

Section 7: Master Plan Development

7.1.1 Introduction

The South Tahoe Public Utility District undertook the complex task of preparing a 20 year Master Plan for their Alpine County operations. This Master Plan was necessitated by several issues which currently are anticipated to impact the ability of the District to use recycled water, comply with regulatory obligations, reduce operational costs and assess potential operational issues.

The threat of the loss of application areas to residential development prompts direct land application availability concerns for future operations. The District required a minimum of 1,455 acres for annual irrigation application in the year 2007 to this area's 1,883 acres of land permitted to receive recycled water in Alpine County, California but infrastructure is not in place to deliver recycled water to all of this area. The District's acquisition of the Diamond Valley land has added a large portion of which is available for irrigation with recycled water. As time goes on, lands are being converted from agricultural uses to ranchettes that may be unable to apply recycled water for irrigation in a regulatory compliant manner. The District's Diamond Valley Ranch property helps to ensure that additional lands are available for irrigation with recycled water if the need arises.

The existing rancher agreements are on five year terms since 2003 and the overall agreement is up for renewal in 2028, which provides an opportunity to negotiate new agreements for recycled water delivery to irrigators that can encompass the security, regulatory compliance, and management flexibility the District desires.

A series of workshops and scoping meetings were held in the winter and spring of 2001 and 2007. Through these workshops a plan was developed to provide guidance and input to the Master Planning process. Section 7.3 (page 7-54) provides a chronology of the planning activities undertaken by the District Board, staff and consultants. Sections 7.1.2 through 7.2.5 (page 7-51) discuss the principal issues facing the District and the management philosophy regarding those issues and stakeholders.

7.1.2 Purpose and Need

The South Tahoe Public Utility District has defined a mission statement to describe the objectives of the Master Plan. This mission statement reflects the management philosophy of the District Board and staff and is supported by the recommendations presented in this master plan. It is the District's mission to:

"Furnish our customers with reliable water and wastewater services, and provide these services safely, efficiently, and cost effectively."

As the existing recycled water conveyance, distribution, emergency disposal, and application systems reach their planned capacity, the need for further planning to provide a roadmap for future operations is evident. The District is faced with several substantial operational constraints which this Master Plan focuses on resolving. A summary of the District's operational constraints is presented in the following purpose and need (PN – No.) statements:

- PN-1.** Inadequate land may be available to apply future recycled water flows.
- PN-2.** Residential development is encroaching on agricultural land, reducing land available for recycled water irrigation.
- PN-3.** Potential exists for nitrate accumulation in groundwater with unregulated recycled water irrigation application rates.
- PN-4.** Existing recycled water application contracts with contract irrigators will expire in 2028.
- PN-5.** Adequate emergency disposal facility and options are currently unavailable for recycled water.
- PN-6.** Agricultural tail water containing recycled water may not be confined to permitted lands.
- PN-7.** Operational control of the distribution system is insufficient.
- PN-8.** The Diamond Ditch conveyance capacity currently does not meet the on demand recycled water flow rate of 25 cfs of the agreement between the District and the Contractor Irrigators. Additionally, the District does not have control of the Diamond Ditch.
- PN-9.** Ability to meet Indian Creek Reservoir water quality requirements is impaired and the District needs to meet TMDL requirements for the Indian Creek Reservoir.
- PN-10.** Recycled water system improvements are needed to improve operational flexibility.

These issues are addressed by the recommendations of this Master Plan. Insofar as practical each of these issues is addressed by one or more Master Plan objectives and/or guiding principles. The projects presented in the Master Plan projects strive to address these system inadequacies to the greatest extent possible.

7.2 Master Plan Objectives

Through discussion and debate at several meetings held with the District Board, staff, and the Alpine County Board a set of objectives to be addressed in the Master Plan were defined. These objectives focus on the following considerations.

- 1) Regulatory compliance
- 2) Operational reliability and flexibility
- 3) Environmental protection
- 4) Continuing the cooperative association with Alpine County stakeholders

The following is a list of Master Plan objectives that influence the operations of the District's recycled water program and formulate the design of the Master Plan projects:

- To reuse and/or apply recycled water from the District's wastewater treatment plant in South Lake Tahoe to accommodate the projected growth of the system as defined by the adopted plans within the South Tahoe Public Utility District service area.
- To operate the recycled water application system in a manner that protects public health and safety and promotes the wise use of water resources.

- To maximize reclamation, recycling and reuse of the available water resource to the greatest extent reasonably feasible.
- To optimize water resource conservation.
- To meet or exceed applicable responsible agency and institutional guidelines and requirements for reclamation, recycling and reuse.
- To minimize net operating costs and District expenditures.
- To work cooperatively with responsible agencies, jurisdictions and land owners/operators.

To further define these objectives and set criteria in which to measure the feasibility of Master Plan concepts, ideas and operational practices, a set of guiding principles were established. These guiding principles define the objectives set forth by the District Board in sections 7.2.1 through 7.2.5.

7.2.1 Regulatory/Permitting

The South Tahoe Public Utility District has undertaken the complex challenge of developing a long-range Master Plan in order to ensure existing and future regulatory compliance. The permitting and regulatory obligations for operating both fresh water and recycled water systems must be upheld by the District to protect public health and ensure the protection of the environment.

The difficulty of obtaining various permits and regulatory approvals is reviewed for each project. This includes environmental assessments, discharge permits, special use permits, easements, encroachment permits, land transfer approvals and Corps of Engineers permits.

7.2.2 Reliability and Flexibility

In order to ensure successful, economical and responsible management of recycled water resources and to meet freshwater quality concerns, the District purchased the Diamond Valley Ranch in 2006 for potential future recycled water application. Each of the Master Plan projects were reviewed with respect to the District's requirements for management reliability and flexibility. The following criteria were used to assess the benefit of each proposed project:

- Ownership and Easements – Evaluate ownership and accessibility for long-term operation and maintenance.
- Regulatory Compliance – Evaluate the ability to comply with current and anticipated regulations and permits. Consider the probability of non-compliance.
- Longevity/Security – Look at the ability of a proposed project to provide long-term reliability and alleviate the effect of circumstances outside the District's control such as sale of an application site, development adjacent to a site, public opinion, extreme weather or natural occurrences.
- Emergency Response – Evaluate the reliability of those proposed projects that provide emergency disposal, conveyance or storage.
- Reliance on Existing Agreements – Assess the ability to extract the District from undesirable contractual arrangements, or assess the benefit of being party to other agreements.

7.2.3 Environmental Issues

A paramount concern of the District is to achieve a system and management plan that secures the quality of the environment for the future. Each of the proposed projects will undergo an environmental assessment to evaluate associated or perceived impacts with respect to:

- Aesthetics – The perception a Master Plan project might have a detrimental impact on the quality of life and visual aesthetics of the area.
- Habitat – Destruction of habitat that may support sensitive species will be evaluated for each of the projects.
- Water Resources – Impact on surface water and groundwater resources.
- Air Quality – Impact of a project on air quality; either from dust, exhaust, odor, other contaminate.

7.2.4 Alpine County

The District and Alpine County have worked in agreement since the 1960's; it is the desire of the District to uphold this relationship and support the objectives sought by the County. Specific criteria that assess this objective are:

- Support Existing Land Uses and Culture – Substantial modifications of existing land use and cultural practices in Alpine County are not the intent of the District. Potential projects will be assessed with regard to impacts on this criterion.
- Demand Irrigation Supply – Assess how potential projects might benefit existing practices by providing more flexibility and functionality to the irrigation system by using various delivery modifications.
- Crop Production Improvements – Evaluate potential projects for benefits to the productivity to the agricultural community. This includes an increase in irrigated lands, better conveyance efficiency, and enhanced irrigation scheduling.
- Maintain Supply to Alpine County irrigators - Recycled water should be used in Alpine County first, subject to economic and other considerations.

7.2.5 Guiding Principles

In an effort to maintain focus on the objectives of the Master Plan, the District developed a set of "Guiding Principles". These values reflect the focus and priorities of the District pertaining to the recycled water management and operations in Alpine County. The Guiding Principles were reflected in public presentations and materials throughout the Master Plan and were subject to CEQA review and approval. A brief explanation of the Guiding Principles follows:

- All recycled water operations comply with regulations – This guiding principle speaks to the desire for all aspects of the District's operations to conform to federal, state, and local regulatory requirements. Much of the Federal jurisdiction has been remanded to the State and administered along with Title 22 by the Lahontan Regional Water Quality Control Board. Other local government regulations will be upheld in the planning design and operations of the recycled water program.
- District has a fully reliable system – Historically, the District has operated the recycled water irrigation distribution system in Alpine County without the reliability in operations to ensure the proper and adequate direct land application of all recycled water produced annually. This inconsistency can be attributed to insufficient application control standards.

- Blending of recycled and freshwater – The practice of blending recycled water with freshwater from the West Fork of the Carson River has occurred since the early 1970's. This is done to provide sufficient irrigation head for effective water conveyance when the level of the West Fork of the Carson River is down. Recycled water regulation under Title 22 requires that fresh water blended with regulated recycled water be treated as if it were all recycled water. This practice therefore increases the volume of water that must meet recycled water regulations. If irrigators apply fresh water and recycled water on a rotational schedule then fewer tailwater control systems will be required and a calculated application rate can be monitored.
- Reliable emergency disposal site – The Lahontan Regional Water Quality Control Board requires an emergency disposal facility for recycled water. This requirement was initially met in 1988 by the construction of the On-Farm emergency disposal site, located approximately 6 miles northeast of the Harvey Place Reservoir. Subsequent evaluation of the capabilities of the On-Farm system indicates that its operational efficiency is low and it requires regular and costly maintenance. Operations of the District's recycled water program must meet emergency disposal regulations imposed by the Lahontan Regional Water Quality Control Board. The Diamond Valley Ranch has provided an area which can be utilized for emergency disposal.
- Application rate reflects crop type and soil conditions – For the ensured protection of groundwater resources and the limitation of tailwater production, a planning value recycled water application rate of 3.25 acre-feet per acre was assumed for preparation of the master plan. This rate was developed to produce no percolation past the root zone to the groundwater and complete nutrient assimilation by the plant biomass. The methodology to calculate the nutrient budget for recycled water application was borrowed from the Nevada Division of Environmental Protection, Effluent Management Plan criteria. The State of California has released a draft policy on recycled water use that includes details on the preparation of Nutrient Management Plans. If adopted by the State of California, the application rate of recycled water could potentially be required to be established through preparation of a Nutrient Management Plan for the basin. However, it is in the best interest of the District to work with contract irrigators to help them to establish Nutrient Management Plans on an individual basis to help ensure the application of recycled water in an amount that would not adversely affect the land or groundwater.
- 5,848 acre-feet of recycled water application in year 2028 – Through analysis of growth projections in the Tahoe Basin and how that relates to recycled water production from the South Tahoe WWTP, a determination was made that the District needs the capacity and flexibility to manage 5,848 acre-feet per year (5.8 MGD) of recycled water application by the year 2028. The management of this volume of water could be accomplished through direct land application, infiltration or export. Currently the District provides approximately 4,738 acre-feet per year of recycled water to agricultural irrigation.
- Application area available for 20% additional capacity – Because changes can occur quickly and have an immediate effect on recycled water production and application areas, a safety margin of 20% additional capacity in the recycled water system was deemed prudent. This margin would be used to compensate for unanticipated growth in the Tahoe Basin service area or development of existing application areas in Alpine County.

- Irrigators are responsible for regulatory compliance – In the past, the District was sometimes viewed as the de-facto responsible party for recycled water regulatory compliance. The problem with this regulatory responsibility was the limited influence the District has on the individual irrigators, their application methods and rate. For example District personnel cannot touch private water turn-out facilities, or anything along the Fredericksburg Ditch. Future District operations in Alpine County should clearly delineate the District as the recycled water purveyor, and the contract irrigators, the ranchers, as the responsible parties to recycled water application regulations. For the ensured protection of the environment and regulatory compliance the District reserves the right to cease recycled water delivery to irrigators that do not comply with the proper recommended application methods and regulations. The removal of a ranching property from recycled water irrigation should not affect the other irrigators for the duration of the Diamond Ditch Agreement, as the District retains the right under the Agreement to maintain and operate structures on ranchers' lands to transmit recycled water to other lands.

7.3 Planning Process

In December 2000 the District contracted a consultant to prepare a recycled water Master Plan for District operations in Alpine County. The scope of services also included the negotiation and planning associated with the Indian Creek Reservoir TMDL being imposed by the Lahontan Regional Water Quality Control Board.

The freshwater and recycled water systems are inherently intertwined due to the manner of use of the water resources in the area. Although it is recognized that the two systems, freshwater and recycled water are separate, the management of one should be “in sync” with the management objectives of the other.

The planning process started in earnest in January of 2001 when the consultants started on a literature review and data assemble for integration into a resource management geographic information system (GIS) to be used extensively for mapping and data management throughout the Master Planning process. See Appendix H for more information regarding mapping and GIS.

An initial project kickoff meeting was held with the District management. At this meeting the outline for data collection, evaluation, and Master Plan process development was presented and discussed. Resulting from this discussion a decision on data presentation in a technical memoranda format was decided on. The technical memoranda found in appendices A through K were completed by mid-June 2001 and updated accordingly in 2008. These memoranda are the basis of the planning data and project development. Each of the eleven technical memoranda was provided to the District for review and modified to reflect comments received from District staff and legal counsel.

District staff has held a series of workshops with the District Board and the Alpine County Contract Commission, made up by the Alpine County supervisors. These workshops discussed and identified how the District philosophy would be incorporated into the planning effort and how the values set by the District Board were prioritized. These values are further described in sections 7.2.1 through 7.2.5. Issues surrounding interaction with Alpine County, regulatory and permitting, environmental protection and impacts, and the need to develop management flexibility were deemed central to the objective of the Master Plan.

Each workshop conducted in 2001 was presented to the District for review and comment, and then presented to the Alpine County Board the following day. Comments were recorded in the

meeting minutes and reflected in subsequent planning. Some of the suggestions and comments from ranching interests, District ratepayers, County officials, and other stakeholders such as Lahontan Regional Water Quality Control Board, the Washoe Tribe, and Alpine County School District were received and incorporated into an alternatives analysis.

In the initial Master Plan development effort, it became obvious that the District needed to secure additional lands for the application of recycled water. Development of the Master Plan document was halted in 2001 while the Diamond Valley Ranch property was being acquired to provide additional land for application of recycled water. In 2006, upon completion of the acquisition of the property (Diamond Valley Ranch), the District hired Stantec Consulting Inc. to continue completion of the Master Plan. An initial meeting was held with District board members and employees in 2006 followed by Master Plan project scoping meetings held at Turtle Rock Park on May 16, 2007 and at the South Tahoe Public Utility District boardroom in South Lake Tahoe on May 17, 2007.

In the project scoping meeting 28 Master Plan concepts were presented to the public. During Master Plan development each of the 28 concepts were analyzed. After consideration and evaluation two project concepts were deleted. These ideas were not pursued because they did not meet the criteria for the Master Plan objectives as set forth by the District or were objectionable to the County or the regulatory agencies. The remaining 26 concepts constitute the Master Plan. These concepts were developed into 26 District projects. Of the 26 projects, eight are recommended for implementation in the near future, while implementation of twelve other Master Plan projects is contingent on various factors and conditions. Six of the 26 Master Plan projects are deemed as potential future projects and are not formally part of the Master Plan. If the future projects are to be implemented, additional environmental assessment and documentation will be required.

Through a process of public presentation and comment/comparison to the District's guiding principles the Master Plan projects identified in 2008 reflect the most desirable aspects of all of the alternatives discussed. Upon implementation, the Master Plan projects intend to provide the District with security, reliability and economy for its recycled water and fresh water programs.