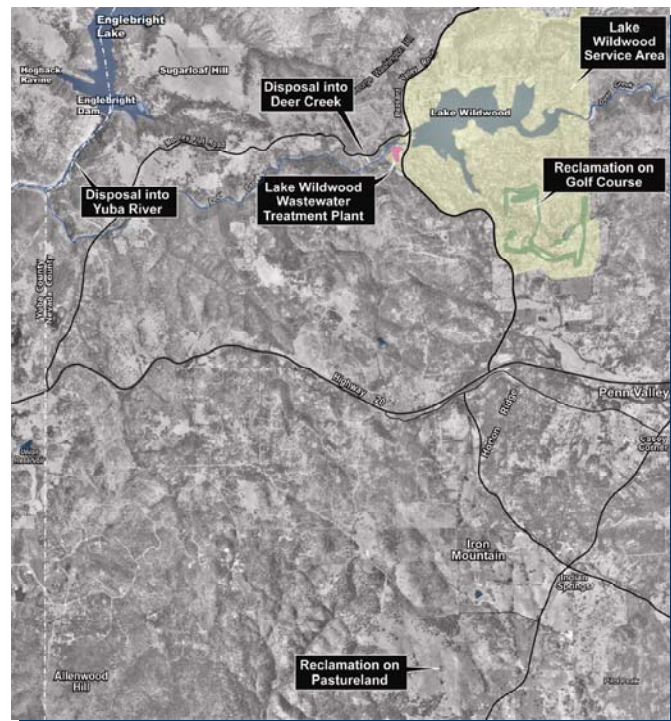


LAKE WILDWOOD WASTEWATER TREATMENT FACILITIES IMPROVEMENT PROJECT SUMMARY

The Nevada County Department of Transportation and Sanitation has initiated planning and engineering activities for modifications to the Lake Wildwood wastewater treatment plant (WWTP). New water quality regulations promulgated by the State of California require changes to the level of wastewater treatment provided and, possibly, where the treated water is discharged. The California Regional Water Quality Control Board has required various water quality improvements to be completed in 2007.

Several phases of work have been identified. In this phase of work (Phase I), a wastewater treatment and disposal facilities plan is being developed. The purpose of the facilities plan is to describe all relevant issues, develop and analyze alternatives, and identify the most cost-effective means for wastewater treatment and disposal and/or reuse in compliance with State and Federal regulations. The facilities plan will also estimate sewer fee impacts to Lake Wildwood's contributing residences and businesses.

Over the last year, the County has completed four quarters of effluent testing required under the State Implementation Plan (SIP) of the California Toxics Rule (CTR). Several metals, pesticides, solvents, and disinfection byproducts (the latter from the WWTP's chlorination system) have been detected in the effluent above the CTR criteria. The County has also assessed the flowrates and water quality in Deer Creek and has determined that Deer Creek has no reliable assimilative capacity for handling these detected pollutants. Accordingly, the County has evaluated source control and treatment upgrades as means to allow continued discharge to Deer Creek. The County has also evaluated alternatives involving effluent discharge to the Yuba River and reclamation on pastureland or the Lake Wildwood Golf Course.



S.1 ALTERNATIVES CONSIDERED

There are four major wastewater disposal alternatives available to Lake Wildwood: discharge to Deer Creek, discharge to the Yuba River, disposal on pastureland, and disposal on the Lake Wildwood Golf Course. A summary of the treatment, storage, conveyance, and disposal facilities and costs for each of the alternatives is presented in Table S-1. In addition, constructibility issues, implementability issues, and regulatory risk for each alternative are summarized in Table S-2.

TABLE S-1
DESCRIPTION OF TREATMENT PLANT FACILITY IMPROVEMENTS, CONVEYANCE, STORAGE, AND DISPOSAL FACILITIES FOR THE LAKE WILDWOOD WWTP

Required Facilities	Deer Creek			Yuba River	Pastureland Reclamation		Golf Course Reclamation	
	Year-Round Discharge with Advanced Treatment	Year-Round Discharge with Supplemental Dilution	Seasonal Discharge (Dry Season Storage/Wet Season Discharge)	Year-Round Discharge	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation
Lake Wildwood Wastewater Treatment Plant								
Headworks Improvements	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches	Modifications to divert flows to EQ and return equalized flow to headworks for splitting to the oxidation ditches
Influent Flow Equalization (EQ)	530,000 gallon EQ basin with daily EQ and wet weather EQ compartments	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services	600,000 gallon circular EQ basin previously designed by 7-H Technical Services
Denitrification	224,000 gallon anoxic basin with submersible mixers; addition of mixed liquor recycle pumps							
Chemical Addition Facilities		1,000 gallon rapid mix basin and chemical feed facilities	1,000 gallon rapid mix basin and chemical feed facilities			1,000 gallon rapid mix basin and chemical feed facilities	1,000 gallon rapid mix basin and chemical feed facilities	1,000 gallon rapid mix basin and chemical feed facilities
Filter Improvements		One additional filter to provide reliable year-round filter capability; upgrades to filter control panel, filter valves, & one additional filter supply pump	One additional filter to provide reliable year-round filter capability; upgrades to filter control panel, filter valves, & one additional filter supply pump	Upgrades to filter control panel & filter valves to improve system reliability	Upgrades to filter control panel & filter valves to improve system reliability	One additional filter to provide reliable year-round filter capability; upgrades to filter control panel, filter valves, & one additional filter supply pump	One additional filter to provide reliable year-round filter capability; upgrades to filter control panel, filter valves, & one additional filter supply pump	One additional filter to provide reliable year-round filter capability; upgrades to filter control panel, filter valves, & one additional filter supply pump
Disinfection Improvements	2 channel, 360 lamp low pressure, high intensity UV disinfection system	2 channel, 360 lamp low pressure, high intensity UV disinfection system	2 channel, 360 lamp low pressure, high intensity UV disinfection system	Upgrade of existing chlorine disinfection system from chlorine gas to liquid chlorine bleach	Upgrade of existing chlorine disinfection system from chlorine gas to liquid chlorine bleach	2 channel, 360 lamp low pressure, high intensity UV disinfection system	Upgrade of existing chlorine disinfection system from chlorine gas to liquid chlorine bleach	2 channel, 360 lamp low pressure, high intensity UV disinfection system
Advanced Treatment (e.g. trace pollutant removal)	360 membrane module microfiltration system	No facilities needed, but space left available for possible future requirements	No facilities needed, but space left available for possible future requirements	No facilities needed, but space left available for possible future requirements		No facilities needed, but space left available for possible future requirements		No facilities needed, but space left available for possible future requirements
Title 22 Upgrades							Upgrades to comply with Title 22 Requirements, including flexibility of design, redundancy features, alarms, emergency storage or disposal, & use area requirements	Upgrades to comply with Title 22 Requirements, including flexibility of design, redundancy features, alarms, emergency storage or disposal, & use area requirements
Administration/Laboratory/Maintenance Buildings	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg	4,000 ft ² collections & operations admin/lab bldgs & 2,400 ft ² maintenance bldg

TABLE S-1 (CONT.)
DESCRIPTION OF TREATMENT PLANT FACILITY IMPROVEMENTS, CONVEYANCE, STORAGE, AND DISPOSAL FACILITIES FOR THE LAKE WILDWOOD WWTP

Required Facilities	Year-Round Discharge with Advanced Treatment	Deer Creek		Yuba River	Pastureland Reclamation		Golf Course Reclamation	
		Year-Round Discharge with Supplemental Dilution	Seasonal Discharge (Dry Season Storage/Wet Season Discharge)	Year-Round Discharge	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation
Sludge Storage Basin/Chemical Feed and Monitoring Facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities	Lining of emergency sludge storage basin & upgrades to influent & chlorine chemical feed & monitoring facilities
Effluent Conveyance and Storage Facilities								
Effluent Pump Station(s)/Pipeline			2-mile pipeline to/from WWTP to dry season storage. Pumping facilities at WWTP & storage site.	5-mile pipeline from WWTP to Yuba River. Pumping facilities at WWTP. Outfall facilities at Yuba River.	6-mile pipeline from WWTP to storage/reclamation site. Pumping facilities at WWTP.	6-mile pipeline from WWTP to storage/reclamation site. Pumping facilities at WWTP.	2-mile pipeline from WWTP to wet season storage, 4-mile pipeline from storage to pastureland reclamation, & 2-mile pipeline from WWTP to golf course. Pumping facilities at WWTP and storage site.	2-mile pipeline from WWTP to golf course & 6-mile pipeline from WWTP to pastureland reclamation. Pumping facilities at WWTP.
Storage Facilities			100 MG storage basin		215 MG storage basin	15 MG storage basin	200 MG storage basin	35 MG storage basin
Land Purchase – Storage			Purchase of 25 acres		Purchase of 50 acres	Purchase 5 acres	Purchase 45 acres	Purchase 10 acres
Disposal Facilities								
Land Purchase – Disposal					Purchase 380 acres of pastureland	Purchase 100 acres of pastureland	Purchase 290 acres of pastureland	Purchase 80 acres of pastureland
Sitework/Irrigation Improvements					Pastureland site preparation, irrigation, & tailwater control system	Pastureland site preparation, irrigation, & tailwater control system	Pastureland site preparation, irrigation, & tailwater control system. Modifications to the existing golf course irrigation system & drainage to accommodate reclaimed water	Pastureland site preparation, irrigation, & tailwater control system. Modifications to the existing golf course irrigation system & drainage to accommodate reclaimed water
Supplemental Water for Dilution								
Supplemental Water Purchase from NID		Purchase of 14,000 acre-feet per year						
Estimated Costs								
Project Capital Costs	\$8,700,000	\$6,100,000	\$13,600,000	\$8,100,000	\$26,400,000	\$12,900,000	\$28,000,000	\$16,900,000
Additional Annual (Operations & Maintenance) Costs	\$190,000	\$310,000	\$180,000	\$120,000	\$440,000	\$290,000	\$470,000	\$340,000

TABLE S-2
SUMMARY OF TREATMENT AND DISPOSAL ALTERNATIVES FOR THE LAKE WILDWOOD WWTP

	Deer Creek		Seasonal Discharge (Dry Season Storage/Wet Season Discharge)	Yuba River	Pastureland Reclamation		Golf Course Reclamation	
	Year-Round Discharge with Advanced Treatment	Year-Round Discharge with Supplemental Dilution		Year-Round Discharge	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation
Constructibility Issues								
	- Project readily constructible onsite	- Project readily constructible onsite	- Project readily constructible onsite - Determination of specific land areas for storage may have unique construction issues. Additional information required to fully develop project elements and costs.	- Pipeline route to Yuba River involves significant grade change, a pipeline crossing Englebright Dam, and an outfall into the river. Additional information required to fully develop project elements and costs.	- Determination of specific land areas for storage and disposal may have unique construction issues. Additional information required to fully develop project elements and costs. - Land availability and costs can vary widely	- Determination of specific land areas for storage and disposal may have unique construction issues. Additional information required to fully develop project elements and costs. - Land availability and costs can vary widely	- Determination of specific land areas for storage and disposal may have unique construction issues. Additional information required to fully develop project elements and costs. - May require modifications to golf course to control runoff - Pastureland availability and costs can vary widely	- Determination of specific land areas for storage and disposal may have unique construction issues. Additional information required to fully develop project elements and costs. - May require modifications to golf course to control runoff - Pastureland availability and costs can vary widely
Implementability Issues								
	- Requires only mitigated negative declaration CEQA documentation - Implemented under existing NPDES permit	- Requires modifications to existing NPDES permit - Requires long-term agreement with NID for purchase of additional water - Environmental impacts of "wheeling" additional water down Deer Creek unknown and may require additional studies	- Requires modifications to existing NPDES permit - Requires environmental documentation for pipeline route and storage area - County may be required to condemn land for storage reservoir - Water rights and environmental issues may exist with the removal of effluent from Deer Creek	- Requires extensive environmental documentation for pipeline route and outfall into Yuba River - Requires coordination with (and endorsement of) numerous agencies and stakeholders, including the Dept. of Fish and Game, Corps of Engineers, Yuba River watershed interest groups, RWQCB. - Requires new NPDES permit - Water rights and environmental issues may exist with the removal of effluent from Deer Creek - Outfall must be located away from salmon spawning habitat	- Requires environmental documentation for pipeline route and storage and disposal area - County may be required to condemn large tracts of land - Subject to California DHS Title 22 requirements - NPDES permit no longer required; new, less stringent permit issued by RWCQB for land disposal - Water rights and environmental issues may exist with the removal of effluent from Deer Creek	- Requires environmental documentation for pipeline route and storage and disposal area - County may be required to condemn large tracts of land - Subject to California DHS Title 22 requirements - NPDES still required; new, less stringent permit issued by RWCQB for land disposal - Water rights and environmental issues may exist with the removal of effluent from Deer Creek	- Requires environmental documentation for pipeline route and storage and disposal area - County may be required to condemn large tracts of land for pastureland disposal - Subject to California DHS Title 22 requirements, including full containment and human contact issues - NPDES permit no longer required; new, less stringent permit issued by RWCQB for land disposal - Water rights and environmental issues may exist with the removal of effluent from Deer Creek - Involves retrofit of existing golf course to accommodate reclaimed water - Aesthetics of the golf course may be degraded by quality of water - Adjacent property owners to golf course may express concern over exposure to effluent mists from sprinklers - Requires operation of two different disposal facilities	- Requires environmental documentation for pipeline route and storage and disposal area - County may be required to condemn large tracts of land for pastureland disposal - Subject to California DHS Title 22 requirements, including full containment and human contact issues - NPDES still required as well as new permit for land disposal; new, less stringent permit issued by RWCQB for land disposal - Water rights and environmental issues may exist with the removal of effluent from Deer Creek - Involves retrofit of existing golf course to accommodate reclaimed water - Aesthetics of the golf course may be degraded by quality of water - Adjacent property owners to golf course may express concern over exposure to effluent mists from sprinklers - Requires operation of two different disposal facilities

TABLE S-2 (CONT.)
SUMMARY OF TREATMENT AND DISPOSAL ALTERNATIVES FOR THE LAKE WILDWOOD WWTP

	Deer Creek		Seasonal Discharge (Dry Season Storage/Wet Season Discharge)	Yuba River	Pastureland Reclamation		Golf Course Reclamation	
	Year-Round Discharge with Advanced Treatment	Year-Round Discharge with Supplemental Dilution		Year-Round Discharge	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation	Wet Season Storage/Dry Season Reclamation	Wet Season Discharge to Deer Creek/Dry Season Reclamation
Regulatory Risk	<ul style="list-style-type: none"> - Greatest risk of regulatory non-compliance of any alternative considered - Little or no assimilative capacity exists in Deer Creek, which will require highest level of treatment compared to other disposal options - Reliance on source control to comply with CTR - County's ability to enforce source control measures difficult to predict - Limited database of CTR sample testing available (4 samples). Future sampling may indicate additional constituents of concern, which would need to be mitigated. - Subject to more stringent future regulations reflecting little or no assimilative capacity in Deer Creek 	<ul style="list-style-type: none"> - Supplemental water in Deer Creek reduces the risk of non-compliance by a small amount compared to year-round discharge in Deer Creek - Little assimilative capacity exists in Deer Creek, which will require higher levels of treatment compared to other disposal options - Reliance on source control to comply with CTR - County's ability to enforce source control measures difficult to predict - Limited database of CTR sample testing available (4 samples). Future sampling may indicate additional constituents of concern, which would need to be mitigated. - Subject to more stringent future regulations reflecting little assimilative capacity in Deer Creek 	<ul style="list-style-type: none"> - Seasonal discharge into Deer Creek reduces the risk of non-compliance by a small amount compared to year-round discharge in Deer Creek - Little assimilative capacity exists in Deer Creek, which will require higher levels of treatment compared to other disposal options - Reliance on source control to comply with CTR - County's ability to enforce source control measures difficult to predict - Limited database of CTR sample testing available (4 samples). Future sampling may indicate additional constituents of concern, which would need to be mitigated. - Subject to more stringent future regulations reflecting little assimilative capacity in Deer Creek 	<ul style="list-style-type: none"> - Least apparent risk of non-compliance of all alternatives involving any effluent discharge to surface waters - Provides significant assimilative capacity due to low pollutant background concentration and high dilution in Yuba River - Does not rely on source control to comply with CTR - Limited database of CTR samples available. Future sampling may indicate additional constituents of concern, which would need to be mitigated. - Subject to future, more stringent regulations. Relies on assimilative capacity of the Yuba River for compliance. 	<ul style="list-style-type: none"> - Least apparent risk of regulatory non-compliance of all the alternatives, if potential groundwater degradation issues can be resolved - Eliminates NPDES permit and associated requirements - Future regulations for surface water may include new effluent limits not regulated under existing NPDES permit. Land disposal eliminates the concern with meeting future, more stringent surface water permit requirements - Requires extensive monitoring to confirm groundwater resources are not impacted - Waste discharge requirements for land disposal systems are currently less stringent than any level of surface water disposal requirements - Does not rely on the assimilative capacity of a receiving water for compliance - Consistent with Basin Plan objectives of encouraging reclamation 	<ul style="list-style-type: none"> - Somewhat less risk of regulatory non-compliance compared to seasonal discharge to Deer Creek, if potential groundwater degradation issues can be resolved - Little assimilative capacity exists in Deer Creek, which will require higher levels of treatment compared to other disposal options - Future regulations for surface water may include new effluent limits not regulated under existing NPDES permit. Land disposal during low flow periods reduces the concern with meeting future, more stringent surface water permit requirements - Requires extensive monitoring to confirm groundwater resources are not impacted - Waste discharge requirements for land disposal systems are currently less stringent than any level of surface water disposal requirements - Only relies on the assimilative capacity of a receiving water for compliance during the wet season 	<ul style="list-style-type: none"> - Comparable risk of regulatory non-compliance to wet season storage/dry season reclamation on pastureland, if potential groundwater degradation, golf course runoff, and golf course mist issues can be resolved - Eliminates NPDES permit and associated requirements - Future regulations for surface water may include new effluent limits not regulated under existing NPDES permit. Land disposal eliminates the concern with meeting future, more stringent surface water permit requirements - Requires extensive monitoring to confirm groundwater resources are not impacted - Requires extensive monitoring and reporting to confirm that DHS requirements are met for golf course reclamation - Waste discharge requirements for land disposal systems are currently less stringent than any level of surface water disposal requirements - Does not rely on the assimilative capacity of a receiving water for compliance - Consistent with Basin Plan objectives of encouraging reclamation 	<ul style="list-style-type: none"> - Somewhat less risk of regulatory non-compliance compared to seasonal discharge to Deer Creek, if potential groundwater degradation, golf course runoff, and golf course mist issues can be resolved - Little assimilative capacity exists in Deer Creek, which will require higher levels of treatment compared to other disposal options - Future regulations for surface water may include new effluent limits not regulated under existing NPDES permit. Land disposal during low flow periods reduces the concern with meeting future, more stringent surface water permit requirements - Requires extensive monitoring to confirm groundwater resources are not impacted - Requires extensive monitoring and reporting to confirm that DHS requirements are met for golf course reclamation - Waste discharge requirements for land disposal systems are currently less stringent than any level of surface water disposal requirements - Only relies on the assimilative capacity of a receiving water for compliance during the wet season

From the data collected over the last year, continued discharge to Deer Creek would require extensive upgrades to the existing WWTP, including membrane treatment, denitrification, and ultraviolet disinfection. The cost of these improvements plus other operational costs is expected to almost triple existing sewer charges. Even with these upgrades, the Lake Wildwood community may continue to have compliance problems with effluent limitations and receiving water limitations. During periods of the year, Deer Creek has no flow and, therefore, provides no reliable assimilative capacity for the WWTP effluent. While the addition of advanced treatment processes such as membrane microfiltration will reduce particulate CTR contaminants concentrations, microfiltration will do little to reduce dissolved CTR contaminant concentrations. The dissolved contaminants are the greater threat to aquatic ecology. Thus, the community may need quantifiable, long-term results from its source control program to further reduce some trace pollutants to below the CTR criteria, e.g., Lindane from shampoos and copper from water pipes. However, the County's ability to enforce source control is difficult to predict and some constituents (such as copper from water pipes) cannot be controlled solely through public education. Regarding receiving water limitations, the County is concerned that the effluent, even with advanced treatment, will cause or contribute to biostimulation in Deer Creek that, in turn, will cause or contribute to dissolved oxygen levels below 7.0 mg/L at times or places along Deer Creek as it flows from Lake Wildwood to the Yuba River. Because of these issues, the County is concerned about the regulatory risk as well as the potential to impact public and environmental health by continuing to discharge to Deer Creek.

Regarding the feasibility of reclamation, approximately 400 acres of pastureland would be needed for disposal of the Lake Wildwood effluent year-round. No suitable reclamation land exists adjacent to the WWTP. Therefore, effluent would need to be pumped approximately six-miles to a site that may be appropriate for reclamation. The cost of the reclamation project is such that it is estimated to more than quadruple existing sewer charges. Because of this very high cost, plus the loss of a water resource and the probability of groundwater degradation, the County does not believe that reclamation as the primary means for permit compliance to be appropriate. Use of treated effluent for irrigation, however, could be used in the future to offset peak water demands in the area.

Reclamation on the Lake Wildwood Golf Course was also considered and is not regarded to be a feasible option. The core problem is that only the center areas of the fairways could receive effluent so as to comply with the California Department of Health Services (DHS) Title 22 requirements that effluent sprays and mists not enter dwellings. Thus, reclamation on the golf course would only reduce the amount of pastureland needed for disposal by about 100 acres. There is also the problem of effluent containment. In essence, the golf course irrigation system would have to be completely rebuilt to reclaim a small portion of the effluent produced by the Lake Wildwood WWTP. Because golf course reclamation is nowhere near a complete solution, its cost is virtually an added cost to the full pastureland alternative. Golf course reclamation is the highest total cost of all alternatives considered.

The County has also conducted a preliminary analysis of the assimilative capacity of the Yuba River below Englebright Dam. The minimum allowable reservoir release to the Yuba River from Englebright Dam is 250 cfs. In the last 10 years of flow data, actual flows have never been below 530 cfs. Even at the minimum allowable reservoir release, the Yuba River provides over 250 to 1 dilution of the roughly 1 cfs effluent flow from the WWTP. Based on this historical flow data, one comprehensive sampling event, and the general condition of the Yuba River watershed, it is believed that the Yuba River has sufficient assimilative capacity to handle all pollutants detected within the effluent.

Relocation of the discharge to the Yuba River complies with both current and expected future water quality regulations. After mixing with the receiving water, the discharge would comply with all CTR criteria without significant upgrades to the WWTP. As described above, addition of advanced treatment does not remove dissolved contaminants (the form of CTR contaminants of greatest environmental risk). Therefore, effluent dilution is more appropriate than advanced treatment if the objective is to minimize dissolved CTR contaminant concentration in the environment. Since the effluent from the Lake Wildwood WWTP currently flows to the Yuba River via Deer Creek, other water quality impacts on the Yuba River (including nutrient loading and temperature impacts) would be the same or less compared to current conditions. In addition, DHS guidance is that a situation involving 20 to 1 dilution of secondary effluent is superior to a situation involving less than 20 to 1 dilution of tertiary effluent from a domestic water supply public health perspective. The Regional Board has acknowledged the propriety of the DHS position. Providing over 20 to 1 dilution consistently in Deer Creek would be cost prohibitive; while over 250 to 1 dilution would always be provided in the Yuba River.

Discharge to the Yuba River would require minimal upgrades to the existing WWTP, construction of a new pump station, and construction of a pipeline and outfall into the Yuba River. The cost of these facilities plus other operational costs is expected to nearly triple existing sewer charges.

S.2 RECOMMENDED TREATMENT AND DISPOSAL PLAN

Based on the facilities planning analysis summarized above, the County believes that the Yuba River provides the most cost effective, most reliable, and most compliant solution available to the residents of Lake Wildwood. It is recommended to discharge the effluent into the River directly below Englebright Dam. This location provides complete mix conditions with the discharge from the dam penstock. This location (subject to hydraulic scour) should keep any mixing zone away from endangered species spawning areas reported to be located downstream of the dam. Finally, this location is believed to be scoured such that more movement of the bedload (which can compromise a diffuser) is unlikely.

Year-Round Discharge to the Yuba River requires minimal improvements to the existing WWTP since significant assimilative capacity is available in the River. Because Deer Creek discharges into the Yuba River, the Yuba River would not experience any net increase in pollutant load compared to existing conditions. This alternative will require the construction of a new pump station at the WWTP and a five-mile pipeline and outfall into the Yuba River. Year-Round Discharge to the Yuba River is estimated to have the least cost and also has the least regulatory risk compared to continued discharge to Deer Creek. In addition, the Yuba River would provide a greater ability to comply with future regulated constituents.

Required Facilities and Costs

Since sufficient assimilative capacity exists within the Yuba River, only minor facility upgrades would be required. Facility upgrades include the addition of an influent equalization basin (and related upgrades to the headworks) and an upgrade of the chlorine disinfection system from chlorine gas to liquid chlorine bleach (sodium hypochlorite) for safety reasons. A new effluent pump station and five-mile pipeline to the Yuba River (below Englebright Dam) would also be necessary. A summary of the cost of in-plant and conveyance facilities is provided in Table S-3.

TABLE S-3
YUBA RIVER DISCHARGE ESTIMATED CONSTRUCTION COSTS

Description	Cost
Headworks Improvements	\$64,000
Influent Flow Equalization	\$580,000
Filter Control Panel & Valve Upgrades	\$270,000
Disinfection Improvements	\$150,000
Site Piping & Electrical	\$210,000
Building Upgrades	\$950,000
Chemical Feed Improvements /Lining of Sludge Storage Basin	\$200,000
Pump Station at WWTP	\$400,000
5-mile, 12-inch Pipeline to Yuba River	\$2,100,000
4 Pressure Reducing Stations	\$100,000
Outfall Facilities	\$200,000
Total Construction Cost (Rounded)	\$5,200,000

Due to the addition of new facilities and the pipeline, the annual operation and maintenance cost of the WWTP would increase. Additional costs include the increased cost of liquid chlorine versus gaseous chlorine, an increase in maintenance costs due to the new facilities, and the cost of pumping. These costs are expected to increase the annual cost of operations and maintenance at the Lake Wildwood WWTP by about \$120,000 per year (or, about an 8% increase above current operating costs). The Yuba River alternative has the least capital cost as well as the lowest annual cost of all of the alternatives considered.

S.3 RECOMMENDED IMPLEMENTATION PLAN

The implementation of the Yuba River disposal alternative will require several steps before construction can begin on the pipeline. These steps include pre-engineering activities, development of environmental documentation, an updated financial plan, obtaining a new NPDES permit, and design of in-plant and conveyance facilities. A projected timeline for the implementation of each of these steps is shown in Figure S-1. Each of these activities is discussed in detail below.

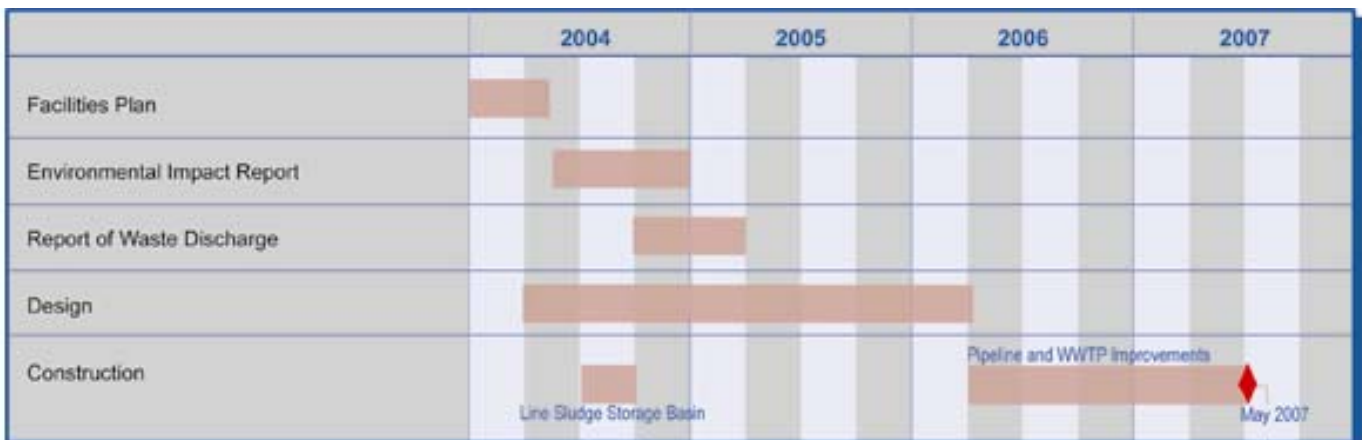


Figure S-1
Permit Compliance Improvement Schedule

Pre-Engineering Activities

Pre-engineering activities include the completion of an aerial survey, an analysis of preferred pipeline route, and determination of necessary easements. A revised cost estimate of required conveyance facilities will also be prepared. These activities are expected to take about three months to complete and should be completed in the summer of 2004.

Development of Environmental Documentation

Environmental clearance documentation would include an Environmental Impact Report (EIR) consistent with the California Environmental Quality Act (CEQA). The EIR would describe the pipeline route, outfall facilities, and any environmental impacts expected with discharging directly to the Yuba River. The CEQA process is expected to take about eight months and should be completed by early 2005. The draft EIR will be used as a basis for the new Report of Waste Discharge (discussed below).

Permitting Activities

Permitting activities include further characterization of the Yuba River as well as the preparation of the new Report of Waste Discharge (ROWD). The ROWD is the first step in obtaining a new NPDES permit for the Yuba River. The Yuba River will need to be sampled for CTR constituents in all four quarters of the year to confirm that seasonal variations in pollutant levels do not exist. Preparation of the ROWD should begin by fall of 2004 and should take about six months to complete.

Financial Plan Updates

The preliminary costs developed within this report will be updated to reflect the site-specific constraints determined during the preliminary design. Once cost information is updated, the preliminary financial plan can be refined and sewer charges can be adjusted accordingly.

Design of Improvements

Design of the specific facilities within the treatment plant and of the pipeline and outfall facilities for disposal can commence once the pre-engineering, environmental, and permitting activities are completed. Pre-design activities will most likely begin in mid- to late-2004 in concert with the planning activities. Design of the treatment plant facilities and pipeline route will occur during the majority of 2005.

Construction

Construction of the facility improvements, pipeline, and outfall will commence in spring 2006. Construction is expected to last 12 to 15 months and will be completed by the permit compliance deadline of May 1st, 2007. The lining of the sludge storage basin and upgrades to the existing chemical feed and monitoring facilities will be completed prior to the main facility upgrades. These projects are required in the current permit to be completed in the near-term. Preliminary analysis these projects have already commenced and the construction phase will occur during the summer of 2004.

S.4 EXPECTED INCREASES TO ANNUAL SEWER CHARGES

A preliminary financial plan was developed to determine the viable options to fund the recommended alternative and to determine the expected increases to Lake Wildwood's sewer charges. Capital improvement expenditures for implementing the Yuba River alternative will occur during the next three

years. As described above, initial expenses in the coming year will include planning activities, permitting, pre-design, and the construction of improvements to the sludge storage basin and chemical feed and monitoring. Completion of the environmental and permitting activities as well as design of the facility upgrades and the pipeline will occur in 2005 and construction of the improvement project will occur in 2006. An estimate of these new capital improvement expenditures in each of the next three years is provided in Table S-4. Table S-4 represents costs in the year incurred.

TABLE S-4
CAPITAL IMPROVEMENT EXPENDITURES FOR LAKE WILDWOOD FOR
YUBA RIVER YEAR-ROUND DISCHARGE

Capital Improvement Expenditure	Year				
	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
Permitting					
EIR		\$250,000			
ROWD		\$310,000			
Aerial Survey/Routing Analysis		\$130,000			
Pre-Design		\$60,000			
Design		\$190,000	\$800,000		
Sludge Storage Basin Lining		\$250,000			
Pipeline & WWTP Improvements				\$6,400,000	
Construction Management				\$300,000	
Total Yearly Capital Improvement Expenditures (Rounded)	---	\$1,200,000	\$800,000	\$6,700,000	---

Note: Capital improvement expenditures rounded to the nearest ten thousand dollars.

The wastewater service charge for Lake Wildwood is currently \$315 per year. The County has maintained this charge for the last several years, in spite of continued cost increases in annual operation and maintenance (O&M) charges, facility depreciation, and required engineering studies. Until recently, the County has been able to absorb these cost increases by use of its reserve fund. This reserve fund is now exhausted. As a result, the service charge will need to be increased to balance the existing account, address increased O&M costs (from items such as labor, chemicals, power, etc), as well as to finance of capital improvement expenditures shown in Table S-4.

A general breakdown of estimated sewer charges for connected Lake Wildwood residents during and after completion of the improvement project is provided in Table S-5. As shown, the sewer charge for connected customers is expected to increase to \$650 per year for 2004/2005 based on increases to the existing O&M budget and to pay for the pre-construction activities associated with the compliance project. In 2005/2006, the sewer charges are expected to increase to \$805 per year to finance the construction component of the compliance project. In 2006/2007, the new facilities and pipeline will come online and the sewer charge is expected to increase to \$845 per year to pay for the additional O&M costs of these facilities.

TABLE S-5
PROJECTED SEWER CHARGES FOR CONNECTED CUSTOMERS IN LAKE WILDWOOD (PER EDU)

Component	Annual Sewer Charge				
	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
Existing Annual Sewer Charge	\$315	\$315	\$315	\$315	\$315
Increase to Balance Existing Budget		\$240	\$240	\$240	\$240
Increase Due to Higher Annual O&M Costs		\$30	\$30	\$30	\$30
Increase to Fund New Facilities		\$65	\$220	\$220	\$220
Increase to Fund Annual O&M of New Facilities				\$40	\$40
Total Projected Yearly Sewer Charge Per EDU	\$315	\$650	\$805	\$845	\$845

Standby customer projected sewer charges also reflect increases due to higher annual maintenance costs as well as the capital improvement project and subsequent maintenance cost for the new facilities. A general breakdown of estimated sewer charges for standby customers during and after completion of the improvement project is provided in Table S-6. The County is actively pursuing grant funding and low-interest loan financing options and, if these financing options become available, it is possible that the annual sewer charges could be less than stated above and provided in Tables S-5 and S-6.

TABLE S-6
PROJECTED SEWER CHARGES FOR STANDBY CUSTOMERS IN LAKE WILDWOOD (PER EDU)

Component	Annual Sewer Charge				
	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008
Existing Annual Sewer Charge	\$35	\$35	\$35	\$35	\$35
Increase to Balance Existing Budget		---	---	---	---
Increase Due to Higher Annual O&M Costs		\$30	\$30	\$30	\$30
Increase to Fund New Facilities		\$65	\$220	\$220	\$220
Increase to Fund Annual O&M of New Facilities				\$5	\$5
Total Projected Yearly Sewer Charge Per EDU	\$35	\$130	\$285	\$290	\$290