

**Attachment 6.1 – Supporting Documents**

**Monitoring, Assessment and Performance Measures**

**Madera Region – IRWM Implementation Grant Application**

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**Attachment 6.1, Comprehensive Projects Performance Measures Table**

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## Attachment 6.1 - Monitoring, Assessment and Performance Measures

### Projects Performance Measures Table

This chart summarizes monitoring, assessment and performance measures for each of the proposed projects:

<i>Project Goals</i>	<i>Outcomes</i>	<i>Output Indicators</i>	<i>Outcome Indicators</i>	<i>Measurement tools</i>	<i>Targets</i>
<b>Project A – Overall Grant Administration</b>					
Timely and complete administration of grant	Successfully completed IRWM Implementation Projects	Invoices submitted in timely fashion with complete backup information	Project deliverables met		Monthly invoices submitted correctly
		Quarterly reports submitted in timely fashion			20 quarterly reports submitted – complete and timely
		Annual reports submitted in timely fashion			5 annual reports submitted – complete and timely
		Final report submitted in timely fashion			Final report submitted – complete and timely
<b>Project B – MD 19: Parkwood Water Supply and Meters</b>					
Improve water supply adequacy in a DAC	Increase water supply quantity to exceed expected Max Day Demand	Well production capacity	Production tests of new well in addition to existing well capacity	Meters and recorders installed at existing and new wells	Well production capacity total of 720 gpm.
Improve water supply reliability in a DAC	Construct a second well to supplement the current single well	Number of production wells	Completion of a second production well	Operator reports	Two production wells each capable of supplying at least Average Day Demand of 400 gpm
Reduce groundwater consumption	Reduce water use per household by installing water meters on each service	Annual water pumped per household	Measurement of annual water production	Meters and recorders at production wells	Reduce total water production by 20% annually

<b>Project Goals</b>	<b>Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement tools</b>	<b>Targets</b>
<b>Project C. MD 8 North Fork/ South Fork Sewer System Improvements</b>					
Protect Water Quality	Replace failing septic systems with a system that provides for the long-term wastewater treatment needs of the South Fork community.	New gravity sewer mains and force sewer mains to connect the South Fork Community to the Madera County Maintenance District 8A-North Fork Wastewater Treatment Plant (WWTP).	Construction of new public sewer intertie with sewer mains and lift station.	Decommissioning of private Wastewater Facility that is violating WDRs and presenting a public health hazard. Surface water and groundwater testing near non-compliant private Wastewater treatment facility.	No surface water or groundwater contamination resulting from WWTP operations
Recharge Groundwater for Sustainability.	Restore groundwater in the local area by percolating properly-treated effluent.	Restore 1.76 AFY to the local groundwater table	AFY Rate	Monitoring well levels, meter records at Madera County Maintenance District 8A-North Fork WWTP.	Maintenance of steady monitoring well elevations
<b>D. Brockman Flood Control Basin</b>					
Make use of flood waters that are sometimes lost to Madera County	Recharge flood water that would normally not be able to be utilized by Madera County or RCWD	Amount of water recharged	Measurement of water diverted & groundwater levels within RCWD and project vicinity	Meters installed at turnout, documentation of water supplied to facility	Import annual average of 15 AF per year of floodwater
Minimize flooding damage by diverting some floodwaters from Madera Ranchos North drainage	Recharge flood water that would normally not be able to be utilized by Madera County, MID or RCWD	Amount of water recharged	Measurement of water diverted.	Meters installed at turnout, documentation of water supplied to facility	Import annual average of 15 AF per year of floodwater
Improve existing groundwater quality	Reduced salinity, nitrates and other harmful constituents in groundwater	Reduction in negative water quality trend	Groundwater quality within MD 10A, RCWD and project vicinity	Groundwater constituent monitoring	Higher quality groundwater
Import Additional Water Supplies	Additional surface water supplies	Amount of imported water	Additional surface water imported to Madera County near MD 10A.	Meters installed at MID Lateral 6.2 turnout, documentation of water supplied to facility	Import annual average of 75 AF per of Section 215 San Joaquin River Flood Waters

<b>Project Goals</b>	<b>Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement tools</b>	<b>Targets</b>
<b>E. CSA-14: Chuk-Chanse Sewer System Improvements and Water Meters</b>					
Improve and protect drinking water quality in this Disadvantaged Community.	Replace failing sewer collection line	New gravity sewer main	Construct new sewer main and manholes	Measure influent sewer flows at head works	No surface water or groundwater contamination resulting from WWTP operations
Eliminate the infiltration of percolation water into the adjacent orchard	Intercept seepage from disposal pond	New interceptor trench drain	Construct new interceptor trench drain	Visually look for alge blooms in the adjacent orchard	No surface water contamination resulting from seepage of WWTP ponds
Reduce potable water demands	Reduce water use per household by installing self-reading water meters on each service	Annual water pumped per household	Measurement of annual water production	Water Meters and recorders at production wells	Reduce total water production by 20% annually

<b>Project Goals</b>	<b>Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement tools</b>	<b>Targets</b>
<b>F. MD33 Fairmead Wastewater Collection, Treatment and Disposal System Plans</b>					
Protect and improve water quality in a DAC	Maintain bacteria-free water with nitrate level below MCL	MD33 annual Consumer Confidence Report	No increase in nitrate levels from current range of 12-13 mg/l	Laboratory testing of water samples	Zero incidence of coliform and/or fecal coliforms, nitrate concentrations below MCL
Reduce groundwater overdraft in the Fairmead area in accordance with IRWMP goals	Reduce groundwater pumping by supplying recycled wastewater effluent to growers in the area in lieu of groundwater	Delivery of recycled water to area growers	Measurement of water delivered to growers and groundwater levels in the area	Meters at WWTP discharge, annual groundwater elevation measurements	Use of 75 percent of Fairmead wastewater effluent as recycled water for irrigation purposes
Facilitate Community Outreach Program to inform residents and other stakeholders related to project design.	Evaluation by residents and other stakeholders of alternative solutions to Fairmead's sewage disposal situation, including water quality and supply issues.	Preliminary design work evaluated by community representatives with respect to siting of WWTP and alternative solutions.	Participation of Fairmead population in public outreach meetings.	Meeting attendance records, APN rolls.	Participation of at least one-third of Fairmead population in one or more public outreach meetings.
Prepare to construct sanitary sewer system to achieve water quality and groundwater conservation goals.	Complete plans, specifications and cost estimate for complete sanitary sewer system, ready to pursue construction funding.	Approval of project plans by County and RWQCB	Letter from RWQCB indicating no further comment on Report of Waste Discharge	Recommended project design that is deemed acceptable to RWQCB.	Complete plans, specifications and estimate ready for inclusion in construction grant funding applications

**Attachment 6.1, Project B - MD19 Parkwood Water Supply and Water Meters**

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## Project B – MD19 Parkwood Water Supply and Water Meters

### Goals, Objectives and Deliverables

#### Goals:

- Improve the adequacy of the water supply for Parkwood a Disadvantaged Community to a capacity of at least 720 gpm
- Improve the reliability of the water supply for Parkwood a Disadvantaged Community by having two sources that each meet the Average Day Demand
- Reduce the ground water consumption for Parkwood by installing water meters

#### Objectives:

- To increase the well production capacity for Parkwood to at least 720 gpm
- To have two production wells that produce at least 400 gpm each
- To reduce the annually production of water for Parkwood by 20 %

#### Deliverables:

- Flow meters and data recorders will be installed at the existing well and new well to record water produced by each well
- Operator reports will be completed for each well
- Water meters will record the usage at each connection and the flow meters from the well sites will be compared to the past well production of the system to determine the reduction in water demand and water usage by the District

### Discussion of Performance Measures

#### a. The performance measures used to verify project performance include:

- The flow meters installed at each well will record the output production of each well to determine each wells performance
- The number of wells in the system
- The water meters installed at each service connection will record and summarized the current water usage to compare against past records of usage by the District

b. Why 'output indicators' will effectively track program outputs - The 'output indicators' (i. through iii above) are direct measures of the output of the program activities. Indicators i and iii can be measured directly through tested and approved protocols. Indicator ii will be measured through the compilation of permits and reports from site observations. These indicators will therefore effectively track the success of the work done under this grant.

c. Why 'outcome indicators' are adequate to evaluate change resulting from work – The 'outcome indicators' in this case is the increase the production capacity with a new well and an additional well and reduce the total water production by 20 % annually.

d. Where and when data will be collected – Data which can be directly collected will be obtained on the following schedule:

- I. Flow data from each of the two wells will be collected monthly.
- II. Flow data from the water meters will be collected monthly

e. Why it is feasible to meet targets within the life of the proposal. – The targets of the proposed activities are based on credible assessments, research and protocols. The timelines follow these protocols, and have taken into consideration potential delays.

#### **Discussion of monitoring system(s)**

Meters and recorders will be installed at the existing and new wells, and meters will be installed at each water service. These instruments will keep record of water produced by each well on a daily basis. Records will be compared with previous years and month-to-month comparisons will be reported on the basis of gallons produced per month.

Data from water meters will be used to create a database of water use per connection. The County will have the information to evaluate normal water use against previous years' unmetered use, as well as the data to identify users which are consuming above or below the norm. Very-high-use consumers can be targeted for informational contacts aimed at reducing unusual consumption, and the District will have the information necessary to create a tiered water rate system designed to provide affordable water at normal rates of consumption while discouraging over-use through financial incentives.

#### **Consistency with Basin Plan**

The project area is in the San Joaquin River watershed, which is tributary to the area covered by the Sacramento River and San Joaquin River Basin Plan and the area covered by the Tulare Lake Basin Plan. This project is designed to be consistent with both of these Basin Plans. Protecting water quality (surface and underground) is of the utmost importance in the Basin Plan. Recharging groundwater is also a Best Management Practice employed by the project. Consolidating septic systems and a small, failed, wastewater treatment plant with a larger treatment plant producing effluent useful for landscape irrigation is directly in line with RWQCB groundwater anti-degradation goals. The project will significantly reduce impacts to groundwater in an area where useable groundwater is limited by hard rock hydrogeology.

#### **How monitoring data will be used to measure the performance of the IRWM Plan**

Data from water meters will be used to create a database of water use per connection. The County will have the information to evaluate normal water use against previous years' unmetered use, as well as the data to identify users which are consuming above or below the norm. Very-high-use consumers can be targeted for informational contacts aimed at reducing unusual consumption, and the District will have the information necessary to create a tiered water rate system designed to provide affordable water at normal rates of consumption while discouraging over-use through financial incentives.

**Attachment 6.1, Project C – MD8 North Fork/ South Fork  
Sewer System Improvements**

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## **Project C – MD8 North Fork/ South Fork Sewer System Improvements**

### **Project Goals and Objectives**

Madera Irrigation District (MID or the District) is seeking IRWM grant funding to assist the District in Arundo eradication and sediment removal in the three main creeks that run through the District. The District's goal and objectives are as follows:

#### Goals:

- Protect Water Quality
- Recharge Groundwater for Sustainability

#### Objectives:

- Replace failing septic systems with a system that provides for the long-term wastewater treatment needs of the South Fork community.
- Restore groundwater in the local area by percolating properly-treated effluent.

#### Deliverables:

- Plans, Specifications and Construction Cost Estimates (10%, 30%, 60%, 90%, 100%) for all planned improvements including gravity sewer mains, lift stations, sewer force mains and sewer laterals necessary to connect existing residences and businesses in the South Fork community to the North Fork WWTF, and for expansion of North Fork effluent disposal spray field areas, additional runoff control ditches and effluent return pump systems needed to accommodate additional flows from the South Fork Community.
- Construct all improvements included in the Plans and Specifications.

### **Performance Measures**

The performance measures the County will use include:

- Installation of new gravity sewer mains and force sewer mains to connect the South Fork Community to the Madera County Maintenance District 8A-North Fork Wastewater Treatment Plant (WWTP).
- Removal from Service of all South Fork septic tanks.
- Restore 1.76 AFY to the local groundwater table, as measured by monitoring well levels, meter records at Madera County Maintenance District 8A-North Fork WWTP

### **Basin Plan**

The project area is in the San Joaquin River watershed, which is tributary to the area covered by the Sacramento River and San Joaquin River Basin Plan and the area covered by the Tulare Lake Basin Plan. This project is designed to be consistent with both of these Basin Plans. Protecting water quality (surface and underground) is of the utmost importance in the Basin Plan. Recharging groundwater is also a Best Management Practice employed by the project.

Consolidating septic systems and a small, failed, wastewater treatment plant with a larger treatment plant producing effluent useful for landscape irrigation is directly in line with RWQCB groundwater anti-degradation goals. The project will significantly reduce impacts to groundwater in an area where useable groundwater is limited by hard rock hydrogeology.

**How Monitoring Data will be used to measure performance in meeting IRWM Plan Goals**

The construction of the expanded sewer and spray field facilities are easily monitored. Once construction is complete, the goal is accomplished. The County will maintain records of those homes and businesses which are connected to the new sewer, and the records will be included as part of the grant reporting until 100-percent connection is achieved. Pumping data from the WWTP to the spray field will be totaled on a monthly basis, along with data for previous years, and included in project reporting to demonstrate the increase in water applied to the spray field and recharged to the local aquifer.

**Attachment 6.1, Project D – Brockman Flood Control Basin**

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## **Project D – Brockman Flood Control Basin**

Project Performance Measures for the project are discussed below. Groundwater level monitoring is already being carried out annually by the County, DWR and Root Creek Water District (RCWD). Each agency will continue groundwater monitoring efforts during and after the project to evaluate the success of the project. Project performance measures include monitoring pipeline/diversion structure flows, and groundwater well pumping.

### **Project Goals and Objectives**

#### **Goals:**

- Make use of flood waters that are sometimes lost to Madera County
- Minimize flooding damage by diverting some floodwaters from Madera Ranchos North drainage into retention storage
- Improve existing groundwater quality
- Import Additional Water Supplies

#### **Objectives:**

- Recharge flood water that would normally not be able to be utilized by Madera County, MID or RCWD
- Impound flood water to eliminate potential flood damage within a 100-year SFHA downstream of the project site.
- Reduced salinity, nitrates and other harmful constituents in groundwater
- Additional surface water supplies brought into Madera County and recharged

#### **Deliverables:**

- Biological Assessment and Evaluation prior to preparation of plans
- Land Donation completed (per Agreement)
- Final Design and Specifications
- Mitigated Negative Declaration (MND)
- Construction

### **Project Performance Measures**

The stated performance measures can all be measured using currently accepted standards. Groundwater elevation and constituent monitoring can be done using existing wells within MD10A, RCWD and the surrounding areas. Surface water diversions will be measured using the proposed flowmeter at the new turnout.

The recharge quantities and reduction of groundwater pumping will be measured by both the amount of diverted imported surface water and by groundwater level monitoring. The

reduction in pumping costs is easily determined by comparing the electrical requirements based on normal irrigation cycles.

### **Basin Plan Consistency**

The project is consistent with the Basin Plan. The project calls will help mitigate the basin's current groundwater overdraft through direct recharge of high-quality surface water, benefitting both the groundwater table and the quality of the groundwater itself.

### **Project Groundwater Monitoring Program**

There are several components to the groundwater-monitoring program.

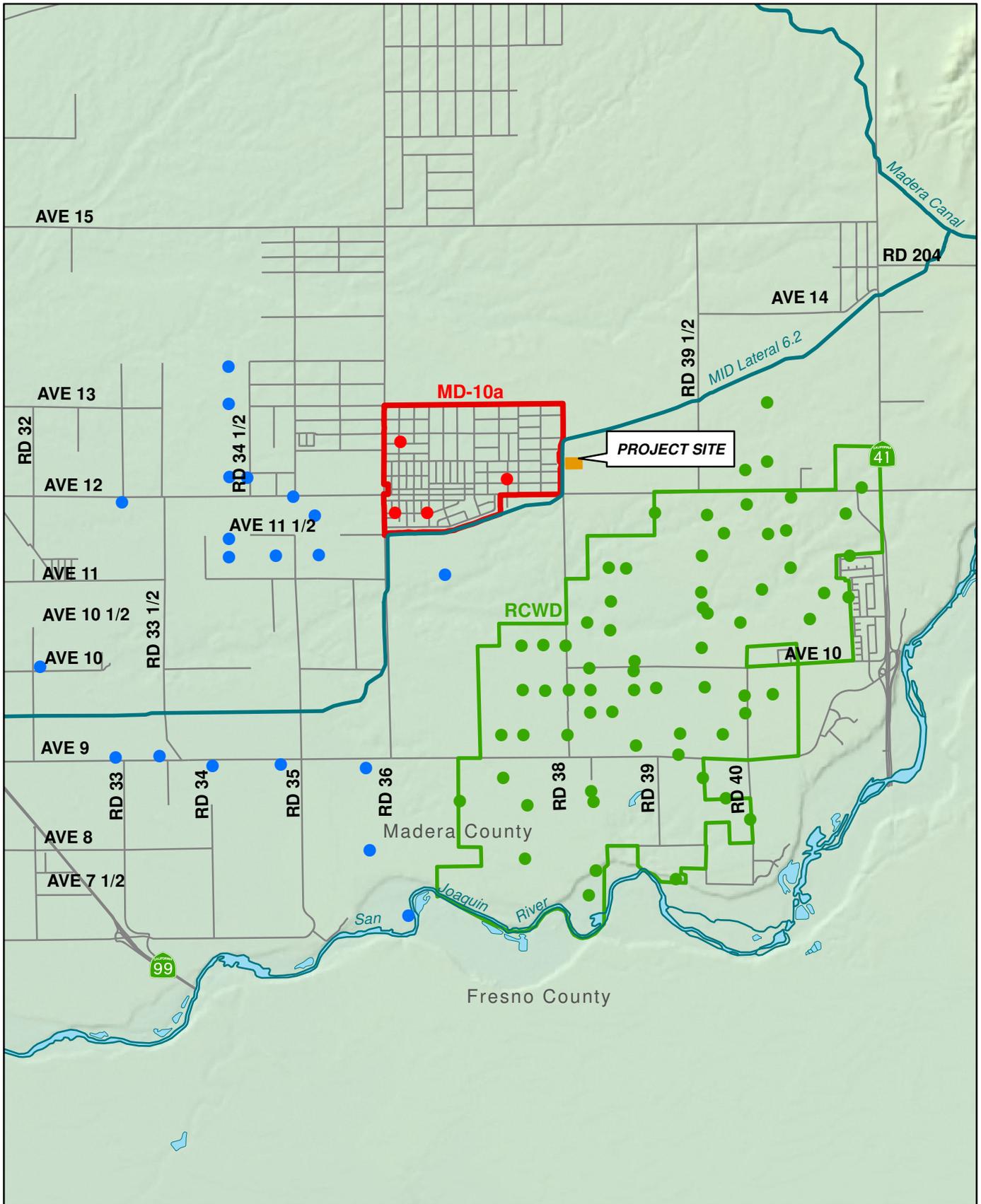
The first is to continue collecting and organizing the pumping records for irrigation, domestic and municipal wells in the project area. These records have been collected by RCWD for over 15 years, and by DWR for over 40 years.

The second component is to semi-annually measure groundwater levels in the wells that RCWD and the County use for water quality testing.

The third component is annual measurement of electronic conductivity (EC) in these same wells. The subject wells are shown in Figure 6.1 (see next page). The EC test is a general measure of groundwater quality. If a drastic change occurs, more in-depth testing will be performed to determine the driving force behind the change.

A fourth component will be use of the records of the surface water delivered to the project, along with evaporation data and a weekly log of water depth at the facility, to calculate the actual amount of water recharged to the groundwater at the project site.

Since RCWD has a GWMP in place, all sampling and reporting will follow the formats already established in the GWMP. In addition, RCWD and three neighboring Water Districts have recently prepared a draft MOU entitled "Madera-Chowchilla Basin Regional Groundwater Monitoring Plan". This document will guide regional groundwater monitoring efforts.



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- RCWD & Ag
- MD-10a & Municipal Wells
- Ag Wells per DWR Monitoring Locations
- Project Site

**Figure 6.1**

Project D - Brockman Flood Control Basin  
 Regional Groundwater Wells for Monitoring Program

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**Attachment 6.1, Project E – CSA14 Chuk-Chanse**  
**Sewer System Improvements**

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## Project E – CSA14 Chuk-Chanse Sewer System Improvements

### Goals, Objectives and Deliverables

#### Goals:

- Protect the ground water from leakage of raw sewage from existing cracks in the VCP sewer collection main for Chuk-Chanse, a Disadvantaged Community
- Protect surface water and adjacent nut orchard from damage from secondary treated sewage seeping from the evaporation percolation ponds at the Chuk-Chanse WWTP.
- Reduce the ground water consumption for Chuk-Chanse by installing self-reading water meters to realize expected 20% savings in annual water consumption.

#### Objectives:

- To replace 500 lineal feet of cracked VCP sewer collector with PVC SDR 35 pipe, eliminating both I&I and exfiltration.
- To add an interceptor trench drain at the toe of the slope of the western levee at the WWTP, breaking through the shallow hardpan layer and providing a drainage path for seepage so that it does not travel laterally into the neighboring orchard.
- To reduce the annually production of water for Chuk-Chanse by 20% without adding to labor costs related to monthly reading of standard mechanical water meters.

#### Deliverables:

- Construct 500 lineal feet of replacement sewer main
- Construct 300 lineal feet of interceptor trench drain
- Water meters will record the usage at each connection and the flow meters from the well sites will be compared to the past well production of the system to determine the reduction in water demand and water usage by the District

### Discussion of Performance Measures

a. The performance measures used to verify project performance include:

- Record influent sewer flows at the headworks of the WWTP and compare to past flows.
- Visually check for algae blooms in the adjacent orchard.
- The water meters installed at each service connection will record and summarize the current water usage to compare against past records of usage by the District

b. Why ‘output indicators’ will effectively track program outputs:

The ‘output indicators’ (i. through iii above) are direct measures of the output of the program activities. Indicators i and iii can be measured directly through tested and approved protocols.

Indicator ii will be measured through the compilation of reports from site observations. These indicators will therefore effectively track the success of the work done under this grant.

c. Why 'outcome indicators' are adequate to evaluate change resulting from work:

The 'outcome indicators' in this case is consistent sewer flows to the WWTP, visual reviews of the adjacent orchard for algae blooms and reduction of total water production by 20 % annually.

d. Where and when data will be collected:

Data which can be directly collected will be obtained on the following schedule:

- i Flow data from the headworks of the WWTP will be compared to past flow and consistency on a monthly basis.
- ii. Flow data from the water meters will be collected on a monthly basis.

e. Why it is feasible to meet targets within the life of the proposal:

The targets of the proposed activities are based on credible assessments, research and protocols. The timelines follow these protocols, and have taken into consideration potential delays.

#### **Consistency with Basin Plan**

The Basin Plan discusses water quality objectives for groundwater within the Basin, and provides standards for bacteriological contamination and chemical constituents that cannot be obtained in areas where sewer collection lines are leaking. Replacement of the sewer collection pipeline helps achieve these groundwater objectives by removing the primary source of biological contaminants from the project area.

#### **How monitoring data will be used to measure the performance of the IRWM Plan**

Data from water meters will be used to create a database of water use per connection. The County will have the information to evaluate normal water use against previous years' unmetered use, as well as the data to identify users which are consuming above or below the norm. Very-high-use consumers can be targeted for informational contacts aimed at reducing unusual consumption, and the District will have the information necessary to create a tiered water rate system designed to provide affordable water at normal rates of consumption while discouraging over-use through financial incentives.

Empirical data from site visits and photographs will be used to compare orchard conditions before and after the project. The absence of standing puddles with algae infestations will demonstrate the effectiveness of the trench drain system.

**Attachment 6.1, Project F - MD33 Fairmead Sewer Collection,  
Treatment and Disposal System Plans**

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## **Project F – MD33 Fairmead Sewer Collection, Treatment and Disposal System Plans**

### **Project Goals and Objectives**

#### **Goals:**

- Protect and improve water quality in a DAC.
- Reduce groundwater overdraft in the Fairmead area in accordance with IRWMP goals.
- Facilitate Community Outreach Program to inform residents and other stakeholders related to project design.
- Prepare to construct sanitary sewer system to achieve water quality and groundwater conservation goals.

#### **Objectives:**

- Maintain bacteria-free water with nitrate level below MCL
- Reduce groundwater pumping by supplying recycled wastewater effluent to growers in the area in lieu of groundwater
- Evaluation by residents and other stakeholders of alternative solutions to Fairmead's sewage disposal situation, including water quality and supply issues
- Complete plans, specifications and cost estimate for complete sanitary sewer system, ready to pursue construction funding

#### **Performance Measures, Output Indicators, and Outcome Indicators:**

Project performance will be measured using the following Outcome Indicators:

- No increase in groundwater nitrate levels from current range of 12-13 mg/l, showing no increase in current levels of seepage from septic tanks after they are removed from service.
- Measurement of quantity of water delivered to growers, and groundwater levels in the area
- Participation of Fairmead population in public outreach meetings.
- Letter from RWQCB indicating no further comment on Report of Waste Discharge will mark readiness to take completed plans and specifications to bid.

#### **Consistency With Basin Plan**

Failed septic systems are an expressed Water Quality Concern in the Sacramento River and San Joaquin River Basin Plan, published by the Regional Water Quality Control Board in 1998. The project would eliminate the possibility of failed septic systems within the MD 22 service area by replacing all of the current septic systems with a new WWTP. The Basin Plan also discusses water quality objectives for groundwater within the Basin, and provides standards for

bacteriological contamination and chemical constituents that are not easily attainable in areas where septic systems are as prevalent as they are in Fairmead. Replacement of the septic systems with a new WWTP helps achieve these groundwater objectives by removing the primary source of biological contaminants from the project area.