

MokeWISE Program Scope of Work:
Project 8c: Barney Way Septic System Conversion

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Abstract	2
Background Information	2
Existing Treatment	3
Reference Programs	4
Project Information	5
Project Description	5
Project Location	6
Project Sponsor	6
Scope of Work	6
Task 1. Preliminary Project Evaluation	6
Task 2. Public Outreach	6
Task 3. Design	6
Task 4. Community System Management Program (<i>Community System alternative only</i>) ...	7
Task 5. Environmental Documentation	8
Task 6. Permitting	8
Task 7. Funding	8
Task 8. Construction	8
Budget	9
References	9

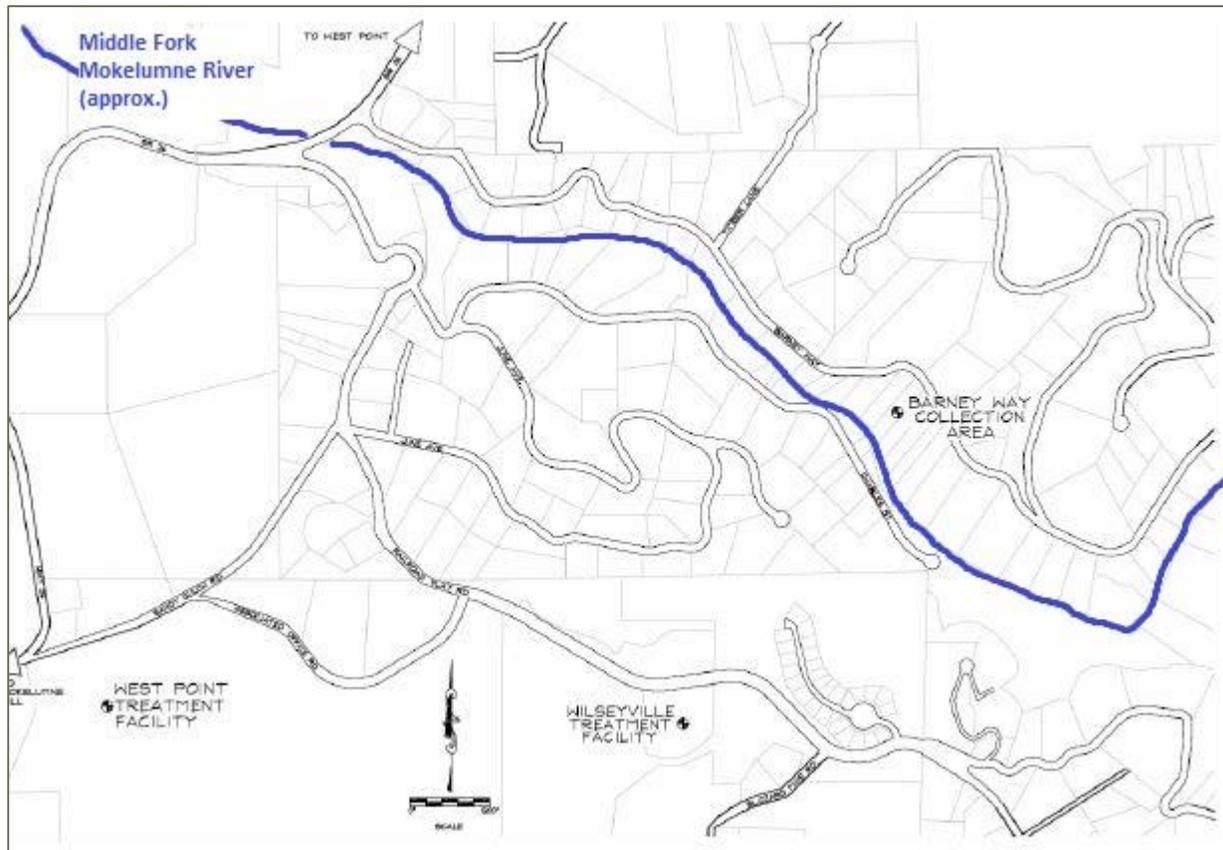
Abstract

The Barney Way Septic System Conversion Project will convert 40 residences along Barney Way from individual septic systems either to a sanitary sewer, which would convey wastewater to the West Point treatment facility, or to a new community septic system. This would result in the decommissioning or abandoning of existing septic systems. The project includes conducting a preliminary evaluation to determine feasibility, engaging in public outreach, design, permitting, and construction. Costs for this project are estimated to be roughly \$4.3 million and include planning, engineering, construction, and a 10% contingency.

Background Information

Approximately 40 residential parcels along Barney Way in Calaveras County are currently served by individual septic systems. There is concern that these septic systems are not properly maintained or may be experiencing failures. These parcels are located along the Middle Fork of the Mokelumne River and failing or improperly designed systems may be polluting the river, an important water supply in the region. Calaveras County Water District (CCWD) is seeking to reduce the risk of sewage spills from these parcels by either converting these parcels to sewer, or to a community septic system that would be easier to maintain and monitor than individual systems. There are two treatment facilities within the vicinity of the Barney Way Collection Area, the West Point Treatment Facility and the Wilseyville Treatment Facility, as shown in **Figure 1**.

Figure 1: Treatment Facilities near Barney Way Collection Area



Source: CCWD, 2014

Existing Treatment

Wastewater in the region is treated onsite in septic systems or is conveyed to one of two treatment facilities.

Septic System

Septic systems collect wastewater from residences or small communities in a tank, in which solids settle out, and liquid effluent is dispersed in a leach field. Septic systems, when designed and sited properly, are an effective and safe means of wastewater treatment, but they do require maintenance, such as occasional solids removal. Some areas may not be ideal for septic systems due to elevated groundwater levels, proximity to waterbodies, or community density.

West Point Treatment Facility

The West Point Treatment Facility treats liquid effluent from 165 septic tanks in the community of West Point. The facility has a physical and permitted capacity to treat an average dry

weather flows are 58,000 gallons per day (gpd). Treatment processes include recirculation of raw influent with recycled water (1/3 influent, 2/3 recycled water), sand filtration, chlorine disinfection, and storage in irrigation storage ponds for later disposal via spray irrigation during the dry season. This facility is manually monitored and operated (CCWD, 2014). CCWD is considering a project to expand West Point Treatment Facility to accommodate flows currently treated at the Wilseyville treatment facility (see below).

Wilseyville Treatment Facility

The Wilseyville treatment facility has a capacity of 9,000 gpd and serves 28 connections. Unlike the West Point facility, the Wilseyville facility receives both liquids and solids. This facility is comprised of an aerated storage pond, which is chlorinated, and an effluent dispersal irrigation field (which is rarely used). Treated effluent is generally disposed of via percolation and evaporation (CCWD, 2014). Wilseyville is considered to be at buildout. If CCWD moves forward with the project to expand the West Point Treatment Facility, the Wilseyville facility would be abandoned, and its flows would be treated at West Point.

Reference Programs

As communities grow, extensive use of septic systems can result in water quality concerns. In these cases, conversion from septic to sewerage with centralized treatment can help resolve issues associated with failing or improperly operating septic systems. For communities in which the cost to connect to sanitary sewers is prohibitive, conversion to community septic systems can also be an attractive solution.

Septic-to-Sewer Conversion

Conversion from septic or other on-site wastewater treatment to a sewer system and centralized treatment can help resolve many of the issues associated with failing onsite septic systems, and serves to protect ground and surface water quality, along with public health. Conversion to sewer, however, can be costly, depending on the distance to the nearest sewer main and whether the existing conveyance and treatment facilities have the capacity to accommodate the additional flow.

Costs have delayed or prevented conversion to sewer for many communities within California. For example, in the Coachella Valley, many communities use on-site septic systems that are frequently undersized, improperly designed or maintained, or exceed recommended densities. This has contributed to groundwater quality and public health concerns in an area that is dependent on groundwater. Communities in this area are actively pursuing outside funding to support a conversion to sanitary sewers, requiring installation of gravity sewer pipelines, lift stations, and sewer force mains to connect to the existing sewer collection and treatment system (CVRWVG, 2013).

Clustered (Decentralized) Wastewater Management

Community systems can be a cost-effective solution to improve wastewater management when connecting to the sanitary sewer is deemed too costly. Clustered wastewater systems, also called decentralized wastewater systems, collect wastewater from a cluster of residences (such as a mobile home park, street, or small community) and treat wastewater from these residences using various on-site wastewater treatment methods. For example, Sea Ranch, in Sonoma County, California, serves 600 homes using two large clustered systems. The Auburn Lake Trails Subdivision, near Cool, California in El Dorado County, uses small community systems to serve 134 homes. By consolidating treatment, maintenance can be more cost effective, and systems are typically better maintained through community management as opposed to leaving the responsibility to each individual homeowner. However, these systems do require effective management to ensure that they are, indeed, properly maintained. Examples of successful management programs in California include the use of operating permits, formal maintenance contracts, and surface and groundwater quality monitoring (U.S. EPA, 2012).

Project Information

Project Description

The Barney Way Septic System Conversion Project (project) would convert 40 residences along Barney Way from individual septic systems either to a sanitary sewer, which would convey wastewater to the West Point treatment facility, or to a new community septic system. This would result in the decommissioning or abandoning of existing septic systems, reducing the risk of pollution to the Middle Fork of the Mokelumne River that is currently posed by the existing septic systems. **Table 1** shows the anticipated flows from Barney Way that would need to be accommodated by the selected system. This Scope of Work will address the anticipated tasks necessary to accomplish this conversion.

Table 1. Projected Wastewater Flows from Barney Way

	2013	2023	2033	2043
Proposed Connections	31	40	40	40
Average Dry-Weather Flows (gpd)	6,045	7,800	7,800	7,800
Peak Wet-Weather Flows (gpd)	18,135	23,400	23,400	23,400
Annual Average (gpd)	6,831	8,814	8,814	8,814

Source: CCWD, 2014

Project Location

The Project would be located in at Barney Way, in Calaveras County, along the northern side of the Middle Fork of the Mokelumne River, off Highway 26, and downstream of Schaads dam (**Figure 1**).

Project Sponsor

The project is sponsored by the Calaveras County Water District.

Scope of Work

Task 1. Preliminary Project Evaluation

A preliminary evaluation will be conducted to determine the feasibility of converting to sewer compared to converting to a community system. This evaluation will identify project alternatives, and selected a preferred alternative. Considerations will include projected project costs (for CCWD and for individual homeowners), treatment capacity of the West Point Treatment Facility, community preference, potential outside funding opportunities, timing, and ability to address water quality issues. This evaluation will also identify the potential permits, agreements, and / or regulations that may be required for implementation.

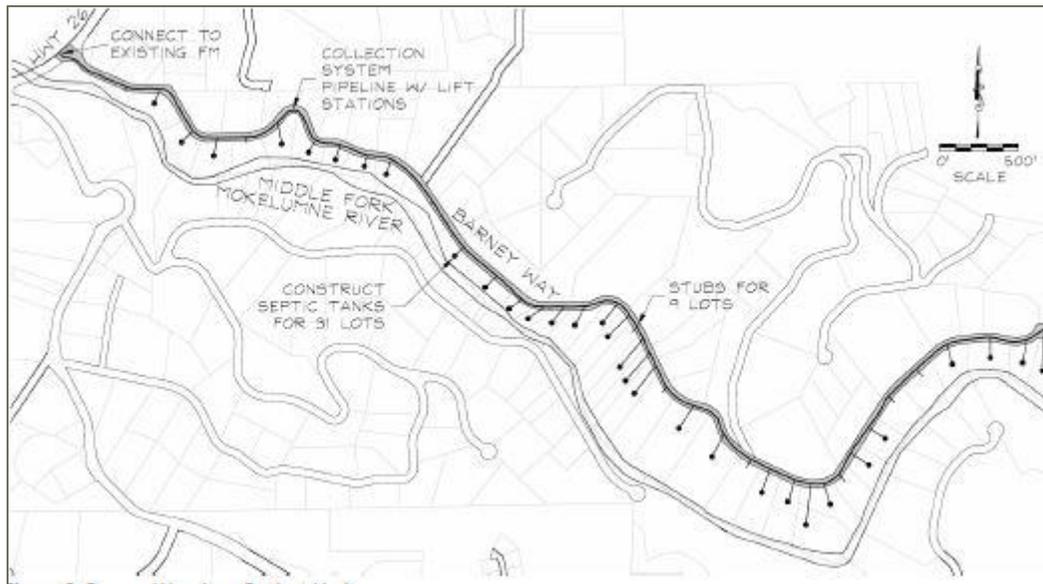
Task 2. Public Outreach

CCWD's Alternatives Evaluation (CCWD 2014) found that there was uncertainty regarding community support for the Barney Way project. Public outreach will be critical to a successful project, and and public participation at all key steps of this project is a high priority. Public Outreach activities will include public meetings to solicit input on potential project alternatives, educational materials and/or meetings to inform residents of the need for and benefits of the project and workshops at each phase of the project.

Task 3. Design

This task would involve completing preliminary and final design for the recommended project alternative. Should the recommended project be conversion to sewer, project components would include the new collection system, one or more lift stations, connection to CCWD's existing facilities at Highway 26, and service lateral stubs. Because flows would be treated at West Point Treatment Facility, which is designed to treat liquid effluent only, the failing septic tanks would be replaced with new tanks for solids removal, unless West Point is upgraded. **Figure 2** shows the extent of the proposed work, should conversion to sewer be the recommended project.

Figure 2: Proposed Project – Conversion to Sewer



Source: CCWD, 2014

Should a community treatment system be the preferred alternative, project components would include a new collection system and service lateral stubs, and may require one or more lift stations. It would also require design of the community treatment system itself.

Regardless of the selected alternative, this task will also delineate how existing septic systems will be taken out of service (e.g., decommissioned, removed, and/or abandoned).

Task 4. Community System Management Program (*Community System alternative only*)

Should the recommended project be a community system, a Community System Management Program should be developed. Some communities in California have found that an Operating Permit is an effective Community System Management Program. An Operating Permit focuses on performance measures of the system, has limited permit cycles (e.g., 3-5 years), can require inspections prior to reissuing permits, and provides for continuous oversight of the systems. There are three key elements to an Operating Permit management program (U.S. EPA, 2012):

- Renewable or revocable operating permits issued to the system owner.
- Specific and measurable performance criteria and regular submission of compliance reports.
- An inventory and tracking system for system permits and inspection/compliance reports.

Other management programs may be more appropriate for the Barney Way community and should be explored in addition to the appropriateness of an Operating Permit management system. This task is not required if the recommended project is conversion to sewer.

Task 5. Environmental Documentation

Regardless of the selected project alternative, environmental documentation compliant with CEQA and potentially NEPA will be required. Given the location, type, and size of the project, it is anticipated that a Mitigated Negative Declaration (MND) is likely the most appropriate environmental documentation, unless further evaluation finds that a different level of environmental documentation would be necessary to satisfy the requirements of CEQA and potentially NEPA.

Task 6. Permitting

Permits necessary for construction of the project may include, but are not limited to those listed in **Table 2**.

Table 2: Potential Permits for Implementation

Agency	Permit
Regional Water Quality Control Board	Waste Discharge Requirements NPDES Permit Conditional Use
Local Municipalities and Calaveras County	Construction Permit Encroachment Permit Tree Removal Permit

Task 7. Funding

Outside funding opportunities should be pursued to reduce the local cost burden of the project. Potential funding sources could include State Revolving Fund (SRF) loans, USDA Rural Development funds, Proposition 84 Integrated Regional Water Management (IRWM) program funding, and funding made available by Proposition 1 through a variety of programs.

Task 8. Construction

Construction of the proposed project would include:

- Site Preparation: mobilization of materials and equipment, staging areas, clearing, and other preparation activities.
- Construction: excavation for the new collection pipeline and lift station(s), installation of collection pipelines, lift stations, community septic tank and service laterals,

construction of the new treatment system (if necessary), and connection to CCWD's collection system (if necessary).

- Testing and demobilization: testing of the new system, connection to residences, cleanup, restoration of pipeline alignment to pre-construction conditions, and demobilization of equipment, materials, and staging areas.
- Decommissioning of existing septic tanks: likely to be completed by the homeowners, this would involve decommissioning, abandoning, or removing existing septic tanks, as appropriate.

Budget

The budget for this project is \$4.291 million. These costs are preliminary, and would be refined under Task 1, above. Costs to upgrade West Point treatment facility are not included; costs for a community treatment system alternative have not been estimated.

Costs associated with the project are broken down as follows:

- Planning: \$171,500
 - Includes environmental compliance, grant application, and property owner coordination.
- Engineering: \$430,000
 - Includes design engineering and administration, construction management, and grant administration.
- Construction: \$2,974,000
 - Construction costs include 6,710 linear feet of 6 foot gravity sewer lines, 5 lift stations, 2,750 linear feet of force main, and encroachment permit compliance.
- Contingency (20%): \$715,000
- **Total Project Cost: \$4,291,000**

References

Calaveras County Water District (CCWD). 2014. Alternatives Evaluation for West Point & Wilseyville Treatment Facilities and a Proposed Barney Way Collection System. May.

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Coachella Valley Regional Water Management Group (CVRWVG). 2013. Coachella Valley Integrated Regional Water Management Implementation Grant Proposal – Round 2. March.

U.S. Environmental Protection Agency (U.S. EPA). 2012. Case Studies of Individual and Clustered (Decentralized) Wastewater Management Programs: State and Community Management Approaches. June.