

**APPENDIX K: ON-SITE WASTEWATER TREATMENT SYSTEM REVISED
CONFORMANCE REVIEW, CITY OF MALIBU ENVIRONMENTAL HEALTH,
ENVIRONMENTAL AND BUILDING AND SAFETY DIVISION (July 16, 2008)**

[page left intentionally blank]



City of Malibu

Environmental Health · Environmental and Building Safety Division
23815 Stuart Ranch Road · Malibu, California · 90265-4861
Phone (310) 456-2489 · Fax (310) 456-3356 · www.ci.malibu.ca.us

July 16, 2008

Donald Schmitz
Schmitz and Associates, Inc.
29350 Pacific Coast Highway, Suite #12
Malibu, California 90265

Subject: 3700 La Paz Lane, Malibu, California 90265; Conformance Review for Office Park Projects, Revisions and Conversion to Coastal Development Permit (CDP 05-106 and CDP 05-107)

Dear Mr. Schmitz:

On July 16, 2008, a **Revised Conformance Review** was completed for two office park project alternatives at the subject property. Environmental Health reviewed a revised design for the alternative onsite wastewater treatment system (AOWTS) proposed to serve two office park development projects: (a) No City Hall Alternative/CDP 05-106 and (b) City Hall Alternative/CDP 05-107. The revised AOWTS, which incorporates recycling of the wastewater treatment system effluent for landscape irrigation, was designed by Lombardo Associates, Inc. (Master Plan wastewater system engineering report dated April 1, 2008).

The proposed AOWTS meets the minimum requirements of the City of Malibu Plumbing Code, i.e. Title 28 of the Los Angeles County Code, incorporating the California Plumbing Code, 2007 Edition, and the City of Malibu Ordinance No. 318 Amendments (MPC), and the City of Malibu Local Coastal Plan/Local Implementation Plan (LCP/LIP). The proposed AOWTS has been approved in concept by both the City's contract wastewater engineering reviewer (Carollo Engineers; review dated June 30, 2008) and the California Department of Public Health (CDPH; letter dated May 30, 2008).

The following items shall be submitted prior to Environmental Health final approval of the AOWTS proposed for CDP 05-106 or CDP 05-107:

- 1) **Plot Plan:** A final plot plan shall be submitted showing an AOWTS design meeting the minimum requirements of the MPC, and the LCP/LIP, including necessary construction details, the proposed drainage plan for the developed property, and the proposed landscape plan for the developed property. If inclusion of the above items renders the plot plan difficult to read, then the above items shall be submitted on two or more plot plans. All plot plans shall use the same scale so as to facilitate comparison.
- 2) **Final Design and System Specifications:** The complete engineering design drawings, calculations, construction specifications, and an operation and maintenance manual

shall be submitted to the City of Malibu Environmental and Building Safety Division. Describe all AOWTS components (i.e. alarm system, pumps, timers, flow equalization devices, backflow devices, etc.) proposed for use in the construction of systems for onsite wastewater treatment, effluent recycling, irrigation, and disposal.

An operations and maintenance manual specified by the AOWTS design engineer shall be submitted. This shall be the same operations and maintenance manual proposed for later submission to the owner and/or operator of the proposed alternative onsite wastewater disposal system.

Cross-section drawings through subject property, including the AOWTS, shall be submitted. The cross-sections shall show the proposed subsurface disposal fields, the subsurface strata beneath the AOWTS (including cut and fill in accordance with the grading plan), and the seasonal high groundwater level.

- 3) **Wastewater Engineering Plan Check:** The complete engineering design drawings, calculations, construction specifications, and an operation and maintenance manual shall be submitted for review and approval by the City's wastewater engineering review consultant (currently Carollo Engineers). Describe all AOWTS components (i.e. alarm system, pumps, timers, flow equalization devices, backflow devices, etc.) proposed for use in the construction of systems for onsite wastewater treatment, effluent recycling, irrigation, and disposal.
- 4) **Mechanical Plan Check:** The mechanical portions of the wastewater treatment system shall be submitted to the Environmental and Building Safety Division for mechanical plan check.
- 5) **Electrical Plan Check:** The control and instrumentation portion of the wastewater treatment system shall be submitted the Environmental and Building Safety Division for electrical plan check.
- 6) **California Department of Public Health:** Submit a Title 22 Engineering Report to the California Department of Public Health, 1449 W. Temple St. Room 202, Los Angeles, California 90026, (213) 580-5727, to assure compliance with the California Code of Regulations for recycled water (Title 22). CDPH approval shall be obtained and submitted to the City of Malibu Environmental Health Administrator.
- 7) **Los Angeles Regional Water Quality Control Board:** Submit building plans, and all necessary supporting forms, and reports, to the RWQCB, 320 W. 4th St., Los Angeles, CA 90013, (213) 576-6600, to assure compliance with the California Water Quality Control Plan, Los Angeles Region (Basin Plan). RWQCB Waste Discharge Requirements shall be obtained and submitted to the City of Malibu Environmental Health Administrator.

- 8) **Cumulative Impact Analysis:** The LCP/LIP requires all onsite wastewater treatment systems proposed for new commercial development to be evaluated for cumulative impacts on the groundwater level and quality. A cumulative impact analysis shall be submitted and approved by the City of Malibu Geologist and Geotechnical Engineer in consultation with the City of Malibu Environmental Health Specialist. An AOWTS Final Design that is engineered to meet the effluent limits specified in WDRs, taking into account the Malibu Lagoon bacteria and nutrient total maximum daily load (TMDL) requirements of the RWQCB and United States Environmental Protection Agency, will be deemed to satisfy City of Malibu Environmental Health requirements for the LCP/LIP Cumulative Impact Analysis of groundwater quality.
- 9) **Covenant to Hold Together Properties:** Prior to receiving Environmental owner shall execute and record a covenant requiring the property owner to hold proposed alternate private sewage disposal system as a single parcel until a written recorded by the City of Malibu (" Covenant and Agreement Regarding Onsite Disposal and the Use and Transfer of Ownership and Property . ") Said covenant and acceptable to, the City. All properties involved must be owned by the same properties must be contiguous (as determined by the City Attorney). If the properties corporation, a partnership, a trust, or some other such entity, then the person agreement must offer suitable proof to the City of Malibu that the person executing is legally authorized to execute said covenant and agreement. A certified copy from Recorder is required.
- 10) **Covenant for Alternative Onsite Wastewater Treatment System:** A covenant running with the land shall be executed between the City of Malibu and the holder of the fee simple absolute as to subject real property and recorded with the Los Angeles County Recorder's Office. Said covenant shall serve as constructive notice to any future purchaser for value that the onsite wastewater treatment system serving subject property is an alternative method of onsite wastewater disposal pursuant to the City of Malibu Uniform Plumbing Code, Appendix K, Section 1(i). Required language for said covenant shall be provided by the City of Malibu. *Please note only original "wet signature" documents are acceptable.*
- 11) **Proof of Ownership:** Proof of ownership of subject property shall be submitted.
- 12) **Maintenance Contract:** A maintenance contract executed between the owner of subject property and an entity qualified in the opinion of the City of Malibu to maintain the proposed alternative onsite wastewater disposal system after construction shall be submitted. *Please note only original "wet signature" documents are acceptable.*
- 13) **City of Malibu Geologist/Geotechnical Approval:** City of Malibu Geologist and Geotechnical Engineer final approval shall be submitted.
- 14) **City of Malibu Biologist Approval:** City of Malibu Biologist final approval shall be submitted. The City of Malibu Biologist shall review the AOWTS design to determine any impact on any Environmentally Sensitive Habitat Area.

Donald Schmitz
July 16, 2008
Page 4 of 4

- 15) **Final Fee:** To be determined based on the City of Malibu's contract wastewater engineering reviewer's fees and/or City of Malibu Environmental Building & Safety Division staff time spent for review of submittals during the building plan check stage. To date EBS Division staff has spent 55 hours reviewing the two projects. The current hourly rate for EBS review is \$143. An invoice for review fees accumulated to date will be presented to you prior to the beginning of building plan check.

-o0o-

If you have any questions regarding the above requirements, please contact the undersigned at your earliest convenience.

Sincerely,

City of Malibu



Andrew Sheldon
Environmental Health Administrator

cc: Planning Division
Environmental Health main file
Environmental Health reference file (without enclosures)
Jim Ewing, Carollo Engineers (without enclosures)

Enclosures: Review of Proposed Wastewater Treatment System by California
Department of Public Health dated May 30, 2008
Review of Proposed Wastewater Treatment System by Carollo Engineers
dated June 30, 2008

(CDP 05-106 and CDP 05-107)

3700 LA PAZ LANE
"CITY HALL" ALTERNATIVE and
"NO CITY HALL" ALTERNATIVE
MALIBU, CA 90265

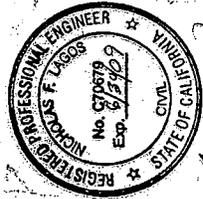
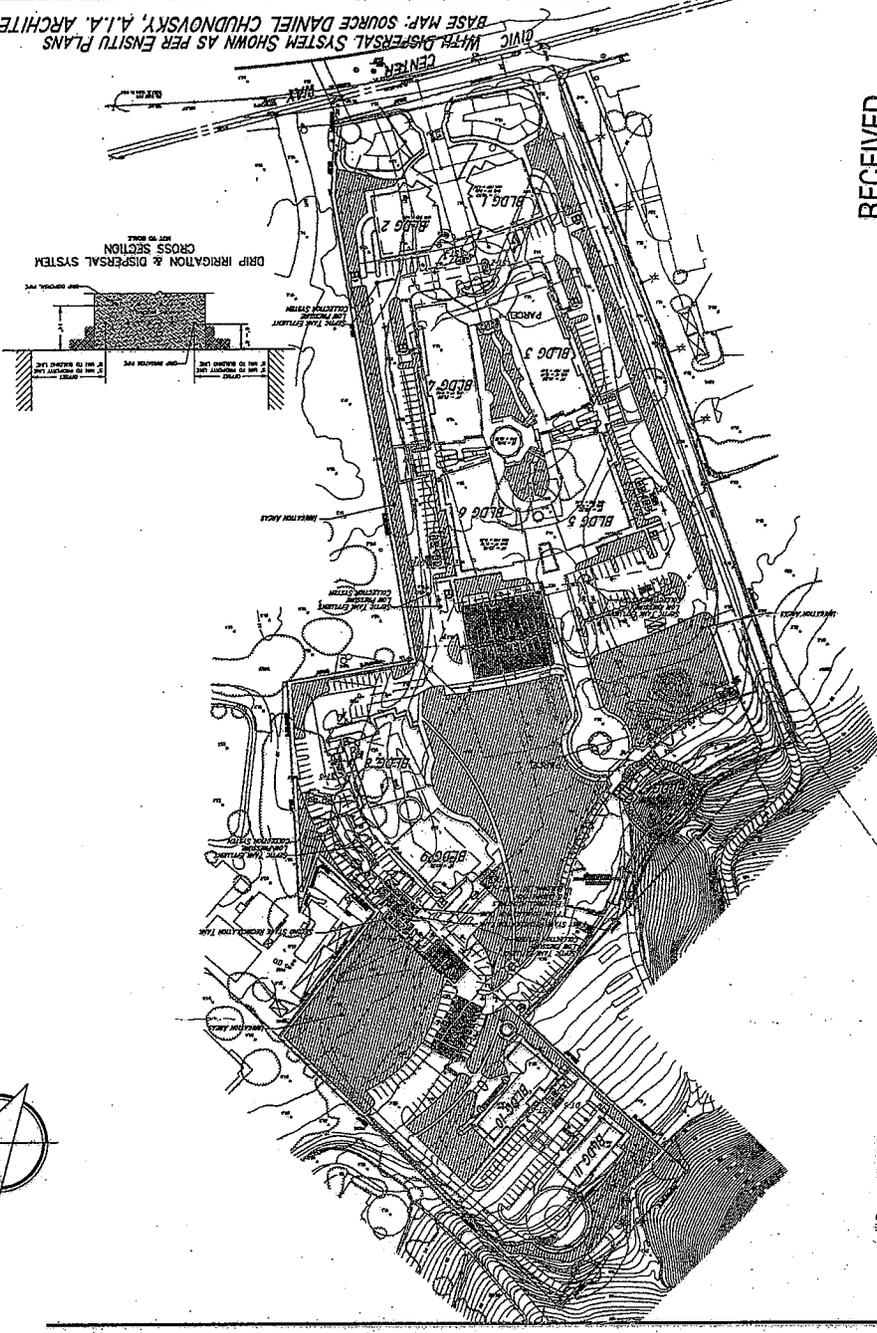
REFERENCE: Lombardo Associates, Inc.
Wastewater Management System Master Plan
dated 4-1-2008; OWS plot plan dated 7-11-2008

DESIGNER: Pico Lombardo/Nicholas Lagos, PCE 70679

NOTES:

1. This review is for 11 new commercial buildings (CDP 05-106) and for 11 new commercial buildings with a new City Hall building (CDP 05-107). A new alternative onsite wastewater treatment system shall be installed, as shown. The new alternative onsite wastewater treatment system conforms to the City of Malibu Plumbing Code (MPC), and the Local Coastal Plan (LCP).
2. This review relates only to the minimum requirements of the MPC and the LCP, and does not include an evaluation of any geological, or other potential problems, which may require an alternative method of wastewater treatment.
3. This review is valid for one year, or until MPC, and/or LCP, and/or Administrative Policy changes render it noncomplying.

CITY OF MALIBU ENVIRONMENTAL HEALTH	
CONFORMANCE REVIEW	
JUL 16 2008	
SIGNATURE	<i>A. Stuber</i>
THIS IS NOT AN APPROVAL. FINAL APPROVAL IS REQUIRED PRIOR TO THE ISSUANCE OF ANY CONSTRUCTION PERMITS	



Nicholas Lagos
7/16/08

RECEIVED
JUL 14 2008
BUILDING SAFETY DEPT.

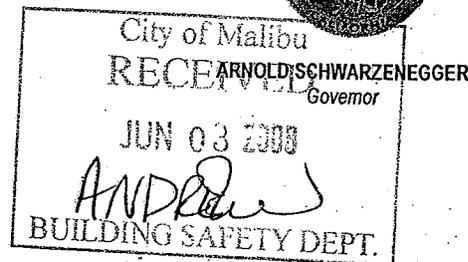
LOMBARDO ASSOCIATES, INC. 4800 Wilshire Blvd., Suite 1000 Beverly Hills, CA 90210 (310) 276-1111 www.lombardoassociates.com	WASTEWATER SYSTEM FOR LA PAZ RANCH Civic Center-Way City of Malibu COUNTY OF LOS ANGELES STATE OF CALIFORNIA	FIGURE 1-1A
SCALE: 1"=40' DATE: DECEMBER 2007	JULY 2008	

WITH DISPERSAL SYSTEM SHOWN AS PER ENSTU PLANS
BASE MAP: SOURCE DANIEL CHUDNOVSKY, A.I.A. ARCHITECTS, INC.



MARK B HORTON, MD, MSPH
Director

State of California—Health and Human Services Agency
California Department of Public Health



May 30, 2008

Ms. Tracy Egoscue, Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

**SYSTEM NO. 1990020 – MALIBU LA PAZ DEVELOPMENT WASTEWATER
MANAGEMENT SYSTEM MASTER PLAN**

Dear Ms. Egoscue:

We have reviewed the Malibu La Paz Development Wastewater Management System Master Plan (Plan), dated April 1, 2008, describing the wastewater management system for the La Paz development in the City of Malibu. The Plan gives a general idea of the wastewater treatment system and the type of wastewater reuse that will be proposed at the site. The Department finds that the Plan is a good first step in the development of the Title 22 Engineering Report. The treatment system proposed in the Plan is appropriate. In addition, the proposed reuse is appropriate for the level of treatment provided by the treatment system. However, more detail is needed to make a final determination on the treatment system and reuse at this site. In particular, the proponents should produce a thorough Title 22 Engineering Report following the Department's 2001 guidelines (attached).

The Department is available to work with stakeholders on the development of the Title 22 Engineering Report. If you have questions regarding this letter, please contact Mr. Chi Diep at (213) 580-5727 or myself at (213) 580-3127.

Sincerely,

Stefan Cajina, P.E.
District Engineer
Central District

Ms. Tracy Egoscue
May 30, 2008
Page 2

Enclosure(1)

cc: Elizabeth Erickson
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013 CA Regional

Chris Deleau
La Paz Ranch, LLC
c/o Schmitz & Associates, Inc.
5234 Chesebro Rd, Suite 200
Agoura Hills, CA 91301

Andrew Sheldon
Environmental Health Administrator
City of Malibu
23815 Stuart Ranch Road
Malibu, California 90265

Pio Lombardo
Lombardo Associates, Inc.
49 Edge Hill Road
Newton, MA 02467

Paul Wong
Cross-Connections & Water Pollution Control Program
5050 Commerce Drive, Rm. 116
Baldwin Park, CA 91706-1423



City of Malibu

**REVIEW OF PROPOSED
WASTEWATER TREATMENT SYSTEM
FOR THE MALIBU LA PAZ DEVELOPMENT**

FINAL
July, 2008

Signed: 6/30/2008

City of Malibu

**REVIEW OF PROPOSED
WASTEWATER TREATMENT SYSTEM
FOR THE MALIBU LA PAZ DEVELOPMENT**

TABLE OF CONTENTS

	<u>Page</u>
1.0 WASTEWATER DESIGN FLOWS	1
2.0 PREDICTED WASTEWATER QUALITY	3
3.0 CONCEPTUAL DESIGN OF TREATMENT SYSTEM	4
4.0 PERMITTING REQUIREMENTS	4
5.0 PRELIMINARY ENGINEERING SIZING OF TREATMENT PROCESSES	4
5.1 Grease Traps and Septic Tanks	4
5.2 Flow Equalization Tank	5
5.3 First Stage Recirculation Tank and Recirculating Media Filter	5
5.4 Denitrification Filter	5
5.5 Second Stage Recirculation Tank and Recirculating Media Filter	5
5.6 Filtration System	5
5.7 Disinfection System	6
5.8 Odor Control	6
5.9 Electrical Controls and Monitoring	6
5.10 Reliability	6
5.11 Performance Monitoring Plan	6
5.12 Effluent Storage and Disposal	6
6.0 PROPOSED MONITORING PLAN	7
7.0 OTHER CONSIDERATIONS	8
8.0 FINDINGS AND RECOMMENDATIONS	8

REVIEW OF PROPOSED WASTEWATER TREATMENT SYSTEM FOR THE MALIBU LA PAZ DEVELOPMENT

This report presents the findings from Carollo Engineers' review of a master plan for wastewater treatment at the proposed La Paz Development (La Paz) in the City of Malibu (Malibu). The master plan, prepared by Lombardo and Associates, is titled "Malibu La Paz Development Wastewater Management System Master Plan" (MP), dated April 1, 2008. This report discusses the portions of the master plan covering:

- Wastewater design flows (MP Section 2.2).
- Predicted wastewater quality (MP Section 2.3).
- Conceptual design of the treatment system (MP Section 2.4).
- Permitting requirements (MP Section 2.5).
- Preliminary engineering sizing of treatment processes (MP Section 2.6).
- Proposed monitoring plan (MP Section 2.7).

Specifically excluded from this review are:

- Siting of facilities.
- Demands for recycled water.
- Soils and hydrology.
- Wastewater collection and distribution systems.
- Recommendations for alternative processes.

It should be noted that much of the MP is conceptual and does not contain the detail necessary to fully review the treatment system. The more detailed plan would come later in the form of a facilities plan, a predesign report, or an Engineering Compliance Report.

Our review generally is section by section and contains a brief summary of what is presented in the MP, the methods and results of our review, and comments and recommendations for Malibu to consider.

1.0 WASTEWATER DESIGN FLOWS

This section of the MP first presents a table (Table 2.2) and discussion covering the development of wastewater flows from the project for two development plans. The table is based on floor areas or customers for the various planned occupancies and unit sewage generators for each of those occupancies. The unit generators are from the requirements of the Los Angeles County (County) Plumbing Code. Using the values from the County code,

predicted flows are: 37,120 gallons per day (gpd) for Plan 1 and 30,440 gpd for Plan 2. The unit generators from the County code are representative of those found in textbooks, other codes, and common usage.

The MP first requests that new flows, lower in value than those determined from generators in the County code, be allowed, and then presents an argument based on data from a similar project in the area - the Malibu Creek Plaza (Creek). Using data from Creek, new flow rates are determined and then a peaking and safety factor of 50 percent is applied. The proposed flows now become: Plan 1 - 28,000 gpd and Plan 2 - 23,000 gpd.

Analysis to justify the reduction in flows is found in Appendix A of the MP. Table A-1 shows flows for the Creek development using both the County generators and, reportedly, actual design flows. The flow based on County generators is 25,614 gpd, while the actual design flow is 12,000 gpd or about half of the County flow. Flows for the Creek development, based on average water use, for the period of November 2000 to November 2003 average 11,123 gpd with the maximum for a 50-day period being 12,731 gpd. Data in Table A-3 for the period of May 7, 2004 through July 13, 2004 show an average daily flow of 9,706 gpd and a maximum day of 17,280 gpd. More recent data, for the period of July 2007 through February 2008 (Table A-4), show wastewater flows of 11,877 gpd average and 17,519 gpd maximum for the Creek development.

The data for Creek do show that the average flow is approximately half and that the peak flows vary up to about 68 percent, respectively, of the flow based on County generators. Also, the make up of the two developments in terms of ratios of retail, office, and restaurant space is roughly the same.

No table similar to Table 2.2 using proposed generation factors is included in the MP. If we use the design criteria listed on page 14 of the MP, the flows for La Paz would be as follows:

Condition	Average Flow (gpd)	Peak Flow (gpd)
Plan 1	18,560	27,840
Plan 2	15,220	22,830

The MP notes various justifications for allowing a variance from the use of Code generators. These include:

- The use of low flow toilets and water-conserving fixtures.
- Code values not taking influent flow equalization into account.
- Code values being generally conservative and for very small systems.

All of these are valid to some extent, and, in fact, some treatment plants have seen a reduction in flow over the past several years. However, the actual extent and effect for each of the above factors is not known. The information from Creek appears to be valid and may

be indicative of what will be the case at La Paz. There may be differences in the make up of new and future tenants and their use patterns at the two developments, however. We, therefore, suggest that the developer furnish flow data vs. tenant makeup for at least one other similar commercial development.

Some factors that might affect the flow, and thus give reason to a conservative approach, include the following questions:

- What is the assurance that the use of low-flow fixtures will remain, particularly in restaurants?
- Will there be restrictions on how much water a tenant can use?
- Will "dry" tenants become "wet" tenants?
- Will the hours of operation change?

Based on the above, including the uncertainties, and if review of data from another development shows the same pattern, we recommend that:

1. The developer be allowed to reduce flow to 80 percent of the County code generated flow. Although this is higher than the 75 percent requested by the developer, we consider the more conservative approach justified because of uncertainties in the prediction of flow.
2. The developer submit an acceptable contingency plan of how higher flows would be accommodated should they develop.

2.0 PREDICTED WASTEWATER QUALITY

Section 2.3 of the MP presents Tables 2.11 and 2.12 showing assumed wastewater characteristics. This information should be expanded to include actual values for average and peak concentrations of BOD₅, TSS, VSS, NH₄⁺, pH, oil and grease, temperature, organic nitrogen, and alkalinity for the various contributors of raw wastewater. The values should be based on measurements from at least two similar developments.

The section also briefly discusses effluent quality and presents Table 2.13 showing probable effluent standards. The standards given adequately describe the requirements of Title 22 and in part what the requirements of the RWQCB will be. Note that the requirements of the discharge permit issued by the RWQCB will likely be much more extensive than presented in the MP. Since some limitations imposed by the RWQCB will be based on maximum concentrations or masses of constituents, a table showing the quality of the area's domestic water should be added to the MP.

As in Section 1.0 of this review, a contingency plan should be developed to show how a wastewater flow stronger than predicted would be accommodated.

3.0 CONCEPTUAL DESIGN OF TREATMENT SYSTEM

Section 2.4 lists the proposed treatment processes in Table 2.14 and then provides a block flow diagram showing the treatment train. The individual processes are discussed in more detail in Section 2.6 of the MP. In our opinion, the proposed process train has the potential to produce an acceptable and permittable effluent. There is not adequate information presented, however, make a final judgment. Section 2.4 or Section 2.6 should include a table of all design criteria and a table showing the expected quality in the effluent from each process (in greater detail than is now provided in Section 2.6). These tables should show conditions and expected effluent quality with all units operating and with the largest unit of any process out of service. The effluent quality from each process should include those constituents listed in Section 2.0 of this review as well as turbidity.

Two areas of concern are noted from review of the flow diagram. These are 1) the potential for regrowth of microorganisms in the storage tank following the disinfection process and 2) the use of drip irrigation for disposal of out-of-compliance effluent. These will be discussed in Section 5.0 of this review.

4.0 PERMITTING REQUIREMENTS

Section 2.5 briefly discusses the major permits that will be required for construction and operation of the treatment system. The section correctly states the permitting authorities for the project are Malibu, the RWQCB, and the CDPH. There normally are other agencies with interests in the project, but these typically work through one of the three agencies listed. The Air Quality Management District may also become involved with permitting air releases from odor treatment systems and the venting of ozone from the disinfection system.

5.0 PRELIMINARY ENGINEERING SIZING OF TREATMENT PROCESSES

Section 2.6 of the MP expands on the conceptual design briefly discussed in Section 2.4. It presents information on design criteria for each process and provides discussion on system reliability. The information is conceptual at this stage; it should be expanded on in the next stage of the project development. It should be noted that the conceptual design is based on reduced flows discussed in Section 2.2 of the MP and would have to be modified if the approved flows are higher. The individual treatment processes are reviewed below.

5.1 Grease Traps and Septic Tanks

These preliminary treatment parts of the overall treatment train are sized based on the County code and appear to be sized adequately. We have a concern that if the septic tank effluent has not been screened prior to pumping or if grinder pumps are not used, use of pipe smaller than 3 inches will have a potential for plugging.

5.2 Flow Equalization Tank

The text in Section 2.6.2 regarding sizing of the tank is not clear. We recommend that the designer provide calculations and a diurnal mass diagram showing flow, including backwash return from the filters, versus quantity in storage for the tank. Other questions include: Will the tank be compartmentalized so that a part can be taken out of service for cleaning? How will solids entering the tank be kept in suspension or otherwise removed from the tank daily?

5.3 First Stage Recirculation Tank and Recirculating Media Filter

The one-day residence time for the recirculation tank appears adequate, assuming that surge volumes are covered. The mechanism for and degree of nitrification anticipated in this first-stage filter is not provided or discussed. More information or justification for the filter sizing should be provided to show that the proposed loading rates are suitable and what the effluent quality will be. Filter media materials and gradation were not provided.

5.4 Denitrification Filter

The proposed method of denitrification, Nitrex™ filter, should give adequate removal of nitrate if properly designed. No design criteria or influent characteristics are provided to allow review of the process. Again, media materials and gradation were not provided.

5.5 Second Stage Recirculation Tank and Recirculating Media Filter

This second-stage RMF process is provided to polish the effluent from the denitrification process. If properly designed and depending on the media used, it should fulfill that goal. The hydraulic residence times (HRT) in the recirculation tank appears suitable. Again, influent and effluent quality expectations and justification for the stated loading rate are not provided in the MP.

5.6 Filtration System

The MP proposes the use of a mixed-media filtration unit followed by two-stage cartridge filtration. Although not noted in the MP, the designer states that the system actually selected for final design will be from the CDPH's approved list. The loading rate for the granular media filter is stated as 5 gpm/ft². This is the rate permitted by CDPH under Title 22 criteria, but here it appears high, particularly for such a small system. The MP does not discuss disposal or recirculation of backwash water, the number of filters proposed, or the possible requirement for addition of coagulating chemicals. Also not included is the anticipated quality of influent and effluent for the process.

Cartridge filters might not be required to meet turbidity standards, and the designer has stated that they might be taken out of the process. We think that they might be beneficial as a polishing step ahead of ultraviolet (UV) disinfection.

5.7 Disinfection System

This two-process system using UV and ozone should be effective at disinfection of the effluent. The ozonation dose and contact time appear suitable. There is no information on the proposed UV dose other than that it will meet the criteria set out in the 2003 edition of "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse." Like filtration, the UV equipment should be from a CDPH-approved list. Although it might not be required in this design, Title 22 requires that disinfection systems considered alternative to what is described in Title 22 be proven by demonstration of effectiveness and reliability. This should be discussed with CDPH. We do not understand the statement under Section 2.6.9 that says, "The Second Stage Recirculation Tank will have an integral pump station that feeds the disinfection system at a steady flow rate."

5.8 Odor Control

The proposed use of soil filters and activated carbon filters to control odors is suitable. No information on points where foul air will be extracted or design criteria for the odor control systems is provided. The designer should verify whether an ozone destructor will be required and whether the AQMD will issue permits for odor treatment systems and ozone releases.

5.9 Electrical Controls and Monitoring

This section notes that a telephone and Internet monitoring system will be installed to provide data on the system and inform operators of emergencies. The section should be expanded in the next phase of the project to specify what information will be available, to whom it will be sent, and who will respond. A California-certified treatment plant operator may be required to operate this plant.

5.10 Reliability

This section briefly notes that there will be a standby generator and that there will be some process redundancy in equipment. Review of reliability features should take place when more complete information is available.

5.11 Performance Monitoring Plan

What is presented is good and needed. A more detailed monitoring plan should be included at the next stage of the project. Monitoring frequencies for some equipment and processes and for water quality at several locations in the process train should be increased from what is proposed.

5.12 Effluent Storage and Disposal

As noted in Section 3.0 of this review, we have three concerns regarding disposal or use of effluent from the plant. The first involves the proposal to store final effluent for long periods

(up to 20 days) in tanks with no disinfectant residual. We are concerned that there will be regrowth or bacteria in the tanks. The designer should consider this and either show why it will not be of concern or show how it will be addressed.

Corollary with this is the growth of biofilms in the storage tanks and distribution piping. Depending on water age and the concentration of residual nitrogen in the effluent, film that can impair water quality and potentially clog the drip irrigation system can develop. Information on design of the storage tanks is not provided at this time, so we are not able to assess circulation patterns in the storage system.

The second concern is the use of drip irrigation for disposal of out-of-compliance effluent that may contain particulates. Can the drip irrigation system operate effectively when changed with out-of-compliance effluent? Further, can the drip system pass the entire plant flow when being fed out-of-compliance effluent? The designer should address these concerns.

The other concern involves effluent disposal during start-up. Effluent during start-up will likely not meet discharge requirements for several constituents and for three or more weeks. What will be the disposition of this effluent?

6.0 PROPOSED MONITORING PLAN

A proposed monitoring program is given in MP Sections 2.5 and 2.7, primarily in Table 2.15. We are in agreement with most of what is presented in Table 2.15 for effluent monitoring. We recommend changing the table, however, to require more frequent or continual monitoring of some parameters. We recommend requiring use of a continuous turbidity analyzer rather than using grab samples, and increasing the monitoring frequency of BOD, nitrate and ammonia, pH, and TSS to weekly sampling. Turbidity is the main indicator of effluent compliance with Title 22, and high turbidity, along with failure of the disinfection system, will be one of the primary indicators causing automatic diversion of effluent from the recycled water use system. As noted, the above pertains to effluent monitoring for compliance.

An additional monitoring plan and an operations manual covering monitoring of the individual processes should be prepared and submitted along with the preliminary design report or Title 22 - Engineering Compliance Report. This operations monitoring program should be designed to show that each process is performing as designed. Such monitoring would allow operators to see trends and note potential problems before they affect effluent quality. Depending on the process and parameter, this monitoring would be continuous, daily, weekly, or monthly based on the parameter, and would include alarms and instrumentation as well as physical/chemical information on the waste as it flows through the treatment train.

7.0 OTHER CONSIDERATIONS

Although not covered in the MP, there is concern regarding containment of and public contact with recycled water from irrigation systems. Spray irrigation of small areas of the development, primarily for median strips in parking areas, has been proposed. This is both feasible and common, but requires controls to prevent runoff from leaving the area and design and operating practices that limit the drift from sprinklers.

Title 22 is the primary regulation controlling irrigation with recycled water. The regulation states that runoff from irrigation shall be confined to the use area. The use area would be defined in the authorization to use recycled water and should be discussed with the CDPH. Title 22 also places restrictions on spray irrigation with recycled water, but does not put defined limits on overspray around commercial areas except that sprays shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

The RWQCB might also regulate spray and runoff from the site through clauses in the waste discharge requirements for the development.

Two other documents may govern the use of recycled water either directly or through adoption by other agencies:

- "Guidelines for Distribution of Nonpotable Water" by the California-Nevada Section of the American Water Works Association.
- "Recycled Water User Manual" by Los Angeles County Recycled Water Advisory Committee, adopted by the Los Angeles County Department of Health Services.

These documents, particularly the latter, set design and operating criteria for irrigation systems. Restrictions and guidance include limiting the time of irrigation to periods when the public is not present and designing and operating the system to prevent overspray and runoff. They also require the designation of a use area or site supervisor who would be responsible for operation and maintenance of the system, compliance with regulations and permits, and notifications to regulatory agencies.

8.0 FINDINGS AND RECOMMENDATIONS

Findings from our review of the developer's master plan include the following:

- Based on the review of this conceptual report, we judge that the proposed treatment process train, with noted modifications, can produce an effluent meeting Title 22 requirements.
- Allowing a reduction in wastewater flow generators from those used in the County code should be considered. More data and justification on which to base a decision should be provided for review.

- More information on wastewater characteristics should be submitted.
- More information on handling out-of-compliance effluent should be submitted.

As part of the project moving to the next stage, we recommend that Malibu require the developer to:

- Prepare and submit a detailed preliminary design report containing the information discussed above and addressing the comments and questions presented.
- Develop contingency plans covering how wastewater quantity and quality above what is used in the master plan will be accommodated if necessary.
- Obtain tentative discharge requirements from the RWQCB so that the agency's requirements are known and can be addressed.