



Study Scope – Attachment 1

Diablo Water District / Ironhouse Sanitary District
Recycled Water Feasibility Study

This joint recycled water feasibility study will be the first co-sponsored feasibility study between Diablo Water District and Ironhouse Sanitary District.

1. Service Area to be studied:
 - a. Diablo Water District / Ironhouse Sanitary District
 - b. These Districts have nearly coterminous boundaries that include the City of Oakley, CA and the unincorporated census designated place of Bethel Island, CA.
 - c. Population: 42,000
 - d. Acres: 19,000
2. Source of recycled water and a brief summary of processes at exiting treatment facilities.
 - a. See attachment: [ISD Treatment Processes and Service Area Map.pdf](#)
3. Current disposal/reuse of recycled water:
 - a. Irrigation of agricultural land
 - b. Permitted discharged to waterways
4. A map of the study area showing the sources of recycled water and potential service area(s). The map should clearly show the study area boundary and boundaries of other associated agencies, such as community or sewer services districts, municipalities and water supply agencies.
 - a. See attachments:
 - i. [DWD Sphere of Influence.pdf](#)
 - ii. [ISD Treatment Processes and Service Area Map.pdf](#)
5. General description of current sources of fresh water, including quantity and potential future demand.
 - a. Diablo Water District
 - i. 20% Local groundwater
 - ii. 80% Delta water
 - b. Current demands: 4.25 million gallons per day
 - c. Future demands at 2040 buildout up to 14 million gallons per day

6. Water and wastewater agencies having jurisdictions over the sources of recycled water and/or the potential service area.
 - a. Water: Diablo Water District
 - b. Wastewater: Ironhouse Sanitary District

7. General description of water recycling and fresh/potable water supply alternatives that may be evaluated.
 - a. Landscape water use
 - b. In-direct potable reuse via groundwater injection wells
 - c. Direct potable reuse

8. Opportunities for stakeholder participation.
 - a. Both Diablo Water District and Ironhouse Sanitary District are committed to public involvement throughout the process including:
 - i. Regular updates on study progress with public comment at Board meetings
 - ii. Coordination with the City of Oakley
 - iii. Public hearing prior to acceptance of the study

9. Schedule with the start and completion dates of major tasks associated with the project report study.

Start	October 2019
Review of previous reports	November 2019
Recycled water market analysis	January 2020
Initial findings for recycled water alternatives	March 2020
Recommend project identification	April 2020
Draft report	June 2020
Final report	September 2020

10. A list of potential problems that may cause delay in the progress of the study and description of the proposed actions to reduce the impact of these potential problems.
 - a. Working with multiple public agency Boards can cause delays, however close coordination amongst executive management will be maintained throughout the study to help identify and minimize delays.

11. Identification of the entities that will be conducting the study and description of their roles. This may include a description of proposed subcontracts with consultants or interagency agreements with other agencies, and any force account work.
 - a. Public agencies sponsoring this report:
 - i. Diablo Water District
 1. Role: Grant administrator, contract administrator for consultant (still to be selected), project proponent, provider of data, reviewer of report.

2. Force account work: all time associated with collecting data and reviewing materials and reports.
- ii. Ironhouse Sanitary District
 1. Role: Project proponent, provider of data, reviewer of report.
 2. Force account work: all time associated with collecting data and reviewing materials and reports.

12. Proposed budget:

Proposed Planning Work and Estimated Costs Breakdown

Recycled Water Market Assessment:	<u>\$15,000</u>
Assess Alternatives and Final Recommendation:	<u>\$100,000</u>
Evaluate Water Rights, Legal and institutional Issues:	<u>\$20,000</u>
Planning for Implementation and Financing:	<u>\$15,000</u>
Prepare WRF Report:	<u>\$25,000</u>
Coordination, Management, and Quality Control:	<u>\$25,000</u>
<i>Total Study Cost:</i>	<u><u>\$200,000</u></u>
WRF Planning Grant Amount Requested:	<u><u>\$75,000</u></u>

13. Sources of financing, and sources of funds for cash flow until grant reimbursement.

- a. Funds will be floated 50/50 by both Diablo Water District and Ironhouse Sanitary District's operating funds.

14. Proposed study outline.

This study will leverage many existing reports and studies previously performed by both Districts. Existing reports and studies include:

- Diablo Water District
 - 2015 Urban Water Management Plan
 - 2018 Water Facilities Master Plan
 - 1999 Groundwater Master Plan
- Ironhouse Sanitary District
 - 2015 Recycled Water Feasibility Study
- City of Oakley
 - 2020 General Plan
 - Relevant Specific Area Plans

Based on these existing reports the following items will be updated and compiled into the new feasibility study:

- Service area maps of both Districts
- Wastewater treatment schematic--existing and proposed
- Contra Costa Water District (wholesaler) service area map

- Boundary map of Diablo Groundwater Sustainability Agency and adjacent GSAs
- Regional and local vicinity map
- Detailed map and GIS shape file of study area boundaries
- Topographic map
- Other relevant local City/agency boundaries
- Maps of streams and waterways receiving waste discharges.
- Present and projected land use maps and trends
- Maps of all identified recycled water facilities alternatives
 - Showing locations of potential customers and approximate pipeline routes
- Hydrologic maps featuring:
 - Ground water basins including quantities extracted by all users, natural and artificial recharge, losses by evapotranspiration, inflow and outflow of basins, and safe yield or overdraft
 - Water quality - ground water and surface water.
- Population projections of study area
- Beneficial uses of receiving waters and degree of use, portion of flow that is effluent
- Water supply characteristics and facilities:
 - Description of all wholesale and retail entities
 - All sources of water for study area and major facilities, their costs (fixed and variable), and customer prices
 - Capacities of present facilities, existing flows, estimated years when capacities to be reached for major components (water treatment plants, major transmission and storage facilities)
 - Ground water management and recharge
 - Water use trends and future demands, prices and costs
 - Quality of water supplies
 - Sources for additional water and plans for new facilities (for both for DWD and CCWD)
- Wastewater characteristics and facilities:
 - Description of entities
 - Description of major facilities, including capacities, present flows, plans for new facilities, description of treatment processes, design criteria
 - Water quality of effluent and any seasonal variation
 - Additional facilities needed to comply with waste discharge requirements
 - Sources of industrial or other problem constituents and control measures
 - Existing recycling, including users, quantities, contractual and pricing arrangements
 - Existing rights to use of treated effluent after discharge
 - Wastewater flow variations - hourly and seasonal
 - Treatment Requirements for Discharge and Reuse
 - Required water qualities for potential uses

- Required health-related water qualities or treatment requirements for potential uses, operational and on-site requirements (such as backflow prevention, buffer zones)
- Wastewater discharge requirements, anticipated changes in requirements
- Water quality-related requirements of the RWQCB to protect surface or ground water from problems resulting from recycled water use

Previous reports contain portions of the required scope items below. However, there will need to be larger updates and new analysis to include: Diablo Water District's perspective, new potential projects including both indirect and direct potable reuse.

- Recycled Water Market
 - Description of market assessment procedures
 - Descriptions of all users or categories of potential users, including type of use, expected annual recycled water use, peak use, estimated internal capital investment required (on-site conversion costs), needed water cost savings, desire to use recycled water, date of possible initial use of recycled water, present and future source of water and quantity of use, quality and reliability needs, and wastewater disposal methods
 - Summary tables of potential users and related data
 - Definition of logical service area based on results of market assessment
- Project Alternative Analysis
 - Planning and design assumptions:
 - Delivery and system pressure criteria
 - Peak delivery criteria
 - Storage criteria
 - Cost basis: cost index, discount rate, useful lives, etc.
 - Planning period
 - Water Recycling Alternatives to be evaluated:
 - Treatment alternatives: alternative levels of treatment, alternative unit processes to achieve a given level of treatment
 - Pipeline route alternatives
 - Alternative markets: based on different levels of treatment
 - Geographical areas
 - Alternative storage locations
 - Marginal analysis for selected alternative for certain categories of users or certain geographic areas, varying storage, pump rates, and pipeline diameters
 - Use of water blending during peak irrigation months
 - Non-recycled water alternatives: discussion of other potentially viable new sources of water
 - Water conservation/reduction analysis

- Implementation
- Pollution control alternatives (if applicable) needed to comply with waste discharge requirements, and possible allocation of costs between recycling and pollution control
- Information supplied for each alternative to include, but not be limited to:
 - Cost tables for each alternative with breakdown of costs by total capital (without grants), O&M, unit processes, and with equivalent annual cost and per acre-foot cost
 - Lists of potential users assumed for each alternative
 - Economic analysis per SWRCB guidance document
 - Cost benefit analysis for both Districts
 - Energy analysis for each alternative, including direct and construction energy
 - Water quality impacts: effect on receiving water by removing or reducing discharge of effluent, including effect on beneficial uses resulting from reduced flow.
 - Groundwater impacts (quality & quantity)
 - Comparison of above alternatives and recommendation of specific alternative
 - Recommended Project
 - Description of all proposed facilities and basis for selection
 - Preliminary design criteria and refined pipeline routes
 - Cost estimate based on time of construction
 - List of all potential users, quantity of recycled water use, peak demand, and commitments obtained
 - Reliability of facilities as compared to user requirements
 - Implementation plan:
 - Coordination with water suppliers, determination of recycled water supplier and needed agreements or ordinances
 - Ability and timing of users to join system and make on-site investments
 - Tentative water recycling requirements of RWQCB
 - Commitments from potential users
 - Water rights impact
 - Permits, right-of-way, design, construction
 - Detailed schedule
 - Operational plan:
 - Responsible agency, people, equipment, monitoring, irrigation scheduling, etc.
 - Ongoing O&M costs
- Power
- Chemicals
- Additional staff
 - Construction financing plan and revenue program
 - Sources and timing of funds for design and construction
 - Pricing policy for recycled water
 - Costs that can be allocated to water pollution control

- Annual projection of:
 - Water prices for each user or category of users
 - Recycled water used by each user
 - Annual costs (required revenue) of recycling project
 - Allocation of costs to users
- Unit costs to serve each user or category of users
- Unit price of recycled water for each user or category of users
 - Sensitivity analysis assuming portion of potential users fail to use recycled water
 - Sunk costs and indebtedness.

15. Proposed project timeline or schedule.

- a. October 2019 through September 2020
- b. See item 9 above for a breakdown of major milestones