

TO: COMMITTEE MEMBERS
FROM: BRUCE BUEL *BB*
DATE: OCT. 31, 2008



DISCUSS PROJECT STATUS /PREVIEW 11/13/08 PUBLIC OUTREACH MEETING

ITEM

Discuss project status/Preview 11/13/08 Public Outreach Meeting [Forward Recommendation to Board].

BACKGROUND

AECOM (Boyle) Engineering is under contract with NCSD to finalize the collection and treatment components of the Southland Wastewater Treatment Facility Master Plan and to evaluate disposal options on a programmatic level (See agenda Item 3). Staff and AECOM will conduct an informational briefing regarding the Master Plan update and the disposal options at 6pm on Thursday November 13, 2008 at the NCSD Office.

A draft of the Master Plan update should be available on November 26, 2008 for consideration by the Committee (See Agenda Item 4) in early December and by the full Board at the Board's December 10th Meeting. Should the Board be able to select a "proposed project" at this meeting, then staff would solicit proposals for the development of the Final Design.

Assuming that the Board can agree on the concepts set forth in the Draft Master Plan Update, then an Initial Study can be prepared for presentation to the Board at its January 28, 2009 Board Meeting. The Board could then determine if an EIR or a Mitigated Negative Declaration should be prepared in compliance with CEQA.

RECOMMENDATION

Staff recommends that the Committee discuss the project status and the outreach meeting.

ATTACHMENT - NONE

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TO: COMMITTEE MEMBERS
FROM: BRUCE BUEL *BBB*
DATE: OCT. 31, 2008



DISCUSS POTENTIAL DISPOSAL OPTIONS

ITEM

Discuss potential disposal options [Forward Recommendation to Board].

BACKGROUND

Attached is a Draft Technical Memorandum from AECOM (Boyle) Engineering comparing the various disposal options. Mike Nunley from AECOM will present these options at the Committee Meeting. Staff is seeking feedback from the Committee on the comparison in general and in regards to elimination of any options that appear to have fatal flaws. CEQA requires the District to evaluate a reasonable range of disposal concepts/locations, but it is not necessary or desirable to pay for the environmental research necessary to fully evaluate all possible options. The Committee may also want to identify a mix of options, whereby the initial disposal capacity is increased by a less costly options coupled with one or more long term disposal options.

RECOMMENDATION

Staff recommends that the Committee discuss the draft Technical Memorandum and formulate recommendations to the full Board.

ATTACHMENT

- * Draft Technical Memorandum

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Administrative Draft Preliminary Screening Evaluation of Southland WWTF Disposal Alternatives

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October 2008

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1.0 Introduction

1.1 Background

Nipomo Community Services District is planning to upgrade the Southland Wastewater Treatment Facility in order to meet future community demand, as described in the District's 2007 Water and Sewer Master Plan Update. The plant is currently a facultative pond system that discharges to a system of onsite percolation ponds. The draft 2007 Southland Wastewater Treatment Facility Master Plan (WWTF Master Plan) addressed plans to upgrade the plant from 0.9 to 2.34 million gallons per day (MGD) on a maximum month basis. The WWTF Master Plan recommended installing new influent screens, grit removal, an extended aeration treatment system, and clarification in order to improve effluent quality and provide capacity for future demands.

While planning for the wastewater treatment facility expansion, the District reviewed available groundwater records and with the assistance of Boyle/AECOM and Fugro West discovered the following:

1. A perched mound of treated effluent was growing beneath the wastewater percolation ponds. An aquitard that existed from 60 to 140 feet below ground surface was preventing the mound from percolating to the deeper aquifer.
2. Evidence suggests the mound is slowly draining to the northeast, toward Nipomo Creek. The Creek is listed as an impaired water body in the Central Coast Regional Water Quality Control Board (RWQCB) Basin Plan for fecal coliform.

The District has been working with RWQCB staff to evaluate regulatory constraints for continuing current discharge practices and pursuing other discharge or reuse alternatives after the plant upgrade is completed. Recent guidance from the Regional Board (4/29/08) regarding probable discharge requirements for the Southland Wastewater Treatment Facility (WWTF) indicates that alternative disposal or reuse options will need to be investigated. The District cannot continue to discharge onsite without risking surfacing of the effluent mound.

In accordance with California Environmental Quality Act (CEQA) requirements, the District is planning to prepare an Initial Study for the treatment plant upgrades described in the Southland WWTF Master Plan. Before the appropriate CEQA compliance strategy can be developed, potential disposal and reuse options must be characterized to a level where impacts can be evaluated.

Boyle was previously retained to assist the District in identifying disposal sites under Task Order # 011-07 for Engineering Support for Southland WWTF Management Program. After an initial screening, the proposed disposal sites were rejected by the NCSB Board of Directors on January 23, 2008. At the District Board meeting on August 27, 2008, the NCSB Board agreed to retain Boyle Engineering to evaluate additional disposal alternatives for use in the CEQA process.

1.2 Purpose of this Preliminary Screening Evaluation

The purpose of this preliminary-screening memorandum is to describe the set of alternatives under consideration, so that the District Board and members of the community can provide input into the development of these alternatives.

1.3 Scope of Work

This report represents Task 4a of our contract with NCSB for Southland Disposal Planning Assistance. Our scope for this work includes the following tasks:

Review hydrogeologic information and models provided by District consultants, regulatory guidance from RWQCB, wastewater quantity and quality data provided by the District, and other pertinent information;

Describe at a preliminary screening level up to eleven (11) new disposal options for preliminary screening and identification of fatal flaws.

Present the disposal options at a public meeting to obtain feedback from the District Board and community.

2.0 Proposed Treatment Approach

The Southland Wastewater Treatment Facility (WWTF) is approaching its permitted capacity (0.9 MGD as a maximum monthly average). To evaluate existing and future capacity of the facility, Boyle completed the Draft Southland WWTF Master Plan in February 2007¹. Future flow rates and BOD₅ loadings were projected. At the time, the draft Master Plan estimated that the flow capacity may be reached as early as December 2007 and the effluent limit for BOD₅ (100 mg/L) in 2008 during high flow conditions². Immediate planning for upgrades to the facility was recommended. Several treatment processes were evaluated: expansion of the existing system (aerated ponds), activated sludge, oxidation ditch, and Biolac® wave oxidation system. Effluent water quality, operation and maintenance, footprint size, and capital and operating costs were considered.

The intended end-use for the treated effluent determines the regulations and required treatment level. For instance, if unrestricted irrigation or groundwater recharge is pursued, tertiary treatment will be required. However, the current treatment process, aerated ponds, does not produce effluent appropriate for efficient tertiary filtration. The monthly average total suspended solids (TSS) concentration (September 2006 through August 2008) was 34 mg/L and the maximum was 68 mg/L. The typical goal for filtration is less than 30 mg/L. High TSS concentrations increase the frequency of backwashing, which can multiply the number of filters required and increase capital and operating costs. Also, aerated ponds are ineffective at reducing nitrogen compounds which are a common water quality concern in groundwater.

The Draft Southland WWTF Master Plan recommended the Biolac® wave oxidation system, an extended aeration process that utilizes a longer solids retention time and moving aeration chains to reduce BOD and TSS concentrations to below 15 mg/L and total nitrogen to less than 10 mg/L. When compared to an aerated pond system, a Biolac® system can provide a higher level of treatment at a lower capital and operating cost. It requires a higher degree of operator involvement than the current system, but routine operations and maintenance are less complex than the other, more expensive, treatment technologies reviewed (oxidation ditch and activated sludge). If the District chooses to pursue reuse options that require tertiary treatment, the Biolac® system can produce effluent appropriate for tertiary processes. Two types of filtration (sand and cloth) and two disinfection processes (chlorination and UV radiation) were reviewed in the Draft Southland WWTF Master Plan.

¹ The Draft Southland WWTF Master Plan will be finalized and updated as part of the current contract.

² The hydraulic and treatment capacity will be updated for the final report.

3.0 Water Quality

Influent water quality is influenced by drinking water source(s) and water users (commercial, various industries, domestic). The quality of wastewater treatment plant effluent is dictated by the level of treatment. Currently, Nipomo utilizes groundwater wells to provide drinking water.

Two future projects will affect the quality of treated effluent from the WWTF: NCSW Waterline Intertie Project and WWTF Upgrade. The District is also evaluating options to discourage use of self-regenerating water softeners, in order to reduce concentrations of salt in plant effluent.

NCSW Waterline Intertie Project

In 2010, the District is planning to complete construction of the NCSW Waterline Intertie Project, which will deliver up to 3,000 acre-feet per year (AFY) from the City of Santa Maria to the District. The City primarily uses water from the State Water Project, and will provide their "municipal mix" of State Water and groundwater to Nipomo. As described in the 2008 Salt Minimization Plan for Southland WWTF, the Santa Maria water supply is considerably softer than Nipomo groundwater and would result in lower concentrations of various salts.

WWTF Upgrade

The WWTF upgrade will include nitrogen removal to 10 mg/L as N. No significant nitrogen removal is performed in the existing treatment system. Potential impacts on selected contaminants are summarized below:

Table 3.1 – Future Effluent Quality with WWTF Upgrade and Waterline Intertie Project

	Existing Concentrations (2004 - 2008)	Projected Future Concentrations (2010)
5-day Biological Oxygen Demand (BOD ₅), mg/L	2 - 185	< 15
Total Dissolved Solids (TDS), mg/L	980 - 1180	800 - 1000
Sodium (Na), mg/L	184 - 209	180 - 210
Chloride (Cl) mg/L	208 - 234	200 - 240
Nitrate (NO ₃ ⁻), mg/L	50 - 80	ND - 10
Total Nitrogen (TN), mg/L	28 - 46	ND - 10
Sulfate (SO ₄ ⁻), mg/L	200 - 270	175 - 210
Bacteria Count, (MPN/100 mL)	ND - 2.2	ND - 2.2
pH	7.4 - 7.8	7.4 - 7.8

Notes:

ND = non-detect

mg/L = milligrams per liter

MPN = most probable number (of colony forming units)

4.0 Reuse and Disposal Alternatives

There are two general categories of end-use options for treated wastewater: reuse and disposal. Reuse refers to using the treated wastewater for another beneficial use. Examples of this include landscape and agricultural irrigation, water supply for impoundments (fish hatcheries or recreational lakes), water supply for industrial and commercial cooling towers and air conditioning, groundwater recharge, dust control on roads and streets, decorative fountains, and many others. Disposal refers to discarding the treated wastewater without the intention of using it again. The most common methods of effluent disposal are discharging to water bodies and land application via percolation or sprayfields.

Four approaches are considered viable for reuse or disposal of treated wastewater from the Southland Wastewater Treatment Facility (WWTF):

- Percolation with basins is the simplest approach from a regulatory perspective and is the existing method of disposal. Treated wastewater percolates from basins into the ground, eventually finding its way to groundwater aquifers. Treatment standards and monitoring requirements are set by the Regional Water Quality Control Board (RWQCB) to protect groundwater resources.
- Percolation with a subsurface system involves percolation below ground surface instead of through open ponds. Instead, either perforated pipes or a subsurface chamber with a permeable bottom is built to receive the treated wastewater, and hold it as it percolates. RWQCB regulates this disposal method.
- Irrigation with recycled water involves treating the wastewater to required standards, followed by delivery to the intended customer for irrigation of landscape or agricultural products. Treatment standards are set by the California Department of Public Health (CDPH) and the RWQCB and depend on the irrigated product and potential for public contact.
- Groundwater recharge also involves additional treatment, plus requirements for dilution water and groundwater monitoring. Regulatory requirements are more stringent than for the other approaches. The recycled water can be re-introduced through percolation, or via direct injection into the receiving aquifer. Due to the need for dilution water or a high level of treatment (such as reverse osmosis) this alternative is not considered feasible. However, groundwater recharge can increase a water purveyor's ability to withdraw water from an adjudicated basin or to withdraw water in excess of their water rights, if they have permit limitations.

5.0 Previous Studies

The use of recycled water for irrigation was analyzed as part of the Evaluation of Supplemental Water Alternatives study conducted by Boyle in 2007. As part of that study a preliminary water budget was analyzed to estimate the impact of this approach on groundwater resources. Those results indicated that using recycled water as a substitute for irrigating with well water resulted in a very small decrease in the net water extracted from groundwater resources.

Additionally, use of recycled water to recharge the aquifer was also studied. This alternative would result in no increase in "supply" to the District under the terms of the legal settlement. Southland WWTF discharge was included in the groundwater budget that has been presented during litigation involving the Santa Maria Valley Groundwater Basin aquifers. (i.e., WWTF groundwater recharge is already considered as "return flows" to the aquifer).

The Water and Sewer Master Plan Update and Evaluation of Supplemental Water Alternatives identified possible routes and general locations for pipelines, percolation facilities, and irrigation areas that would most directly reduce known groundwater depressions.

6.0 Summary of Disposal and Reuse Alternatives

This memo contains descriptions of ten (10) disposal alternatives with different facility options for the Southland WWTF. These alternatives are described to a level sufficient for preliminary screening and identification of fatal flaws, and are based on a review of hydro-geologic information and models provided by District consultants, regulatory guidance from the Regional Board, wastewater quantity and quality data provided by the District, and other pertinent information. Figure 1 displays the various sites considered for these alternatives.

As the remainder of the report shows, some options contain "fatal flaws" which make them infeasible. These "fatal flaws" include regulatory restrictions, lack of customers or suitable sites, or excessive cost.

Table 6.1 – Site Descriptions and Disposal or Reuse Approach

Alternative	Site Description	Disposal or Reuse Approach
0	Continued use and expansion of existing percolation basins at Southland WWTF	Percolate with onsite basins
1	Pasquini Property, 192 acre site located southwest of Orchard Road and south of Southland Street.	Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and percolate at new location with: Option A: Basins Option B: Subsurface system
2	Agricultural land south of Nipomo mesa and north of Santa Maria River	Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and percolate at new location with: Option A: Basins Option B: Subsurface system
3	Agricultural land near Mesa and Eucalyptus Roads	Percolate with basins at Southland, pump mound, and percolate at new location with Option A: Basins Option B: Subsurface system
4	Agricultural land near Pomeroy Road and Camino Caballo	Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and percolate at new location with: Option A: Basins Option B: Subsurface system

Alternative	Site Description	Disposal or Reuse Approach
5	Expansion of irrigation with recycled wastewater capabilities at Woodlands Golf Course, Nipomo Community Park, Blacklake Golf Course or other turf or landscape users	Irrigation with recycled water. Option A: Direct recycle. Option B: Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and irrigate at new location.
6	Continued use and possible expansion of existing percolation basins at Southland WWTF and penetration of aquitard beneath Southland facility	Groundwater recharge or percolation*
7	Highway 101 right-of-way	Irrigation with recycled water. Option A: Direct recycle. Option B: Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and irrigate within right-of-way.
8	Agricultural land on Nipomo Mesa southeast of Southland WWTF	Irrigation with recycled water. Option A: Direct recycle. Option B: Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and irrigate at new location.
9	Nipomo Refinery property	Percolate with onsite basins at Southland to utilize the shallow aquifer for storage and pathogen inactivation, pump from the mound, and percolate at new location with: Option A: Basins Option B: Subsurface system

* RWQCB's opinion as to whether the project as a "groundwater recharge" or a "percolation" project is key to its regulatory requirements, feasibility, and costs.

7.0 Assessment Criteria

Each disposal alternative was evaluated to provide a basis for comparison and to determine if any critical factor (i.e., a fatal flaw) would eliminate the alternative from further consideration.

7.1 Regulatory Restrictions

Existing and draft state and federal regulations regarding the disposal of treated wastewater and the re-use of recycled water are summarized below, as are recent, pertinent communication with the RWQCB. An alternative was considered to have a "fatal flaw" from a regulatory perspective if the proposed action was prohibited. Alternatives for which significant additional costs would be incurred were noted.

Different regulations come into play depending on the intent of the proposed project or as described in previous sections. Disposal projects are regulated by the RWQCB. Reuse projects are regulated by both the RWQCB, and the CDPH under California Code of Regulations Title 22, Division 4, Chapter 3, Water Recycling Requirements (Title 22).

Preliminary consultation with the RWQCB indicates that:

- Continued discharge in a manner that contributes to significant increase in constituent concentrations in groundwater and/or Nipomo Creek is not acceptable.
- If the perched treated effluent mound is pumped for irrigation, its use would be regulated by Title 22. Various levels of treatment are dictated by the type of crop and/or level of public access. For the purposes of this study, disinfected tertiary recycled water (the most stringent treatment level) is assumed to allow the majority of reuse options. If the water is demonstrated to have bacteria counts below Title 22 criteria, disinfection would not be required. The following table summarizes the requirements for effluent constituents.

Parameter	Units	Mean	Maximum
BOD ₅	mg/L	10	30
Coliform bacteria	MPN/100 ml	median < 2.2	23
Suspended Solids	mg/L	10	30
Settleable Solids	ml/L	0.1	0.3
Turbidity	NTU	2*	5*
pH	Units	Within the range 6.5 to 8.4	
*Shall not exceed daily average of 2 NTU or 5 NTU for more than 5% of the time over a 24 hr. period.			

- Treating the water to appropriate standards and then directly injecting to the lower aquifer would likely be regulated under the draft groundwater recharge reuse project regulations of Title 22. Under this regulatory arrangement, the effluent would need to (1) be filtered and disinfected, (2) meet primary and secondary drinking water standards, and (3) be diluted with an appropriate water source before it is "injected".
- RWQCB staff indicates that replacing a portion of the aquitard with permeable material would be considered direct injection and would be regulated accordingly. However, even with perforation of the aquitard, the effluent would have over 100 feet of soil column to travel through before combining with groundwater. California regulations do not provide a clear definition for a groundwater recharge project as opposed to a percolation disposal project. If the District wishes to investigate this option, additional research would be required to develop a better understanding of the feasibility of the project.
- Nipomo Creek is classified as an impaired water body under the State Water Quality Control Board for fecal coliform and may soon be subject to a fecal bacteria loading allocation under a Total Maximum Daily Load process.
- Southland WWTF is nearing its capacity and upgrades to the treatment and disposal capacity are required. The RWQCB will be revising the Waste Discharge Requirements (WDR) upon the District's application to increase capacity and/or change processes at Southland.

7.2 Irrigation Demand

In the Evaluation of Supplemental Water Alternatives study (ibid), average irrigation demand in the Nipomo area was estimated to be 2.5 ft/year. The average annual flow rates from the Southland WWTF are currently 0.59 MGD, equivalent to approximately 662 acre-feet per year (AFY)³. These flows are projected to increase to 1,568 AFY (1.4 MGD) at buildout⁴. Therefore, as much as 627 acres of land will need to be irrigated in order to use the entire volume of treated wastewater at buildout.

The District contacted approximately 30 owners of agricultural production land south of the Southland WWTF and provided them with information regarding recycled water, the range of water quality that can be expected from Southland, and a questionnaire regarding the potential to use treated effluent as an irrigation source. Potential obstacles are expected to be concerns about high salts content, pH, public health, and public perception. As of October, 2008, minimal interest has been expressed by agricultural users. This is considered a significant constraint for agricultural reuse.

In cases where direct recycle to irrigation is proposed as part of the disposal project, seasonal storage or seasonal disposal to the existing percolation facilities at Southland must be provided so that irrigation can be interrupted during periods of rainfall.

³ Flow rate is based on September 2006 through August 2008 records.

⁴ NCS D Water and Sewer Master Plan Update. Cannon. December 2007.

7.3 Site Suitability

The following investigations by Fugro West were considered in evaluating the relative suitability of each of the disposal sites considered:

July 17, 2007 – Hydrogeologic Characterization, Southland WWTP, Nipomo, California

Key findings include:

- A dual aquifer exists beneath the WWTF percolation basins.
- The discharged treated effluent may be flowing to Nipomo Creek.
- The shallow aquifer appears to consist of treated WWTF effluent.
- The water quality in the deeper aquifer is unknown.
- Insufficient information is available to determine if the treated effluent is percolating into the deeper aquifer.

December 20, 2007 – Nipomo Creek Water Quality Sampling Program Phase 2

Results of a preliminary sampling effort indicate that treated effluent from Southland WWTF disposal basins may be contributing to flows in Nipomo Creek.

January 29, 2008 – Assessment of the Potential for Extracting Discharge Water from Beneath the Southland WWTP

This preliminary aquifer testing and modeling work suggests that if the wastewater flow increases from 0.6 MGD to 1.13 MGD (2008 to 2017) and the existing percolation ponds are used, then a network of five wells could extract up to 60% of the total treated effluent flow. If annual pumping rates start at 0.51 MGD and rise to 0.67 MGD over the same time frame, this extraction would reduce the flow to Nipomo Creek to half (0.05 MGD) of the WWTF's current estimated contribution (0.10 MGD).

January 22, 2008 – Feasibility Level Exploration Program for New Percolation Basin Sites

All of the sites investigated (three sites: north and south of Mesa Road, and west of Osage) appear suitable for percolation. The area south of Mesa appears most suitable because of the minimal relief at the site.

July 30, 2008 – Supplemental Groundwater Modeling Analysis

Additional modeling was used to estimate that up to 0.57 MGD could be disposed at the existing site without increasing the size of the perched treated effluent mound.

July 30, 2008 – Hydrogeologic and Geotechnical Assessment of APN 090-311-001.

Results of this preliminary assessment indicate that the (Pasquini) property may be able to percolate up to 1.2 MGD in the 35-acre northerly third of the 192 acre parcel. Additional investigation into actual percolation

rates and impacts to groundwater levels, as well as additional modeling to determine the fate and transport of percolated treated effluent, would be needed to determine whether the site is suitable for this use.

In cases where primary disposal is proposed through percolation basins located in a flood plain, or where elevated groundwater levels may be present (e.g., near the Pasquini property and along the Santa Maria River), additional disposal options will need to be provided so that use of the percolation basins can be interrupted during periods of potential flooding or high groundwater.

7.4 Cost Projections

Screening-level cost projections were developed for each of the alternatives considered. A uniform set of assumptions were used, as listed below:

7.4.1 Demands

Each disposal and reuse alternative was sized to handle projected buildout demands. The existing average annual flow (AAF) and peaking factors were determined with plant records from September 2006 through August 2008. Buildout AAF was estimated in the NCSW Water and Sewer Master Plan (Cannon, December 2007). With a peaking factor of 2.0, the projected buildout peak daily flow (PDF) is 2.80 MGD.

Table 7.2 – Existing and Projected Wastewater Demands

Flow Condition	Peaking Factor	Existing Flow (MGD)	Projected Buildout Flow (MGD)
Average Annual Flow (AAF)	--	0.59	1.40
Maximum Month Flow (MMF)	1.3	0.64	1.82
Peak Daily Flow (PDF)	2.0	1.19	2.80
Peak Hourly Flow (PHF)	3.0	--	4.20

7.4.2 Design Criteria

For the purposes of this study, all offsite pipelines, pump stations, tertiary treatment, and disinfection facilities will be sized to convey the projected buildout Peak Daily Flow (PDF). Percolation facilities and required irrigation area will be sized to receive the future maximum month flow (MMF).

Onsite Percolation Coupled with Offsite Disposal or Recycling

The District may choose to investigate the potential to allow up to 0.57 MGD to percolate onsite without impacting the size of the mound. In some alternatives, effluent would be percolated onsite prior to being pumped offsite to a new disposal or reuse facility. Wells would be installed to extract water from the existing perched aquifer. Fugro modeled the aquifer conditions onsite and analyzed percolation and extraction for up to 1.13 MGD utilizing the existing infiltration basins. Additional testing and analysis would be required to determine if greater capacity to percolate and extract exists onsite. For the purposes of this study, it is assumed that expansion of the infiltration basins onsite will provide the capacity to percolate up to 1.4 MGD of average annual flow and extract 0.83 MGD.

Offsite pumping facilities and pipelines will be sized to convey the buildout peak daily flow (2.8 MGD). Offsite disposal facilities will be sized to handle maximum month flows (1.82 MGD). It is assumed the onsite "mound" will serve as a buffer for short-term peak flows, or possibly to store seasonal or wet-weather flows.

Table 7.3 summarizes the unit costs and assumptions used to develop the opinion of costs for each alternative.

Table 7.3 – Unit Costs and Assumptions

Description	Assumptions for Cost Opinions
16-inch diameter pipeline	Installed Capital: \$210 per LF Annual O&M: 1% of total capital
Tertiary Filtration Facility [†]	Sized for Buildout Peak Daily Flow Installed Capital: \$2,014,000 Annual O&M: 1% of total capital
Disinfection Facility [†]	Sized for Buildout Peak Daily Flow Installed Capital: \$1,641,000 Annual O&M: 1% of total capital
500,000-gallon Tank	Installed Capital: \$1,360,000 Annual O&M: 0.5 % of total capital
Energy Use	Pump & Motor Efficiency: 50 % Electrical Power: \$0.13 / kWh
Financing	Term: 20 Years Interest: 5 %
Land	Land costs are not included
Subsurface Infiltration Systems	Percolation Capacity: 10 gpd/ft ² Percolation area per trench: 5 ft ² per LF of trench Area needed for "resting": additional 100% Area for roads, fence, etc: additional 20% Installed Capital: \$30 per LF
Infiltration Basins	Percolation Capacity: 10 gpd/ft ² Size per Basin: 110 ft x 650 ft x 5 ft depth Gross land area per basin: 2 acres Area needed for "resting": additional 100% Area for roads, fence, etc: additional 20% Installed Capital: \$15 per YD ³
Highway Landscape Irrigation	Installed Capital Initial Infrastructure: \$200,000 Landscaping & drip system: \$90,000 per acre Annual O&M: \$8,000 per acre per year
Engineering & Administration	25%
Contingency	25%
Notes: [†] Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI	

8 Preliminary Screening

The regulatory restrictions, availability of irrigation customers, site suitability, and cost projections for the alternatives considered are briefly discussed below. Figures are included at the back of this document.

8.1 Alternative 0: Infiltration at Existing Facilities

Description of Alternative

This alternative would continue disposal of treated effluent at the Southland WWTF by utilizing the existing ponds and possibly new percolation ponds on the existing site. (See Figure 2)

Regulatory Restrictions

The most significant regulatory challenges are subsurface flow to Nipomo Creek and potential for mounding at the plant site. RWQCB staff has indicated that "continued discharge in a manner that contributes to significant increase in constituent concentrations in groundwater and Nipomo Creek is not acceptable." Increased flow rates to the existing facility are clearly not acceptable to RWQCB staff. We assume the RWQCB Board would take the same position. For purposes of this preliminary screening, we conclude that regulatory restrictions represent a fatal flaw to continued disposal at the existing facility at existing or increased flow rates.

Site Suitability

Recent investigations show that treated effluent is "perching" on an aquitard which is encountered between 60 and 140 feet below the surface. Some of the treated effluent contributes to flows in Nipomo Creek. At flow rates above 0.57 MGD the size of the "perched mound" would increase. An increased mound would probably result in increased flows to Nipomo Creek as well as destabilization of the percolation basins.

Therefore, the existing percolation basins are not suitable for flow rates above 0.57 MGD. This is considered another "Fatal Flaw" for this alternative. If onsite percolation could be used in conjunction with another alternative to provide adequate disposal capability, it is not clear if a continued disposal rate of 0.57 MGD would be allowed by the RWQCB, or if a lower limit would be established. Approximately 10 acres southwest of the existing percolation basins is available for expansion. However, assuming the aquitard also exists underneath this land, percolation here would likely contribute to the perched effluent mound. If the aquitard is absent, testing would be required to determine percolation capacity. For the purposes of this study, it is assumed that future onsite percolation will be possible, but rates greater than 0.57 MGD will contribute to the effluent mound.

Cost Projection

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,000
Engineering & administration (25%)	\$362,000		\$29,000
Contingency (25%)	\$362,000		\$29,000
<i>Total Alternative 0</i>	\$2,200,000	\$7,230	\$174,000

* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI

8.2 Alternative 1: Infiltration at Pasquini Property

Description of Alternative

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, expansion of the existing percolation basins to accommodate increased flows, followed by extraction of treated effluent from the perched aquifer.

The extracted water would be pumped approximately 4,500 feet to the northern portion of the Pasquini property and put into percolation basins (Option A) or into subsurface percolation systems (Option B). Approximately 24 acres of land would be utilized to create the new percolation facility. (See Figure 3)

Regulatory Restrictions

We expect that regulatory restrictions at the expanded existing disposal facility and at the new disposal facility would be similar to those now imposed on Southland WWTF disposal facilities. We anticipate monitoring requirements will be increased and effluent limits would be established for some constituents (TDS, sulfate, and boron) and that effluent limits for nitrogen compounds may be more stringent. (See Boyle Technical Memorandum for Task 3 – Regulatory Comparison, July 23, 2007). However, we expect that it would be possible to meet these effluent limits with the planned treatment process upgrade.

As noted above, analysis has indicated that it will be possible to percolate 1.13 MGD at the existing facility, extract 0.67 MGD, and reduce the contribution to Nipomo Creek from 0.10 MGD to 0.05 MGD. For purposes of this preliminary screening, we assume that it will be possible to percolate and extract up to 1.4 MGD onsite with expanded infiltration basins, extract 0.67 to 1.4 MGD, and that the RWQCB will allow disposal and partial re-extraction at the facility in this manner because it reduces the contribution of treated effluent to Nipomo Creek.

Site Suitability

Recent investigations by Fugro West indicate that the northerly 35 acres of the 192 acre parcel may be suitable for use as a percolation facility, but that additional investigations would be warranted. The potential of percolation to destabilize the bluff has not been evaluated, but could be a significant restraint at this site.

Cost Projections

Alternative 1A: Percolation Basins

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 4,500 LF 16-inch PVC water main	\$945,000	\$9,500	\$75,800	\$85,000
Expand percolation basins at Southland*	\$1,446,000	\$7,200	\$116,000	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,100	\$36,000
Electricity for Pumping	--	\$27,300	--	\$27,000
Construct 10 percolation basins (110' x 650' x 5' each)	\$2,904,000	\$14,500	\$233,000	\$248,000
<i>Subtotal Option 1A.</i>	\$5,695,000			
Engineering & administration (25%)	\$1,423,800		\$114,300	\$114,000
Contingency (25%)	\$1,423,800		\$114,300	\$114,000
<i>Total Option 1A.</i>	\$8,542,500	\$62,500	\$685,500	\$748,000
+ Land cost for 24 acres on Pasquini property				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

Alternative 1B: Subsurface Systems

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 4,500 LF 16-inch PVC water main	\$945,000	\$9,500	\$75,800	\$85,000
Expand percolation basins at Southland*	\$1,446,000	\$7,200	\$116,000	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,100	\$36,000
Electricity for Pumping	--	\$25,600	--	\$26,000
Install subsurface system at new site	\$4,008,000	\$20,000	\$321,600	\$342,000
<i>Subtotal Alternative 1B</i>	\$6,799,000			
Engineering & administration (25%)	\$1,699,800		\$136,400	\$136,000
Contingency (25%)	\$1,699,800		\$136,400	\$136,000
<i>Total Alternative 1B</i>	\$10,199,000	\$66,300	\$818,400	\$885,000
+ Land cost for 24 acres on Pasquini property				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

8.3 Alternative 2: Infiltration South of Nipomo Mesa

Description of Alternative

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, expansion of the existing percolation basins to accommodate increased flows, followed by extraction of treated effluent from the perched aquifer.

The extracted water would be pumped approximately 9,500 feet to agricultural land at the base of the Nipomo Mesa and put into percolation basins (Option A) or into subsurface percolation systems (Option B). Approximately 24 acres of land would be utilized to create this new disposal facility. (See Figure 4)

Additional disposal options would be required so that use of the percolation basins can be interrupted during periods of possible flooding. One option would involve using the shallow Southland aquifer for seasonal storage by allowing pumping from the existing facility to stop during times of impending flooding, and then re-start after the danger of flooding passed. This option would require additional wells and larger transmission facilities for a comparable annual rate of extraction.

Regulatory Restrictions

We expect that regulatory restrictions at the expanded existing disposal facility and at the new disposal facility would be similar to those now imposed on Southland WWTF disposal facilities. We anticipate monitoring requirements will be increased and effluent limits would be established for some constituents (TDS, sulfate, and boron) and that effluent limits for nitrogen compounds may be more stringent. (See Boyle Tech memo Task 3 –

Regulatory Comparison, July 23, 2007). We expect that it would be possible to meet these effluent limits with the treatment improvements as discussed in the Facility Master Plan.

As noted above, analysis has indicated that it will be possible to percolate 1.13 MGD at the existing facility, extract 0.67 MGD, and reduce the contribution to Nipomo Creek from 0.10 MGD to 0.05 MGD. For purposes of this preliminary screening, we assume that it will be possible to percolate and extract up to 1.4 MGD onsite with expanded infiltration basins, extract 0.67 to 1.4 MGD, and that the RWQCB will allow disposal and partial re-extraction at the facility in this manner because it reduces the contribution of treated effluent to Nipomo Creek.

Site Suitability

We believe that land in this area may be physically suitable for use as a percolation facility, but additional investigations will be needed. However, this area is considered prime agricultural land and converting its use to a municipal facility would represent a Class 1 (significant and non-mitigable) impact under CEQA.

Cost Projections

Alternative 2A: Percolation Basins

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 9,500 LF 16-inch PVC water main	\$1,995,000	\$19,950	\$160,100	\$180,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,000	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,100	\$36,000
Electricity for Pumping	--	\$20,500	--	\$24,000
Install percolation basins at new site	\$2,904,000	\$14,520	\$233,000	\$248,000
<i>Subtotal Alternative 2A</i>	\$6,745,000			
Engineering & administration (25%)	\$1,686,300		\$135,300	\$135,000
Contingency (25%)	\$1,686,300		\$135,300	\$135,000
<i>Total Alternative 2A</i>	\$10,117,500	\$66,200	\$811,900	\$878,000
+ Land cost for 24 acres on agricultural property south of Nipomo mesa				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

Alternative 2B: Subsurface Systems

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 9,500 LF 16-inch PVC water main	\$1,995,000	\$19,950	\$160,084	\$180,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$22,200	--	\$26,000
Install subsurface system at new site	\$4,008,000	\$20,040	\$321,612	\$342,000
<i>Subtotal Alternative 2A</i>	\$7,849,000			
Engineering & administration (25%)	\$1,962,250		\$157,500	\$157,000
Contingency (25%)	\$1,962,250		\$157,500	\$157,000
<i>Total Alternative 2A</i>	\$11,733,500	\$73,400	\$944,700	\$1,018,000
+ Land cost for 24 acres on agricultural property south of Nipomo mesa				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

8.4 Alternative 3: Infiltration near Mesa and Eucalyptus Roads

Description of Alternative

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, expansion of the existing percolation basins to accommodate increased flows, followed by extraction of treated effluent from the perched aquifer.

The extracted water would be pumped approximately 18,500 feet to suitable land near Mesa and Eucalyptus Roads and put into percolation basins (Option A) or subsurface systems (Option B). Approximately 24 acres of land would be utilized to create this new disposal facility. (See Figure 5)

Regulatory Restrictions

We expect that regulatory restrictions at the expanded existing disposal facility and at the new disposal facility would be similar to those now imposed on Southland WWTF disposal facilities. We anticipate monitoring requirements will be increased and effluent limits would be established for some constituents (TDS, sulfate, and boron) and that effluent limits for nitrogen compounds may be more stringent. (See Boyle Tech memo Task 3 – Regulatory Comparison, July 23, 2007). We expect that it would be possible to meet these effluent limits with the treatment improvements as discussed in the Facility Master Plan.

As noted above, analysis has indicated that it will be possible to percolate 1.13 MGD at the existing facility, extract 0.67 MGD, and reduce the contribution to Nipomo Creek from 0.10 MGD to 0.05 MGD. For purposes of this preliminary screening, we assume that it will be possible to percolate and extract up to 1.4 MGD onsite with

expanded infiltration basins, extract 0.67 to 1.4 MGD, and that the RWQCB will allow disposal and partial re-extraction at the facility in this manner because it reduces the contribution of treated effluent to Nipomo Creek.

Site Suitability

Recent investigations show that the area south of Mesa road and west of Osage is suitable for percolation. The hydraulic conductivity was estimated to be approximately 1.1 feet/day, but is expected to be less for treated plant effluent. However, residents near this location have expressed strong opposition to percolation at this site.

Cost Projections

Alternative 3A: Percolation Basins

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 18,500 LF 16-inch PVC water main	\$3,885,000	\$38,850	\$311,742	\$351,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$20,500	--	\$26,000
Install percolation basins at new site	\$2,904,000	\$14,520	\$233,024	\$248,000
<i>Subtotal Alternative 3A</i>	\$8,635,000			
Engineering & administration (25%)	\$2,158,800		\$173,200	\$173,000
Contingency (25%)	\$2,158,800		\$173,200	\$173,000
<i>Total Alternative 3A</i>	\$12,952,500	\$85,100	\$1,039,300	\$1,124,000
+ Land cost for 24 acres on suitable land near Mesa and Eucalyptus Roads				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

Alternative 3B: Subsurface Systems

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 18,500 LF 16-inch PVC water main	\$3,885,000	\$38,850	\$311,742	\$351,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$18,800	--	\$24,000
Install subsurface system at new site	\$4,008,000	\$20,040	\$321,612	\$342,000
<i>Subtotal Alternative 3B</i>	\$9,739,000			
Engineering & administration (25%)	\$2,434,800		\$195,400	\$195,000
Contingency (25%)	\$2,434,800		\$195,400	\$195,000
<i>Total Alternative 3B</i>	\$16,633,500	\$88,900	\$1,172,200	\$1,261,000
+ Land cost for 24 acres on suitable land near Mesa and Eucalyptus Roads				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

8.5 Alternative 4: Infiltration near Pomeroy Road and Camino Caballo

Description of Alternative

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, expansion of the existing percolation basins to accommodate increased flows, followed by extraction of treated effluent from the perched aquifer.

The extracted water would be pumped approximately 24,000 feet to suitable land near Pomeroy Road and Camino Caballo and put into percolation basins (Option A) or subsurface systems (Option B). Approximately 24 acres of land would be utilized to create this new disposal facility. (See Figure 6)

Regulatory Restrictions

We expect that regulatory restrictions at the expanded existing disposal facility and at the new disposal facility would be similar to those now imposed on Southland WWTF disposal facilities. We anticipate monitoring requirements will be increased and effluent limits would be established for some constituents (TDS, sulfate, and boron) and that effluent limits for nitrogen compounds may be more stringent. (See Boyle Tech memo Task 3 – Regulatory Comparison, July 23, 2007). We expect that it would be possible to meet these effluent limits with the treatment improvements as discussed in the Facility Master Plan.

As noted above, analysis has indicated that it will be possible to percolate 1.13 MGD at the existing facility, extract 0.67 MGD, and reduce the contribution to Nipomo Creek from 0.10 MGD to 0.05 MGD. For purposes of this preliminary screening, we assume that it will be possible to percolate and extract up to 1.4 MGD onsite with

expanded infiltration basins, extract 0.67 to 1.4 MGD, and that the RWQCB will allow disposal and partial re-extraction at the facility in this manner because it reduces the contribution of treated effluent to Nipomo Creek.

Site Suitability

Unknown; site-specific investigations would be needed.

Cost Projections

Alternative 4A: Percolation Basins

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 24,000 LF 16-inch PVC water main	\$5,040,000	\$50,400	\$404,423	\$455,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$30,700	--	\$38,000
Install percolation basins at new site	\$2,904,000	\$14,520	\$233,024	\$248,000
<i>Subtotal Alternative 4A</i>	\$9,790,000			
Engineering & administration (25%)	\$2,448,000		\$196,400	\$196,000
Contingency (25%)	\$2,448,000		\$196,400	\$196,000
<i>Total Alternative 4A</i>	\$14,685,000	\$106,900	\$1,178,400	\$1,285,000
+ Land cost for 24 acres on suitable land near Pomeroy Road and Camino Caballo				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

Alternative 4B: Subsurface Systems

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 24,000 LF 16-inch PVC water main	\$5,040,000	\$50,400	\$404,423	\$455,000
Expand percolation basins at Southland*	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$29,600	--	\$37,000
Install subsurface system at new site	\$4,008,000	\$20,040	\$321,612	\$342,000
<i>Subtotal Alternative 4B</i>	\$10,894,000			
Engineering & administration (25%)	\$2,723,500		\$218,500	\$219,000
Contingency (25%)	\$2,723,500		\$218,500	\$219,000
<i>Total Alternative 4B</i>	\$16,341,000	\$111,300	\$1,311,200	\$1,423,000
+ Land cost for 24 acres on suitable land near Pomeroy Road and Camino Caballo				
* Costs from 2007 Draft Southland WWTF Master Plan and adjusted using ENR CCI				

8.6 Alternative 5: Irrigate Landscape with Recycled Water

Description of Alternative

This reuse project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, and either (A) additional treatment (filtration and disinfection) of Southland WWTF effluent, or (B) expansion of the existing percolation basins to accommodate increased flows, followed by extraction and additional treatment of the water from the perched aquifer. (See Figure 7)

Under Option (A) a tertiary filtration system followed by disinfection would be used to treat the Southland WWTF effluent.

Under Option (B) we assume that the pumped perched effluent may require pH adjustment, but otherwise would meet all the chemical requirements of Title 22. Additionally, water from the perched aquifer may require disinfection to ensure compliance with the pathogen indicator requirements for use on landscapes.

The recycled water would be pumped to the customer(s) and applied to landscaping. The length of pipeline depends on the location(s) of the customer(s). For this preliminary screening we assumed the pipeline distance would be approximately 36,500 feet (distance to Blacklake Golf Course).

A long-term contract would be established to assure the District that the investment in this alternative was justified. Users would need to provide their own onsite pumping and distribution system to apply the water.

Under Option (A), either the District or users would also need to provide additional wet weather storage. Under Option (B) the existing percolation basins would be used during wet weather when disposal via irrigation is not feasible.

Regulatory Restrictions

As noted above, reuse projects are regulated by the California Department of Public Health under Title 22 Water Recycling Requirements. If the water is demonstrated to have bacteria counts below Title 22 criteria, disinfection would not be required. Reclaimed water discharged to irrigation reclamation areas shall at all times be adequately oxidized, coagulated, clarified, filtered, disinfected and shall not exceed specific limits established in the regulations.

No recent data is available regarding the parameters listed for Title 22 water recycling, with the exception of pH. The perched effluent had pH values of 6.42 and 6.46 in samples collected from monitoring wells in October 2007. Therefore, the pH of the water may need to be adjusted to a pH of 7 before delivery to customers.

Availability of Irrigation Customers

At the present time, the Blacklake Golf Resort uses approximately 100,000 gallons per day (gpd) of unmixed treated secondary effluent from the Blacklake wastewater treatment plant, and could apply an additional 100,000 gpd of the same quality effluent, if it were available. Assuming the water from Southland is filtered and disinfected, as planned under this proposed project, the Blacklake resort could take considerably more (Scott Walwyn, Maintenance Supervisor, Blacklake Golf resort, personal communication, 11/26/2007). If we use an estimated recycled water application rate of 200,000 gpd applied on 6 fairways, and assume expansion of this use to include all 27 fairways, we estimate an application rate of as much as 900,000 gpd during irrigation season.

The Woodlands produces and reuses recycled water. However, current wastewater generation rates are lower than planned. <We are working with Woodlands to estimate the amount of treated effluent (or perched effluent) that could be used there.>

Nipomo Community Park could also use this water. <Demand estimates are pending.>

Site Suitability

Existing use of secondary effluent and recycled water at Blacklake and The Woodlands implies that these sites are suitable for use of recycled water. Use of recycled water for irrigation will require that the inorganic characteristics (such as sodium, chloride, and other salts) be routinely monitored and adjusted as necessary, through addition of soil amendments, and/or through blending with water from another source.

Cost Projections

Alternative 5A: Additional Treatment of Southland Effluent

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 36,500 LF 16-inch PVC water main	\$7,665,000	\$76,650	\$615,059	\$692,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & Install pump station	\$300,000	\$3,000	\$24,073	\$27,000
Electricity for Pumping	--	\$15,400	--	\$21,000
Additional Treatment – Tertiary Filtration	\$2,014,000	\$20,140	\$161,609	\$182,000
Additional Treatment - Chlorination	\$1,641,000	\$16,410	\$131,678	\$148,000
Furnish & install 0.5-MG storage tank	\$1,350,000	\$6,750	\$108,327	\$115,000
<i>Subtotal Alternative 5A</i>	\$14,416,000			
Engineering & administration (25%)	\$3,604,000		\$289,200	\$289,000
Contingency (25%)	\$3,604,000		\$289,200	\$289,000
<i>Total Alternative 5A</i>	\$21,624,000	\$145,600	\$1,735,200	\$1,881,000

Alternative 5B: Percolation and Extraction at Southland

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 36,500 LF 16-inch PVC water main	\$7,665,000	\$76,650	\$615,059	\$692,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$30,700	--	\$39,000
<i>Subtotal Alternative 5B</i>	\$9,511,000			
Engineering & administration (25%)	\$2,377,800		\$190,800	\$191,000
Contingency (25%)	\$2,377,800		\$190,800	\$191,000
<i>Total Alternative 5B</i>	\$14,267,000	\$118,900	\$1,144,800	\$1,263,000

8.7 Alternative 6: Modify Aquitard to Continue Infiltration at Southland

Description of Alternative

This project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan. Dry wells or other conduits would be installed in the aquitard to enhance percolation from the upper (perched) aquifer to the lower aquifer. (See Figure 8)

Regulatory Restrictions

RWQCB staff has indicated that replacing a portion of the aquitard with permeable material would be considered "direct injection" and would be regulated under draft direct injection regulations of the Department of Public Health. If this position is officially adopted by the Regional Board, the costs for additional treatment and to supply diluent water may be prohibitive. In this case, regulatory restrictions could be treated as a "fatal flaw."

However, it may be possible to demonstrate that a feasible system could be installed, and that travel times would be similar to those initially anticipated for typical surface percolation systems. If so, it may be possible for the Regional Board to treat this alternative as a "disposal" project, and permit it similarly as with the existing facility.

Site Suitability

The aquitard beneath the Southland WWTF is approximately 50 feet thick and is encountered between 100 and 150 feet below the ground surface. Making the site suitable will require significant cost. Long-term operation and maintenance of drywell systems will be a challenge.

Cost Projections

Additional investigations and design efforts will need to be undertaken before a reasonable cost projection can be developed for the construction of dry wells or other conduits to enhance percolation from the upper (perched) aquifer to the lower aquifer. Given RWQCB staff's opposition to this approach, it should not be pursued without exhausting other, more favorable options and then developing a study plan acceptable to RWQCB.

8.8 Alternative 7: Irrigation of Highway 101 Right-of-Way with Recycled Water

Description of Alternative

This reuse project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, and either (A) additional treatment (filtration and disinfection) of Southland WWTF effluent, or (B) expansion of the existing percolation basins to accommodate increased flows, followed by extraction and additional treatment of the water from the perched aquifer. (See Figure 9)

Under Option (A) a filtration system followed by disinfection would be used to treat the Southland WWTF effluent.

Under Option (B) we assume that the pumped perched effluent may require pH adjustment, but otherwise would meet all the chemical requirements of Title 22. Additionally, water from the perched aquifer may require disinfection to ensure compliance with the pathogen indicator requirements for use on landscapes.

The recycled water would be pumped to the right-of-way for distribution to landscaping. The length of pipeline was estimated to be 750 feet.

A long-term contract would be established to assure the District that the investment in this alternative was justified. Caltrans would need to provide their own onsite pumping and distribution system to apply the water.

Under Option (A), Caltrans would also need to provide additional storage. Under Option (B) the existing percolation basins and subsurface storage would be used during wet weather when disposal via irrigation is not feasible.

Regulatory Restrictions

As noted above, recycle projects are regulated by the California Department of Public Health under Title 22 Water Recycling Requirements. Reclaimed water discharged to irrigation reclamation areas shall at all times be adequately oxidized, coagulated, clarified, filtered, disinfected and shall not exceed the certain limits. Water quality requirements are based on the use of the irrigation water, e.g., for orchards, or food crops, or ornamental plants. If the water is demonstrated to have bacteria counts below Title 22 criteria, disinfection would not be required.

No recent data is available regarding the parameters listed for Title 22 water recycling, with the exception of pH. The perched effluent had pH values of 6.42 and 6.46 in samples collected from monitoring wells in October 2007. Therefore, the pH of the water may need to be adjusted before delivery to customers.

Because no bacteria information is available, we assume that extracted water will need to be disinfected prior to use.

Availability of Irrigation Area

A 1990 law (AB 2217-Baker), requires Caltrans to use reclaimed water for the irrigation of freeway landscaping and also permits local agencies to place recycled water transmission lines in the right-of-way for transmission of recycled water to others. However, there may not be sufficient demand to take all the water available.

Typical, low demand highway landscaping can use between 0.3 and 0.9 MG/year/acre (Reeves, D., pers. comm., 2008). Assuming that landscaping in Nipomo could be irrigated with recycled water at a rate of 0.6 MG/year per acre, approximately 2069 acres would be required to dispose of the projected buildout AAF of 1.4 MGD.

$$1.4 \text{ MGD} / 0.6 \text{ MG/yr/acre} = 2.3 \text{ acres-year/day} \times 365 \text{ days/year} = 850 \text{ acres.}$$

Assuming approximately 4 acres of landscaping per mile of freeway, approximately 220 miles of highway could be irrigated, excluding interchanges.

A new interchange is planned for Willow Road. A recently completed interchange on Highway 101 in Morgan Hill, California, covers approximately 40 acres (¼ mile x ¼ mile). Therefore, the proposed use of 1.4 MGD could irrigate 22 similarly-sized interchanges.

Therefore, while Caltrans may be willing to take the recycled water, it may be unable to use the total amount that could be provided unless plants with a higher water demand are installed.

In addition, installation costs are expected to be approximately \$200,000 for the initial infrastructure (main line, control systems, flow meter cut off valves, etc.), plus \$90,000/acre for landscaping and irrigation, plus \$10,000/acre per year initially (tapering to \$6,000/acre per year) for operation and maintenance. These costs may need to be provided by the District.

The required area is considered a "Fatal Flaw" for this alternative.

Site Suitability

The use of recycled water on highway landscaping is accepted practice. No site conditions have been identified that would prevent the use of recycled water on Highway 101 landscaping.

Cost Projections

Alternative 7A: Additional Treatment of Southland Effluent

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 750 LF 16-inch PVC water main	\$157,500	\$1,575	\$12,638	\$14,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & Install pump station	\$200,000	\$2,000	\$16,049	\$18,000
Electricity for Pumping	--	\$23,900	--	\$29,000
Additional Treatment - Tertiary Filtration	\$2,014,000	\$20,140	\$161,609	\$182,000
Additional Treatment - Chlorination	\$1,641,000	\$16,410	\$131,678	\$148,000
0.5-MG Storage Tank	\$1,350,000	\$6,750	\$108,327	\$115,000
Irrigation Infrastructure	\$200,000	-	\$16,049	\$16,000
Landscape and Irrigation (850 acres)	\$76,500,000	\$6,800,000	\$6,138,600	\$12,939,000
<i>Subtotal Alternative 7A.</i>	\$83,508,500			
Engineering & administration (25%)	\$20,877,100		\$1,675,200	\$1,675,000
Contingency (25%)	\$20,877,100		\$1,675,200	\$1,675,000
<i>Total Alternative 7A.</i>	\$125,262,800	\$6,878,000	\$10,051,400	\$16,929,000

Alternative 7B: Percolation and Extraction at Southland

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 750 LF 16-inch PVC water main	\$157,500	\$1,575	\$12,638	\$14,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$39,300	--	\$48,000
Irrigation Infrastructure	\$200,000	-	\$16,049	\$16,000
Landscape and Irrigation (850 acres)	\$76,500,000	\$6,800,000	\$6,138,600	\$12,939,000
<i>Subtotal Alternative 7B.</i>	\$78,703,500			
Engineering & administration (25%)	\$19,675,900		\$1,578,800	\$1,579,000
Contingency (25%)	\$19,675,900		\$1,578,800	\$1,579,000
<i>Total Alternative 7B.</i>	\$118,055,300	\$6,852,100	\$9,473,100	\$16,325,000

8.9 Alternative 8: Irrigate South of Treatment Facility

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, and either (A) additional treatment (filtration and disinfection) of Southland WWTF effluent, or (B) expansion of the existing percolation basins to accommodate increased flows, followed by extraction and additional treatment of the water from the perched aquifer. (See Figure 10)

Under Option (A) a filtration system followed by disinfection would be used to treat the Southland WWTF effluent.

Under Option (B) we assume that the pumped perched effluent may require pH adjustment, but otherwise would meet all the chemical requirements of Title 22. Additionally, water from the perched aquifer would require disinfection to ensure compliance with the pathogen indicator requirements for use on crops.

The recycled water would be pumped to the ultimate customer and applied to crops. The length of pipeline depends on the location of the ultimate customer(s). For this preliminary screening, we assumed the pipeline distance would be 5,000 feet. Users would need to provide their own onsite pumping and distribution system to apply the water.

Long-term contracts would be established to assure the District that the investment in transmission pipelines was justified. Users would need to provide their own onsite pumping and distribution system to apply the water.

Under Option (A), users would also need to provide their own storage. Under Option (B) onsite (expanded) percolation basins would be used during wet weather when disposal via irrigation is not feasible.

Regulatory Restrictions

As noted above, recycle projects are regulated by the California Department of Public Health under Title 22 Water Recycling Requirements. Reclaimed water discharged to irrigation reclamation areas shall at all times be adequately oxidized, coagulated, clarified, filtered, disinfected and shall not exceed the certain limits. Water quality requirements are based on the use of the irrigation water, e.g., for orchards, or food crops, or ornamental plants. If the water is demonstrated to have bacteria counts below Title 22 criteria, disinfection would not be required.

No recent data is available regarding the parameters listed for Title 22 water recycling, with the exception of pH. The perched effluent had pH values of 6.42 and 6.46 in samples collected from monitoring wells in October 2007. Therefore, the pH of the water may need to be adjusted before delivery to customers.

Because no bacteria information is available, we assume that extracted water will need to be disinfected prior to use.

Availability of Irrigation Customers

Few potential users expressed interest in recycled water. This lowers the probability that this alternative can be implemented.

Site Suitability

No site conditions have been identified that would prevent the use of recycled water in the areas noted

Cost Projections

Alternative 8A: Additional Treatment of Southland Effluent

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 5,000 LF 16-inch PVC water main	\$1,050,000	\$10,500	\$84,255	\$95,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & Install pump station	\$200,000	\$2,000	\$16,049	\$18,000
Electricity for Pumping	--	\$3,400	--	\$3,000
Additional Treatment - Tertiary Filtration	\$2,014,000	\$20,140	\$161,609	\$182,000
Additional Treatment - Chlorination	\$1,641,000	\$16,410	\$131,678	\$148,000
Furnish & install 0.5-MG Storage Tank	\$1,350,000	\$6,750	\$108,327	\$115,000
<i>Subtotal Alternative 8A</i>	\$7,701,000			
Engineering & administration (25%)	\$1,925,250		\$154,500	\$154,000
Contingency (25%)	\$1,925,250		\$154,500	\$154,000
<i>Total Alternative 8A</i>	\$11,551,500	\$59,700	\$926,900	\$987,000

Alternative 8B: Percolation and Extraction at Southland

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 5,000 LF 16-inch PVC water main	\$1,050,000	\$10,500	\$84,255	\$95,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$18,800	--	\$22,000
<i>Subtotal Alternative 8B</i>	\$2,896,000			
Engineering & administration (25%)	\$725,000		\$58,100	\$58,000
Contingency (25%)	\$725,000		\$58,100	\$58,000
<i>Total Alternative 8B</i>	\$4,344,000	\$40,530	\$348,600	\$389,000

8.10 Alternative 9: Infiltration at Nipomo Refinery Property

Description of Alternative

This disposal project would involve upgrades to the Southland WWTF treatment process described in the Southland Master Plan, expansion of the existing percolation basins to accommodate increased flows, followed by extraction of treated effluent from the perched aquifer.

The extracted water would be pumped approximately 24,000 feet to suitable land near the Nipomo oil refinery property off of Highway 1, and put into percolation basins (Option A) or subsurface systems (Option B). Approximately 24 acres of land would be utilized to create this new disposal facility. (See Figure 11)

Regulatory Restrictions

We expect that regulatory restrictions at the expanded existing disposal facility and at the new disposal facility would be similar to those now imposed on Southland WWTF disposal facilities. We anticipate monitoring requirements will be increased and effluent limits would be established for some constituents (TDS, sulfate, and boron) and that effluent limits for nitrogen compounds may be more stringent. (See Boyle Tech memo Task 3 – Regulatory Comparison, July 23, 2007.) We expect that it would be possible to meet these effluent limits with the treatment improvements as discussed in the Facility Master Plan.

As noted above, analysis has indicated that it will be possible to percolate 1.13 MGD at the existing facility, extract 0.67 MGD, and reduce the contribution to Nipomo Creek from 0.10 MGD to 0.05 MGD. For purposes of this preliminary screening, we assume that it will be possible to percolate and extract up to 1.4 MGD onsite with expanded infiltration basins, extract 0.67 to 1.4 MGD, and that the RWQCB will allow disposal and partial re-extraction at the facility in this manner because it reduces the contribution of treated effluent to Nipomo Creek.

Site Suitability

Unknown; additional site-specific investigations would be needed.

Cost Projections

Alternative 9A: Percolation Basins

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 41,000 LF 16-inch PVC water main	\$8,610,000	\$86,100	\$690,889	\$777,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$25,900	--	\$33,000
Install percolation basins at new site	\$2,904,000	\$14,520	\$233,024	\$248,000
<i>Subtotal Alternative 9A</i>	\$13,360,000			
Engineering & administration (25%)	\$3,340,000		\$268,000	\$268,000
Contingency (25%)	\$3,340,000		\$268,000	\$268,000
<i>Total Alternative 9A</i>	\$20,040,000	\$123,230	\$1,608,100	\$1,731,000

+ Land cost for 24 acres on suitable land near the Nipomo refinery property

Alternative 9B: Subsurface Systems

Description	Capital Cost	Annual O & M Cost	Annual Amortized Capital Cost	Total Annual Cost
Install 41,000 LF 16-inch PVC water main	\$8,610,000	\$86,100	\$690,889	\$777,000
Expand percolation basins at Southland	\$1,446,000	\$7,230	\$116,031	\$123,000
Furnish & install extraction wells	\$400,000	\$4,000	\$32,097	\$36,000
Electricity for Pumping	--	\$25,900	--	\$34,000
Install subsurface system at new site	\$4,008,000	\$20,040	\$321,612	\$342,000
<i>Subtotal Alternative 9B</i>	\$14,464,000			
Engineering & administration (25%)	\$3,616,000		\$290,200	\$290,000
Contingency (25%)	\$3,616,000		\$290,200	\$290,000
<i>Total Alternative 9B</i>	\$21,696,000	\$123,200	\$1,740,900	\$1,864,000

+ Land cost for 24 acres on suitable land near the Nipomo refinery property

8.11 Summary of Results and Preliminary Ranking

Cost projections are summarized in Table 8-1, below. Table 8-2 is a comparison matrix summarizing each alternative and establishing the preliminary rankings.

Table 8.1 – Summary of Cost Projections

Option	Description	Total Capital Cost	Annual Amortized Capital	Annual O&M	Total Annual Cost
0	Continued use and expansion of existing infiltration basins at WWTF	\$2,169,000	\$174,000	\$7,200	\$180,000
1	<u>Offsite Infiltration - Pasquini Property</u>				
	A: Basins	\$8,542,500	\$685,500	\$62,500	\$750,000
	B: Subsurface system	\$10,198,500	\$818,400	\$66,300	\$880,000
2	<u>Offsite Infiltration - South of the Mesa</u>				
	A: Basins	\$10,117,500	\$811,900	\$66,200	\$880,000
	B: Subsurface system	\$11,773,500	\$944,700	\$73,400	\$1,020,000
3	<u>Offsite Infiltration - agriculture near Mesa & Eucalyptus Roads</u>				
	A: Basins	\$12,952,500	\$1,039,300	\$85,100	\$1,120,000
	B: Subsurface system	\$14,608,500	\$1,172,200	\$88,900	\$1,260,000
4	<u>Offsite Infiltration - near Pomeroy Rd & Camino Caballo</u>				
	A: Basins	\$14,685,000	\$1,178,400	\$106,900	\$1,290,000
	B: Subsurface system	\$16,341,000	\$1,311,200	\$111,300	\$1,420,000
5	<u>Irrigate landscape with recycled water</u>				
	A: Utilize additional treatment	\$21,624,000	\$1,735,200	\$145,600	\$1,880,000
	B: Utilize onsite infiltration	\$14,266,500	\$1,144,800	\$118,600	\$1,260,000
7	<u>Irrigate Hwy 101 ROW with recycled water</u>				
	A: Utilize additional treatment	\$125,262,750	\$10,051,400	\$6,878,000	\$16,930,000
	B: Utilize onsite infiltration	\$118,055,250	\$9,473,100	\$6,852,100	\$16,330,000
8	<u>Irrigate agricultural property south of WWTF with recycled water</u>				
	A: Utilize additional treatment	\$11,551,500	\$926,900	\$59,700	\$990,000
	B: Utilize onsite infiltration	\$4,344,000	\$348,600	\$40,500	\$390,000
9	<u>Offsite Infiltration at Nipomo refinery property</u>				
	A: Basins	\$20,040,000	\$1,608,100	\$123,200	\$1,730,000
	B: Subsurface system	\$21,696,000	\$1,740,900	\$123,230	\$1,860,000

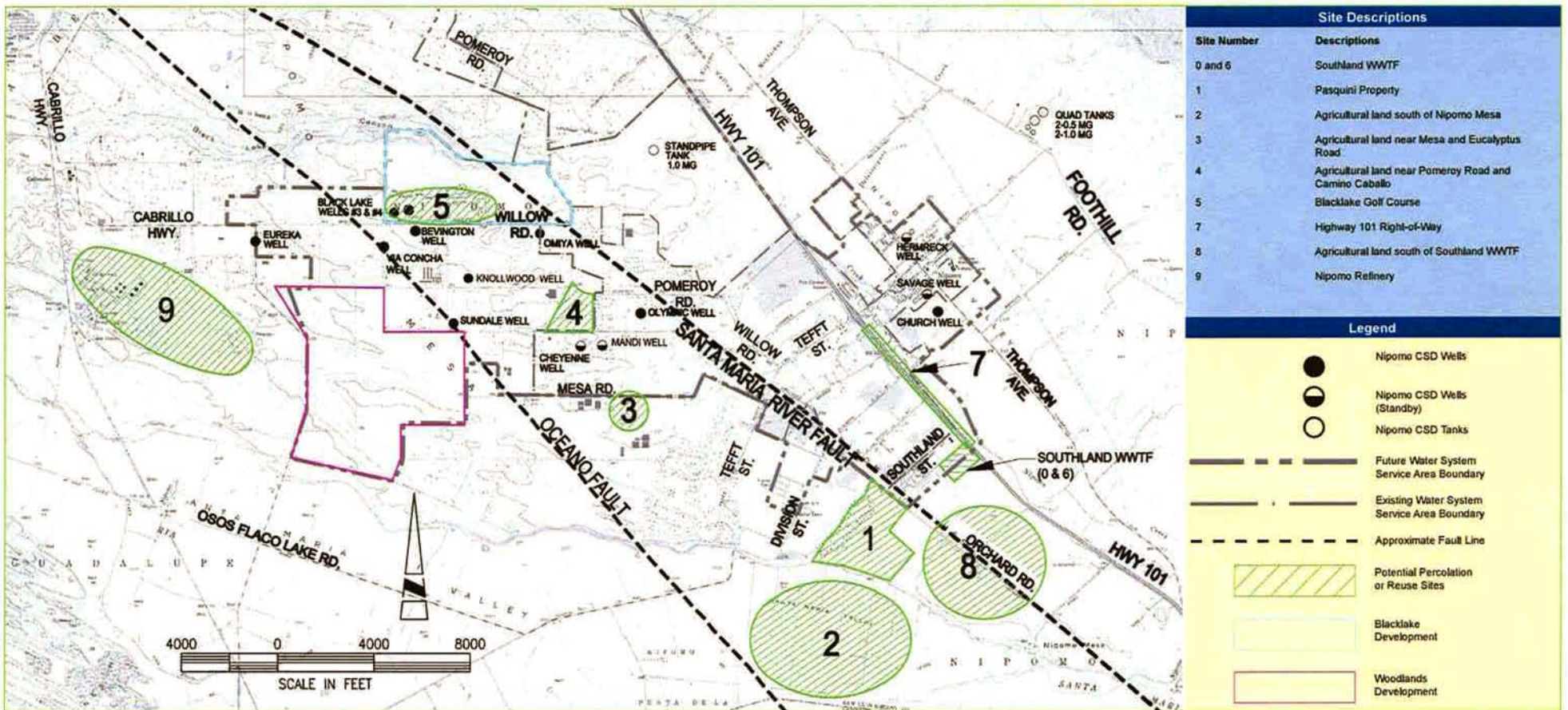
Table 8.2. – Comparison Matrix

Alternative	Regulatory Restrictions	Site Suitable for Percolation or Irrigation	Public Opinion	Relative Cost	Total Preliminary Score	Fatal Flaw	Preliminary Ranking
Total Points Possible (Weighting Factor)	25	25	25	25	100		
<i>Alternative 0 - Continued use and expansion of existing infiltration basins at WWTF</i>	<u>Fatal Flaw.</u> Score = 0 Existing disposal method is not acceptable to RWQCB staff.	Poor. Score = 5 • Top of mound is rising. • Flows to Nipomo Creek, • Impermeable layer.		Score = 25 Annual Cost: \$180,000		X	
<i>Alternative 1 - Pasquini Property – Percolate at Southland, pump mound, and percolate at new facilities</i> Option 1A: Basins Option 1B: Subsurface systems	Score = 25 Probably OK	Score = 10 Fair		Option 1A Score = 20 Annual Cost: \$750,000 <hr/> Option 1B Score = 20 Annual Cost: \$880,000	-----		-----
<i>Alternative 2 - South of Nipomo mesa and north of Santa Maria River - Percolate at Southland, pump mound, and percolate at new facilities with Option 1A: Basins</i> Option 1B: Subsurface systems	Score = 25 Probably OK	Score = 7 Unknown Suitability		Option 2A Score = 20 Annual Cost: \$880,000 <hr/> Option 2B Score = 15 Annual Cost: \$1,020,000	-----		-----
<i>Alternative 3 - Near Mesa and Eucalyptus Roads - Percolate at Southland, pump mound, and percolate at new facilities with</i> Option 3A: Basins Option 3B: Subsurface systems	Score = 25 Probably OK	Score = 20 Good		Option 3A Score = 15 Annual Cost: \$1,120,000 <hr/> Option 3B Score = 15 Annual Cost: \$1,260,000	-----		-----
<i>Alternative 4 - Near Pomeroy Road and Camino Caballo - Percolate at Southland, pump mound, and percolate at new facilities with</i> Option 1A: Basins Option 1B: Subsurface systems	Score = 25 Probably OK	Score = 7 Unknown Suitability		Option 4A Score = 15 Annual Cost: \$1,290,000 <hr/> Option 4B Score = 15 Annual Cost: \$1,420,000	-----		-----
<i>Alternative 5 - Irrigation with recycled wastewater at golf course(s) or other turf or landscape users</i> Option 5A: Additional treatment at Southland for recycled water Option 5B: Percolate at Southland, pump mound and irrigate	Score = 20 Need to meet Title 22 requirements for landscape irrigation.	Score = 15 Presumed good		Option 5A Score = 5 Annual Cost: \$1,880,000 <hr/> Option 5B Score = 15 Annual Cost: \$1,260,000	-----		-----
<i>Alternative 6 – Utilize and expand existing percolation basins at Southland WWTF and modification of aquitard - Groundwater recharge or percolation</i>	<u>Potential Fatal Flaw.</u> Score = 1 If the RWQCB considers this "direct injection," additional costs may be prohibitive. <u>Need more information.</u>	Score = 5 Underlying material assumed good. Modification may be challenging.		Unknown. Depends on modification technique.			
<i>Alternative 7 - Highway 101 right-of-way - Irrigation with recycled water</i> Option 7A: Additional treatment at Southland for recycled water Option 7B: Percolate at Southland, pump mound and irrigate	Score = 20 Need to meet Title 22 requirements for landscape irrigation	Score = 10 Presumed good Sufficient area may not be available nearby.		<u>Fatal Flaw.</u> Option 7A Score = 0 Annual Cost: \$16,930,000 <hr/> Option 7B Score = 0 Annual Cost: \$16,330,000	-----	X	-----
<i>Alternative 8 - Agricultural lands on Nipomo mesa S. of Southland WWTF - Irrigation with recycled water</i> Option 8A: Additional treatment at Southland for recycled water Option 8B: Percolate at Southland, pump mound and irrigate	Score = 10 Need to meet Title 22 requirements for agricultural use	Score = 15 Presumed good		Option 8A Score = 20 Annual Cost: \$990,000 <hr/> Option 8B Score = 25 Annual Cost: \$390,000	-----		-----
<i>Alternative 9 – Conocco Phillips Land – Percolate at Southland, pump mound, and percolate at new facilities with</i> Option 1A: Basins Option 1B: Subsurface systems	Score = 25 Probably OK	Score = 7 Unknown Suitability		Option 9A Score = 10 Annual Cost: \$1,730,000 <hr/> Option 9B Score = 5 Annual Cost: \$1,860,000	-----		-----

Figures

Southland WWTF Disposal Screening Analysis

Potential Effluent Disposal/Reuse Sites

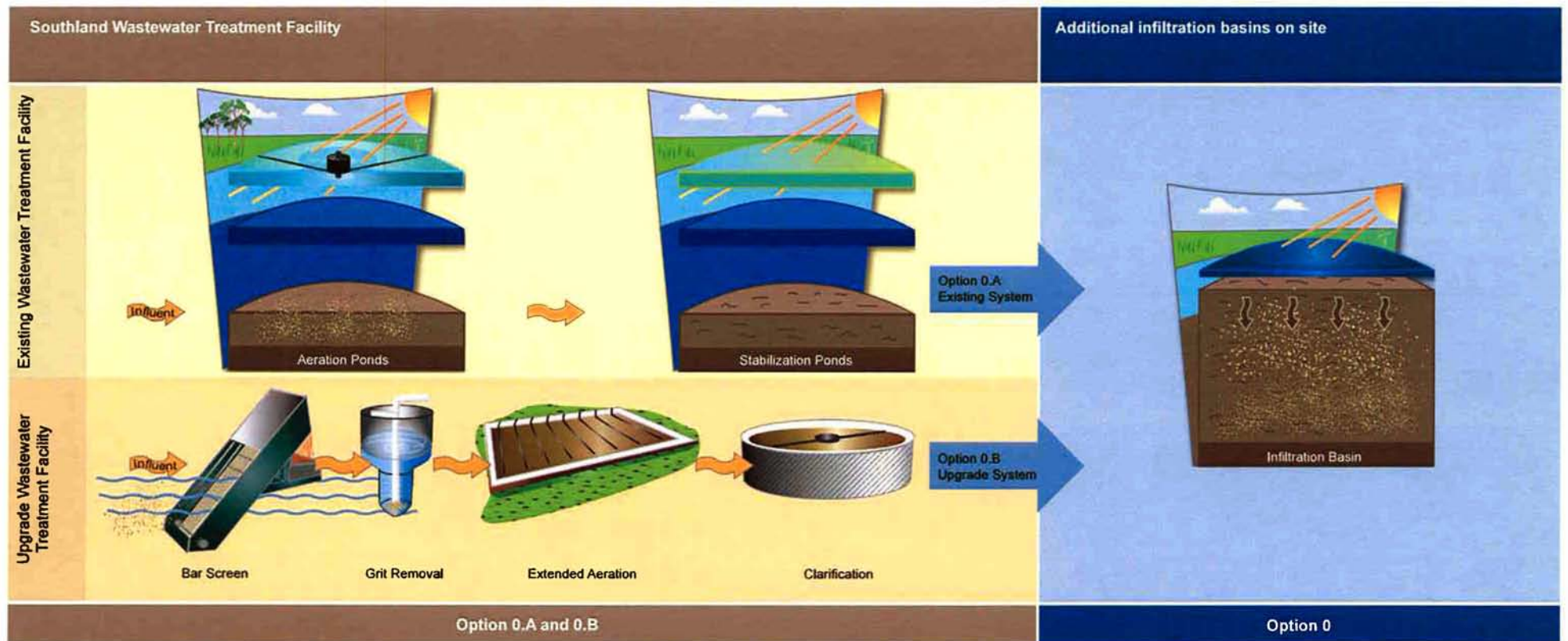


Administrative Draft—Preliminary Screening Evaluation of Southland Wastewater Treatment Facility Disposal Alternatives

FIGURE 1

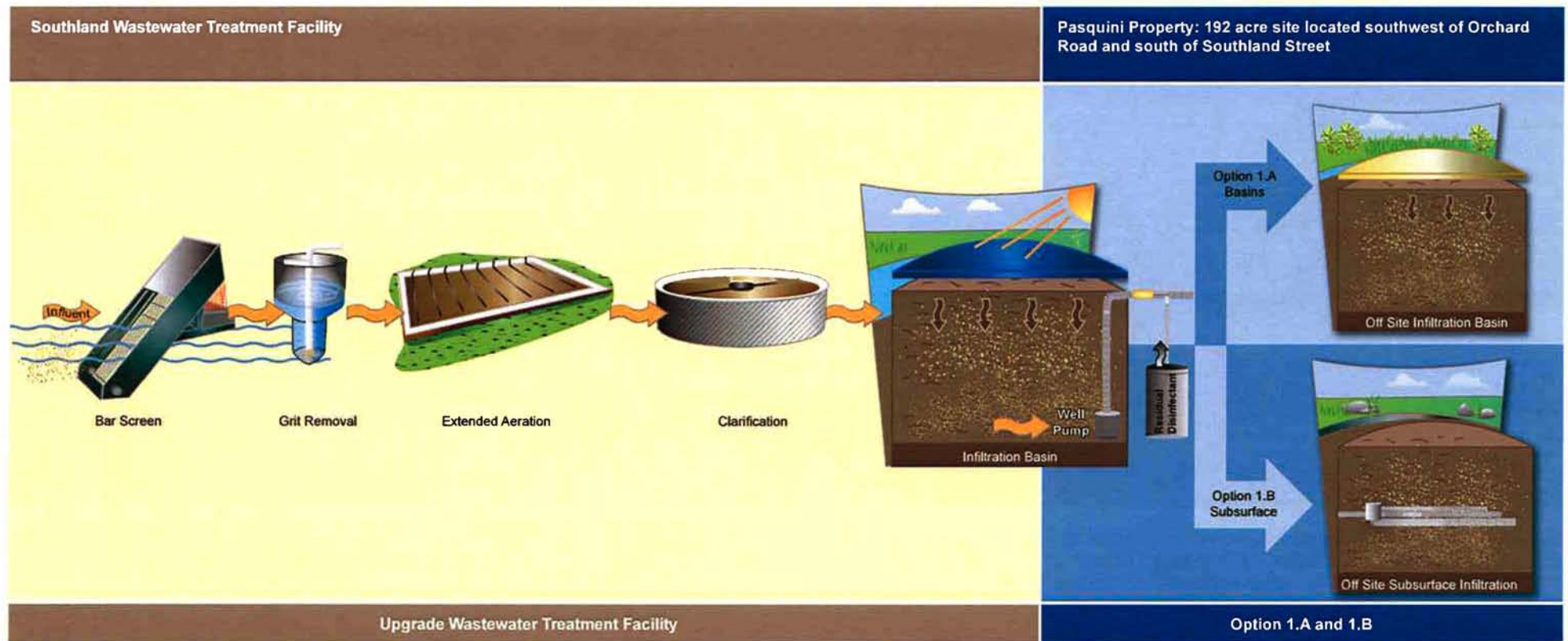
Process Flow Diagram

Option 0.A and O.B: Infiltration at Existing Facilities



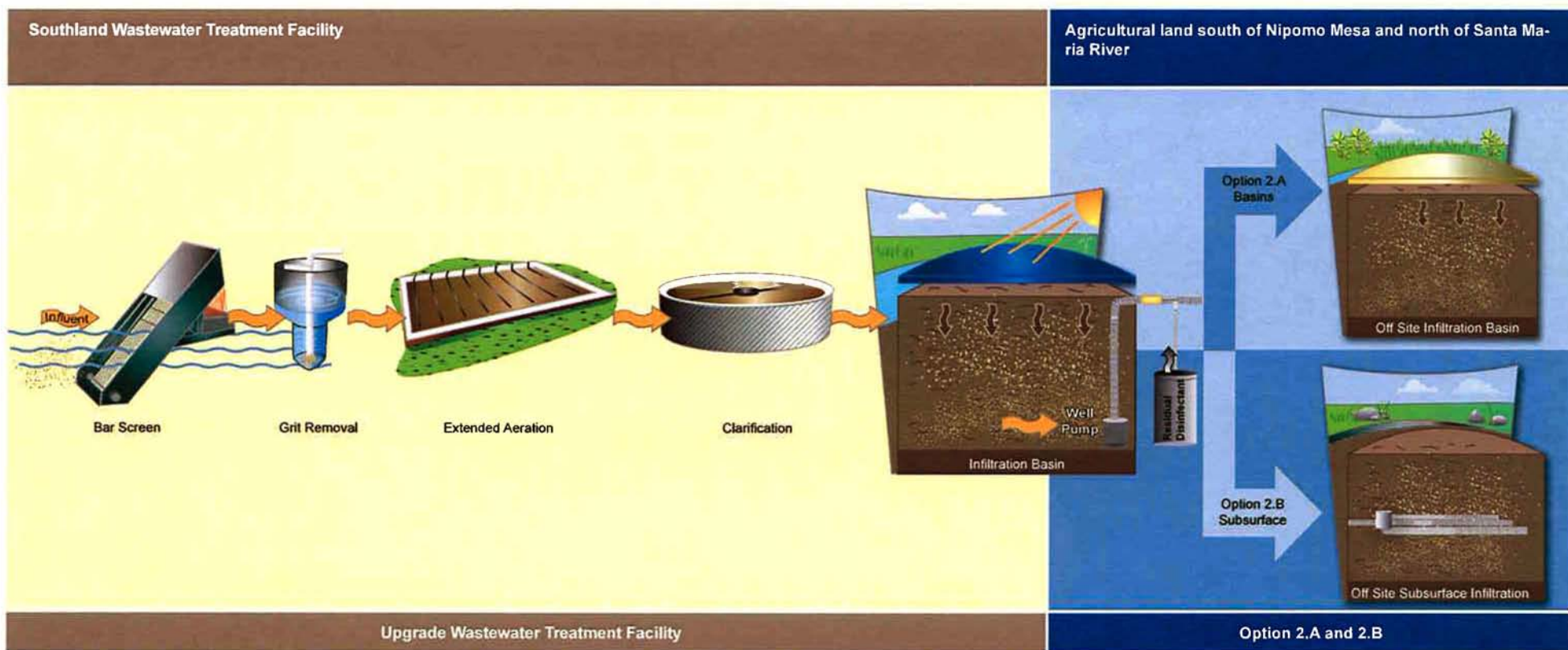
Process Flow Diagram

Options 1.A and 1.B: Infiltration at Pasquini Property



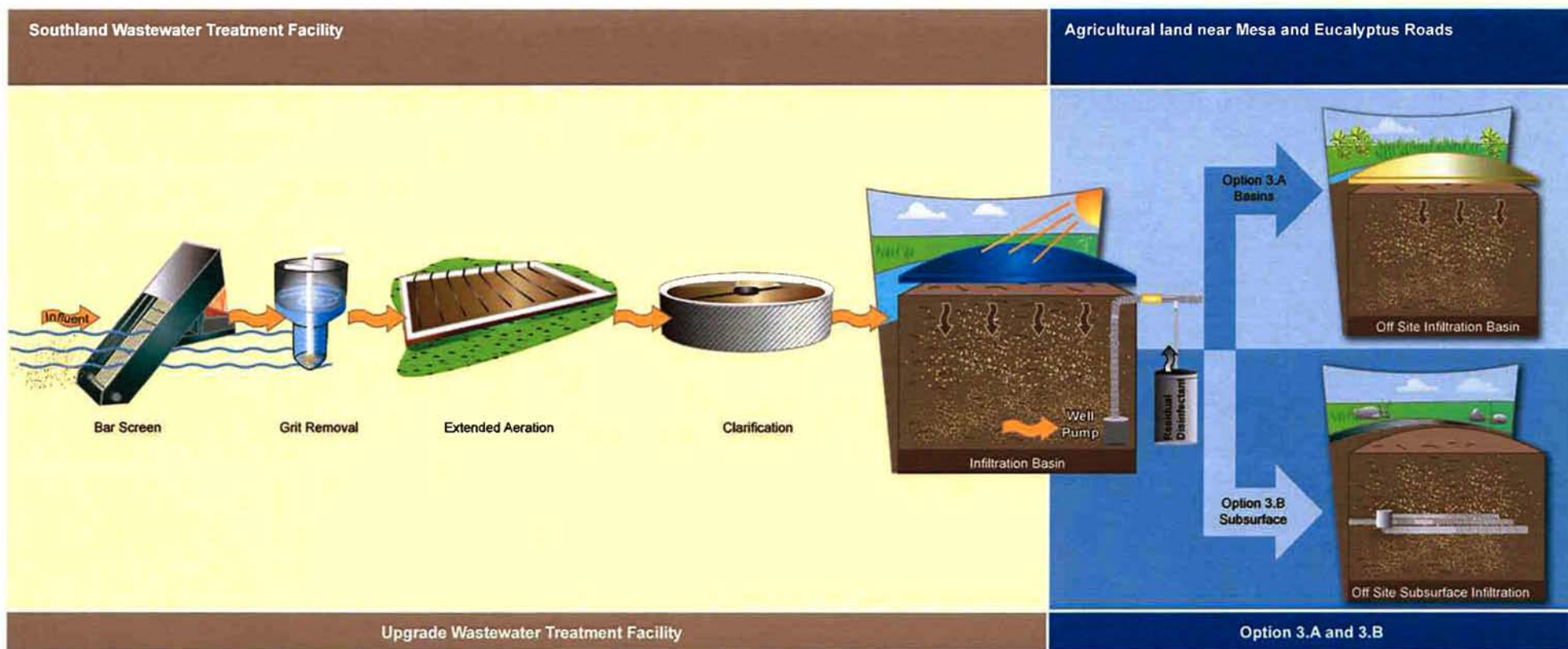
Process Flow Diagram

Options 2.A and 2.B: Infiltration South of Nipomo Mesa



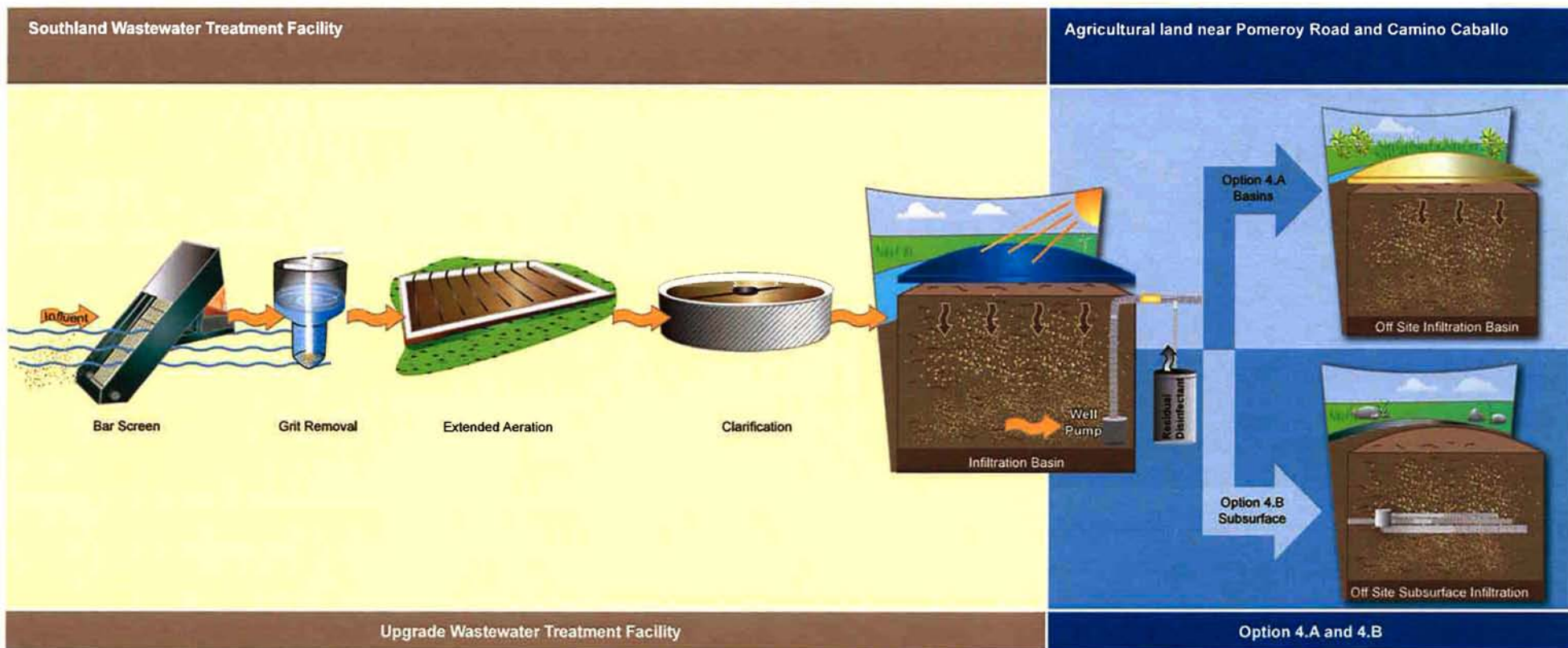
Process Flow Diagram

Options 3.A and 3.B: Infiltration near Mesa and Eucalyptus Roads



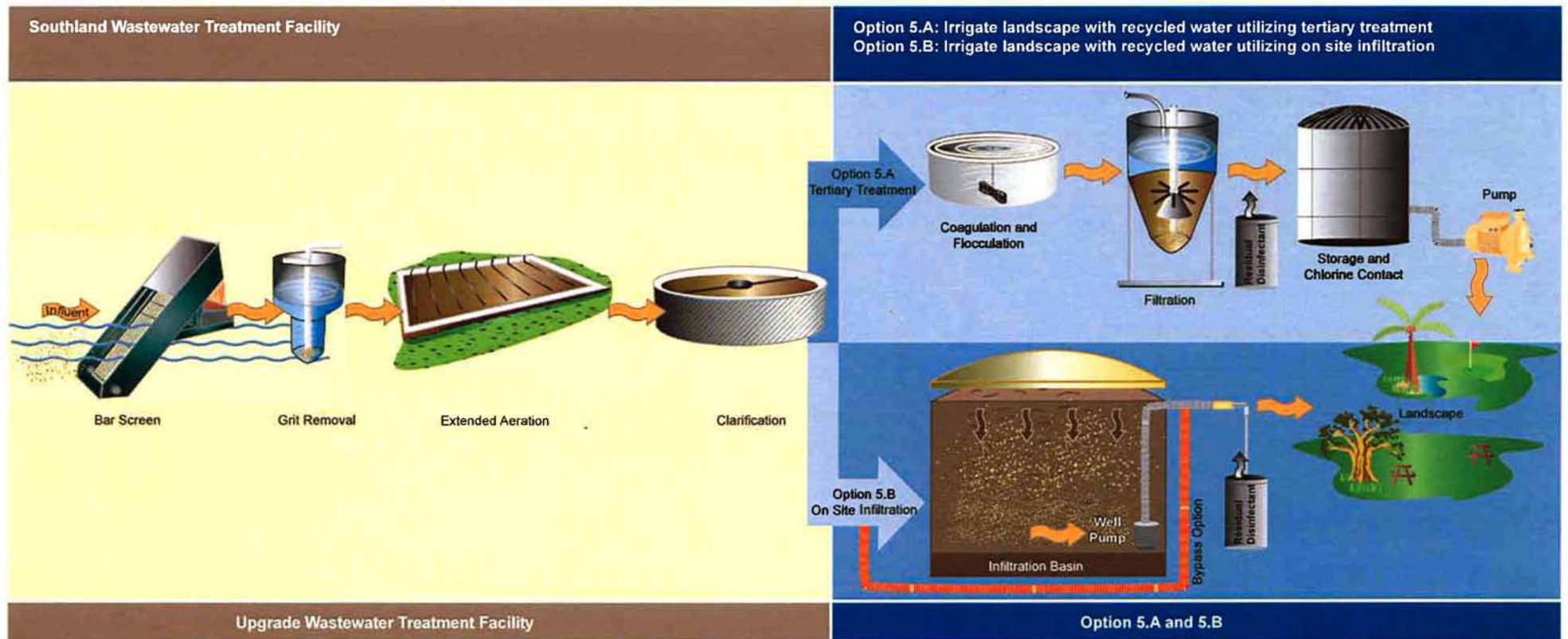
Process Flow Diagram

Options 4.A and 4.B: Infiltration near Pomeroy Road and Camino Caballo



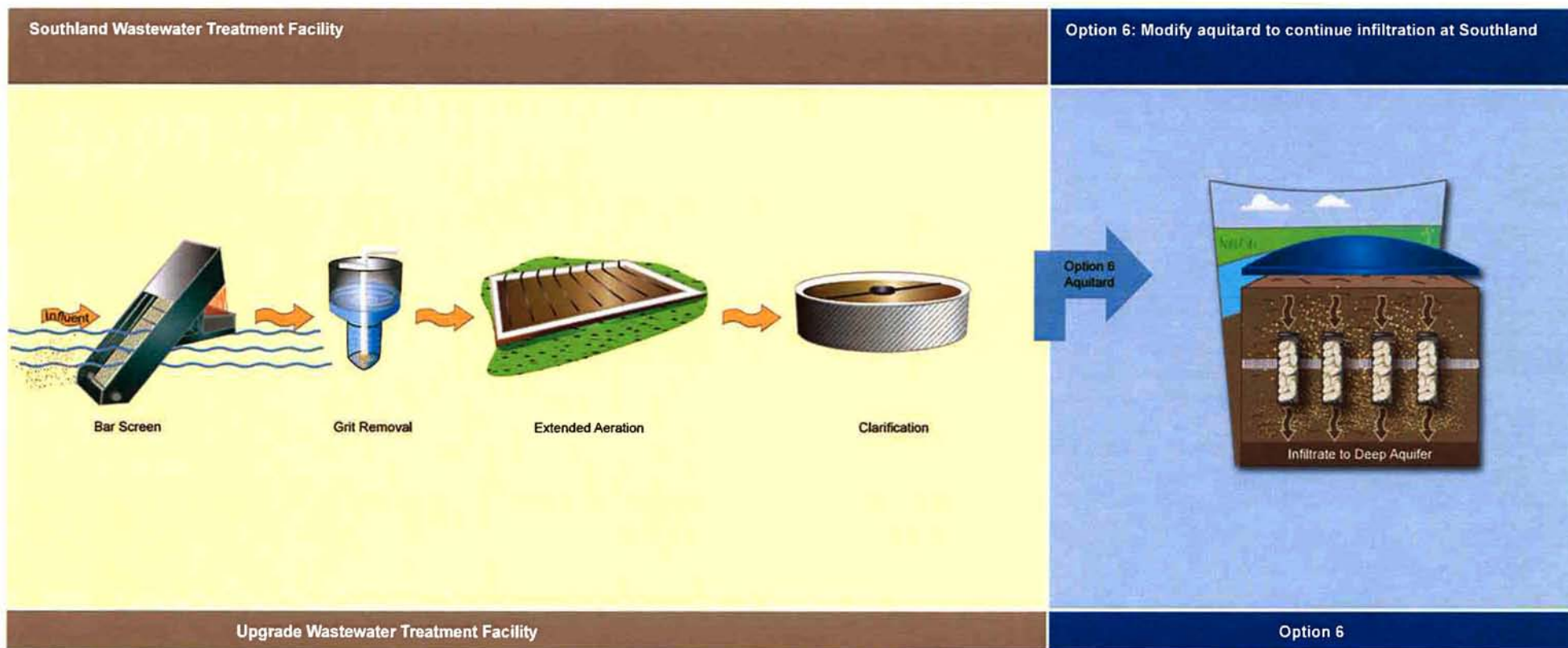
Process Flow Diagram

Options 5.A and 5.B: Irrigate Landscape with Recycled Water



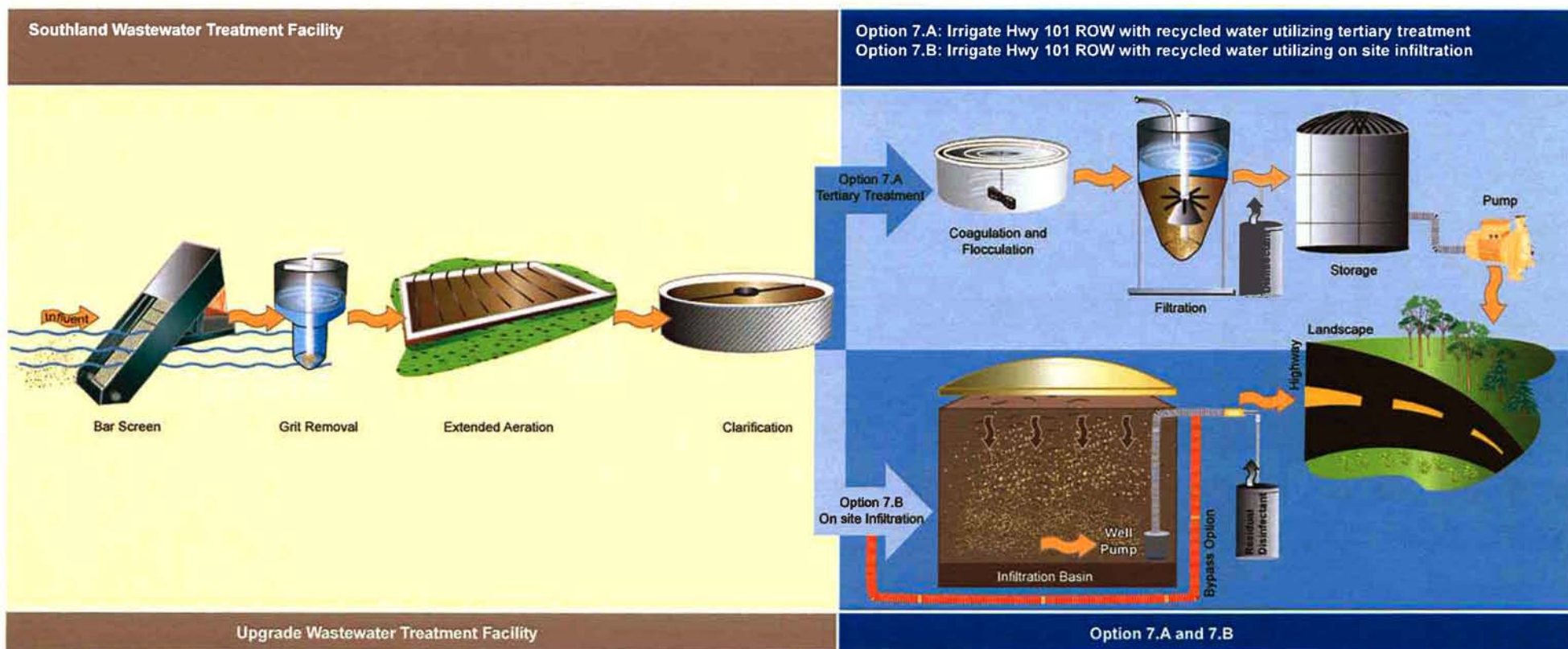
Process Flow Diagram

Option 6: Modify Aquitard to Continue Infiltration at Southland



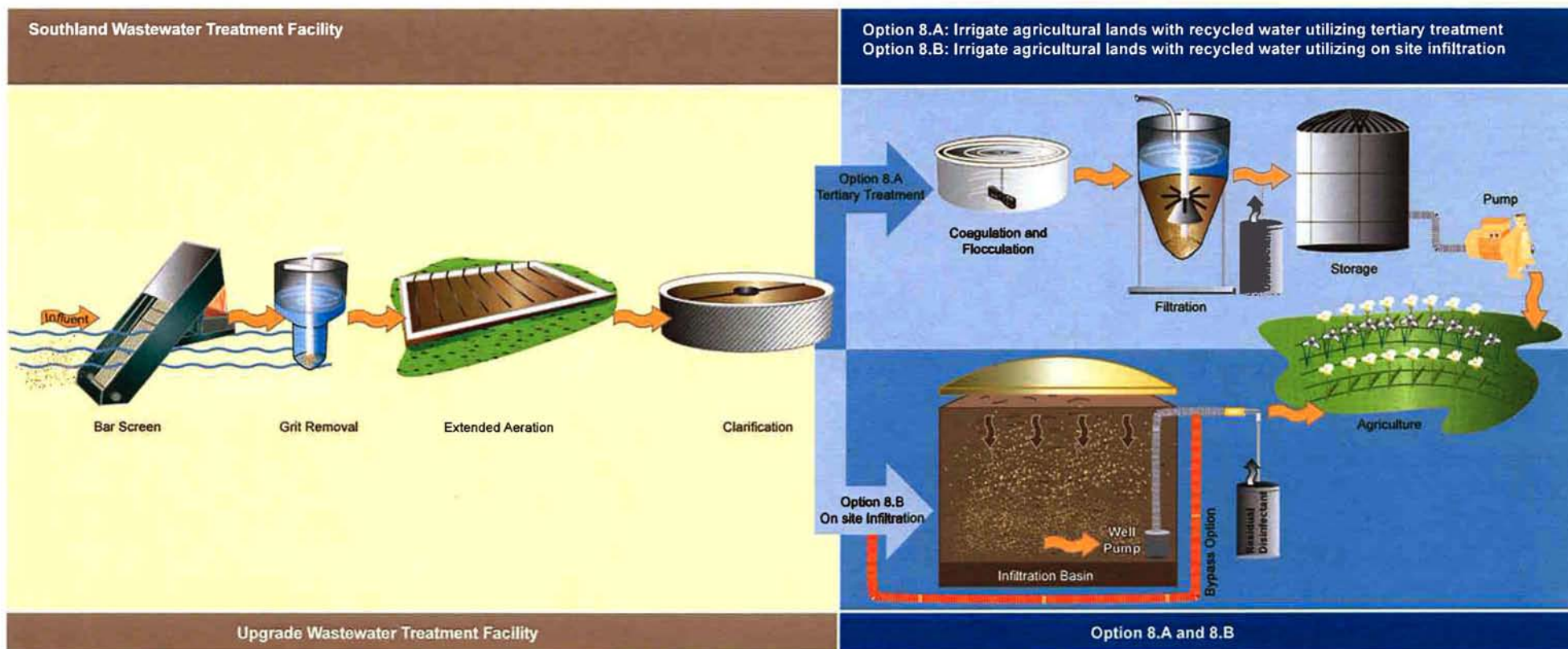
Process Flow Diagram

Options 7.A and 7.B: Irrigation of Highway 101 Right-of-Way with Recycled Water



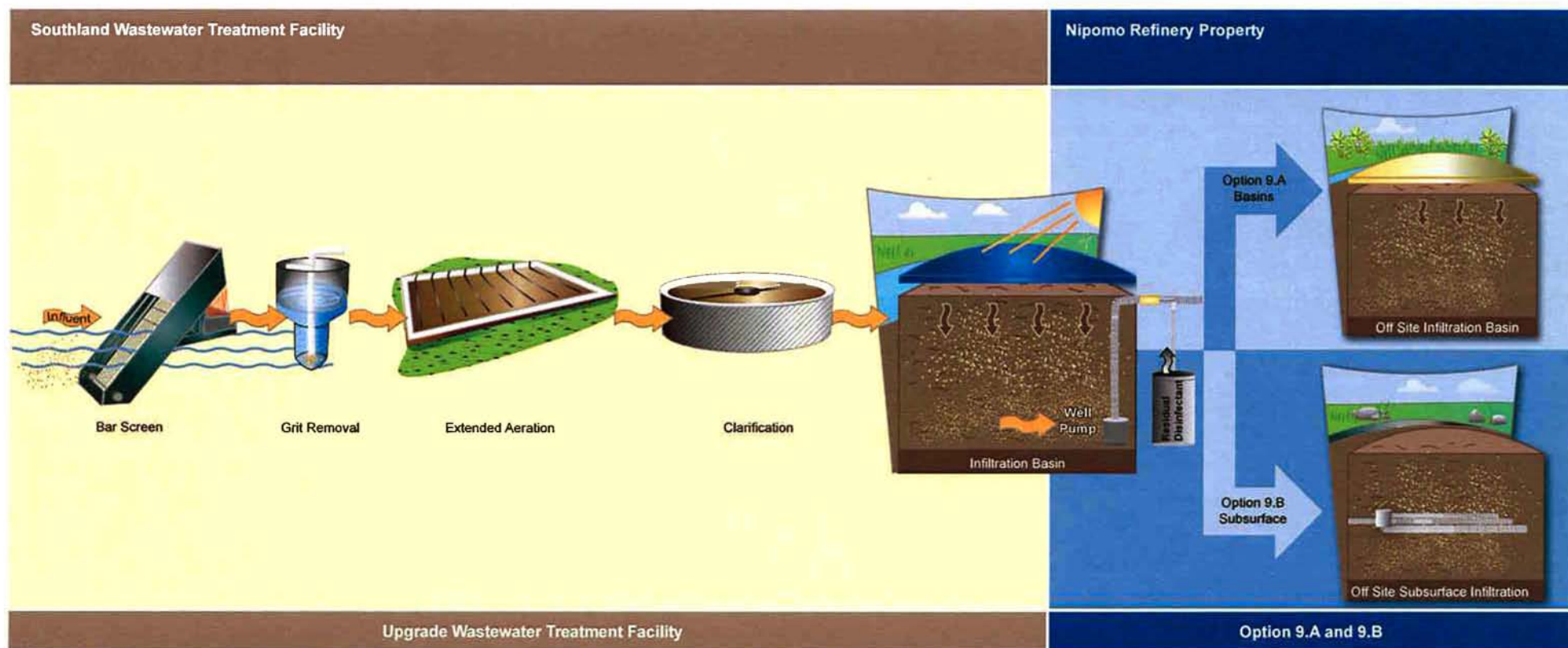
Process Flow Diagram

Options 8.A and 8.B: Irrigate South of Treatment Facility



Process Flow Diagram

Options 9.A and 9.B: Infiltration at Nipomo Refinery Property



TO: COMMITTEE MEMBERS
FROM: BRUCE BUEL *BB*
DATE: OCT. 31, 2008



SET DECEMBER MEETING TO FORMULATE RECOMMENDATIONS

ITEM

Set December Meeting to formulate recommendations [Set Meeting for 2pm on Monday December 1, 2008].

BACKGROUND

Assuming the AECOM can publish a draft Master Plan by November 26, 2008, staff recommends that the Committee set a meeting for December 1, 2008. Such a meeting would allow the Committee to formulate recommendations that can be forwarded to the Board for the December 10th Board Meeting.

RECOMMENDATION

Staff recommends that the Committee set a Committee Meeting for 2pm on Monday December 1, 2008.

ATTACHMENT - NONE

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