66% of FID. The project will provide regional benefits to the entire service area of Fresno Irrigation District. While recovered water cannot be delivered to all of the District, per FID policy, the new water supply would increase the water allocation for District growers, with the benefit spread over the entire District. Areas surrounding the basins would see improved groundwater levels and groundwater quality.

Figure 6 shows groundwater elevation contours and that project will increase groundwater levels and improve water quality within this disadvantaged community area.

Tribal Benefits:

- *Does the proposed project directly serve and/or benefit a Federally Recognized Tribe?*

The project will not involve a tribe or tribal lands.

- *Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?*

The project will not involve a tribe or tribal lands.

EVALUATION CRITERION F—NEXUS TO RECLAMATION

- *Does the applicant have a water service, repayment, or O&M contract with Reclamation?*

FID currently holds a water contract with the USBR (Friant Division Central Valley Project contract No. 14-06-200-1122A-D (C2)) for 75,000 acre-feet of Class II San Joaquin River water.

- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*

Not applicable.

- *Will the proposed work benefit a Reclamation project area or activity?*

Yes, the project and the District are both located within the Central Valley Project's Friant Division, and the District is within the CVP Place of Use. FID is dependent on their CVP supplies to meet their full water demands. The project will directly benefit a Reclamation Project Area.

- *Is the applicant a Tribe?*

No. The applicant is not a tribe.

EVALUATION CRITERION G – STAKEHOLDER SUPPORT FOR PROPOSED PROJECT

- *Describe the level of stakeholder support for the proposed project. Are any stakeholders providing support for the project through cost-share contributions or through other types of contributions to the project?*

Multiple stakeholders are in favor of the proposed project, the received letters of support from stakeholders are located in **Appendix H.** There are no contributions, financial or other, provided by stakeholders.

(F) PERFORMANCE MEASURES

The following performance measures will be used to evaluate the project:

- Volume of water delivered to the recharge basin
- Volume of water left in the aquifer as a benefit to the region
- Change in local groundwater levels as measured in the monitoring wells
- Change in regional groundwater levels and regional groundwater storage
- Recharge rates based on observed seepage using a staff gauge at each site.

2 . PROJECT BUDGET

(A) FUNDING PLAN AND LETTERS OF COMMITMENT

Identify the sources of the non-Federal cost share contribution for the project, including:

i. Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments).

FID believes this project is foundational to drought planning and water supply operations and have therefore committed to providing the required funding. The District will pay all remaining costs not covered by the USBR.

Table 2 – Funding Sources

Funding Sources	Amount
Fresno Irrigation District – Cash Contributions	$3,000,000
Subtotal: Non-Federal Funding	$3,000,000
Requested Reclamation Funding	$3,000,000
Other Federal Funding	$0
Project Funding Total	$6,000,000

Appendix F is documentation for the District's cost share. The total reserve funds exceed the proposed cost share and ensures that FID will have sufficient assets to enter the grant agreement and complete the project.

FID also spent $2.9 million on land purchase and land clearing, but those costs are not presented in the table above.

ii. Any costs that will be contributed by the applicant.

See Table 1 above

iii. Any third-party in-kind costs (i.e., goods and services provided by a third party).

There will be no third-party in-kind costs.

iv. Any cash requested or received from other non-Federal entities.

There is not any cash requested or received from other non-Federal entities for this project.

v. Any pending funding requests (i.e., grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied.

There are no pending funding requests for the project.

vi. Identify whether the budget proposal includes any project costs that have been or may be incurred prior to award.

Some surveying, design work and environmental work has been and will be performed before the contract award. This is estimated to be $120,000. These expenditures will all be used as cost

share if eligible.

(B) BUDGET PROPOSAL

The budget proposal has been developed based on the District's experience constructing several recent similar projects, including projects that include USBR grant funding. The District will perform administration and management and oversee the entire process, however it will not charge its time to the project.

The District will contract with the appropriately licensed and experienced professional consultants and contractors to complete the work associated with the project. Table 2 provides a summary of the totals under each category to complete the work, and the detailed supporting information for each of the items is included in **Appendix G**. A more detailed description of the costs under each category is included below.

Table 3 – Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	Unit Cost	Quantity		
Salaries &Wages (FID)	$0			$0
Fringe Benefits (FID)	$0			$0
Travel (under contractual)	$0			$0
Equipment (under contractual)	$0			$0
Supplies/Materials (under contractual)	$0			$0
Contractual (see Appendix G for details)				
Professional Services				
Grant Administration	$20,000	1	-	$20,000
CEQA/NEPA and Permitting	$79,000	1	-	$79,000
Project Design	$180,000	1	-	$180,000
Assistance during Construction	$150,000	1	-	$150,000
Construction Contractor			-	
Recharge Basin	$5,471,000	1	-	$5,471,000
Monitor Well	$50,000	2	-	$100,000
Other	$0			$0
Total Direct Costs				**$6,000,000**
Indirect Costs – 0.0%				$0
Total Project Costs				**$6,000,000**

Note: See **Appendix G** for a more detailed breakdown of the above costs

(C) BUDGET NARRATIVE

a. Personnel

The project manager will be the District's Chief Engineer Laurence Kimura. District staff will participate through contract negotiations, project management, project administration, consultant management, design review and grant reporting. The Chief Engineer and District staff have successful completed numerous similar projects, including several that have received USBR

grant funding. These efforts will not be billed to the project and FID will not seek either reimbursement or credit towards cost share.

b. Fringe Benefits

Since FID will not charge salary costs to the project or provide work-in-kind, there will be no fringe benefit costs included.

c. Travel

Travel expenses will include limited mileage costs for consultants to attend project meetings, visit the site, perform surveying, and monitor construction. These will be billed at the standard IRS mileage rate in effect at the time of the project. Since these costs are for consultants, they are placed in the Contractual category.

d. Equipment

The project will include equipment for flow measurement and actuated gates. This equipment will be provided by contractors, with their costs falling under the Contractual category below.

e. Supplies

Materials and supplies needed for the project will be provided by consultants and contractors, with their costs falling under the Contractual category below.

f. Contractual

The District will contract with its consultant engineer and environmental planners to complete the work associated with grant support, survey, design, environmental documentation, permitting, bidding support and construction management. **Appendix G** includes an estimate of consultant costs with a detailed breakdown of tasks, subtasks, person-hours, billing rates and direct costs. The hours and hourly rates considered factor in potential increases of the project period. This estimate was prepared by an engineering consulting firm that also assisted in developing the preliminary design, preliminary CEQA/NEPA memo and the scope of work, is familiar with the District's water system, and has designed similar projects.

This category also includes costs for a contractor to build the recharge basin, monitor well, and appurtenances. **Appendix G** includes a detailed construction cost estimate, as well as bid canvasses for several other similar projects that were used in developing the cost estimate. The costs were estimated based on the preliminary design and unit prices for similar recently bid or constructed recharge basin projects in FID, including Kenneson Basin Big Sandridge NO. 65 Central Basin, Wagner Basin,, and Savory Basin. The estimate provided is the best available with the current design and existing information on current construction costs.

The District will select project consultants and contractors based on the appropriate Code of Federal Regulations guidelines. A consultant will be selected based on qualifications, and a contractor will be selected using a competitive bidding process.

g. Construction

A Preliminary Opinion of Probable Construction Cost (EOPCC) has been prepared and included in

Appendix G. The EOPCC includes a detailed listing of potential bid items with quantities based on preliminary design and costs based on bid cavasses from recent similar projects. Environmental and regulatory compliance will incur costs for permitting, CEQA compliance and NEPA Compliance. Provost & Pritchard Consulting Group performed a preliminary CEQA/NEPA review for the Krum project (see https://ceqanet.opr.ca.gov/2024040116). The environmental and regulatory compliance costs are summarized in the Estimate of Professional Fees (see **Appendix G**). These costs are incorporated into the fee estimate spreadsheet for consulting services (**Appendix G**).

h. Other Direct Costs

The project land costs, estimated to be approximately $2.9M will not be claimed in the project budget or as local cost share. The District also performed CEQA compliance work, but these costs will not be claimed.

There will be no third-party contributions.

i. Total Direct Costs

A detailed listing of the categories and totals for each category is shown in **Table 3**. The detail supporting these costs is included in **Appendix G**.

j. Indirect Costs

The project will not have indirect costs.

j. TOTALS

A detailed listing of the categories and totals for each category is shown in **Table 2**. The detail supporting these costs is included in **Appendix G**.

3 . ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

An Initial Study and Mitigated Negative Declaration was prepared for the Krum project and publicly noticed in accordance with CEQA requirements. A Negative Declaration for the Krum project was adopted by FID's Board of Directors in May 2024. A copy of only the cover page is included in **Appendix E**, but a full copy of the document and supporting studies can be found at https://ceqanet.opr.ca.gov/2024040116 . The Biological and Cultural Studies associated with this work included work typically required for NEPA processing, which should assist in expediting the NEPA process should funding be approved that requires USBR to initiate NEPA.

- Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?

The project will impact the local environment including changes to the soil (due to site clearing and grubbing, excavation and grading). There will be some generation of dust associated with work activities on the site. With proper stormwater control measures there should be no impacts on water (quality and quantity).

As documented in the Initial Study and Negative Declaration (https://ceqanet.opr.ca.gov/2024040116) there is no evidence of significant impacts on aesthetics, agricultural and forestry resources, air quality, greenhouse gas emissions, biological resources, wetlands and jurisdictional waters, cultural resources, energy, hazards/hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and service systems and wildfire. A specific list of planned Monitoring and Mitigation Measures is listed in Chapter 5 of the Final Initial Study and Mitigated Negative Declaration.

- Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Earth disturbing work will include clearing and grubbing of the site, excavation of the basins, fill for the levees, and excavation and backfill for piping and structures. Appropriate Storm Water Pollution Prevention Plan (SWPPP) measures will be implemented to control water runoff from the site. Dust control measures will be implemented to minimize the generation of dust from construction activities on the site. Appropriate mitigation measures as determined under CEQA and NEPA review will be implemented to minimize impacts on animal habitat within the project area.

- 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?

A Federal Cross-Cutting Topic section is included in the Final Initial Study and Mitigated Negative Declaration (ISMND) that can be found here: https://ceqanet.opr.ca.gov/2024040116. **Appendix E** to the ISMND is a Biological Evaluation and includes the Section 7 Determinations for Federally Listed Species. No effect was determined for the all of the species listed.

- Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate

any impacts the proposed project may have.

There are no wetlands or jurisdictional features within the project area (https://ceqanet.opr.ca.gov/2024040116).

- When was the water delivery system constructed?

Most of the District's delivery system was constructed in the late 1800s to deliver water from the Kings River to previously non-irrigated land in and around Fresno. The Fresno Irrigation District was formed in 1921.

- Will the proposed project result in the modifications or effects to, individual features of an irrigation system? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The proposed project will include an outlet structures on FID's canal system, and modification to those canal systems. Preliminary plans are included in **Appendix A**.

- Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

The District is not aware of any buildings, structures, or features in the District that are listed on the National Register of Historic Places.

- Are there any known archeological sites in the proposed project area?

As identified in the ISMND, there are no known archaeological sites within the proposed project area.

- Will the proposed project have an adverse and disproportionate effect on communities with environmental justice concerns (as discussed in E.O. 14096)??

The proposed project will not have a disproportionately high and adverse effect on low income or minority populations. In fact, the project is an identified Disadvantaged Community, and the recharged water will benefit groundwater levels and groundwater quality in the area. Further, as the District provides surface water to the City of Fresno and other areas that include significant Disadvantaged Community areas, the project will help maintain groundwater levels and provide drought resilience for these communities by improving the overall water supply for the region.

- Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The proposed project will not limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands. Based on surveys completed, there are no known sacred Indian sites in the vicinity of the project.

- Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

4 . REQUIRED PERMITS OR APPROVALS

Required permits and approvals include the following:

1. CEQA Compliance. The CEQA process has been completed and the ISMND for the Krum project and NOD can be found here: https://ceqanet.opr.ca.gov/2024040116.
2. NEPA Compliance. NEPA compliance will only be required if a USBR grant is awarded. There is no other federal nexus to the project. The ISMND includes a Federal Cross-Cutting Topic section and the supporting Biological and Cultural studies were prepared with consideration should NEPA be required.
3. Stormwater Pollution Prevention Plan. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared according to State requirements for the project site. Compliance with the SWPPP will enforced during construction.
4. Dust Control Permit. A dust control permit will be needed from the local Air Quality Control Board.
5. Indirect Source Review. The Indirect Source Review permit will be obtained from the local air board right after final design is completed.
6. Electrical Connection. An approval for electrical connection from Pacific, Gas and Electric to operate the water control, flow measurement and water level monitoring will be required. FID has obtained these approvals many times in the past.

No building permits, grading permits or other approvals will be required from Fresno County or other local agencies. According to California Government Code Section 53091, the District will not need to obtain any building or zoning permits for the project. These regulations state that, for a local agency such as FID, "*Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water. Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water.*"

FID already owns the project property needed for the project. No additional easements or land acquisitions are required for the project.

5 . OTHER REQUIREMENTS

OVERLAP OR DUPLICATION OF EFFORTS STATEMENT

FID is not aware of any overlap or duplication of efforts associated with this project.

CONFLICT OF INTEREST DISCLOSURE STATEMENT

FID is not aware of any actual or potential conflicts of interest that would impact either the grant application or the project if it is funded by USBR. FID will notify USBR promptly if a conflict of interest arises.

UNIFORM AUDIT REPORTING STATEMENT

FID was not required to file a Single Audit Report last year.

CERTIFICTION REGARDING LOBBYING

FID has not engaged in any lobbying, therefore form SF-LLL is not required.

LETTERS OF SUPPORT

The project benefits are described above, but the qualitative significance of the project benefits is best demonstrated by the numerous letters of support from stakeholders, which can be found in **Appendix H**. Several stakeholder groups provided letters including: local water agencies, regional water management agencies, disadvantaged communities, and non-profit organizations. Letters were received from the following:

- City of Kerman
- North Kings Groundwater Sustainability Agency
- Fresno County Farm Bureau
- Kings Basin Water Authority
- Kings River Conservation District

There is no known opposition to the project. No letters of opposition have been received, and no opposition to the project was made during the adoption of the Resolution to prepare the grant application.

OFFICIAL RESOLUTION

Appendix I includes the resolution authorizing the preparation of this application and funding for the District's cost share that has been adopted at FID's September 12, 2024 Board meeting.

6 . UNIQUE ENTITY IDENTIFER AND SYSTEM FOR AWARD MANAGEMENT

FID has previously received grants from USBR and is already registered with the System for Award Management and meets other requirements for award and implementation of a grant contract.

The District uses the following identifiers:
Employer Identification Number: 23-7046670
Unique Entity Identifier : KCMZJ7VGCUM3

Appendix A – Project Design and Analysis

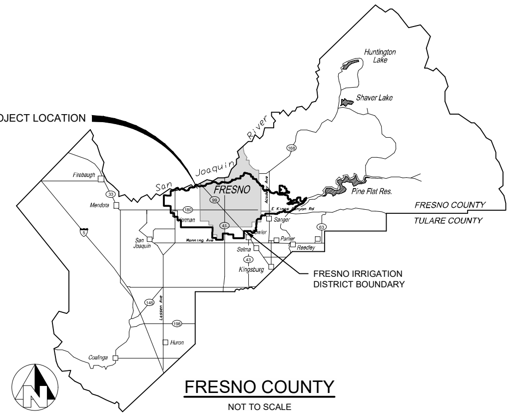
811 Call what's below. before you dig.

WARNING
POWER LINES OVERHEAD

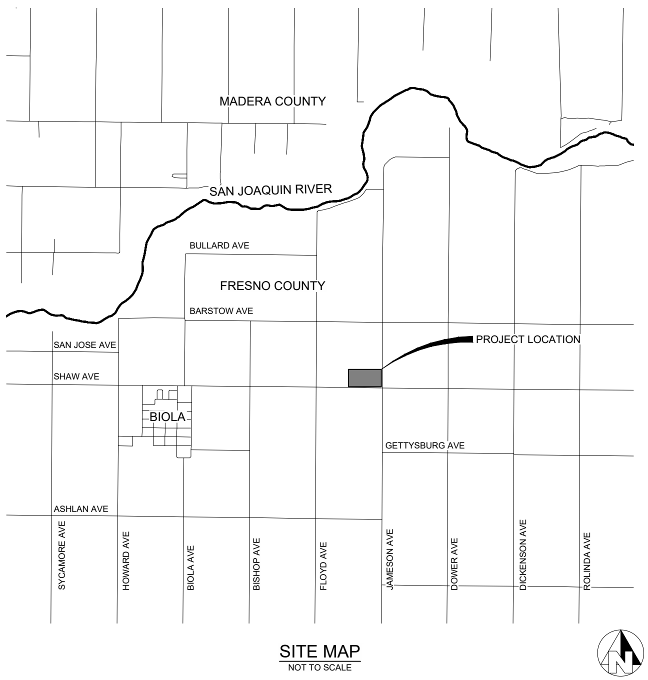
FRESNO IRRIGATION DISTRICT

FRESNO COUNTY, CA

METZLER BASIN
THOMPSON NO. 54



FRESNO COUNTY
NOT TO SCALE



SITE MAP
NOT TO SCALE

SPECIAL NOTE

WHERE UNDERGROUND AND SURFACE STRUCTURES ARE SHOWN ON THE PLANS, THE LOCATIONS, DEPTH AND DIMENSIONS OF STRUCTURES ARE BELIEVED TO BE REASONABLY CORRECT, BUT ARE NOT GUARANTEED. SUCH STRUCTURES ARE SHOWN FOR THE INFORMATION OF THE CONTRACTOR, BUT INFORMATION SO GIVEN IS NOT TO BE CONSTRUED AS A REPRESENTATION THAT SUCH STRUCTURES WILL, IN ALL CASES, BE FOUND WHERE SHOWN, OR THAT THEY REPRESENT ALL OF THE STRUCTURES WHICH MAY BE ENCOUNTERED.

SITE SAFETY AND PROTECTION NOTES

THE DUTY OF THE ENGINEER, OWNER OR ITS AGENTS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE AND THE UNDERTAKING OF INSPECTIONS OR THE GIVING OF INSTRUCTIONS AS AUTHORIZED HEREIN IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF THE ACTUAL CONSTRUCTION NOR MAKE THE ENGINEER, OWNER OR ITS AGENTS RESPONSIBLE FOR PROVIDING A SAFE PLACE FOR THE PERFORMANCE OF WORK BY THE CONTRACTOR, SUBCONTRACTORS, OR SUPPLIERS, OR FOR ACCESS, VISITS, USE, WORK, TRAVEL OR OCCUPANCY BY ANY PERSON.

THE CONTRACTOR SHALL HAVE AT THE WORK SITE, COPIES OR SUITABLE EXTRACTS OF CONSTRUCTION SAFETY ORDERS, ISSUED BY CAL-OSHA. CONTRACTOR SHALL COMPLY WITH PROVISIONS OF THESE AND ALL OTHER APPLICABLE LAWS, ORDINANCES AND REGULATIONS. THE CONTRACTOR MUST COMPLY WITH PROVISIONS OF THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, PROMULGATED BY THE SECRETARY OF LABOR UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, AS SET FORTH IN TITLE 29 C.F.R.

TO PROTECT THE LIVES AND HEALTH OF CONTRACTOR'S EMPLOYEES UNDER THE CONTRACT, THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC., AND SHALL MAINTAIN AN ACCURATE RECORD OF ALL CASES OF DEATH, OCCUPATIONAL DISEASE, AND INJURY REQUIRING MEDICAL ATTENTION OR CAUSING LOSS OF TIME FROM WORK, ARISING OUT OF AND IN THE COURSE OF EMPLOYMENT OR WORK UNDER THE CONTRACT.

THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY, EFFICIENCY, AND ADEQUACY OF CONTRACTOR'S FACILITIES, APPLIANCES, AND METHODS AND FOR ANY DAMAGE, WHICH MAY RESULT FROM THEIR FAILURE OR THEIR IMPROPER CONSTRUCTION, MAINTENANCE OR OPERATION.

THE CONTRACTOR AGREES THAT IT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, PROVOST & PRITCHARD CONSULTING GROUP, AND THEIR RESPECTIVE AGENTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF OWNER, ENGINEER, OR THEIR RESPECTIVE AGENTS.

THE OWNER AND ITS AGENTS' SITE RESPONSIBILITIES ARE LIMITED SOLELY TO THE ACTIVITIES OF THEIR EMPLOYEES ON SITE. THESE RESPONSIBILITIES SHALL NOT BE INFERRED BY ANY PARTY TO MEAN THAT THE OWNER OR ITS AGENTS HAVE RESPONSIBILITY FOR SITE SAFETY. SAFETY IN, ON, OR ABOUT THE SITE IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR ALONE. THE CONTRACTOR'S METHODS OF WORK PERFORMANCE, SUPERINTENDENCE AND THE CONTRACTOR'S EMPLOYEES, AND SEQUENCING OF CONSTRUCTION ARE ALSO THE SOLE AND EXCLUSIVE RESPONSIBILITIES OF THE CONTRACTOR ALONE.

FRESNO IRRIGATION DISTRICT PIPELINE ACCEPTANCE:

1. ALL NEW PIPELINE AND APPURTENANT STRUCTURES WILL NOT BE CONSIDERED ACCEPTED BY FID UNTIL A PRESSURE TEST HAS BEEN COMPLETED AND ACCEPTED BY FID. THE CONTRACTOR SHALL UTILIZE HYDROSTATIC ISOLATION PLUG(S) (I.E. REINFORCED RUBBER TEST PLUGS) AT EACH END OF THE NEWLY INSTALLED PIPE AND SHALL BE RESPONSIBLE TO IMPORT WATER IN ORDER TO CONDUCT THE TEST. FID'S INSPECTOR SHALL APPROVE THE PLUG INSTALLATION PRIOR TO PERFORMING THE PRESSURE TEST.
2. RUBBER GASKETED REINFORCED CONCRETE PIPE (RGRCP)
   A. THE WATER LEVEL IN THE UPSTREAM STANDPIPE SHALL BE MAINTAINED AT THE DESIGN HIGH LEVEL FOR A PERIOD NO LESS THAN 2 HOURS.
   B. THE ALLOWABLE LEAKAGE UNDER WORKING CONDITIONS FOR RGRCP PIPE SHALL NOT EXCEED 80 GALLONS PER 24 HOURS PER INCH OF PIPE DIAMETER, PER MILE OF GRAVITY OF PIPELINE TESTED.
3. TESTS SHALL BE MADE AFTER THE TRENCH HAS BEEN BACKFILLED AND COMPACTED, BUT NOT UNTIL AT LEAST SEVEN (7) CALENDAR DAYS HAVE ELAPSED SINCE ANY THRUST BLOCKS IN THE SECTION HAVE BEEN POURED.
4. SLOWLY FILL THE PIPELINE WITH WATER AT A RATE SUCH THAT VELOCITY DOES NOT EXCEED 0.25 FEET PER SECOND AND ALLOW TO STAND FOR A MINIMUM OF 24-HOUR PERIOD PRIOR TO THE START OF THE TESTS. EXPEL ALL AIR FROM THE PIPE. ABSORPTION BY THE PIPE OR PIPE LINING MATERIAL MAY REQUIRE A LONGER PERIOD BEFORE BEGINNING THE TESTS AS DIRECTED BY FID'S CHIEF ENGINEER OR FID'S INSPECTOR.
5. SHOULD TESTING DISCLOSE ANY VISIBLE LEAKS OR LEAKAGE GREATER THAN WHAT IS ALLOWED, THE DEFECTIVE JOINTS OR PIPE SHALL BE LOCATED, REPAIRED, AND RE-TESTED UNTIL SATISFACTORY RESULTS ARE OBTAINED BY THE CONTRACTOR AND THE CONTRACTOR'S EXPENSE.

GENERAL NOTES

1. NO WORK SHALL BE PERFORMED WITHIN FRESNO IRRIGATION DISTRICT'S (FID) EASEMENT OR RIGHT-OF-WAY DURING THE IRRIGATION SEASON, WHICH IS TYPICALLY MARCH THROUGH AUGUST, UNLESS APPROVED BY FID'S GENERAL MANAGER.
2. ALL WORK SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS AS SHOW IN FRESNO IRRIGATION DISTRICT'S ENGINEERING HANDBOOK OF SPECIFICATIONS.
3. ALL REINFORCED CONCRETE PIPE SHALL BE RUBBER GASKETED AND CONFORM TO ASTM STANDARD C-361 WITH CIRCULAR REINFORCEMENT. ANY OTHER TYPE OR CLASS PIPE SHALL REQUIRE FRESNO IRRIGATION DISTRICT APPROVAL.
4. ALL MATERIAL SHALL BE NEW AND NO SALVAGED MATERIAL OR PREVIOUSLY USED MATERIAL MAY BE USED UNLESS APPROVED BY FRESNO IRRIGATION DISTRICT'S ENGINEER.
5. ALL DISTURBED SOIL SHALL BE COMPACTED TO A MINIMUM 93% COMPACTION (95% WITHIN CITY/COUNTY R/W FOR TOP 24") OR AS SPECIFIED ON THE PLANS. COMPACTION TESTS SHALL BE MADE AVAILABLE TO FRESNO IRRIGATION DISTRICT'S ENGINEER.
6. ALL BENDS AND/OR ELBOWS SHOWN ARE PRECAST UNLESS SPECIFIED DIFFERENTLY AND SHALL CONFORM TO ASTM STANDARDS. ALL BENDS AND/OR ELBOWS SHALL BE INSTALLED WITH THRUST BLOCKS PER FRESNO IRRIGATION DISTRICT STANDARDS.
7. ALL EXCESS MATERIAL AND/OR DEBRIS SHALL BE REMOVED FROM FRESNO IRRIGATION DISTRICT EASEMENT UPON COMPLETION OF CONSTRUCTION.
8. CONSTRUCTION SHALL NOT INTERFERE WITH THE FLOW OR DISTRIBUTION OF WATER AS REQUIRED BY FRESNO IRRIGATION DISTRICT. ANY WORK NEAR OR WITHIN A FACILITY DESIGNATED FOR ROUTING STORM FLOWS SHALL BE PERFORMED IN A MANNER TO ALLOW FLOOD FLOWS TO PASS AT ALL TIMES.
9. FRESNO IRRIGATION DISTRICT WILL NOT BE RESPONSIBLE FOR ANY WATER THAT MAY FLOW IN THE IRRIGATION FACILITY OR AREA OF CONSTRUCTION DURING THE TIME OF CONSTRUCTION.
10. FRESNO IRRIGATION DISTRICT'S ENGINEERING DEPARTMENT, (559) 233-7161, SHALL BE NOTIFIED TO DETERMINE A PERIOD THAT WORK MAY BE PERFORMED.
11. ALL CONSTRUCTION STAKING SHALL INCLUDE A STATION IDENTIFICATION (THAT CORRESPONDS WITH THE CONSTRUCTION PLANS). A HUB, HUB ELEVATION, AND HUB OFFSET DISTANCE. STAKING SHALL BE PROVIDED FOR ALL CRITICAL INSTALLATION LOCATIONS (PIPELINE BENDS, STRUCTURES, VENTS, ETC.).
12. ALL IRRIGATION PIPE INSTALLED FOR USE BY THE FRESNO IRRIGATION DISTRICT (FID) SHALL BE INSPECTED AND APPROVED BY FID FIELD INSPECTOR BEFORE ANY BACKFILLING MAY OCCUR.
13. ALL KNOWN FID AND PRIVATE FACILITIES SHOWN ON THE PLANS REPRESENT IRRIGATION STRUCTURES WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE TO CONFIRM LOCATION, SIZE AND DEPTH OF ALL FID FACILITIES. IF UNKNOWN UTILITIES ARE ENCOUNTERED CONTRACTOR IS TO STOP WORK AND CONTACT FID'S ENGINEER.
14. AN ENCROACHMENT PERMIT IS REQUIRED FOR ANY WORK WITHIN COUNTY RIGHT-OF-WAY. COUNTY PERMITS MAY BE OBTAINED AT THE FRESNO COUNTY PUBLIC WORKS & PLANNING OFFICE.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ALL DAMAGE TO EXISTING FACILITIES WHICH OCCURS DURING CONSTRUCTION ACTIVITIES.
16. ALL PVC IRRIGATION PIPE (PIP 100 PSI DR 41) SHALL CONFORM TO ASTM D1784. JOINT DESIGN SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3139 WITH RUBBER GASKETED JOINTS THAT CONFORM TO ASTM F477.
17. ALL PVC IRRIGATION PIPE (C905 100 PSI DR 41) SHALL CONFORM TO AWWA C905 SPECIFICATION. JOINT DESIGN SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3139 WITH RUBBER GASKETED JOINTS THAT CONFORM TO ASTM F477.
18. NO INTERRUPTIONS TO IRRIGATION DELIVERIES WILL BE ALLOWED WITHOUT PRIOR APPROVAL BY FID. THE IRRIGATION SEASON VARIES WITH HYDROLOGIC CONDITIONS BUT TYPICALLY OCCURS BETWEEN FEBRUARY 15 AND AUGUST 31, BUT MAY EXTEND THROUGH OCTOBER DURING UNUSUALLY WET YEARS.
19. TRACER WIRE IS TO BE USED WITH RGRCP AND PVC WHERE CALLED FOR ON THE PLANS. TRACER WIRE SHALL BE COPPER WIRE, BLUE, TYPE UF, SIZE AWG #10 AND SHALL BE PLACED OVERTOP THE PIPELINE. TRACER TAPE IS NOT ALLOWED. ALL WIRE TO WIRE CONNECTIONS SHALL USE 3M DBR SPLICE KIT TO PROVIDE CONTINUITY AND TAPED TO PREVENT ENTRY OF MOISTURE. WHERE TRACER WIRE IS CALLED FOR, IT SHALL BE SECURELY ATTACHED TO EACH STRUCTURE, VENT, AND /OR EACH LATERAL.
20. TRACER WIRE IS TO BE USED WITH RGRCP AND PVC WHERE CALLED FOR ON THE PLANS. TRACER WIRE SHALL BE SOLID CORE COPPER WIRE, BLUE, TYPE UF SIZE AWG#10 (TW/THW MAY BE SUBSTITUTED IN PLACE OF UF WITHIN PVC CONDUIT) AND INSTALLED OVERTOP WITHIN SCHEDULE 80 PVC CONDUIT. CONDUIT SHALL MEET ANSI/UL 651 SPECIFICATIONS. ALL CONNECTION POINTS SHALL USE 3M DBR SPLICE KIT. WHERE CONDUIT IS CALLED FOR, IT SHALL BE SECURELY ATTACHED TO EACH STRUCTURE AND/OR VENT ON EACH SIDE OF ROADWAYS.

APPROVALS

LAURENCE KIMURA, PE — DATE
CHIEF ENGINEER

SHEET INDEX

NO.	SHEET	DESCRIPTION
GENERAL		
1	G1	COVER
2	G2	LEGEND & ABBREVIATIONS
CIVIL		
3	C1	TOPOGRAPHY AND DEMOLITION PLAN
4	C2	SITE PLAN
5	C3	GRADING PLAN
DETAILS		
6	D1	DETAILS
7	D2	DETAILS
8	D3	DETAILS
9	D4	DETAILS
10	D5	FENCE DETAILS

No.	REVISION	BY	DATE

PRELIMINARY
NOT FOR CONSTRUCTION
9/17/2024

FOR REVIEW ONLY

METZLER BASIN
THOMPSON NO. 54
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA
GENERAL
COVER

PROVOST & PRITCHARD
455 W FIR AVENUE
CLOVIS, CA 93611-9166
PHONE (559) 449-2700
FAX (559) 449-2715
www.provostandpritchard.com

DESIGN ENGINEER: ----
LICENSE NO: ----
DRAFTED BY: MJB
CHECKED BY: RJS
DATE: 9/17/2024
JOB NO: 103824009
PROJECT NO:
PHASE: DRP
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.
SHEET G1
1 OF 10

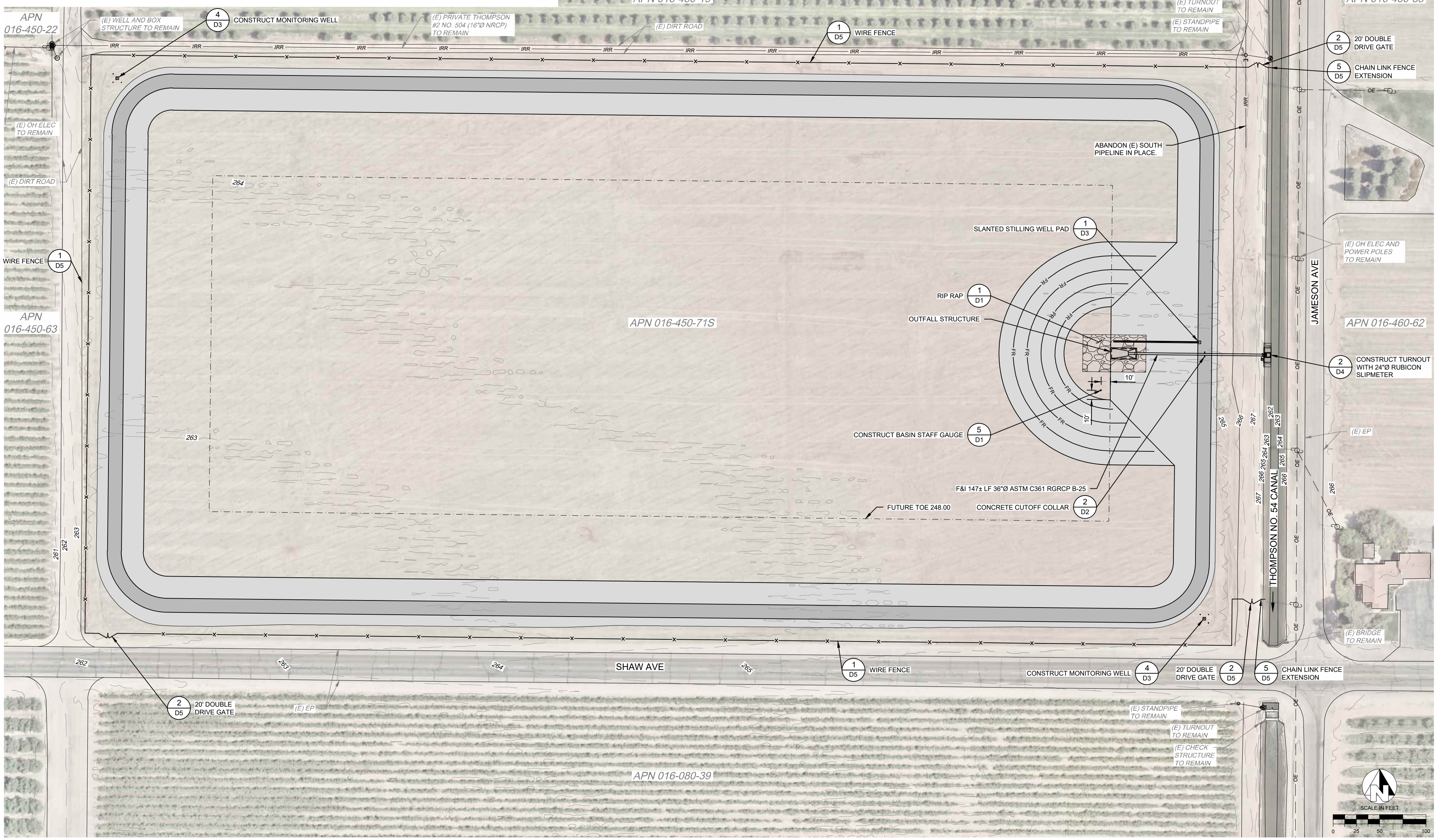
Complete plans available upon request

811.
Call what's below. before you dig.

WARNING
POWER LINES OVERHEAD

LEGEND
PROPOSED TOP OF BANK
PROPOSED SIDE SLOPES; 5H:1V INTERIOR, 3H:1V EXTERIOR, UNLESS OTHERWISE NOTED
PROPOSED CANAL LINING
PROPOSED RIP RAP

FENCE QUANTITIES	
WIRE FENCE	3,145 LF
CHAIN LINK FENCE	8 LF
20' CHAIN LINK DOUBLE DRIVE GATES	3



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FRESNO COUNTY, CA

CIVIL

SITE PLAN

PROVOST & PRITCHARD
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CLOVIS, CA 93611-0166
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LICENSE NO: ----

DRAFTED BY:	CHECKED BY:
MJB	RJS

DATE: 9/17/2024
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ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

SHEET C2

811 Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD

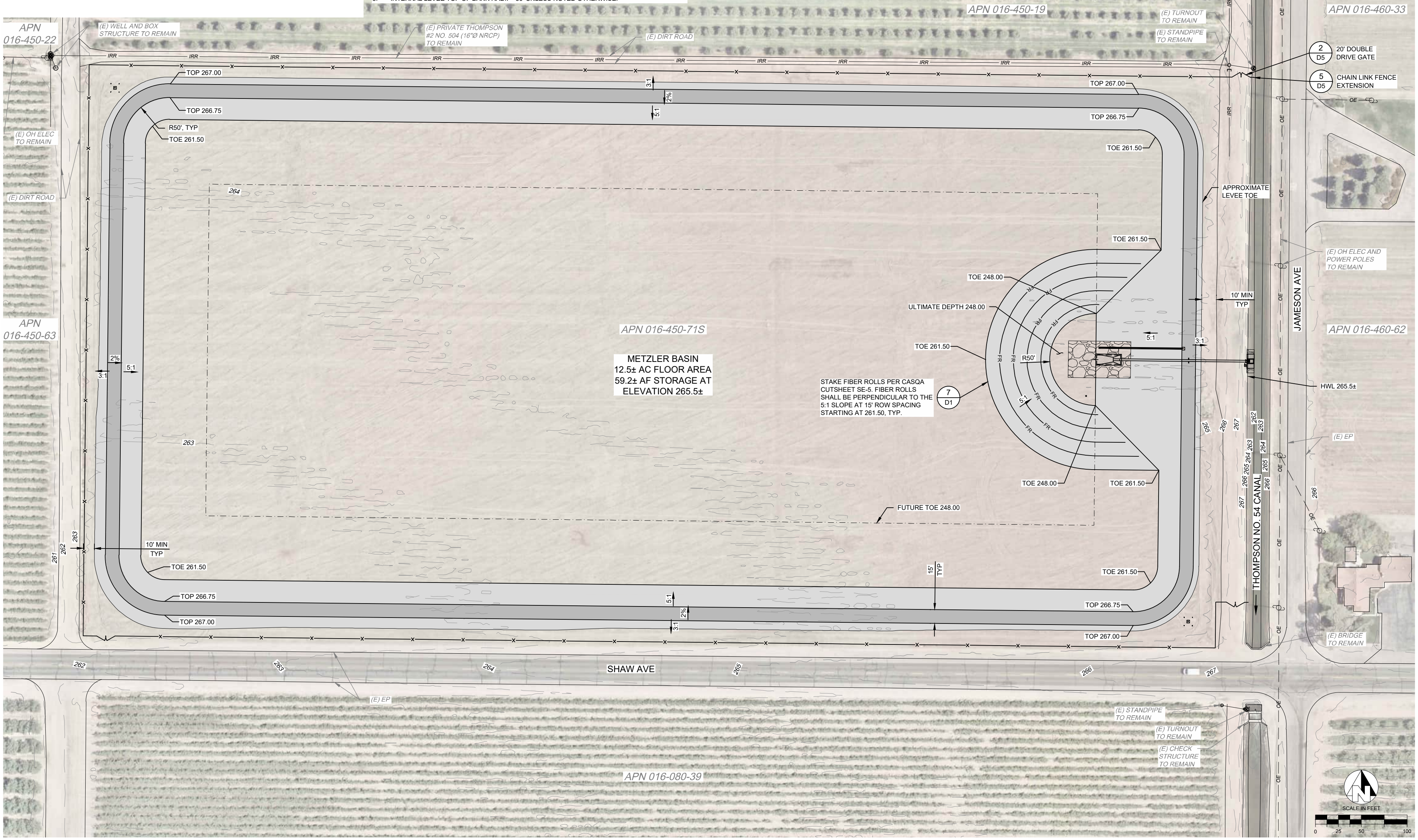
LEGEND

- PROPOSED TOP OF BANK
- PROPOSED SIDE SLOPES; 5H:1V INTERIOR, 3H:1V EXTERIOR, UNLESS OTHERWISE NOTED
- PROPOSED CANAL LINING
- PROPOSED RIP RAP

NOTES

1. EARTHWORK QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CALCULATING THEIR OWN EARTHWORK QUANTITIES.
2. FILL VOLUME SHOWN REPRESENTS AN IN-PLACE COMPACTED FILL.
3. THE BASIN FINISHED FLOOR ELEVATIONS WERE DETERMINED TO BALANCE SITE EARTHWORK ASSUMING 20% CONSOLIDATION AND WASTE FOR THE BASIN AND CANAL LEVEES, OVEREXCAVATION, AND KEYWAY.
4. THE CONTRACTOR SHALL ACCOMMODATE VARIATIONS IN THE ACTUAL CONSOLIDATION AND WASTE OF ENGINEERED FILL BY LOWERING THE UPPER FLOOR OF CELL 1.
5. INTERNAL LEVEE TOP OF BANK RADII = 50' UNLESS NOTED OTHERWISE.

VOLUME TABLE			
DESCRIPTION	CUT (CY)	FILL (CY)	NET VOLUME (CY)
BASIN LEVEES	62,550	9,000	53,550 (CUT)
CONSOLIDATION & WASTE	-	11,000	11,000 (FILL)
TOTAL	62,550	20,000	42,550 (CUT)



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CIVIL

GRADING PLAN

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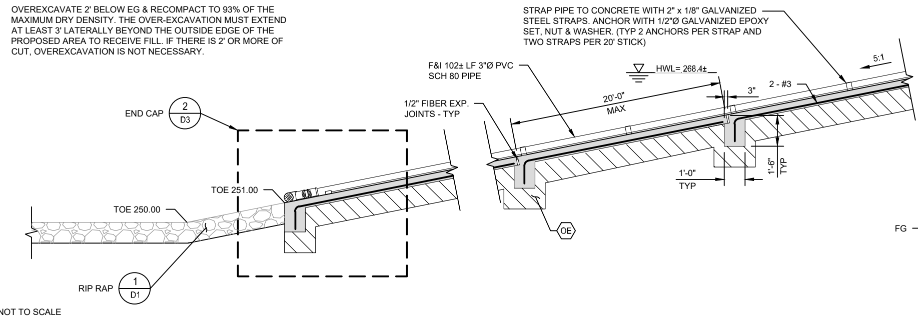
0 1"
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

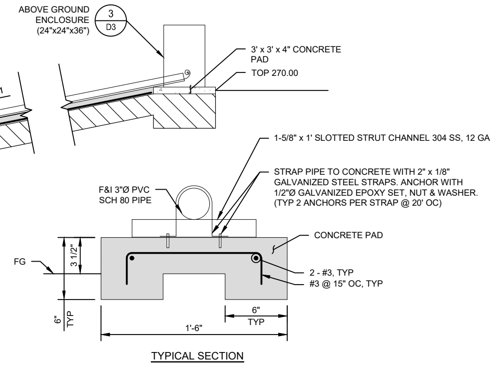
SHEET C3

10/6/2024 1:34 PM \egnytedrive\clients\fresno id - 1038\103824009-krum basin\300 CAD\340 sheet sets\02_Civil\Metzler\C3 GRADING PLAN.dwg -Miguel Jimenez

NOTES:

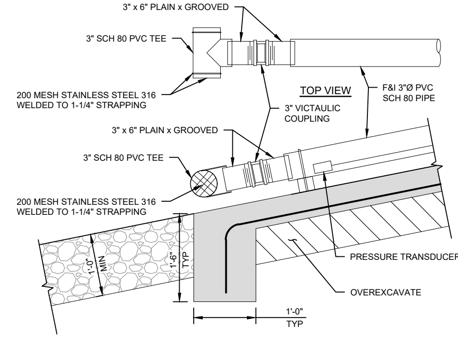
(OE) OVEREXCAVATE 2' BELOW EG & RECOMPACT TO 93% OF THE MAXIMUM DRY DENSITY. THE OVER-EXCAVATION MUST EXTEND AT LEAST 3' LATERALLY BEYOND THE OUTSIDE EDGE OF THE PROPOSED AREA TO RECEIVE FILL. IF THERE IS 2' OR MORE OF CUT, OVEREXCAVATION IS NOT NECESSARY.





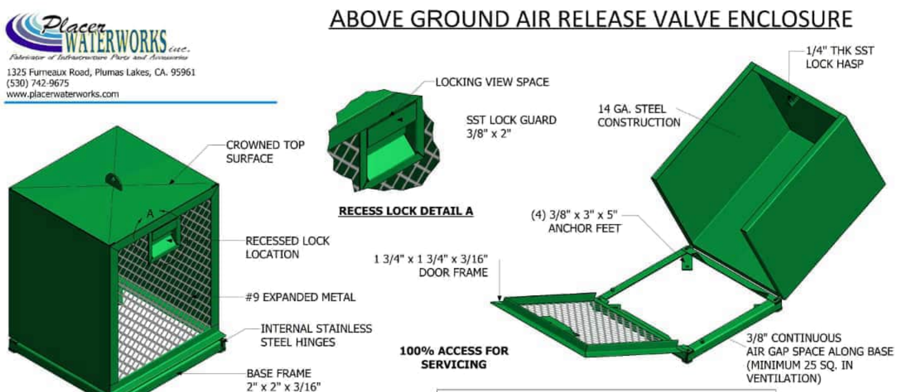
NOT TO SCALE

1 D3 SLANTED STILLING WELL PAD



NOT TO SCALE

2 D3 END CAP



ALL MEASUREMENT STATED ARE INSIDE MEASUREMENT

CAT. #	WIDTH (DOOR)	LENGTH	HEIGHT
PW/SJARV-2	12	12	30
PW/SJARV-3	20	20	30
PW/SJARV-4	24	24	36
PW/SJARV-6	28	28	48
PW/SJARV-8	32	32	56

NOTES:
1. ENCLOSURE TYPE: ABOVE GROUND AIR RELEASE VALVE
2. DOOR FRAME MATERIAL: 1-3/4" x 1-3/4" x 3/16" ANGLE IRON
3. EXPANDED METAL SCREEN IS NO.9 BY 1-1/2" WELDED EVERY 6"
4. DOORS WITH INTERNAL STAINLESS STEEL HINGES
5. (4) FOUNDATION ANCHOR PLATES 3" x 5" x 3/8" WITH 5/8" DIA. HOLE
6. PARTS SAND BLASTED TO SSPC-5 STANDARD SURFACE PROFILE OF 2.0 TO 3.0 MILS
7. POWDER COATED ZINC RICH PRIMER 2 TO 3 MILS W/ SUPER DUTY TOP COATED.
8. ALL WELDING DONE PER AWS SPECIFICATIONS.

CAT#: SJARV *** CB: K.K 05-11-2015 REV.05

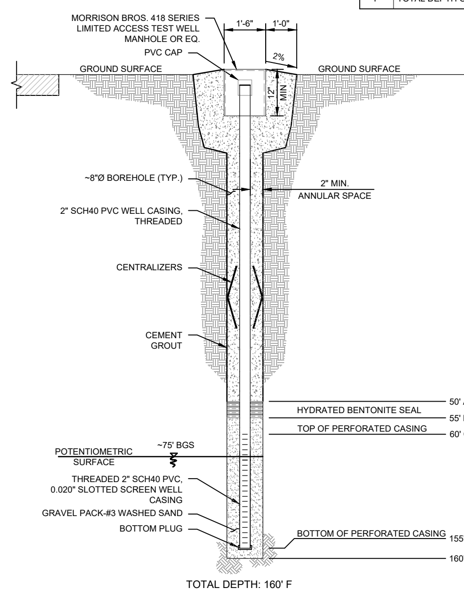
3 D3 ABOVE GROUND ENCLOSURE

NOTES

1. DEPTHS IN THE TABLE MAY CHANGE BASED ON THE STRATIGRAPHY ENCOUNTERED DURING DRILLING.

MONITORING WELL ANTICIPATED DIMENSIONS

ITEM	DESCRIPTION	WELL
A	DEPTH TO TOP OF BENTONITE SEAL	50'
B	DEPTH TO TOP OF GRAVEL PACK	55'
C	DEPTH TO TOP OF PERFORATED CASING	60'
D	DEPTH TO BOTTOM OF PERFORATED CASING	155'
E	TOTAL DEPTH OF COMPLETED WELL	160'
F	TOTAL DEPTH OF BOREHOLE	160'



NOT TO SCALE

4 D3 MONITORING WELL CONSTRUCTION DETAILS

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DESIGN ENGINEER: ----
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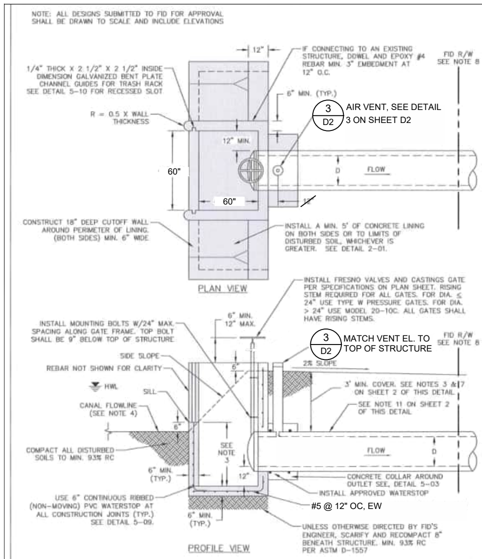
SHEET D3



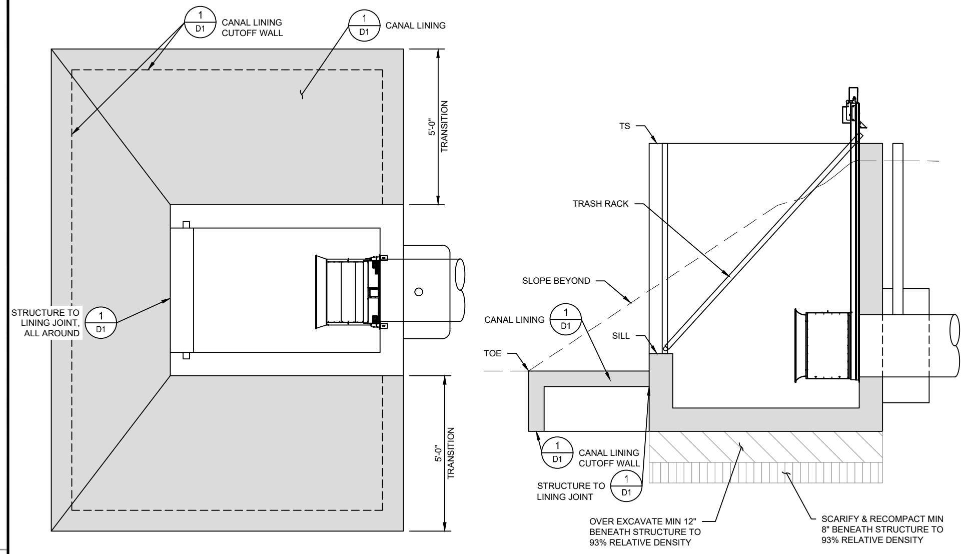
FRESNO IRRIGATION DISTRICT	CE TURNOUT	
"Your Most Valuable Resource — Water"	SCALE: NOT TO SCALE / DATE: JANUARY 2018	STANDARD DETAIL 5-08 SHEET 1 OF 2

1 / D4

STRUCTURE NOTES:

1. STRUCTURAL CONCRETE SHALL BE A MINIMUM OF 6-1/2 SACK (611 POUNDS OF PORTLAND CEMENT PER CUBIC YARD) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,500 PSI, WATER-CEMENT RATIO OF 0.45 (BY WEIGHT), AIR ENTRAINMENT OF 4% ± 1%, AND 4 INCH SLUMP AT PLACEMENT.
2. ALL CAST-IN-PLACE STRUCTURES SHALL INCLUDE FIBERCAST 500 OR EQUIVALENT CONCRETE FIBER REINFORCEMENT WITH FIBER LENGTHS BETWEEN 1.5 INCH TO 2 INCH. APPLICATION RATE TO BE A MINIMUM OF 1.5 POUNDS PER CUBIC YARD.
3. VARIES BASED ON MINIMUM 3 FEET COVER OVER PIPE AND SIZE OF CANAL.
4. REMOVE DEPOSITS/SEDIMENT TO THE NATIVE FLOWLINE OF THE CANAL. CANAL FLOWLINE TO BE FIELD VERIFIED.
5. SUBMITTALS FOR CONCRETE MIX AND GATE VALVES REQUIRED PRIOR TO INSTALLATION.
6. COMPACTION TESTING SHALL BE PERFORMED BY THE OWNER/AGENCY AS DIRECTED BY FID'S ENGINEER OR INSPECTOR.
7. SEE DETAIL 4-02 FOR PIPELINE BACKFILL REQUIREMENTS.
8. SEE DETAIL 1-01 FOR RIGHT-OF-WAY REQUIREMENTS.
9. METER/METER STAND MAY BE REQUIRED PER FID DIRECTION.
10. REFER TO LOW FLOW AGREEMENT REQUIREMENT FOR DRIP INSTALLATION.
11. ALL PIPE SHALL CONFORM TO ASTM C-361 FOR CONCRETE PIPE OR PIP 100 PSI PVC FOR PLASTIC PIPE AND SHALL EXTEND BEYOND FID'S EASEMENT. PIPE SHALL BE INSTALLED PER FID SPECIFICATIONS AND FID INSPECTOR INSTRUCTIONS.
12. ADD GEAR BOX REDUCER (3:1) FOR GATES GREATER THAN OR EQUAL TO 48 INCHES.
13. VENT SIZE SHALL BE 4 INCH MINIMUM, VENT SHALL BE CONCRETE FOR CONCRETE PIPE AND PVC FOR PVC PIPE.

FRESNO IRRIGATION DISTRICT	TURNOUT NOTES	
"Your Most Valuable Resource — Water"	SCALE: NOT TO SCALE / DATE: JANUARY 2018	STANDARD DETAIL 5-08 SHEET 2 OF 2



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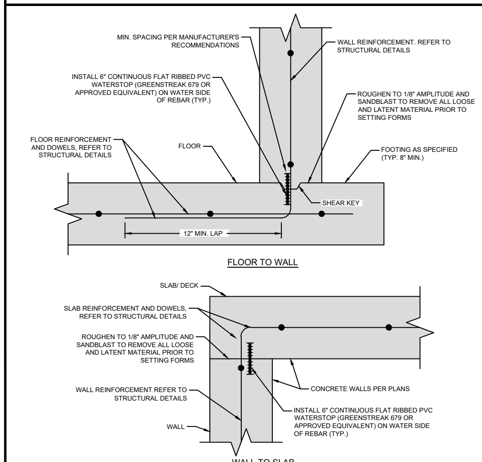
2 / D4

BASIN TURNOUT



NOTES:

1. ALL JOINTS BETWEEN CONCRETE POURS CONFORM TO THIS STANDARD.
2. CONSTRUCTION JOINTS ARE REQUIRED FOR ALL FLOOR/SLAB TO WALL TRANSITIONS.
3. CONSTRUCTION JOINTS SHALL BE PLACED AS SHOWN ON THE PLANS OR AS PRE-APPROVED BY FID ENGINEER. JOINTS SHALL BE THOROUGHLY CLEANED AND LAITANCE REMOVED BEFORE A NEW POUR IS MADE. EACH JOINT SHALL BE WETTED IMMEDIATELY BEFORE THE PLACING OF NEW CONCRETE.
4. REINFORCING STEEL SHALL JOIN THE CONCRETE BETWEEN POURS WITH A MINIMUM OVERLAP CONFORMING TO ACI 318 OR TO BE DETERMINED BY FID'S ENGINEER.
5. THIS DETAIL INTENTIONALLY DOES NOT SPECIFY CONCRETE THICKNESS OR REINFORCEMENT SIZE, WHICH SHOULD BE DESIGNED SEPARATELY.

FID STANDARD DRAWING 5-09

3 / D4

CONSTRUCTION JOINT

No.	REVISION	BY	DATE

PRELIMINARY
NOT FOR CONSTRUCTION
9/17/2024

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PROJECT NO:
PHASE: DRP
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.
SHEET D4
9 OF 10

811
Call what's below.
before you dig.

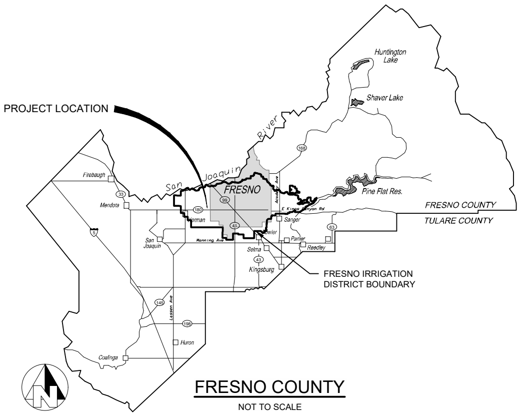
WARNING
POWER LINES OVERHEAD

FRESNO IRRIGATION DISTRICT

FRESNO COUNTY, CA

KRUM BASIN EXPANSION
HOUGHTON NO. 78

FID JOB NO. 2193



FRESNO COUNTY
NOT TO SCALE

SPECIAL NOTE

WHERE UNDERGROUND AND SURFACE STRUCTURES ARE SHOWN ON THE PLANS, THE LOCATIONS, DEPTH AND DIMENSIONS OF STRUCTURES ARE BELIEVED TO BE REASONABLY CORRECT, BUT ARE NOT GUARANTEED. SUCH STRUCTURES ARE SHOWN FOR THE INFORMATION OF THE CONTRACTOR, BUT INFORMATION SO GIVEN IS NOT TO BE CONSTRUED AS A REPRESENTATION THAT SUCH STRUCTURES WILL, IN ALL CASES, BE FOUND WHERE SHOWN, OR THAT THEY REPRESENT ALL OF THE STRUCTURES WHICH MAY BE ENCOUNTERED.

SITE SAFETY AND PROTECTION NOTES

THE DUTY OF THE ENGINEER, OWNER OR ITS AGENTS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE AND THE UNDERTAKING OF INSPECTIONS OR THE GIVING OF INSTRUCTIONS AS AUTHORIZED HEREIN IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF THE ACTUAL CONSTRUCTION NOR MAKE THE ENGINEER, OWNER OR ITS AGENTS RESPONSIBLE FOR PROVIDING A SAFE PLACE FOR THE PERFORMANCE OF WORK BY THE CONTRACTOR, SUBCONTRACTORS, OR SUPPLIERS, OR FOR ACCESS, VISITS, USE, WORK, TRAVEL OR OCCUPANCY BY ANY PERSON.

THE CONTRACTOR SHALL HAVE AT THE WORK SITE, COPIES OR SUITABLE EXTRACTS OF CONSTRUCTION SAFETY ORDERS, ISSUED BY CAL-OSHA. CONTRACTOR SHALL COMPLY WITH PROVISIONS OF THESE AND ALL OTHER APPLICABLE LAWS, ORDINANCES AND REGULATIONS. THE CONTRACTOR MUST COMPLY WITH PROVISIONS OF THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, PROMULGATED BY THE SECRETARY OF LABOR UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, AS SET FORTH IN TITLE 29 C.F.R.

TO PROTECT THE LIVES AND HEALTH OF CONTRACTOR'S EMPLOYEES UNDER THE CONTRACT, THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC., AND SHALL MAINTAIN AN ACCURATE RECORD OF ALL CASES OF DEATH, OCCUPATIONAL DISEASE, AND INJURY REQUIRING MEDICAL ATTENTION OR CAUSING LOSS OF TIME FROM WORK, ARISING OUT OF AND IN THE COURSE OF EMPLOYMENT OR WORK UNDER THE CONTRACT.

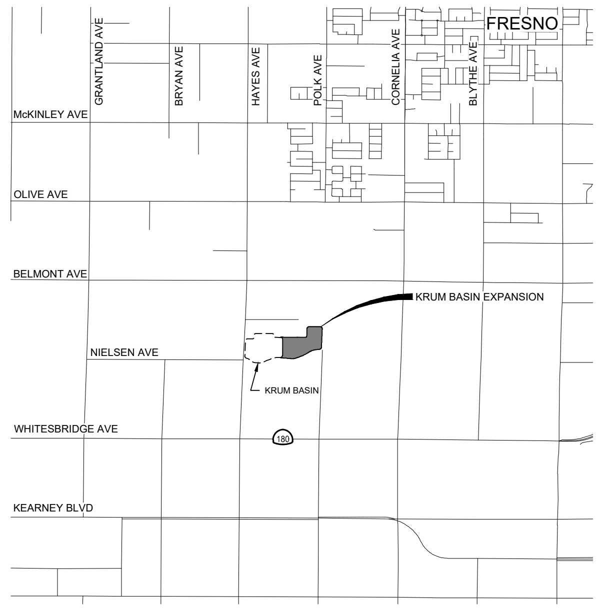
THE CONTRACTOR ALONE SHALL BE RESPONSIBLE FOR THE SAFETY, EFFICIENCY, AND ADEQUACY OF CONTRACTOR'S FACILITIES, APPLIANCES, AND METHODS AND FOR ANY DAMAGE, WHICH MAY RESULT FROM THEIR FAILURE OR THEIR IMPROPER CONSTRUCTION, MAINTENANCE OR OPERATION.

THE CONTRACTOR AGREES THAT IT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, PROVOST & PRITCHARD CONSULTING GROUP, AND THEIR RESPECTIVE AGENTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF OWNER, ENGINEER, OR THEIR RESPECTIVE AGENTS.

THE OWNER AND ITS AGENTS' SITE RESPONSIBILITIES ARE LIMITED SOLELY TO THE ACTIVITIES OF THEIR EMPLOYEES ON SITE. THESE RESPONSIBILITIES SHALL NOT BE INFERRED BY ANY PARTY TO MEAN THAT THE OWNER OR ITS AGENTS HAVE RESPONSIBILITY FOR SITE SAFETY. SAFETY IN, ON, OR ABOUT THE SITE IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR ALONE. THE CONTRACTOR'S METHODS OF WORK PERFORMANCE, SUPERINTENDENCE AND THE CONTRACTOR'S EMPLOYEES, AND SEQUENCING OF CONSTRUCTION ARE ALSO THE SOLE AND EXCLUSIVE RESPONSIBILITIES OF THE CONTRACTOR ALONE.

FRESNO IRRIGATION DISTRICT PIPELINE ACCEPTANCE:

1. ALL NEW PIPELINE AND APPURTENANT STRUCTURES WILL NOT BE CONSIDERED ACCEPTED BY FID UNTIL A PRESSURE TEST HAS BEEN COMPLETED AND ACCEPTED BY FID. THE CONTRACTOR SHALL UTILIZE HYDROSTATIC ISOLATION PLUG(S) (I.E. REINFORCED RUBBER TEST PLUGS) AT EACH END OF THE NEWLY INSTALLED PIPE AND SHALL BE RESPONSIBLE TO IMPORT WATER IN ORDER TO CONDUCT THE TEST. FID'S INSPECTOR SHALL APPROVE THE PLUG INSTALLATION PRIOR TO PERFORMING THE PRESSURE TEST.
2. RUBBER GASKETED REINFORCED CONCRETE PIPE (RGRCP)
   A. THE WATER LEVEL IN THE UPSTREAM STANDPIPE SHALL BE MAINTAINED AT THE DESIGN HIGH LEVEL FOR A PERIOD NO LESS THAN 2 HOURS.
   B. THE ALLOWABLE LEAKAGE UNDER WORKING CONDITIONS FOR RGRCP PIPE SHALL NOT EXCEED 80 GALLONS PER 24 HOURS PER INCH OF PIPE DIAMETER, PER MILE OF GRAVITY OF PIPELINE TESTED.
3. TESTS SHALL BE MADE AFTER THE TRENCH HAS BEEN BACKFILLED AND COMPACTED, BUT NOT UNTIL AT LEAST SEVEN (7) CALENDAR DAYS HAVE ELAPSED SINCE ANY THRUST BLOCKS IN THE SECTION HAVE BEEN POURED.
4. SLOWLY FILL THE PIPELINE WITH WATER AT A RATE SUCH THAT VELOCITY DOES NOT EXCEED 0.25 FEET PER SECOND AND ALLOW TO STAND FOR A MINIMUM OF 24-HOUR PERIOD PRIOR TO THE START OF THE TESTS. EXPEL ALL AIR FROM THE PIPE. ABSORPTION BY THE PIPE OR PIPE LINING MATERIAL MAY REQUIRE A LONGER PERIOD BEFORE BEGINNING THE TESTS AS DIRECTED BY FID'S CHIEF ENGINEER OR FID'S INSPECTOR.
5. SHOULD TESTING DISCLOSE ANY VISIBLE LEAKS OR LEAKAGE GREATER THAN WHAT IS ALLOWED, THE DEFECTIVE JOINTS OR PIPE SHALL BE LOCATED, REPAIRED, AND RE-TESTED UNTIL SATISFACTORY RESULTS ARE OBTAINED BY THE CONTRACTOR AND THE CONTRACTOR'S EXPENSE.



SITE MAP
NOT TO SCALE

APPROVALS

LAURENCE KIMURA, PE — DATE
CHIEF ENGINEER

GENERAL NOTES

1. NO WORK SHALL BE PERFORMED WITHIN FRESNO IRRIGATION DISTRICT'S (FID) EASEMENT OR RIGHT-OF-WAY DURING THE IRRIGATION SEASON, WHICH IS TYPICALLY MARCH THROUGH AUGUST, UNLESS APPROVED BY FID'S GENERAL MANAGER.
2. ALL WORK SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS AS SHOW IN FRESNO IRRIGATION DISTRICT'S ENGINEERING HANDBOOK OF SPECIFICATIONS.
3. ALL REINFORCED CONCRETE PIPE SHALL BE RUBBER GASKETED AND CONFORM TO ASTM STANDARD C-361 WITH CIRCULAR REINFORCEMENT. ANY OTHER TYPE OR CLASS PIPE SHALL REQUIRE FRESNO IRRIGATION DISTRICT APPROVAL.
4. ALL MATERIAL SHALL BE NEW AND NO SALVAGED MATERIAL OR PREVIOUSLY USED MATERIAL MAY BE USED UNLESS APPROVED BY FRESNO IRRIGATION DISTRICT'S ENGINEER.
5. ALL DISTURBED SOIL SHALL BE COMPACTED TO A MINIMUM 93% COMPACTION (95% WITHIN CITY/COUNTY R/W FOR TOP 24") OR AS SPECIFIED ON THE PLANS. COMPACTION TESTS SHALL BE MADE AVAILABLE TO FRESNO IRRIGATION DISTRICT'S ENGINEER.
6. ALL BENDS AND/OR ELBOWS SHOWN ARE PRECAST UNLESS SPECIFIED DIFFERENTLY AND SHALL CONFORM TO ASTM STANDARDS. ALL BENDS AND/OR ELBOWS SHALL BE INSTALLED WITH THRUST BLOCKS PER FRESNO IRRIGATION DISTRICT STANDARDS.
7. ALL EXCESS MATERIAL AND/OR DEBRIS SHALL BE REMOVED FROM FRESNO IRRIGATION DISTRICT EASEMENT UPON COMPLETION OF CONSTRUCTION.
8. CONSTRUCTION SHALL NOT INTERFERE WITH THE FLOW OR DISTRIBUTION OF WATER AS REQUIRED BY FRESNO IRRIGATION DISTRICT. ANY WORK NEAR OR WITHIN A FACILITY DESIGNATED FOR ROUTING STORM FLOWS SHALL BE PERFORMED IN A MANNER TO ALLOW FLOOD FLOWS TO PASS AT ALL TIMES.
9. FRESNO IRRIGATION DISTRICT WILL NOT BE RESPONSIBLE FOR ANY WATER THAT MAY FLOW IN THE IRRIGATION FACILITY OR AREA OF CONSTRUCTION DURING THE TIME OF CONSTRUCTION.
10. FRESNO IRRIGATION DISTRICT'S ENGINEERING DEPARTMENT, (559) 233-7161, SHALL BE NOTIFIED TO DETERMINE A PERIOD THAT WORK MAY BE PERFORMED.
11. ALL CONSTRUCTION STAKING SHALL INCLUDE A STATION IDENTIFICATION (THAT CORRESPONDS WITH THE CONSTRUCTION PLANS). A HUB, HUB ELEVATION, AND HUB OFFSET DISTANCE. STAKING SHALL BE PROVIDED FOR ALL CRITICAL INSTALLATION LOCATIONS (PIPELINE BENDS, STRUCTURES, VENTS, ETC.).
12. ALL IRRIGATION PIPE INSTALLED FOR USE BY THE FRESNO IRRIGATION DISTRICT (FID) SHALL BE INSPECTED AND APPROVED BY FID FIELD INSPECTOR BEFORE ANY BACKFILLING MAY OCCUR.
13. ALL KNOWN FID AND PRIVATE FACILITIES SHOWN ON THE PLANS REPRESENT IRRIGATION STRUCTURES WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE TO CONFIRM LOCATION, SIZE AND DEPTH OF ALL FID FACILITIES. IF UNKNOWN UTILITIES ARE ENCOUNTERED CONTRACTOR IS TO STOP WORK AND CONTACT FID'S ENGINEER.
14. AN ENCROACHMENT PERMIT IS REQUIRED FOR ANY WORK WITHIN COUNTY RIGHT-OF-WAY. COUNTY PERMITS MAY BE OBTAINED AT THE FRESNO COUNTY PUBLIC WORKS & PLANNING OFFICE.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ALL DAMAGE TO EXISTING FACILITIES WHICH OCCURS DURING CONSTRUCTION ACTIVITIES.
16. ALL PVC IRRIGATION PIPE (PIP 100 PSI DR 41) SHALL CONFORM TO ASTM D1784. JOINT DESIGN SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3139 WITH RUBBER GASKETED JOINTS THAT CONFORM TO ASTM F477.
17. ALL PVC IRRIGATION PIPE (C905 100 PSI DR 41) SHALL CONFORM TO AWWA C905 SPECIFICATION. JOINT DESIGN SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3139 WITH RUBBER GASKETED JOINTS THAT CONFORM TO ASTM F477.
18. NO INTERRUPTIONS TO IRRIGATION DELIVERIES WILL BE ALLOWED WITHOUT PRIOR APPROVAL BY FID. THE IRRIGATION SEASON VARIES WITH HYDROLOGIC CONDITIONS BUT TYPICALLY OCCURS BETWEEN FEBRUARY 15 AND AUGUST 31, BUT MAY EXTEND THROUGH OCTOBER DURING UNUSUALLY WET YEARS.
19. TRACER WIRE IS TO BE USED WITH RGRCP AND PVC WHERE CALLED FOR ON THE PLANS. TRACER WIRE SHALL BE COPPER WIRE, BLUE, TYPE UF, SIZE AWG #10 AND SHALL BE PLACED OVERTOP THE PIPELINE. TRACER TAPE IS NOT ALLOWED. ALL WIRE TO WIRE CONNECTIONS SHALL USE 3M DBR SPLICE KIT TO PROVIDE CONTINUITY AND TAPED TO PREVENT ENTRY OF MOISTURE. WHERE TRACER WIRE IS CALLED FOR, IT SHALL BE SECURELY ATTACHED TO EACH STRUCTURE, VENT, AND /OR EACH LATERAL.
20. TRACER WIRE IS TO BE USED WITH RGRCP AND PVC WHERE CALLED FOR ON THE PLANS. TRACER WIRE SHALL BE SOLID CORE COPPER WIRE, BLUE, TYPE UF SIZE AWG#10 (TW/THW MAY BE SUBSTITUTED IN PLACE OF UF WITHIN PVC CONDUIT) AND INSTALLED OVERTOP WITHIN SCHEDULE 80 PVC CONDUIT. CONDUIT SHALL MEET ANSI/UL 651 SPECIFICATIONS. ALL CONNECTION POINTS SHALL USE 3M DBR SPLICE KIT. WHERE CONDUIT IS CALLED FOR, IT SHALL BE SECURELY ATTACHED TO EACH STRUCTURE AND/OR VENT ON EACH SIDE OF ROADWAYS.

SHEET INDEX

PRELIMINARY
NOT FOR CONSTRUCTION
9/11/2024

No.	REVISION	BY	DATE

FOR REVIEW ONLY

KRUM BASIN EXPANSION
HOUGHTON NO. 78
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA

GENERAL

COVER

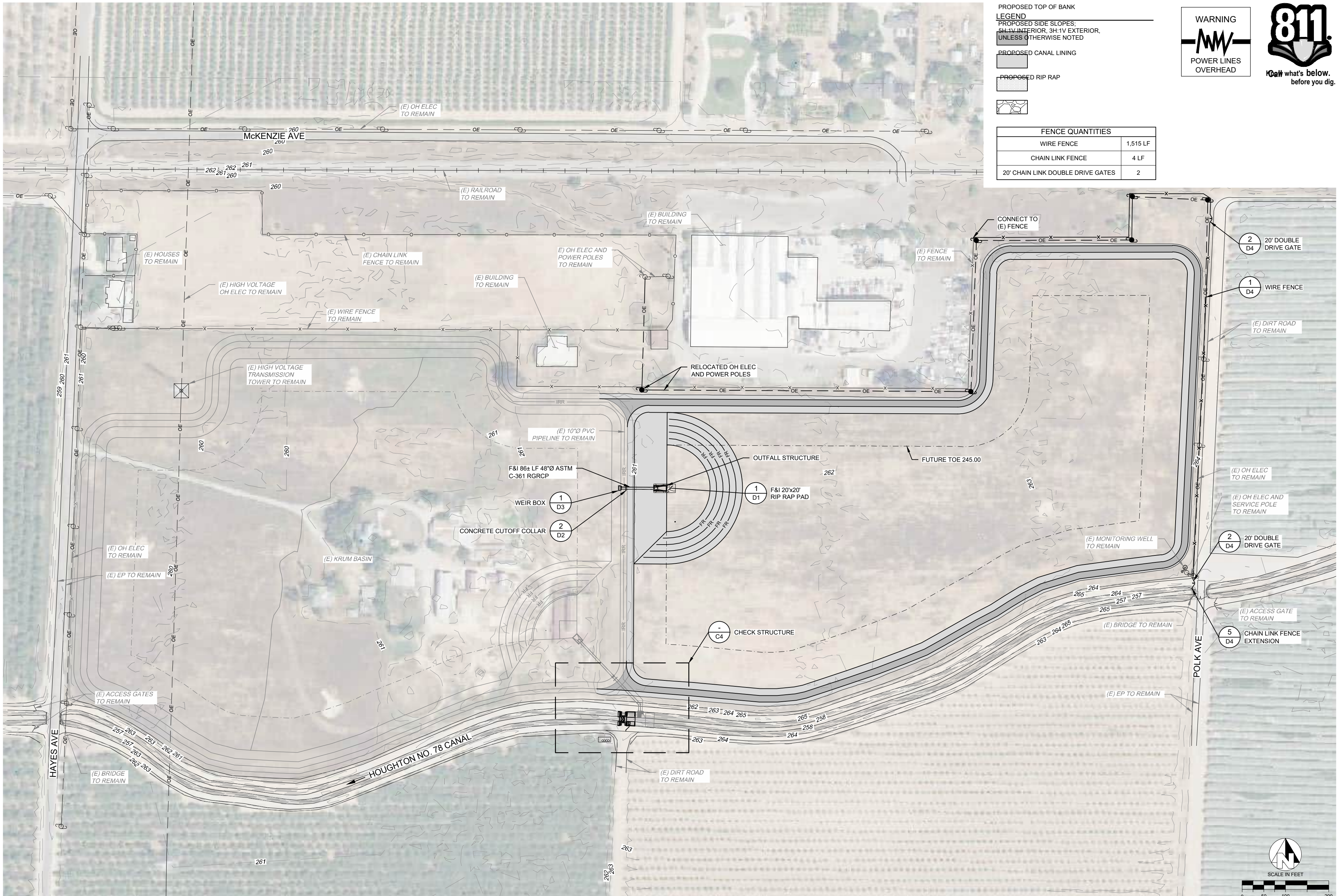
PROVOST & PRITCHARD
455 W FIR AVENUE
CLOVIS, CA 93611-9166
PHONE (559) 449-2700
FAX (559) 449-2715
www.provostandpritchard.com

DESIGN ENGINEER:
LICENSE NO:

DRAFTED BY: MJB — CHECKED BY: RJS
DATE: 9/11/2024
JOB NO: 103824009
PROJECT NO:
PHASE: DRP

0 — 1"
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

SHEET G1
1 OF 10



LEGEND

PROPOSED TOP OF BANK

PROPOSED SIDE SLOPES; 5H:1V INTERIOR, 3H:1V EXTERIOR, UNLESS OTHERWISE NOTED

PROPOSED CANAL LINING

PROPOSED RIP RAP

WARNING
POWER LINES OVERHEAD

811 Know what's below. Call before you dig.

FENCE QUANTITIES	
WIRE FENCE	1,515 LF
CHAIN LINK FENCE	4 LF
20' CHAIN LINK DOUBLE DRIVE GATES	2

NO.	REVISION	BY	DATE

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9/11/2024

FOR REVIEW ONLY

KRUM BASIN EXPANSION
HOUGHTON NO. 78
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA

CIVIL

SITE PLAN

PROVOST & PRITCHARD
455 W FIR AVENUE
CLOVIS, CA 93611-9166
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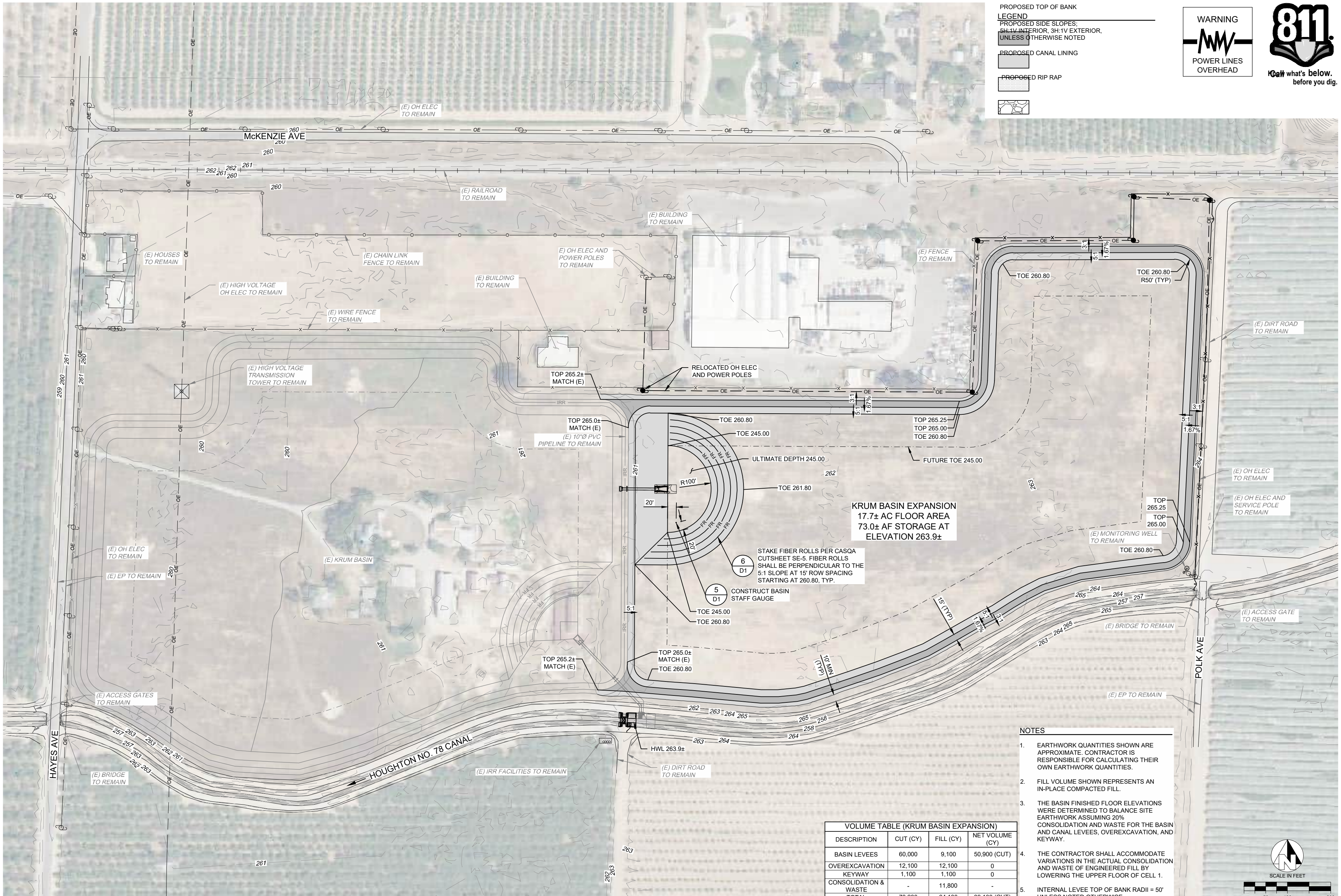
SHEET C2



VOLUME TABLE (KRUM BASIN EXPANSION)			
DESCRIPTION	CUT (CY)	FILL (CY)	NET VOLUME (CY)
BASIN LEVEES	60,000	9,100	50,900 (CUT)
OVEREXCAVATION	12,100	12,100	0
KEYWAY	1,100	1,100	0
CONSOLIDATION & WASTE	-	11,800	-
TOTAL	73,200	34,100	39,100 (CUT)

NOTES

1. EARTHWORK QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR CALCULATING THEIR OWN EARTHWORK QUANTITIES.
2. FILL VOLUME SHOWN REPRESENTS AN IN-PLACE COMPACTED FILL.
3. THE BASIN FINISHED FLOOR ELEVATIONS WERE DETERMINED TO BALANCE SITE EARTHWORK ASSUMING 20% CONSOLIDATION AND WASTE FOR THE BASIN AND CANAL LEVEES, OVEREXCAVATION, AND KEYWAY.
4. THE CONTRACTOR SHALL ACCOMMODATE VARIATIONS IN THE ACTUAL CONSOLIDATION AND WASTE OF ENGINEERED FILL BY LOWERING THE UPPER FLOOR OF CELL 1.
5. INTERNAL LEVEE TOP OF BANK RADII = 50' UNLESS NOTED OTHERWISE.

PRELIMINARY
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FOR REVIEW ONLY

KRUM BASIN EXPANSION
HOUGHTON NO. 78
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA

CIVIL

GRADING PLAN

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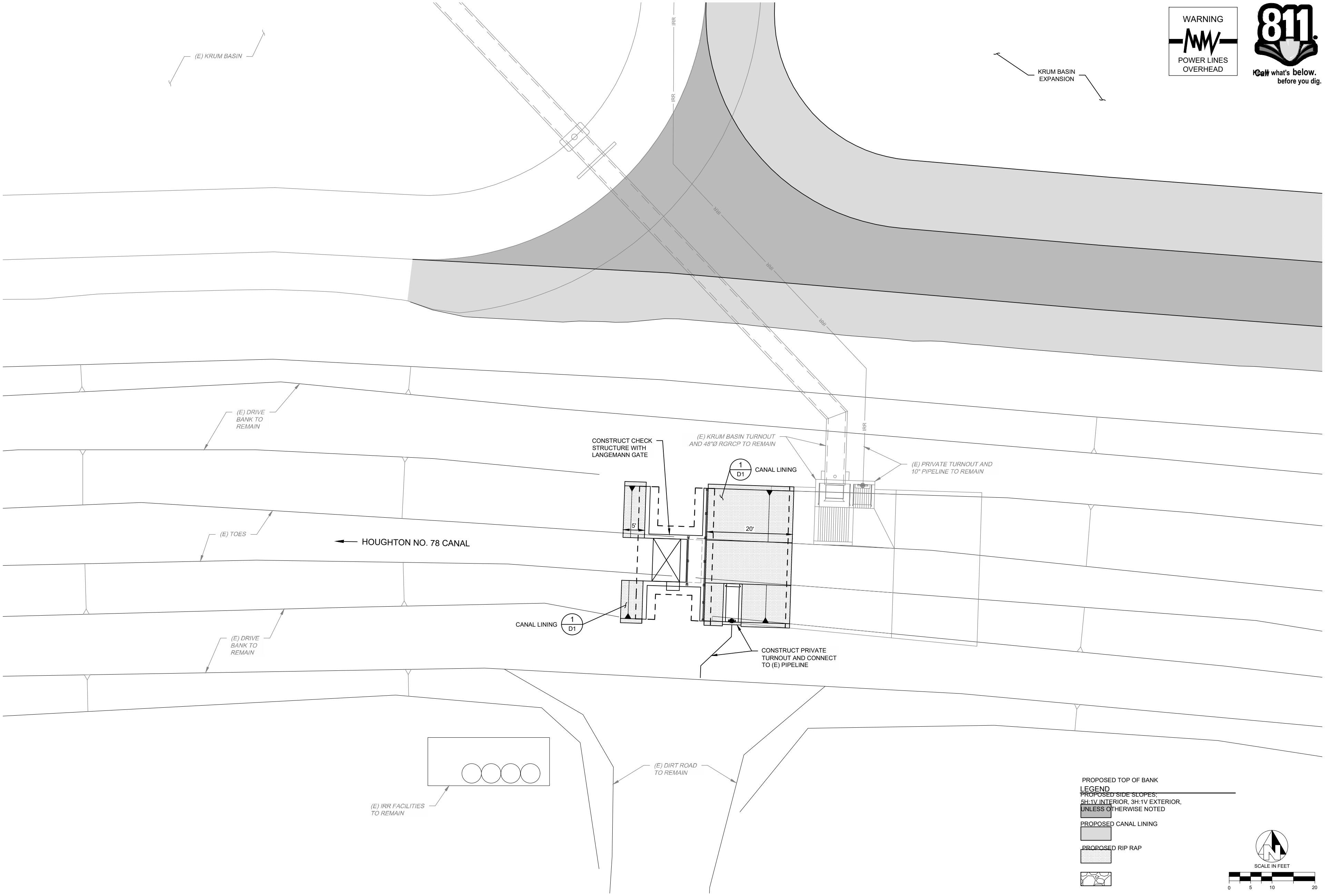
DESIGN ENGINEER:
LICENSE NO:
DRAFTED BY: MJB | CHECKED BY: RJS
DATE: 9/11/2024
JOB NO: 103824009
PROJECT NO:
PHASE: DRP
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.
SHEET C3

10/6/2024 1:20 PM G:\Fresno ID - 1038\103824009-Krum Basin\300 CAD\340 Sheet Sets\02_Civil\Expansion\C3 GRADING PLAN.dwg -Miguel Jimenez



PRELIMINARY
NOT FOR CONSTRUCTION
9/11/2024

No.	REVISION	BY	DATE

FOR REVIEW ONLY

KRUM BASIN EXPANSION
HOUGHTON NO. 78
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA

CIVIL

CHECK STRUCTURE

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CLOVIS, CA 93611-9166
PHONE (559) 449-2700
FAX (559) 449-2715
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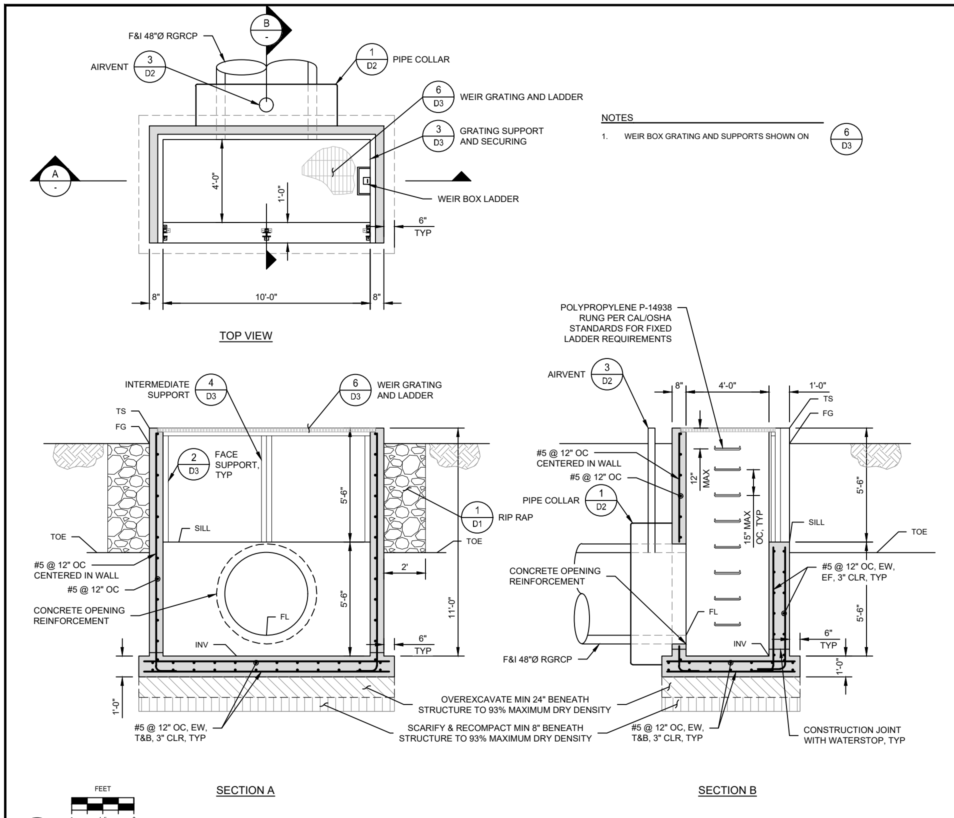
ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

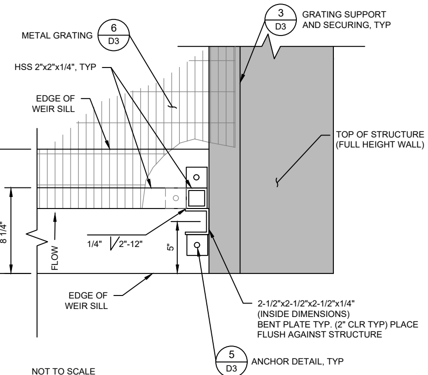
SHEET C4
6 OF 10



NOTES

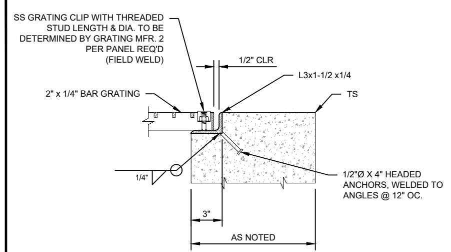
1. WEIR BOX GRATING AND SUPPORTS SHOWN ON 6/D3

1/D3 WEIR BOX



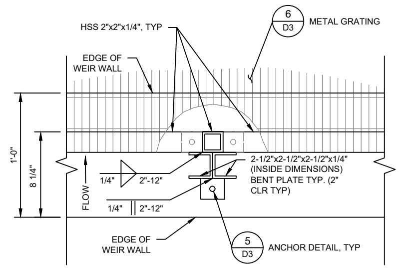
NOT TO SCALE

2/D3 FACE SUPPORT



NOT TO SCALE

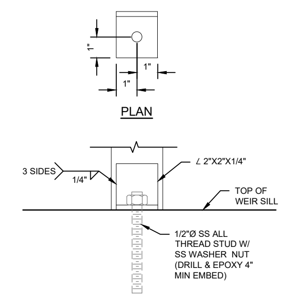
3/D3 GRATING SUPPORT AND SECURING WEIR BOX AND BASIN TURNOUT



NOT TO SCALE

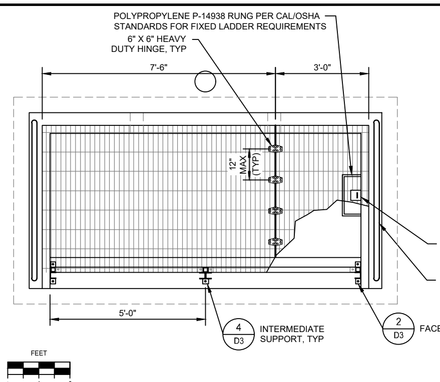
4/D3 INTERMEDIATE SUPPORT

NOTE
MINIMUM 2" CLEARANCE BETWEEN ALL THREAD STUD AND EDGES OF CONCRETE.



NOT TO SCALE

5/D3 ANCHOR DETAIL



GRATING NOTES

1. ALL BAR GRATING SHALL BE GALVANIZED STEEL 2"x 1/4" BARS AT 1-3/16" OC WITH CROSS BARS AT 4" OC.
2. ALL GRATING SHALL BE BANDED ALL AROUND INCLUDING NOTCHED AREAS.
3. ALL GRATING SHALL BE BOLTED DOWN SECURELY WITH STAINLESS STEEL SOCKET HEAD SCREWS.
4. GRATING DIMENSIONS ARE APPROXIMATE FROM EDGE TO EDGE INCLUDING GRATING SUPPORT CLEARANCES. CONTRACTOR TO VERIFY REQUIRED DIMENSIONS.
5. ALL METAL SHALL BE HOT-DIP GALVANIZED.

6/D3 WEIR GRATING AND LADDER

PRELIMINARY
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9/11/2024

No.	REVISION	BY	DATE

FOR REVIEW ONLY

KRUM BASIN EXPANSION
HOUGHTON NO. 78
FRESNO IRRIGATION DISTRICT
FRESNO COUNTY, CA

DETAILS

WEIR BOX AND GRATING DETAILS

PROVOST & PRITCHARD
455 W FIR AVENUE
CLOVIS, CA 93611-0242
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www.provostandpritchard.com

DESIGN ENGINEER:
LICENSE NO:

DRAFTED BY: MJB	CHECKED BY: RJS

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PROJECT NO:
PHASE: DRP

ORIGINAL SCALE SHOWN IS ONE INCH. ADJUST SCALE FOR REDUCED OR ENLARGED PLANS.

SHEET D3

EST. 1968
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CONSULTING GROUP
An Employee Owned Company

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Tel: (559) 449-2700
Fax: (559) 449-2715
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Metzler Basin Recharge Facility
Basis of Design Report

The Fresno Irrigation District (FID or District) Metzler Basin Recharge Facility (Project) consists of approximately 20-acres for groundwater recharge. The project will be constructed within one existing parcel (APN 016-450-71S). Many of the design features and assumptions are based on requests from FID during project meetings and discussions, and from Provost & Pritchard Consulting Group's (P&P) experience gained from previous basin projects. This Report establishes the design criteria and assumptions that will be used to develop the design for the Project.

CURRENT DESIGN INFORMATION AND ASSUMPTIONS

The design of the Project was based on the following information and assumptions:

Project – General

- The Project will be used for recharge operations. The Project will have an initial design storage capacity of fifty three (53) acre-feet. The basin will include a basin turnout structure, actuated gate with Flow Measurement at Basin turnout, 36" RGRCP, and monitoring wells.
- The Project will be fenced on all sides except along the Thompson No. 54 Canal with FID standard wire fence.

Project – Basin / Earthwork

- The top of the basin levees will be designed for 1.25 feet of freeboard, measured from the highwater level (HWL) surveyed upstream of the existing check structure. This will allow the HWL in the basins to become static with the canal and reduce the probability of overtopping.
- The top of basin levees will be a 15 foot wide drive road and maximum height of 6 feet above original adjacent grade.
- The basin side slopes (horizontal: vertical) are 5:1 interior and 3:1 exterior.
- The basins will have a minimum of 50 feet turning radius on all drive roads.
- The anticipated water depth is expected to be a minimum of 4 feet from the basin floor to the HWL.
- Plan will show ultimate future depth of 15 feet below existing grade.

Project – Existing (E) and Proposed (P) Elevations

Feature	Elevation
(E) HWL	Upstream of Check 265.5+/-
(P) Basin Top	266.75 - 267.00 +/-
(P) Basin Floor	261.50 +/-
(P) HWL	265.5 +/-

Project – Structures

- The proposed Basin turnout will be sized to provide a total flow of 20 cfs and will include a 36-inch diameter Rubicon SlipMeter. The Rubicon SlipMeter is an actuated gate and will also serve as the flowmeter. The SlipMeter is assumed to be powered by nearby electrical. The pipeline will be 36-inch RGRCP and discharge into the basin.

Project – Operations

- The basin will operate in a “gravity in” manner, with gravity flow from the turnout to the deepened outfall area and into the basin.
- The existing check structure south of the Shaw Avenue crossing will control the water level upstream of the Thompson No. 54 and the Basin HWL.
- A set flow may be delivered into the basin via the Rubicon SlipMeter.

Project – SCADA/Electrical

- All improvements will utilize PG&E power, when available, or solar.
- Supervisory Control and Data Acquisition (SCADA) will be integrated by District’s SCADA integrator after project completion.

Project –Monitoring

- Two monitoring wells are proposed to be constructed at the northwest and southeast corners of the basin.

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Krum Basin Expansion Recharge Facility
Basis of Design Report

The Fresno Irrigation District (FID or District) Krum Basin Expansion Recharge Facility (Project) consists of approximately 24-acres of additional groundwater recharge area, bringing the site to at total of 54-acres. The project will be constructed within one existing parcel (APN 326-040-23S). Many of the design features and assumptions are based on requests from FID during project meetings and discussions, and from Provost & Pritchard Consulting Group's (P&P) experience gained from previous basin projects. This Report establishes the design criteria and assumptions that will be used to develop the design for the Project.

CURRENT DESIGN INFORMATION AND ASSUMPTIONS

The design of the Project was based on the following information and assumptions:

Project – General

- The Project will be used for recharge operations. The Project will have an initial design storage capacity of approximately seventy-three (73) acre-feet. The basin will include an actuated gate with flow measurement at the basin turnout, a weir box, 48" RGRCP, and monitoring wells.
- The Project will be fenced on all sides except along the Houghton No. 78 Canal with FID standard wire mesh fence.

Project – Basin / Earthwork

- The top of the basin levees will be designed for approximately 1.1 feet of freeboard, measured from the highwater level (HWL) surveyed upstream of the existing check structure. This will allow the HWL in the basins to become static with the canal and reduce the probability of overtopping.
- The top of basin levees will be a 15 foot wide drive road and maximum height of 6 feet above original adjacent grade.
- The basin side slopes (horizontal: vertical) are 5:1 interior and 3:1 exterior.
- The basins will have a minimum of 50 feet turning radius on all drive roads.
- The anticipated water depth is expected to be a minimum of 3.1 feet, from the basin floor to the HWL.
- Plan will show ultimate future depth of 17 feet below existing grade.

Project – Existing (E) and Proposed (P) Elevations

Feature	Elevation
(E) HWL	Upstream of Check 263.9+/-
(P) Basin Top	265.00 - 265.25 +/-
(P) Basin Floor	260.80+/-
(P) HWL	263.9 +/-

Project – Structures

- The proposed Inter-Basin turnout will be sized to provide a total flow of 25 cfs and will include a weir box structure. The weir box will allow flows from the Existing Krum Basin to spill over into the Proposed Expansion Basin. The pipeline will be 48-inch RGRCP and discharge into the basin.
- The existing check structure and private turnout along the Houghton No. 78 Canal will be demolished and removed. The proposed check structure will include a Langemann gate. A proposed turnout will be constructed adjacent to the proposed check structure and connect to the existing private pipeline.

Project – Operations

- The basin will operate in a “gravity in” manner, with gravity flow from the turnout to the deepened outfall area and into the basin.
- The proposed check structure adjacent to the existing Krum Basin turnout will control the water level upstream of the Houghton No. 78 Canal and the Basin HWL.
- A set flow may be delivered into the basin via the Langemann gate and Basin turnout.

Project – SCADA/Electrical

- All improvements will utilize PG&E power, when available, or solar.
- Supervisory Control and Data Acquisition (SCADA) will be integrated by District’s SCADA integrator after project completion.

Project –Monitoring

- An existing monitoring well at the southeast corner of the basin shall be utilized to monitor groundwater levels.

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286 W. Cromwell Avenue
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Fax: (559) 449-2715
www.provostandpritchard.com

Memorandum

To:	Fresno Irrigation District
From:	Provost & Pritchard
Subject:	Consideration of Possible New Recharge Basin Sites
Date:	September 9, 2024

Introduction

This memo provides a summary of estimated acreage needed and possible locations of additional recharge basin within Fresno Irrigation District (FID or District). This evaluation assumes the availability of supply available to FID to recharge during wet years.

Identification of Target Volume for New In-District Recharge

The evaluation of available wet year supplies to FID indicated a range of between 36,000AF and 72,000AF to be available in the two most recent wet years. In discussions with staff, a target of being able to recharge an additional 42,000AF through in-District programs was identified. A goal of FID is to maximize the use of existing facilities to increase recharge capacity. With this in mind, FID is considering other methods besides new in-District recharge basins to utilize supply in wet years, such as improving infiltration rates at existing FMFCD and FID basins, interconnecting existing FMFCD basins that are not intertied currently, and an on-farm recharge program. The challenge with these other programs is that the water is available during periods when storm basins are not available for recharge, and when growers don't want to flood fields. Assumptions for these programs were made and the total anticipated recharge volume identified. The balance of the targeted recharge volume would be accomplished through new in-District recharge basins. Table 1 shows the assumptions made for each program, and the resultant target volume for recharge through new in-District recharge basins of 30,000AF.

Table 1 – Recharge Program Assumptions

Category	Quantity (AF)	Assumptions
On-Farm Recharge Program	1,000	Assumes 1,000 acres would participate & utilizing 1AF/acre
Improved Use of FMFCD Basins	2,500	Assumed 5% improvement
Recharge Efficiency Improvements at Existing FMFCD Basins	2,500	Assumed 5% improvement
Intertie New FMFCD Basins	3,500	Intertie of to-be-built basins
Recharge Efficiency Improvements at Existing FID Basins	2,500	Assumed 10% improvement
New In-District Recharge Basins	30,000	Resultant target volume needed
Total In-District Recharge increase =	42,000	Targeted volume for increase

Estimation of New Basin Acreage Needed

In wetter years, available supply is typically available in March, sometimes extending through June. An assumption of 120 days to capture and recharge the available supply was assumed. In order to recharge the targeted amount of 30,000AF in 120 days, a recharge rate of 250AF per day is needed. Infiltration rates within FID can vary, but a conservative assumption of 0.5ft/day was assumed. Using these assumptions, an estimated total of 500 acres is needed to recharge an additional 30,000AF within FID. Table 2 shows the estimation of basin acreage needed.

Table 2 - Estimation of New Basin Acreage Needed

(1)	Targeted Amount =	30,000	AF
(2)	Days Water is Available =	120	days
(3)	Needed Recharge per day (1) ÷ (2) =	250	AF/day
(4)	Assumed Infiltration Rate =	0.5	ft/day
(5)	Basin Acreage Needed (3) ÷ (4) =	500	acres

New Recharge Basins Under Construction

FID currently has four new recharge basin sites totaling approximately 150 acres that are in construction, nearing construction start, or the land has already been acquired and design is progressing. Table 3 shows the names, locations and sizes of these planned basins. These planned basins were added to a complete list included as Attachment 1 that shows all FID owned basins, leased basins, privately owned basins, and flood rights easements.

Table 3 – New Recharge Basins Under Construction

#	Pond Name	Facility Location	Area (acre)	Major Canal Source
UC1	Central - Central & Hughes	S/W Central & Hughes	35.7	Central
UC2	Central - East & Malaga	S/E Malaga & East	40.0	Central
UC3	Central - Orange & Lincoln	N/E Lincoln & Orange	14.3	Washington
UC4	Wagner	S/E Shaw & Westlawn	60	Herndon

Possible New Recharge Basin Sites

With FID's 150 acres of planned basins, the needed 500 acres of new recharge basin acreage is reduced to about 350 acres. In order to achieve 350 acres of wetted recharge area, an additional 20% of land area is assumed to be needed, so a total area of approximately 420 acres is needed. A discussion was held with FID water department staff to identify possible additional recharge basin sites as well as canals that would benefit from additional recharge and regulation capacity. Several existing basins were identified for possible expansion, as well as possible locations of new basin sites. The Herndon Canal was identified as the major conveyance with the most available capacity to convey water for recharge, especially considering urban storm water routing and Eastside Stream water. FID staff identified available capacity along the Big Sandridge which receives water from the Herndon Canal. There also remains significant capacity within the Fancher Creek system along the Washington and Central Canals downstream.

Eighteen possible sites were identified, including expansion of eleven existing basin sites, and the approximate location of 4 new basin sites. A list of these 18 possible sites is included in Table 4. The list includes more than the required 420 gross acreage needed in order to provide possible options for consideration. A District map showing existing, under-construction and possible basin locations is included in Attachment 2. Also included in Attachment 2 are project specific maps for each of the possible basin expansions and new basin locations. The locations shown for basin expansion were approximated and still need to be reviewed for constructability and location preference, but the approximate location was included to provide possible additional acreage at each location.

Specific site locations are also shown for new basin locations, but these sites were just identified as possible locations within the reach of the canal that a new basin site is desired. A more detailed investigation of suitability and seller willingness is needed within the general proximity of the locations shown to better identify a possible location and help prioritize the locations. Then additional field investigation is needed to estimate the likely infiltration rate, and basin constructability including excavation required.

Table 4 – Possible Basin Expansions and New Basin Locations

#	Pond Name	Facility Location	Area (acre)	Major Canal Source
-	Metzler	N/W Shaw & Jameson	20	Thompson No. 54
-	Krum	S/E McKenzie & Hayes	54	Houghton No. 78
P1	Shubin Expansion	N/W McKinley & Shasta	35	Big Sandridge
P2	Lambrecht Expansion	S/W Shaw & Goldenrod	22	Herndon
P3	Barstow and Jameson	S/W Barstow & Jameson	37	Herndon
P4	Wagner Expansion	S/E Shaw & Westlawn	51	Herndon
P5	Barstow and Westlawn	S/E Barstow & Westlawn	27	Herndon
P6	Barstow and Chateau Fresno - North	N/W Barstow & Chateau Fresno	24	Herndon
P7	Barstow and Chateau Fresno - South	S/W Barstow & Chateau Fresno	72	Herndon
P8	Empire Expansion	N/W Shields & Jameson	13	Herndon
P9	Whitebridge Neilsen	N/E Whitesbridge & Bryan	75	Houghton
P10	Central and Hughes Expansion	S/W Central & Hughes	38	Central
P11	Little Pine Flat Expansion	S/W Lincoln & Marks	18	Washington
P12	Ventura Expansion	S/E Clayton & East	14	Washington
P13	Pursell West	N/E Lincoln & Orange	7	Washington
P14	East and Malaga Expansion	S/W Malaga & East	19	Central
P15	Orange and Lincoln Expansion	N/E Lincoln & Orange	11	Washington
P16	Savory Pond Expansion	N/W Lincoln & Chestnut	23	Washington
P17	Triangle	S/E Malaga & Highway 99	7	Washington
P18	American and Fowler	N/E American & Fowler	16	Briggs

The available capacity of existing major conveyance canals is an important consideration so the total acreage of the existing, planned, and possible recharge basins was identified by the major canal that conveys water to those facilities and then totaled for comparison. Table 5 is a summary of these total acreages by major canal source and ownership type or status of the basin.

Table 5 – Basin Acreage by Major Canal Source and Type

	Basin Acreage					
	Existing				New	
Major Canal	Owned	Leased	Flood Rights	Private	Under Construction	Possible
Big Sandridge	15.5	0.0	0.0	0.0	0	35
Briggs	19.9	0.0	0.0	0.0	0	16
Central	46.2	8.0	23.5	0.0	72	57
Dry Creek	262.9	0.0	1860.0	0.0	0	0
Enterprise	0.0	0.0	0.0	7.9	0	0
Fancher	8.0	0.0	0.0	0.0	0	0
Gould	0.0	0.0	0.0	2.5	0	0
Herndon	71.1	0.0	0.0	0.5	58	246
Houghton	149.2	0.0	80.0	0.0	0	75
Mill	0.0	0.0	0.0	0.0	0	0
Thompson	39.1	0.0	0.0	0.0	0	0
Thompson Ext	10.9	0.0	0.0	0.0	0	0
Washington	54.2	2.1	2.1	6.0	14	80
Total	**677.0**	**10.1**	**1965.6**	**16.9**	**144**	**509**

The use of existing recharge basins at the City of Fresno's WWTP has also been discussed and previously evaluated. The inclusion of acreage at the basin has not been included in this memo at this time, as FID and the City may be evaluating the use of the ponds and pumping of reclaimed water separately.

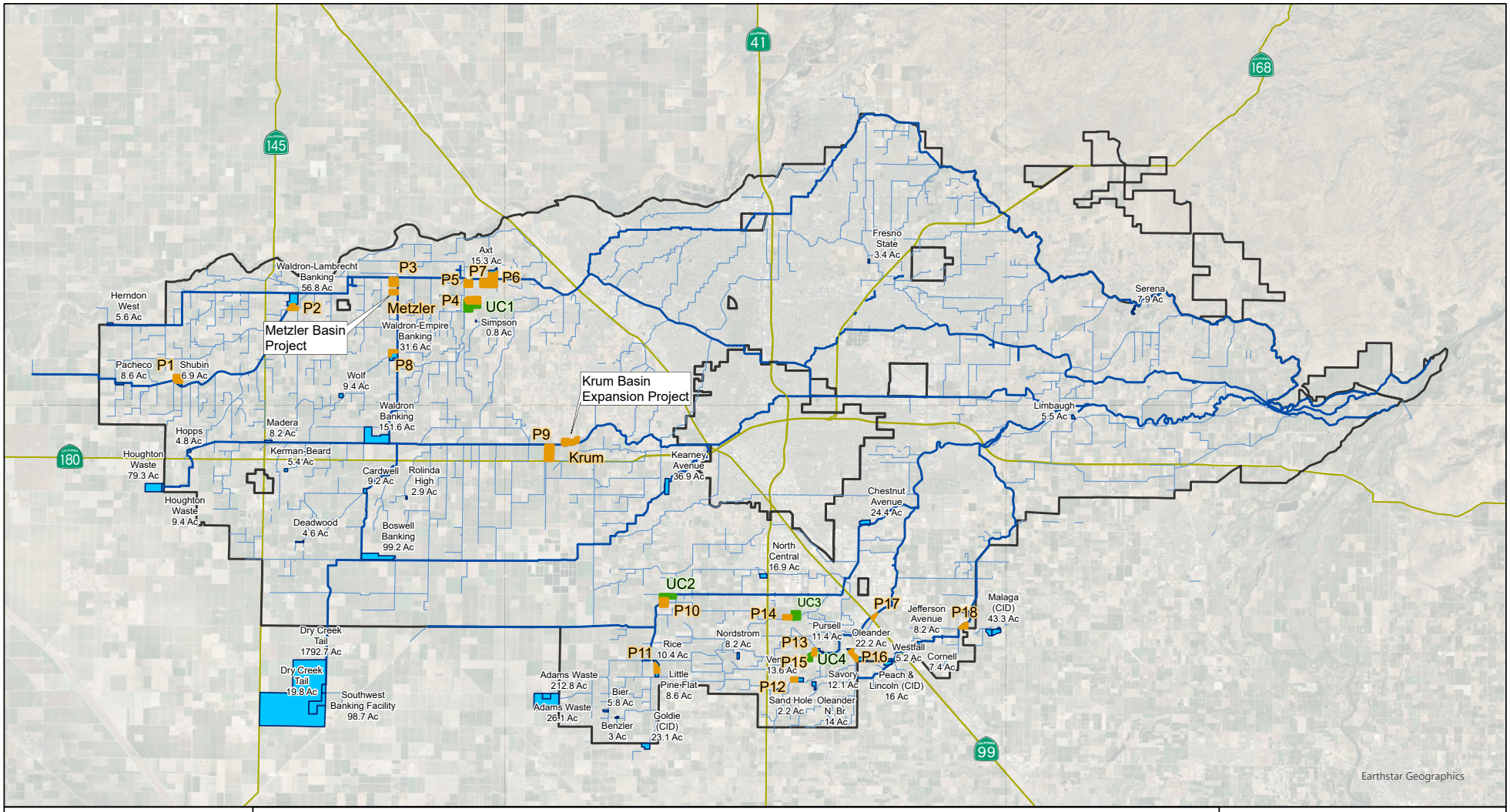
Attachment 1 - FID Basin List

FRESNO IRRIGATION DISTRICT POND LIST

Dated 1-28-2021

#	Pond Name	Facility Location	Area (acre)	Major Canal Source	Ownership Type
0	Fancher Creek Detention Basi	S/W McKinley & McCall	215.0	Fancher	FMFCD/FID
194	Fresno State*	N/W Bullard & Willow	2.5	Gould	Private
191	Nordstrom	N/W Lincoln & Fig	6.0	Washington	Private
575	Serena*	S/E Shaw & Del Rey	7.9	Enterprise	Private
565	Simpson*	N/W Ashlan & Monroe	0.5	Herndon	Private
UC1	Wagner	S/E Shaw & Westlawn	58	Herndon	Under Construction
UC2	Central and Hughes	S/W Central & Hughes	36	Central	Under Construction
UC3	East and Malaga	S/E Malaga & East	36	Central	Under Construction
UC4	Orange and Lincoln	N/E Lincoln & Orange	14	Washington	Under Construction
P1	Shubin	N/W McKinley & Shasta	35	Big Sandridge	Possible
P2	Lambrecht	S/W Shaw & Goldenrod	22	Herndon	Possible
P3	Barstow and Jameson	S/W Barstow & Jameson	37	Herndon	Possible
P4	Wagner	S/E Shaw & Westlawn	51	Herndon	Possible
P5	Barstow and Westlawn	S/E Barstow & Westlawn	27	Herndon	Possible
P6	Barstow and Chateau Fresno	N/W Barstow & Chateau Fresn	24	Herndon	Possible
P7	Barstow and Chateau Fresno	S/W Barstow & Chateau Fresn	72	Herndon	Possible
P8	Empire	N/W Shields & Jameson	13	Herndon	Possible
P9	Whitesbridge Nielsen	N/E Whitesbridge & Bryan	75	Houghton	Possible
P10	Central and Hughes	S/W Central & Hughes	38	Central	Possible
P11	Little Pine Flat	S/W Lincoln & Marks	18	Washington	Possible
P12	Ventura	S/E Clayton & East	14	Washington	Possible
P13	Pursell West	N/E Lincoln & Orange	7	Washington	Possible
P14	East and Malaga	S/W Malaga & East	19	Central	Possible
P15	Orange and Lincoln	N/E Lincoln & Orange	11	Washington	Possible
P16	Chestnut and Lincoln	N/W Lincoln & Chestnut	23	Washington	Possible
P17	Triangle	S/E Malaga & Highway 99	7	Washington	Possible
P18	American and Fowler	N/E American & Fowler	16	Briggs	Possible
167	Axt	N/W Barstow & Chateau Fresn	14.4	Herndon	Owned
168	Benzler (Clay)	N/W South & Brawley	2.7	Central	Owned
169	Bier	S/W Sumner & Blythe	4.6	Central	Owned
580	Pacheco	SE Clinton & Plumas	10.0	Big Sandridge	Owned
171	Cardwell	N/E California & Bishop	7.5	Thompson Ext	Owned
188	Chestnut Avenue	N/E Jensen & Chestnut	21.5	Central	Owned
172	Cornell	N/W Jefferson & Clovis	6.7	Briggs	Owned
187	Deadwood	S/W Jensen & Sycamore	3.4	Thompson Ext	Owned
197	Dry Creek Tail	S/E Lincoln & Madera	50.0	Dry Creek	Owned
581	Herndon West	N/W Ashlan & Plumas	5.0	Herndon	Owned
173	Hopps (Haupts)	N/W California & Trinity	6.0	Houghton	Owned
195	Houghton Waste (Toste)	S/W Whitesbridge & Trinity	10.0	Houghton	Owned
174	Boswell (Jameson)	N/W North & Jameson	98.0	Dry Creek	Owned
175	Jefferson Avenue	S/E Jefferson & Golden State B	9.2	Briggs	Owned
190	Johnson Pond	S/E Herndon & Monroe	1.7	Herndon	Owned
189	Kearney Avenue	N/E California & Marks	16.2	Dry Creek	Owned
177	Limbaugh	S/W Olive & McCall	8.0	Fancher	Owned
178	Little Pine Flat	N/W Clayton & Marks	8.0	Washington	Owned
179	Madera	N/E Nielsen & Madera	9.0	Houghton	Owned
180	North Central	S/E North & Elm	17.4	Central	Owned
579	Oleander	Lincoln & Chestnut	22.2	Washington	Owned
578	Pursell	SW Jefferson & Cedar	8.0	Washington	Owned
181	Rolinda High (Stiggins)	SE California & Jameson	1.2	Houghton	Owned
182	Shubin	N/W McKinley & Shasta	5.5	Big Sandridge	Owned
183	Ventura	S/W Clayton & Orange	12.5	Washington	Owned
184	Waldron Banking	N/E Nielsen & Floyd	123.0	Houghton	Owned
564	Waldron-Empire	N/W Shields & Jameson	30.0	Thompson	Owned
176	Waldron-Lambrecht (Goldenro	S/W Shaw & Goldenrod	50.0	Herndon	Owned
185	Westfall (Sportsmen)	N/W Lincoln & Peach	4.0	Briggs	Owned
186	Wolf	S/W McKinley & Biola	9.1	Thompson	Owned
193	Savory	N/W Lincoln & Chestnut	3.5	Washington	Owned
	Southwest Banking Facility	Dry Creek Tail End	98.7	Dry Creek	Owned
192	Rice*	S/W Lincoln & Marks	8.0	Central	Leased
563	Sandhole*	N/E Adams & Cherry	2.1	Washington	Leased
198	Adams Waste	N/W Summer & Hayes	23.5	Central	Flood Rights
195	Houghton Waste (Toste)	S/W Whitesbridge & Trinity	80.0	Houghton	Flood Rights
199	Oleander N. Br. (Eucalyptus)	N/E Adams & Orange	2.1	Washington	Flood Rights
197	Dry Creek Tail	S/E Lincoln & Madera	1,860.0	Dry Creek	Flood Rights

Attachment 2 – District Map and Possible Basin Site Maps



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FID Major Conveyance
FID Conveyance Facility
Highway
FID Boundary
FID Basins
Under Construction
Possible Basin

(Basin locations are approximate and subject to change based on availability)

Fresno Irrigation District

FID Existing and Proposed Basins

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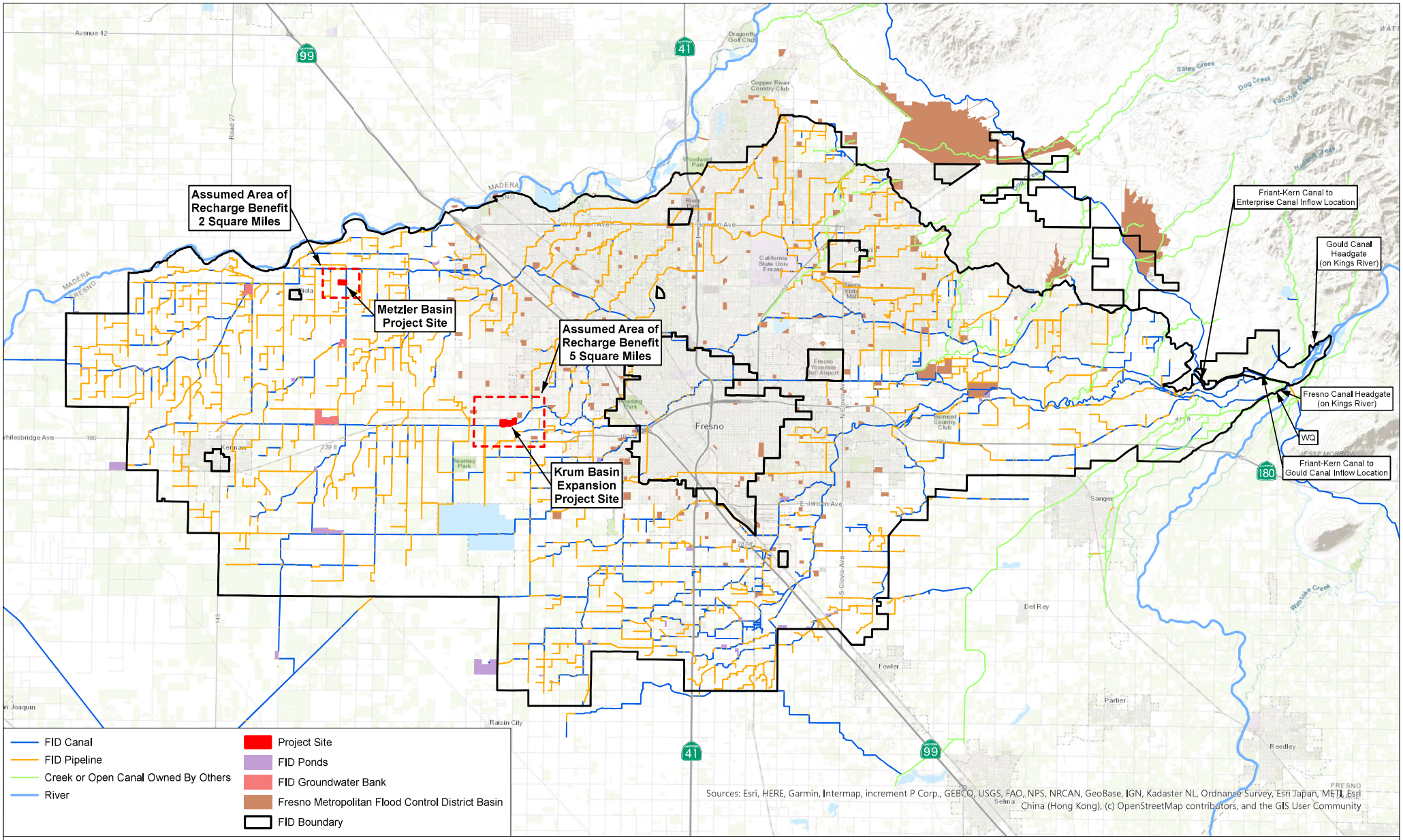

Fresno Irrigation District

Metzler and Krum Basin Expansion Recharge Benefit Area

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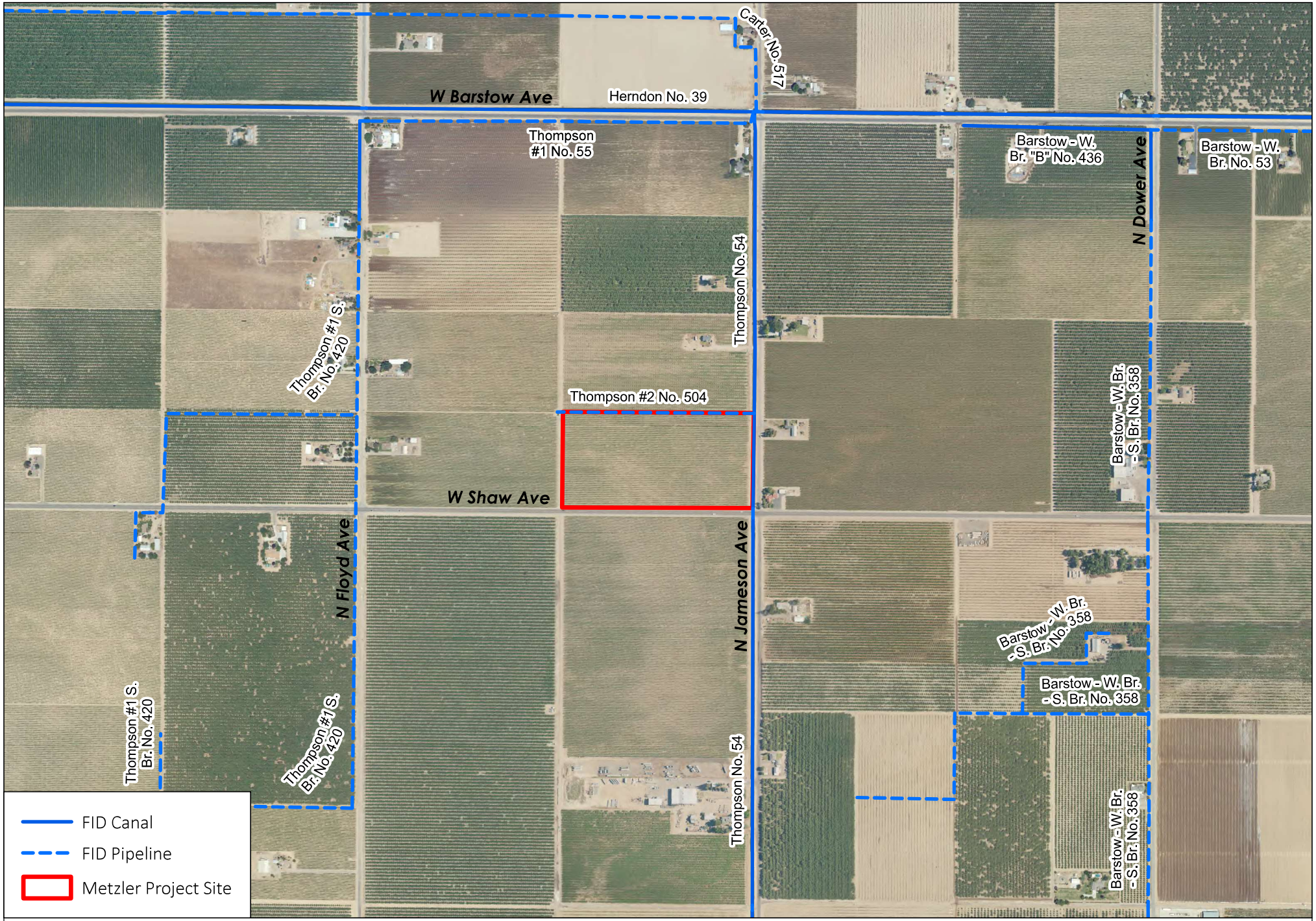

Fresno Irrigation District

Metzler Basin- Site Map

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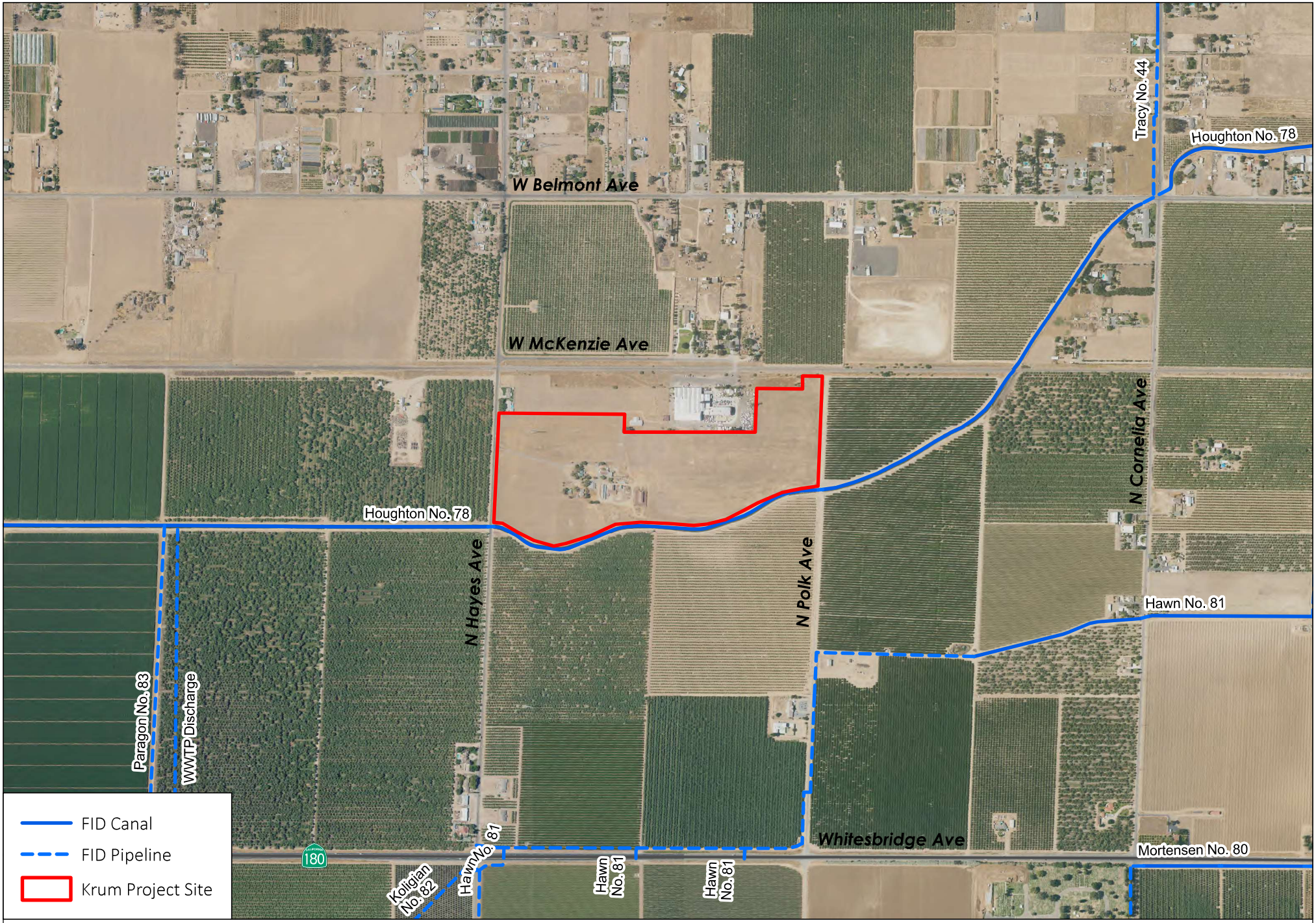

Fresno Irrigation District

Krum Basin Expansion- Site Map

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Appendix B – Fresno Irrigation District Drought Management Plan

FRESNO IRRIGATION DISTRICT

DROUGHT MANAGEMENT PLAN

ADDITIONAL DOCUMENTATION AS REQUIRED BY
STATE OF CALIFORNIA EXECUTIVE ORDER B-29-15
TO ACCOMPANY
FRESNO IRRIGATION DISTRICT'S WATER MANAGEMENT PLAN
PREPARED FOR THE U.S. BUREAU OF RECLAMATION
IN COMPLIANCE WITH 2011 STANDARD CRITERIA

SUBMITTED TO:
CALIFORNIA DEPARTMENT OF WATER RESOURCES
DIVISION OF STATEWIDE INTEGRATED WATER MANAGEMENT
WATER USE AND EFFICIENCY BRANCH

FEBRUARY 17, 2016

Appendix C – Energy Savings Calculations

Fresno Irrigation District

Metzler and Krum Expansion Recharge Project

Energy Savings from Groundwater Recharge

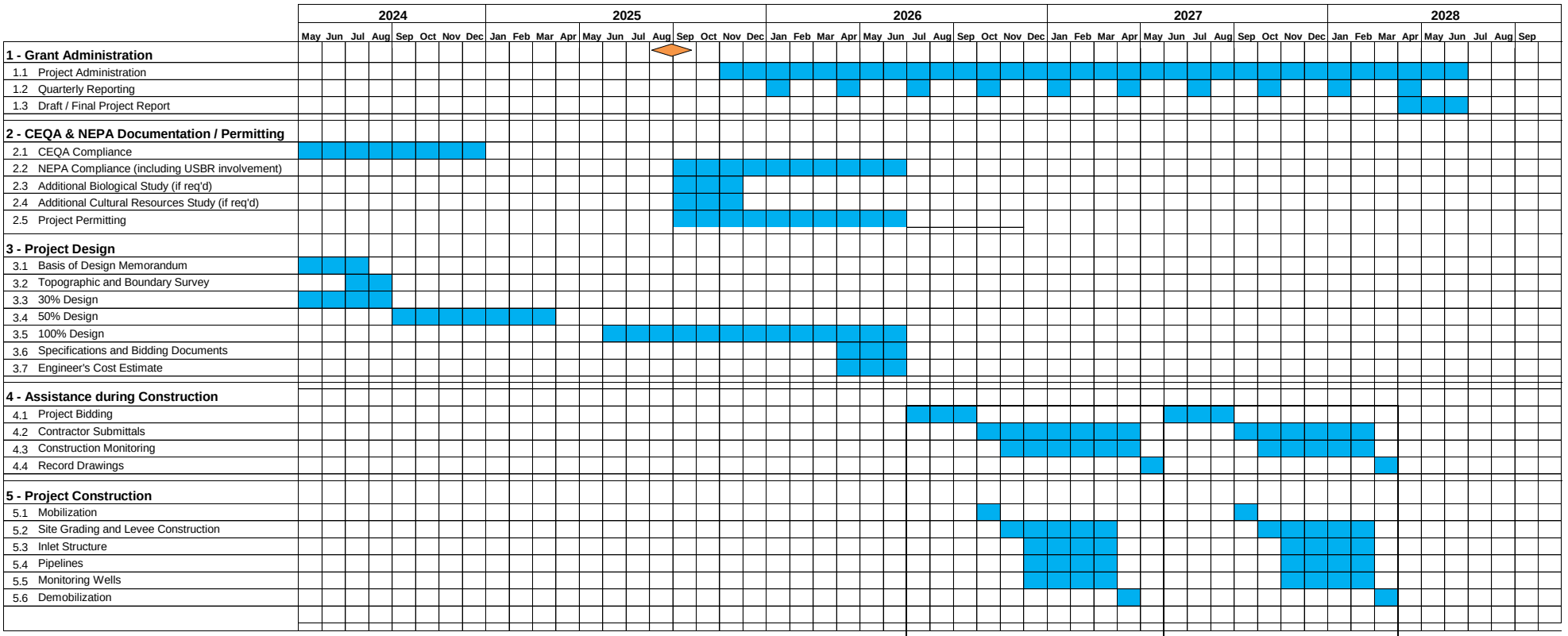
Annual Recharge	792	AF	
Assumed Area Benefitting from Recharge	7	square miles	
	4,480	acres	
Local Groundwater Pumping	3	AF/acre	
Annual Groundwater Pumping in Area Benefitting from Recharge	13,440	AF	
Specific Yield	0.08		
Annual Rise in Groundwater Levels	2	ft	
Pumping Cost	0.27	AF/ft	(Based on 1.8 kwh per foot of lift at $0.15/kwh)
Assumed Period of Benefit before Recharged Water is Pumped and Used	2	years	
Energy Savings	106,920	kwh	
Greenhouse Gas Reduction	75	metric tons of CO_2	(Based on 7.0555 × 10-4 metric tons CO_2 / kwh from EPA Greenhouse Gas Equivalencies Calculator)
Annual Savings (rounded)	**$16,000**		

Appendix D – Project Schedule

FRESNO IRRIGATION DISTRICT

METZLER AND KRUM BASIN EXPANSION RECHARGE BASINS PROJECTS

Project Schedule



Assumed Award Date September 1, 2025 per NOFO

Deadline for Funding Groups II is September 1, 2028 (3 years from Contract Award)

Appendix H – Letters of Support

NORTH KINGS GROUNDWATER
SUSTAINABILITY AGENCY

October 3, 2024

Mr. Laurence Kimura, P.E.
Fresno Irrigation District
2907 S. Maple Avenue
Fresno, CA 93725

Subject: Letter of Support for United States Bureau of Reclamation (USBR) Drought Resiliency Grant for Fresno Irrigation District (FID)

Dear Mr. Kimura:

The North Kings Groundwater Sustainability Agency (NKGSA) is writing in support of the Fresno Irrigation District's (FID) submission of a grant application to the United State Bureau of Reclamation (USBR) to support development of the new Metzler and Krum Recharge Basin projects. The FID lies in the Kings Subbasin (subbasin), designated as a high priority, critically over-drafted basin. As such, it is subject to the requirements of the Sustainable Groundwater Management Act (SGMA). The NKGSA is responsible for SGMA implementation in the subbasin and developed and submitted a Groundwater Sustainability Plan (GSP) in January 2020. This plan was reviewed by the Division of Water Resources (DWR) in 2022. Revisions to the plan were completed and it was resubmitted to DWR in July of 2022. DWR has since determined that the GSP was deemed to be complete as designated in the determination letter from DWR.

The addition of the new Metzler and Krum Recharge projects will help to capture and recharge water in wet years for later use in dry years. Groundwater recharge is one of the most important and effective tools to meet sustainability goals while maximizing benefits from years when there is abundant rain and snowmelt available in the subbasin. The project will also help raise groundwater levels in the area of the basins and benefit landowners with domestic wells and agricultural wells.

Recent droughts have resulted in severe water shortages and emphasized the need for more comprehensive drought planning and mitigation projects. Projects like what FID has planned will help capture storm water in wet years like experienced in 2023 and average years like in 2024, helping sustain and improve the aquifer and provide supplies available in future dry periods.

Internet
www.NorthKingsGSA.org

Mail
North Kings GSA
c/o Fresno Irrigation District
2907 S. Maple Ave.
Fresno, CA 93725

Phone
559-233-7161

About NKGSA: The North Kings Groundwater Sustainability Agency is a Joint Powers Authority formed in December 2016. Composed of local public agencies and others engaged through binding agreements, the NKGSA is the governing body of a portion of the Kings Subbasin (DWR Bulleting 118, 5-22.08) in compliance with the Sustainable Groundwater Management Act of 2014. NKGSA members are Bakman Water Company, Biola Community Services District, City of Clovis, City of Fresno, City of Kerman, County of Fresno, Fresno Irrigation District, Fresno Metropolitan Flood Control District, Garfield Water District, and International Water District.

The NKGSA commends the FID for seeking these resources to develop additional projects to help achieve groundwater sustainability in the Kings Subbasin. Furthermore, the NKGSA strongly encourages the USBR to fund the grant application for the new Metzler and Krum Recharge projects.

Please do not hesitate to contact me at 559-233-7161 x. 7109 should you have any questions.

Sincerely,

Kassy D. Chauhan
Executive Director

Fresno County
Farm Bureau
Serving agriculture since 1917

October 4, 2024

Fresno Irrigation District
Laurence Kimura, PE Fresno Irrigation District
2907 S. Maple Ave.
Fresno, CA 93725
Email: lkimura@fresnoirrigation.com

Subject: Letter of Support for USBR Drought Resiliency Grant for Fresno Irrigation District

Mr. Kimura:

On behalf of the Fresno County Farm Bureau, I write in support of the Fresno Irrigation District's plans to construct the proposed Metzler and Krum Recharge Basin projects. These basins will help to capture and recharge water in wet years for later use in dry years. Groundwater recharge is one of the most important and effective tools to replenish the underground aquifer. The project will also benefit landowners with domestic wells and agricultural wells in the area.

Recent droughts have resulted in severe water shortages and emphasized the need for more comprehensive drought planning and mitigation projects. We understand the need to be proactive in developing more drought resilience in the area. Projects like these that FID has planned will help capture storm water in wet years such as 2023, helping sustain and improve the aquifer and provide supplies available in future dry periods.

We strongly encourage the United States Bureau of Reclamation to fund their application.

Sincerely,

Mark Thompson
President

1274 W Hedges Ave • Fresno, CA 93728
559-237-0263 office • 559-237-3396 fax • www.fcfb.org • info@fcfb.org

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@KingsWater

KINGS BASIN
Water Authority

September 27, 2024

Laurence Kimura, PE Fresno
Irrigation District 2907 South
Maple Avenue Fresno, CA
93725

Re: Letter of Support for USBR Drought Resiliency Grant for Fresno Irrigation District

Dear Mr. Kimura:

The Kings Basin Water Authority (KBWA) strongly supports the Fresno Irrigation District's (FID) plans to construct the proposed new Metzler and Krum Recharge Basin projects. The KBWA is a collaborative effort among nearly 60 public, private, and non-governmental agencies to manage water resources in the Kings Groundwater Subbasin and oversees the implementation and monitoring of the Kings Basin Integrated Regional Water Management Plan (IRWMP). These projects will help to capture and recharge water in wet years for later use in dry years. Groundwater recharge is one of the most important and effective tools to meet this goal. The project will also help raise groundwater levels in the area of the basin and benefit landowners with domestic wells and agricultural wells.

Recent droughts have resulted in very severe water shortages and emphasized the need for more comprehensive drought planning and mitigation projects. We understand the need to be proactive in developing more drought resilience in the area. Projects like what FID has planned will help capture storm water in wet years like we just experienced, helping sustain and improve the aquifer and provide supplies available in future dry periods.

The KBWA strongly encourage the United States Bureau of Reclamation to fund FID's application. If you have any questions, please contact me at MFast@reedley.ca.gov.

Sincerely,

Mary Fast

Mary Fast
Chair

MF/SL/dmr

UKB L24-0012
File: UKB 101.01.04

OFFICE OF THE CITY MANAGER
John Jansons

Mayor - Maria Pacheco
Mayor Pro Tem – Bill Nijjer
Council Members
Jennifer Coleman
Ismael Herrera
Gary Yep

850 S. Madera Avenue
Kerman, CA 93630

Phone: (559) 846-9387
Fax: (559) 846-6199
jjansons@cityofkerman.org

October 3, 2024

Laurence Kimura, PE
Fresno Irrigation District
2907 South Maple Avenue
Fresno, CA 93725

Subject: Letter of Support for USBR Drought Resiliency Grant for Fresno Irrigation District

Dear Mr. Kimura:

The City of Kerman strongly supports the Fresno Irrigation District's plans to construct the proposed new Metzler and Krum Recharge Basin projects. These projects will help to capture and recharge water in wet years for later use in dry years. Groundwater recharge is one of the most important and effective tools to meet this goal. The project will also help raise groundwater levels in the area of the basin and benefit landowners with domestic wells and agricultural wells.

Recent droughts have resulted in very severe water shortages and emphasized the need for more comprehensive drought planning and mitigation projects. We understand the need to be proactive in developing more drought resilience in the area. Projects like what FID has planned will help capture storm water in wet years like we just experienced, helping sustain and improve the aquifer and provide supplies available in future dry periods.

The City of Kerman strongly encourages the United States Bureau of Reclamation to fund their application.

Should you have any questions, please contact me at jjansons@cityofkerman.org or 559-846-9450.

Sincerely Yours,

John Jansons

John Jansons, City Manager
City of Kerman

cc: City Council
Director of Public Works
City Engineer

KRCD
Kings River Conservation District

4886 East Jensen Avenue
Fresno, California 93725

Tel: 559.237.5567
Fax: 559.237.5560

www.krcd.org
@kingsrivercd

September 27, 2024

Mr. Laurence Kimura, PE
Fresno Irrigation District
2907 South Maple Avenue
Fresno, CA 93725

Re: Letter of Support for USBR Drought Resiliency Grant for Fresno Irrigation District

Dear Mr. Kimura:

The Kings River Conservation District (KRCD) strongly supports the Fresno Irrigation District's (FID) plans to construct the proposed new Metzler and Krum Recharge Basin projects. These projects will help to capture and recharge water in wet years for later use in dry years. Groundwater recharge is one of the most important and effective tools to meet this goal. The project will also help raise groundwater levels in the area of the basin and benefit landowners with domestic wells and agricultural wells.

Recent droughts have resulted in very severe water shortages and emphasized the need for more comprehensive drought planning and mitigation projects. We understand the need to be proactive in developing more drought resilience in the area. Projects like what FID has planned will help capture storm water in wet years like we just experienced, helping sustain and improve the aquifer and provide supplies available in future dry periods.

KRCD strongly encourages the United States Bureau of Reclamation to fund FID's project. If you have any questions, please contact me at DMerritt@krcd.org.

Sincerely,

David M. Merritt
General Manager

DM/SL/dmr

L24-0073
File 300.07.01.01