

Final Program
Environmental Impact Report
for the

**Santa Clara County Onsite Wastewater
Treatment Systems Ordinance**

State Clearinghouse No. 2011112024



Prepared by



July 2013

**SANTA CLARA COUNTY ONSITE WASTEWATER TREATMENT SYSTEMS
ORDINANCE**

FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT

STATE CLEARINGHOUSE NO. 2011112024

July 2013

**Prepared By: Santa Clara County Planning Office
70 W. Hedding Street, East Wing, 7th Floor
San José, CA 95110-1705**

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CHAPTER 1

INTRODUCTION

A. PROJECT DESCRIPTION

The County of Santa Clara proposes to adopt a new ordinance that would update and replace the existing County ordinance and regulations governing individual on-site wastewater treatment systems (OWTS) within the unincorporated part of the County. The proposed Ordinance includes provisions for development of an On-site Systems Manual (Manual) that contains the policy, procedural, and technical details for implementation of the Ordinance.

The proposed Ordinance would: (a) implement more standardized procedures on a county-wide basis for soil and site evaluations; (b) incorporate new requirements pertaining to the vertical separation between the bottom of dispersal systems and groundwater or restrictive layers; (c) provide a broader range of treatment and dispersal designs, including alternative OWTS; and (d) institute a program to assure ongoing maintenance of certain types of systems.

In addition to the Ordinance update, the proposed project includes amendments to County General Plan policies and supporting descriptive text that reference use of alternative OWTS. The Zoning Ordinance would also be amended to modify sections related to use of septic systems.

B. EIR PROCESS AND RESPONSE TO COMMENTS FORMAT

The County of Santa Clara prepared a Draft Program Environmental Impact Report (DPEIR) for the project and circulated it for public review in February 2013. The public review period began on February 14, 2013 and ended on April 18, 2013. This Final Program EIR (FPEIR) consists of the DPEIR, all comments received on the DPEIR, responses to those comments, and revisions to the DPEIR. The Final EIR will be considered by two recommending bodies prior to final consideration by the Santa Clara County Board of Supervisors for certification: the Planning Commission and the Housing, Land Use, Environment, and Transportation Committee (HLUET).

The Planning Commission will consider whether the EIR adequately evaluates the potential environmental impacts of project, specifically the General Plan Amendment and Zoning Ordinance Amendment related to the proposed OWTS Ordinance. The Commission will also consider the merits of these elements of the proposed project and make a recommendation to the Board of Supervisors ("the Board") on whether to approve or deny.

HLUET, a subcommittee of the Board, will consider whether the Final EIR is complete and accurate, and will make a recommendation to the Board of Supervisors regarding certification of the document. It will also consider the merits of the proposed Ordinance update and make a recommendation to the Board on whether to approve or deny. The Board will then consider the Final EIR and certify the document if they conclude it meets CEQA requirements. The Final EIR must be certified and CEQA findings adopted before any action on the proposed project (i.e., adoption of the Ordinance, General Plan Amendment, and Zoning Ordinance Amendment) can occur. After the Board has certified

the Final EIR, it will consider the merits of the proposed project and determine whether to approve the project or a project alternative or deny the project.

Chapter 2 contains the comment letters received during the official public review period and responses to the comments contained in those letters. Those comments and responses are followed by a summary of public comments on the DPEIR received at a meeting of the Planning Commission, which was held on March 28, 2013.

Chapter 3 of this report describes the text changes to the DPEIR needed to complete the Final Program EIR. These changes were deemed necessary to correct errata, to clarify statements, and/or to correct information in the DPEIR as part of a response to certain comments received.

Chapter 4 is an appendix that contains: 1) the proposed Ordinance as revised given comments received on the DPEIR; 2) portions of the draft Operation Manual relevant to the EIR; and 3) Appendix B(1) ("Growth Projections and Cumulative Wastewater from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes") of the DPEIR as revised per comments received on the DPEIR.

This chapter provides responses to the written and verbal comments received by the County during the public review period. This section begins with a list of the agencies and individuals that commented on the EIR and where their letter and the County's response to the comments can be found. Each letter is followed by a response page(s). Each letter's comments and corresponding responses are numbered for easy reference.

CHAPTER 2

COMMENTS AND RESPONSES ON THE DRAFT PEIR

A. LIST OF COMMENTERS ON THE DPEIR

The County received 17 comment letters on the DPEIR during the public review period. Five (5) of these letters were from public agencies, and twelve (12) were from individuals or representatives of groups. The table below shows the location of the comment letter (as well as the public hearing comments) within the Final EIR and the responses to the letter or comments.

		<u>Comment On Page</u>	<u>Response On Page</u>
<u>Public Agencies</u>			
1. State Office of Planning and Research	4/03/13	4	6
2. Santa Clara Valley Water District	4/18/13	7	15
3. Central Coast RWQCB	4/15/13	30	32
4. City of Cupertino	3/5/13	33	35
5. LAFCO of Santa Clara County	4/18/13	36	38
<u>Interested Parties</u>			
6. Alice Kaufman, Committee for Green Foothills	4/18/13	39	42
7. Jim and Connie Rogers	3/16/13	47	48
8. Jim and Connie Rogers (Second Letter)	4/08/13	49	50
9. Karen Lemes	3/25/13	51	52
10. Jorge Barriga	3/19/13	53	54
11. People's Coalition for Government Accountability	4/02/13	55	74
12. Eric Biederman	4/03/13	75	76
13. Craig Lammers	3/20/13	77	78
14. Robert J. Benich	2/19/13	79	80
15. Nancy and Jonathan Long	3/23/13	81	82
16. Paul Sanders	4/04/13	83	84
17. Beth Wyman	4/08/13	85	87
<u>Comments Made at the Public Hearing</u>			
18. Santa Clara County Planning Commission Public Hearing	3/28/13	88	89

B. COMMENTS AND RESPONSES ON THE REVISED DPEIR

The following section contains the letters received and responses to those letters. Each letter or group of related letters is followed by a response page(s). Each comment and its corresponding response are numbered.



EDMUND G. BROWN JR.
GOVERNOR

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT



KEN ALEX
DIRECTOR

April 3, 2013

David Rader
Santa Clara County
70 W. Hedding Street
7th Floor, East Wing
San Jose, CA 95110

Subject: On-site Wastewater Treatment Systems Ordinance
SCH#: 201112024

Dear David Rader:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on April 2, 2013, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

COUNTY OF SANTA CLARA
2013 APR -8 PM 3:23
RECEIVED

1-1

Document Details Report
State Clearinghouse Data Base

SCH# 2011112024
Project Title On-site Wastewater Treatment Systems Ordinance
Lead Agency Santa Clara County

Type EIR Draft EIR

Description The County of Santa Clara proposes to adopt a new ordinance that would update and replace existing County regulations governing individual on-site wastewater treatment systems (OWTS) within the unincorporated parts of the County. Besides allowing use of alternative OWTS (non-traditional systems that use pre-treatment technologies), the proposed ordinance would eliminate the 1-acre minimum lot size requirement for installation of OWTS in the Lexington Basin. The proposed project also includes changes to a County General Plan policy as well as a change to the Zoning Ordinance eliminating the minimum lot size requirement for secondary dwelling units in the San Martin Planning Area.

Lead Agency Contact

Name David Rader
Agency Santa Clara County
Phone 408 299 5779 **Fax**
email rob.eastwood@pln.sccgov.org
Address 70 W. Hedding Street
7th Floor, East Wing
City San Jose **State** CA **Zip** 95110

Project Location

County Santa Clara
City San Jose
Region
Lat / Long
Cross Streets
Parcel No.
Township

Range **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways
Schools
Land Use

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Septic System; Soil Erosion/Compaction/Grading; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 3; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Resources, Recycling and Recovery; California Highway Patrol; Caltrans, District 4; Regional Water Quality Control Board, Region 2; Regional Water Quality Control Board, Region 3; Native American Heritage Commission

Date Received 02/14/2013 **Start of Review** 02/14/2013 **End of Review** 04/02/2013

Response to Letter from Scott Morgan, Office of Planning and Research, State Clearinghouse

- 1-1 This is a cover letter that states that the County has complied with State Clearinghouse review requirements for draft environmental documents that are subject to CEQA. No response is required.

File: 32679
Various

April 18, 2013

Mr. David Rader
Santa Clara County Planning Office, County Government Center
70 West Hedding Street, 7th Floor, East Wing
San Jose, CA 95110

Subject: Onsite Wastewater Treatment Systems Ordinance

Dear Mr. Rader:

Santa Clara Valley Water District (District) staff have reviewed the Program Draft Environmental Impact Report (DEIR) for the proposed changes to the County of Santa Clara's (County) Onsite Wastewater Treatment Systems (OWTS) ordinance. The District is a special district with jurisdiction throughout Santa Clara County. The District acts as the county's groundwater management agency, principal water resources manager, flood protection agency and is the steward for its watersheds, streams and creeks, and aquifers. We appreciate the opportunity to comment on the DEIR for the subject project. This letter transmits comments that focus on the areas of interest and expertise of the District.

1. Section 4.1 (Geology and Soils), Part A (Setting), Item 5 (Groundwater, Page 38) states that the principal groundwater aquifer in Santa Clara County is the Santa Clara Valley. As identified by the California Department of Water Resources, there are two groundwater subbasins in the county, the Santa Clara and Llagas Subbasins. This section focuses only on the Santa Clara Subbasin (which contains very few OWTS) and also incorrectly states that the shallowest groundwater tends to be near San Francisco Bay. 2-1

Groundwater is very shallow in many areas of the Coyote Valley located within the Santa Clara Subbasin and in the Llagas Subbasin, where most OWTS are located. In the Coyote Valley, groundwater is generally unconfined and is typically encountered between 5 and 40 feet below ground surface. The Llagas Subbasin also has areas with shallow groundwater and like the Coyote Valley, has permeable soils and high recharge rates. A 2010 District Groundwater Vulnerability Study indicated that groundwater in the Coyote Valley and Llagas Subbasin is highly vulnerable to land use related potentially contaminating activities. There are more than 3,000 domestic wells in the Coyote Valley and Llagas Subbasin, where groundwater is the only drinking water source.

Section 4.1 should be revised to provide a more accurate description of the county's groundwater subbasins.

2. Section 4.2 (Hydrology and Water Quality), Part A (Setting), Item 1 (Surface Water Hydrology) does not include a discussion of the District's source of supply reservoirs which directly supply drinking water to our water treatment plants, rather than through 2-2



groundwater recharge. Source of supply reservoirs and their watersheds should be analyzed separately as a special area of concern rather than treated the same as any other surface water body or reservoir. Specific comments related solely to the special protection needed for source of supply reservoir watersheds are at the end of this letter to differentiate them from our general comments on the ordinance as it relates to all other sites.

3. The discussion under Impact 4.2-A states that pathogens are removed within the first 2 to 3 feet of soil; further it notes that bacteria and viruses reaching the water table can survive and move up to hundreds of feet in groundwater. The section references studies that indicate adequate pathogen removal to justify reduced groundwater separation requirements for OWTS with sand filters, pressure distribution systems, or supplemental treatment. The DEIR should document how adequate pathogen removal is provided with the proposed reduced groundwater separation for at grade and mound systems, which do not appear to require supplemental treatment. If there is no technical information to support this, supplemental treatment should be required for these systems. 2-3

4. The discussion of Impact 4.2-B indicates that nitrate loading rates will increase due to changes to zoning policies to allow smaller lot sizes and higher septic tank density. As recognized in the DEIR, nitrate contamination is a significant concern, particularly in the Coyote Valley and Llagas Subbasin where the majority of OWTS are located. Many wells in these areas already exceed the nitrate drinking water standard, and many others are near the drinking water standard. The District is concerned that increasing the nitrate loading will exacerbate this situation. 2-4

We also question the revised estimate of rainfall-recharge, which was increased four times from the 1981 San Martin Area Water Quality Study, which estimated that 10% of annual rainfall recharges groundwater. Similar to the 1981 study, the District's calibrated groundwater flow models assume that only 10 to 15% of annual rainfall provides deep percolation to groundwater in the valley floor. The higher rainfall-recharge estimate used in the DEIR likely underestimates the additional nitrate loading to groundwater.

The nitrate loading analysis in the DEIR states that the increase in projected nitrate ranges from about 1.5 to 3.6 mg-N/L, which is noted as being well below the drinking water limit of 10 mg-N/L. While it is accurate that 1.5 to 3.6 mg-N/L is below the drinking water standard, it does not follow that the impact is low. Large areas of the Coyote Valley and Llagas Subbasin have nitrate concentrations in groundwater that are approaching or already exceed the drinking water standard, indicating little or no assimilative capacity for additional nitrate loading to groundwater. Increasing the nitrate loading in these areas would cause some wells to exceed the drinking water standard for nitrate. This is a potentially significant impact and needs to be addressed in the DEIR.

The District supports the provision for project-specific "cumulative impact" assessments for areas with potential nitrate impacts due to large flow OWTS, a high concentration of OWTS, or the sensitivity of water resources in a given area. The District recommends that cumulative impact studies or enhanced nitrogen removal be required for new OWTS in areas where groundwater has nitrate above 6.4 mg-N/L (i.e., where the projected

nitrate increase from the OWTS ordinance would cause an exceedance of drinking water standard).

5. Impact 4.2E discusses impacts to the Lexington Basin from the removal of the minimum 1 acre lot size limitation, generally based on the conclusion that the 1 acre criteria was originally recommended without clear justification in a 1980 Montgomery report and that current industry practices and knowledge about OWTS suggest smaller lot sizes would not cause water quality degradation. Again, the District's comments for source of supply reservoir watersheds are described at the end of this letter, but it should be noted that the Central Coast Regional Water Quality Control Board basin plan (Basin Plan) states that septic tank systems should be limited to parcel sizes of one acre or greater and are prohibited within a reservoir watershed where the density of each land division is less than 2.5 acres for areas without approved Wastewater Management Plans. 2-5

6. Impact 4.2-I discusses the fact that OWTS allowed by the proposed ordinance can result in repaired or replacement of OWTS in locations that will not meet minimum surface water body setbacks prescribed by existing Regional Water Quality Control Board basin plans or current County ordinance. The District does not support changes in the ordinance that allow for expansions or replacements of OWTS that do not meet minimum setbacks prescribed by the State Water Resources Control Board or any of its regional board's basin plans. Also, the District does not support expansion or intensification (major or minor) of use on sites where the existing OWTS does not meet ordinance requirements for new systems. The District supports the repair of existing systems so long as the repaired system is more protective of surface water quality or groundwater quality than the existing system, meets minimum setbacks to waterbodies to the maximum extent practicable but no less than existing setback, does not expand the existing system, and does not cause or allow for an expansion of intensification of use of the site. 2-6

This section mentions that a reduction in setback distances to streams and other water features is necessary to accomplish an effective system repair. The Water Collaborative Guidelines and Standards for Land Use Near Streams mentioned in this section does state that "exceptions or variances are allowed per RWQCB or Santa Clara County requirements." However, the exceptions or variances referred to are those variances described in the Basin Plan such as for slopes steeper than 30%, not for minimum setbacks or other prohibitions described in the Basin Plan.

7. Impact 4.2-N relates to potential new development, which could be located in areas with known high nitrate levels in well water, exposing residents to health risks from high nitrate in drinking water. The related discussion states there is a less than significant impact as any existing or new water well proposed to serve new housing would have to be shown to be compliant with applicable drinking water standards. While domestic wells are required to perform one-time water quality testing for County approval, it is our understanding that there is no ongoing water quality monitoring required for domestic wells. Unlike public water supply wells which perform regular testing to ensure compliance with drinking water standards, the lack of ongoing monitoring for domestic wells may result in consumer exposure to high levels of nitrate, pathogens, or other contaminants as water quality conditions change over time. As the OWTS ordinance 2-7

would result in an increase in nitrate to levels exceeding drinking water standards in some areas, mitigation measures for new OWTS should be included for those areas.

8. The discussion of nitrate loading in Appendix B references the 2010 Groundwater Quality Report by the District stating that 8% of the wells in the Llagas Subbasin exceeded the MCL for nitrate. This should be corrected to read that 14% of wells in the principal aquifer zone (wells screened at greater than 150 feet below grade) and over 50% of wells screened in the shallow aquifer zone in the Llagas Subbasin exceeded the MCL for nitrate, per page 3-4 of the report. 2-8

General Comments on the proposed OWTS ordinance

9. Groundwater monitoring should be required for all approved systems with a groundwater separation less than 5 feet due to the increased potential for contaminants to reach groundwater. The District recommends that the performance monitoring requirements include inspection wells that are designed to allow the collection of groundwater samples. Groundwater sampling should be required at the time of installation (to establish baseline conditions) and should be performed at least annually to monitor potential groundwater impacts from ongoing operation of the OWTS. 2-9

10. The DEIR recognizes that all OWTS contribute to nitrate loading. Ongoing inspection and performance monitoring of alternative systems may help ensure that these systems operate as designed. To ensure proper system maintenance and reduce the risk of groundwater contamination from all OWTS, the District recommends that owners of existing traditional and new OWTS systems be required to submit proof that their tanks were pumped and the system inspected every five years. 2-10

11. The District is working with its partners and interested parties in development of a Salt and Nutrient Management Plan (SNMP) as required by the State's Recycled Water Policy. In developing the SNMP, salt and nutrient loading calculations are currently being completed. These calculations are for multiple sources, including OWTS. The District recommends that the DEIR include an evaluation of the increased salt loading that would result from adoption of the ordinance. 2-11

Comments on Special Protection Needed for Source of Supply Watershed Areas

The following comments on the proposed OWTS ordinance are directed to the watershed areas above, draining to, and surrounding source of supply reservoirs, which include Lexington, Coyote, Anderson, Calero, and Almaden reservoirs. The impacts of conventional and alternative OWTS located in these sensitive watersheds that drain to local drinking water source of supply reservoirs, should be considered separately from other areas of the County such as valley and south county ground water zones. 2-12

- 12. The DEIR does not adequately address induced growth and development impacts to source water reservoirs.**

The District does not support the proposed changes in the OWTS ordinance which promote growth and increase residential development in the Lexington Basin, in the Coyote watershed above Anderson and Coyote Reservoirs, and the Alamosas watershed above Almaden and Calero Reservoirs. These listed reservoir watersheds are considered to be sensitive watershed areas because they serve as a local source of supply for drinking water. For example, there are several community water districts in the Lexington basin that use Los Gatos Creek drainage as a source of drinking water, and Lexington Reservoir is used by the San Jose Water Company as an emergency source of drinking water. Lexington Reservoir is considered a potential source of supply for the District as a future local source of drinking water. Lexington is also used by the District to recharge downstream groundwater supplies. As addressed in the District's Integrated Water Resource Planning study, protecting the quantity and quality of our baseline drinking water supplies while addressing increasing water demands for the future is of highest priority for the District. The District encourages community environmental stewardship and land use practices that protect our local surface water and groundwater resources.

The new ordinance will induce growth in the unincorporated areas surrounding source water reservoirs. The DEIR does not adequately address environmental impacts caused by growth and development in the rural areas above source water reservoirs. Beside the increase in the number of developed parcels that will result from the use of alternative OWTS and the increase in contaminant loadings from these parcels, the DEIR does not address growth induced impacts that will result such as the increase in roads, services, schools, traffic, urban runoff, water and air quality impacts, etc. that will result from this growth and development. This growth and development will negatively impact the low risk land uses such as agriculture and open space resources. The District strongly recommends that, for source of supply watershed areas, the proposed ordinance changes be limited to inclusion of alternative design for repairs to failed OWTS at current developed lots. However, alternative designs should not be allowed for promoting growth and increased development or to allow high density development in source water reservoir watersheds.

13. The new OWTS ordinance will increase the vulnerability of source water reservoirs to high risk contaminating activities.

2-13

As an advocate of strong source water protections, the District is opposed to plans that would increase high risk, potentially contaminating activities in the Lexington basin and source reservoir watersheds. Instead of promoting high density development in these sensitive watersheds, the County Planning process must integrate water resource protection policy into planning and public works ordinances such as the OWTS ordinance, including implementing enhanced practices for source water protection, such as greater setbacks, greater lot size requirements and minimal septic development. Based on the Department of Public Health source risk assessment guidelines, the District has established source water protection zones as defined areas around the reservoirs, reservoir outlets, along reservoir tributaries, and the watersheds draining to the reservoir and tributaries. The proposed increased development in these sensitive watersheds are within the water protection zones A-C, and will increase the vulnerability of these drinking water sources to potential contaminants. Land use

regulations within source water protection areas, such as the OWTS Ordinance in the Lexington basin, should not be relaxed, and on the contrary, development requirements need to be tightened specifically within drinking water supply sensitive areas, and to include the source water protection areas.

14. Both conventional and alternative systems are sources of contaminant loadings to the environment over time and contribute to water quality impairment.

2-14

While alternative designs provide options for certain properties with site limitations such as depth to groundwater, inadequate parcel size, and poor drainage, these systems still have the same mechanical and operational limitations as conventional onsite treatment systems. This include improper usage and maintenance by the owner, failing parts and malfunctions, saturated soils, erosion, soil compaction, poor filtration etc. Alternative design systems have a limited life span similar to conventional systems. For areas located in the source of supply reservoir watersheds, the District supports an amended project Alternative 2 'Limited Use of Alternative OWTS'—amended for repairs of existing failing systems only. The use of alternative OWTS systems for new development will promote growth and increase environmental damages in the watersheds draining to Lexington, Anderson, Coyote, Almaden and Calero reservoirs, which are drinking water source reservoirs. In addition, the District supports project Alternative 3 'Maintain a Minimum Lot Size Greater Than 1 Acre'. Conventional and alternative OWTS should be sited on remote parcels in unincorporated areas that are sufficiently large enough and have adequate site conditions to allow for the system to be repaired or replaced when it fails.

Conventional and alternative design OWTS have a limited life span of 10 to 30 years, and will fail over a given time period. The issues raised by the District and LAFCO outlined briefly in Section 1.4 Area of Controversy still apply as OWTS, both conventional or with alternative designs, are high risk contaminant sources to groundwater and surface water. Alternative and conventional OWTS that are poorly designed or installed, that are not maintained or monitored, that are not operated correctly, will fail over time and impair water quality. Improper treatment systems contribute pathogens, nitrates, and emerging contaminants to source water, and increase the eutrophication of the reservoir; over time, the cumulative impact would be considered significant water quality impairment.

In addition, the Diablo range and the Santa Cruz mountains, such as the Lexington watershed and rural watersheds above local water supply reservoirs, are characterized by highly erodible soils and prone to landslide, contributing to the likelihood of failure. Development on lot sizes smaller than 1 acre will contribute to increase erosion, sedimentation, urban runoff to the basin and Lexington Reservoir, and increase the risk of contamination. In order to protect source water quality in the Lexington Reservoir as well as other source reservoir watersheds in Santa Clara County, the District continues to support current planning and zoning requirements in drinking water reservoirs and watersheds that protect groundwater and surface water quality from improper disposal of wastewater, including discharges from OWTS, conventional and alternative, to disallow high-intensity development in rural areas where an OWTS is required, and to focus development to areas with existing municipal wastewater treatment systems.

15. The loading rate analysis for alternative design does not account for actual site conditions or usage.

2-15

The analysis of loading rates and potential water quality impacts are made based on properly functioning OWTS under controlled conditions, without consideration of future water quality impacts due to improper or failed systems from poor design, construction, maintenance, and end of life span. The analysis diminishes the impacts by assuming the OWTS will function at maximum efficiency throughout its planned existence and not adjusting for degradation, poor site conditions, mechanical malfunctions, and improper system operations. The cited treatment effectiveness of the alternative systems use referenced values from literature not based on actual site conditions or usage. In addition, cumulative impacts do not consider the current OWTS that will fail in the future as well, due to poor design, construction, maintenance, and end of life span.

The analysis of loading rates does not consider cumulative water quality impacts from anticipated climate change impacts that are anticipated to occur in the region over the next 50 years, such as increases in air and water temperatures, and low water inflow due to prolonged drought conditions, that along with additional nutrient loadings from new OWTS, would contribute to eutrophication of the reservoirs and poor water quality. In addition, the watershed areas of the Diablo range and Santa Cruz Mountains receive significantly greater rainfall than the urban and valley area of Santa Clara County. This contributes to saturated soil conditions, erosion and landslide. Future climate predictions include the likelihood of greater and more intense storm conditions, which would further impact the effective operation of OWTS in these areas.

16. County ordinance should ensure adequate oversight, mitigation, and authorities will be sustained.

2-16

Both conventional and alternative design OWTS systems fail and cannot be replaced if located on inadequate rural parcels. The new onsite wastewater ordinance provides alternative design options for certain parcels in unincorporated areas of the counties and for current property owners with failing septic systems. However, the new ordinance will create areas of residential development in remote, unincorporated areas of the County where there is no remedy for correction when the new systems fail or at their end of lifespan. As part of the new ordinance, the County should specify what authority will monitor the systems, require property owners to properly maintain and operate their system, and ensure the County will have adequate resources in the future to properly permit and monitor OWTS.

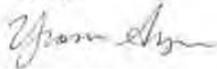
The foremost issue is future protection of the water supply, and source water protection is important to prevent degradation of the resource and enhance water quality. Per the Department of Public Health source water risk assessment guidelines, residential development, onsite waste treatment systems, and sewage treatment are identified as high risks to drinking water quality when located in sensitive drinking water watersheds. The threat from non-point sources of pollution and impairment is not as great today thanks to the current land uses in the District's source watersheds, with the

Mr. David Rader
Page 8
April 18, 2013

large proportion of open space, forested land, and low density residential development, and this can be attributed in part to the County's restrictive residential development ordinance. The primary threat is from changing land uses in these watershed and future land use practices, such as urbanization, further growth and development pressures, increasing the numbers of OWTS, and logging. The best protection for water supply in the source of supply reservoir watershed basins is to maintain current low risk land uses, encourage environmental stewardship and conservation practices, to support current land owners with best management practices, and look for solutions to enhance water quality.

The District appreciates the opportunity to comment on this Program DEIR, and we look forward to reviewing the Final EIR when it is available. If you have any questions, you may reach me at (408) 265-2607, extension 2319, or by e-mail at varrovo@valleywater.org. Please reference District File No. 32679 on future correspondence regarding this project.

Sincerely,



Yvonne Arroyo
Associate Engineer
Community Projects Review Unit

Cc: Mr. Steve Saiz, Environmental Scientist, Central Coast Regional Water Quality Control Board, 895 Aerovista Place, Suite 101, San Luis Obispo, CA. 93401-7906
Mr. Harvey Packard, Supervising Water Resources Control Engineer, Central Coast Regional Water Quality Control Board, 895 Aerovista Place, Suite 101, San Luis Obispo, CA. 93401-7906
Ms. Naomi Feger, Planning Division, San Francisco Bay Regional Water Quality Control Board, 1515 Clay St, Suite 1400, Oakland, CA 94612
S. Tippets, B. Ahmadi, B. Cabral, V. De La Piedra, G. Cook, L. Young, M. Martin, File

Response to Letter from Yvonne Arroyo, Santa Clara Valley Water District

- 2-1 The suggested changes to the description of the County's groundwater basins on page 38 of the DPEIR have been made; see page 91 in Chapter 3 of this FPEIR.
- 2-2 As suggested, discussion of the commenter's source of supply watersheds, which directly supply drinking water to treatment plants has been added to the setting section of Chapter 4.1; see page 92 in Chapter 3 of this FPEIR. Responses to specific concerns about source of supply reservoir watersheds are provided in responses to Comments 2-12 through 2-16.
- 2-3 This comment requests further information about at-grade and mound systems regarding their ability to provide adequate pathogen removal with respect to groundwater separation.

Enhanced removal of pathogens (as compared with conventional OWTS), which justifies reduced vertical separation to groundwater for at-grade and mound systems is based on the following:

- Both incorporate pressure distribution to spread the effluent uniformly over the soil infiltrative surface for maximum soil contact and creation of unsaturated flow conditions;
- Both are designed to disperse the effluent to the native surface soils, which are the most biologically active and aerobic portion of the soil profile, which is advantageous for pathogen removal;
- Mound systems include sand filtration (i.e., a filtering system that distributes measured amounts of treated wastewater to a sand medium) as an integral feature of the design; and
- Under the provisions of the proposed Ordinance, supplemental treatment is required for at-grade systems where the depth to groundwater is less than 3 feet (2-foot minimum).

Mound systems were originally developed in the 1940s and have been used in California since the late-1970s. The State Water Resources Control Board issued Guidelines for Mound Systems in 1980, setting forth siting and design criteria very similar to those proposed for adoption in Santa Clara County. At-grade systems are a variation of the mound system developed in Wisconsin in the early 1980s for use in areas with somewhat more favorable soil and groundwater conditions; they have been used in California since the late 1980s following siting and design criteria similar to those proposed for adoption in Santa Clara County. For more information see:

http://www.nesc.wvu.edu/pdf/ww/publications/pipline/pl_su99.pdf

- 2-4 This comment raises questions about the analysis and conclusions of the groundwater nitrate impact assessment presented in the DPEIR under Impact 4.2-B. Following are responses to these questions.
- a. The commenter's general concern about any increase in nitrate loading due to changes in zoning and lot size requirements in the Coyote Valley and Llagas

Subbasin is noted. The only change in zoning/lot size limitations affecting these areas is the proposed removal of the existing 5-acre minimum lot size limitation for second dwelling units in the San Martin Planning Area, which overlies the Llagas Subbasin. The growth projections identified in the DPEIR indicate the effect of this zoning change would be the potential addition of 74 second dwelling units that would not otherwise be permitted if the 5-acre lot size zoning restriction on second units remains in place. The nitrate loading analysis in the DPEIR (Appendix B) indicates these additional secondary dwelling units could be responsible for an overall incremental groundwater nitrate increase of 0.08 mg-N/L in the San Martin area; this analysis is based on the conservative assumption that the second units would have the equivalent amount of wastewater discharge as a main residence. The limitations, however, on the basis of square footage in the zoning code for secondary dwelling units, they are equivalent to a one or two bedroom addition, which would produce less wastewater flow than a full single family residence; thus the analysis errs on the conservative (safe) side. Since this level of concentration change from secondary units is below the standard analytical detection limit for nitrate-nitrogen (0.4 mg/L by ion chromatography), the DPEIR is justified in determining this potential effect to be insignificant; see subsection "c" of this response below for further information. The DPEIR recognizes that localized, project-specific groundwater nitrate impacts could occur, and this is addressed in both the existing and proposed Ordinance (Section B11-74) through the requirement for project-specific cumulative impact assessments in particular situations; see subsection "d" of this response below for further information.. The guidelines for cumulative impact assessment presented in the draft *Onsite Systems Manual* propose that second unit additions in the San Martin area, on lot sizes of less than 5 acres, would require completion of a cumulative impact assessment per Section B11-74.

- b. Regarding rainfall-recharge estimates, the commenter explains that the nitrate loading calculations presented in the DPEIR likely underestimates the probable effect from OWTS, since the calculations use higher values for rainfall-recharge than the assumption of 10 to 15% of annual rainfall used in the Water District's calibrated groundwater models. Review of the documentation for the Water District's groundwater models ("Draft Coyote Valley Groundwater Flow Model, CVGM", SCVWD Groundwater Management Unit, 2005 and "Coyote Valley Groundwater Report for Metcalf Energy Center", CH2MHILL, July 2000) indicates that the 10 to 15% rainfall-recharge assumption is not appropriate for the DPEIR nitrate loading analysis for the following reasons:
 - In the Water District's groundwater models, the 10 to 15% factor is applied uniformly over the entire areal extent of each groundwater basin, without detailed consideration of different land uses. Thus, it represents a composite or average rainfall-recharge value for all urban and rural areas in the contributing area. In Questa's nitrate loading analysis for the DPEIR, the rainfall-recharge factor was determined specifically unincorporated property utilizing OWTS (principally larger, rural parcels) and applied only to the acreage represented by those properties. The Water District's rainfall-recharge values are less than the values developed by Questa because it is

influenced by the higher amount of impervious area (e.g., roads, parking areas and buildings) in urban areas such as San Jose, Morgan Hill and Gilroy and along Highway 101 and other roadways.

- According to Water District reports noted above, the calibration process supporting the 10 to 15% rainfall-recharge factor included an assumed recharge volume of 0.75 acre-feet per year attributable to OWTS discharges (based on 50% of the annual domestic water pumping volume, estimated at 1.5 acre-feet per acre). This is equal to an annual sewage volume of approximately 244,000 gallons per acre, or about 670 gallons per day (gpd) per acre. This greatly exceeds the volumes determined by Questa's detailed inventory and analysis of OWTS discharges in connection with the DPEIR (Appendix B) which, for the South County groundwater basin areas, show projected annual wastewater loading (recharge) volumes in the range of about 1,700 to 9,500 gallons per acre (5 to 22 gpd/acre) for OWTS parcels. Therefore, by incorrectly attributing such a high amount of recharge to OWTS discharges, the Water District arrived at an underestimation of the portion of the total recharge that could be attributable to rainfall percolation.
- The Water District's 2005 report ("Draft Coyote Valley Groundwater Flow Model, CVGM", SCVWD Groundwater Management Unit, 2005) ends with a final recommendation to "Acquire and update areal recharge using a better approach". The discussion under this recommendation emphasizes the high amount of uncertainty in the water budget simulation related to land use factors, and the need to update and improve the recharge estimates in the future. The data and analysis regarding OWTS densities and recharge estimates developed as part of the DPEIR is consistent with this recommendation because it provides a specific analysis based on land use factors.
- c. The commenter appears to have been misdirected in its understanding of the projected nitrate concentration increases discussed in the DPEIR and summary of projected nitrate concentration increases (bottom of page 77). To provide better clarity on this point, changes have been made to the text on page 77 (middle of third paragraph) and to Table 4.2.7 on page 79; see page 94 in Chapter 3 of this FPEIR for those changes.
- d. The projected concentration increases include the effects of the existing 12,500 OWTS in the County and from the new OWTS that could potentially be installed under the existing and new Ordinance. This information is detailed in Appendix B, but not fully explained in the text of the DPEIR.

Regarding project-specific cumulative impact assessments, the commenter's support of the Ordinance provisions requiring cumulative impact assessments, especially as regards potential nitrate impacts, is noted for the record. This is a provision of the existing Ordinance that has been strengthened in the proposed Ordinance with the addition of more specific assessment guidelines and criteria (see draft *Onsite Systems Manual*, Part 2.E, Appendix B of the FPEIR). The commenter's recommendation to require

cumulative impact studies or the mandatory inclusion of enhanced nitrogen removal systems for certain areas based on ambient groundwater nitrate concentrations is valuable, the selection of 6.4 mg-N/L as the groundwater concentration criterion is not supported. The comment explains in parenthesis that the 6.4 mg-N/L value is based on a determination or assumption that OWTS will increase the nitrate concentration in groundwater by enough (inferred to be 3.6 mg-N/L), to cause the groundwater nitrate level to reach the drinking water standard of 10 mg-N/L in such situations. As discussed in Response 2-4c above, the cumulative nitrate loading analysis presented in the DPEIR was misunderstood. Nevertheless, implementation of this Ordinance section allows the Director to take into consideration various factors pertinent to cumulative nitrate loading effects, including site specific aquifer conditions. The commenter is encouraged to provide to the Director technical information on special areas of nitrate concern to further assist in the implementation of this provision of the Ordinance.

- 2-5 This comment about the proposed removal of the 1-acre OWTS lot size limitation for Lexington Basin relates to other comments in this letter (2-12 through 2-16), and mentions specific provisions of the Central Coast Regional Water Quality Control Board (RWQCB) Basin Plan related to lot size limitations for OWTS.

Regarding source of supply reservoir watersheds, please see Responses 2-12 through 2-16. Regarding the Central Coast RWQCB Basin Plan, the referenced provisions are not applicable to the proposed removal of the 1-acre lot size minimum for OWTS in Lexington Basin for the following reasons.

- a. The Central Coast RWQCB lot size provisions for OWTS apply to the creation of new land divisions, not to the use of OWTS on existing legal lots of record, as explained below. The Ordinance and accompanying General Plan and Zoning Ordinance changes do not contain any proposed modifications to minimum lot sizes for new subdivisions;
- b. Consistent with the Central Coast RWQCB Basin Plan, Santa Clara County's existing OWTS Ordinance and the proposed new Ordinance contain the requirement that new land divisions using OWTS must provide a minimum lot size of one acre, and this must be increased to a minimum of 2.5 acres for land divisions within reservoir watersheds. These requirements apply uniformly throughout the entire County under the existing Ordinance, and will continue to do so under the proposed Ordinance.
- c. Lexington Basin lies within the jurisdiction of the San Francisco Bay RWQCB (not the Central Coast RWQCB), whose Basin Plan does not specify minimum lot size requirements for new land divisions or for use of OWTS on existing lots of record.

- 2-6 In reference to Impact 4.2-1, this comment expresses the commenter's position on the application of horizontal setback requirements from water bodies for OWTS and references statements in the DPEIR regarding the Water Collaborative Guidelines and Standards for Land Use Near Streams ("Guidelines"). Following are responses to each of the commenter's positions:

- a. The commenter does not support any ordinance changes that would allow reduced setbacks from streams and other water features for new or replacement OWTS. No changes are proposed in the Ordinance allowing any reduced horizontal setbacks. The only changes in OWTS setback requirements (Ordinance Section B11-67) are those that increase the minimum horizontal distances (e.g., for public water supply wells, public water supply surface water intakes, and swimming pools).
- b. The commenter does not support any building project with an intensification of use (major or minor) unless the OWTS meets all new system standards. On this issue, the provisions of the existing Ordinance and the proposed Ordinance are the same. "Major" intensification of use requires OWTS compliance with all new system standards; "minor" intensification of use is subject to various performance standards, but does not necessarily require OWTS compliance with all new system standards. The commenter's opposition to this aspect of the OWTS Ordinance is noted; however, no explanation of the basis for the commenter's position is provided.
- c. The commenter supports the repair of existing OWTS following new system standards to the maximum extent practicable, provided that (1) the repair OWTS is no closer to any water body than the existing OWTS, and (2) the repair does not expand the OWTS nor cause or allow an expansion or intensification of use on the site. The proposed Ordinance contains no changes from the existing Ordinance in regard to the handling of OWTS repairs. Additionally, the County's requirements and practices for OWTS repairs and replacement is consistent with the recently enacted SWRCB Policy for OWTS, which states in the applicable Tier 2-Local Agency Management Program requirements (paragraph 9.4.11): "For replacement OWTS that do not meet the above horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable".
- d. In regard to the discussion of OWTS repairs, the commenter states that the reference to septic system "exceptions or variances" contained in the Water Collaborative Guidelines is intended to refer only to variances described in the Basin Plan, such as for slopes steeper than 30% - not for stream setbacks as discussed in the DPEIR. The County disagrees with this interpretation, which is not supported by the text of the Water Collaborative Guidelines, as reproduced below. The Guidelines reference "Santa Clara County requirements" as well as the Basin Plan; County Code Section B11-85 (Abatement) directs failing OWTS to be brought into compliance "... to the extent possible...", allowing for setback exceptions as explained in the DPEIR.

"X. SEPTIC SYSTEMS

X.A. Design of Septic Systems

Follow requirements of the RWQCB or Santa Clara County as applicable including: Leach field setback 100' from top of bank, 50' from swale, 200' from high water mark of reservoir, prohibited in 10 year floodplain or areas observed to flood from field observations. Consult with SCVWD to determine whether land

feature is an active floodplain or swale and assist in determining high water marks at reservoirs.

EXCEPTION: *Exceptions or variances are allowed per RWQCB or Santa Clara County requirements. Please note that since 10-year floodplain maps do not exist, any area of historical flooding should be assumed to be in the 10-year floodplain.”*

- 2-7 In reference to Impact 4.2-N, this comment states that the proposed Ordinance could cause groundwater nitrate levels to exceed drinking water standards in some areas—particularly because there is no ongoing program of mandatory well monitoring—and therefore mitigation measures should be included for protection of well water supplies where new OWTS are proposed.

The analysis provided in the DPEIR does not indicate that the proposed Ordinance will cause groundwater nitrate levels to exceed drinking water standards. See the discussion under Impact 4.2-B and supporting nitrate loading projections in Appendix B. Impact 4.2-N discusses the potential secondary impact of the Ordinance that could allow someone to propose a new residence using an OWTS in a location where the existing groundwater is already impacted by high nitrate levels from other sources, typically agricultural activities. The DPEIR points out that County requirements for domestic water supply wells require appropriate water quality testing (including nitrate analysis) to verify the suitability of the well water prior to building approval. Additionally, all private well owners (with or without an OWTS) are provided information and guidance from the Water District that encourages on-going water quality testing, including annual nitrate analysis especially in areas near agricultural crop production, livestock enclosures, manure or compost storage areas (“A Guide for the Private Well Owner”, SCVWD). The comment does not offer any new information that would warrant imposition of mandatory on-going water well monitoring specifically for new OWTS owners. It should be noted, however, that under both the existing Ordinance and the proposed Ordinance the Director of Environmental Health has the authority to require the completion of a cumulative impact assessment for projects where groundwater nitrate loading is of special concern. Guidelines provided for cumulative impact assessment studies (see *Onsite Systems Manual*, Part 2.E) include consideration of project-specific mitigation measures, which may include on-going monitoring of well water quality if appropriate.

- 2-8 The discussion in Appendix B (Growth Projections Memorandum, bottom of page 26) regarding reported groundwater nitrate data from the 2010 Groundwater Water Quality Report has been corrected as suggested.

- 2-9 This comment recommends the inclusion of groundwater monitoring requirements for any OWTS located where the groundwater separation distance is less than 5 feet.

Section B11-93 of the proposed Ordinance provides for the establishment of performance monitoring requirements for alternative systems, which covers those OWTS where a groundwater separation distance of less than 5 feet would be permitted. The monitoring requirements are to be a condition of the operating permit and determined based on various factors, including the depth to groundwater and other site characteristics. As noted in the *Draft Onsite Systems Manual*, groundwater

monitoring may be included as a specific requirement for particular locations or types of systems; however, it is not proposed to be a universal requirement as recommended by the commenter. Groundwater separation requirements of less than 5 feet are proposed in the Ordinance for different alternative OWTS based on their ability to provide an equivalent (or better) level of effluent treatment and groundwater protection as compared with a conventional gravity OWTS having 5 feet separation to groundwater. Also, as pointed out in the DPEIR (beginning at bottom of page 80), most alternative OWTS provide substantially greater removal of nitrogen than conventional OWTS, regardless of the groundwater separation distance below the dispersal field. Final approval of the County's approach to OWTS monitoring will be part of the Local Agency Management Program review process with the San Francisco Bay RWQCB per the new SWRCB Policy for OWTS.

- 2-10 This comment recommends that the County impose a mandatory requirement for all owners of OWTS (existing and new) to submit proof that their septic tanks were pumped-out and the system inspected every 5 years, to assure proper maintenance and ostensibly to help protect against groundwater contamination from nitrate loading.

The recommendation for mandatory septic tank pump-out for all OWTS every 5 years resembles an initial proposal made by the State Water Resources Control Board (SWRCB) in 2008 for statewide application under AB 885 regulations for OWTS; this approach was subsequently withdrawn and is not included in the final OWTS Policy adopted by the SWRCB in 2012. Under the County's proposed Ordinance, operation and maintenance of OWTS is addressed through: (a) issuance of operating permits for all alternative systems; and (b) establishment of new septic tank inspection/reporting requirements that apply when any OWTS is serviced. The following describes the County's proposed inspection/reporting approach: (a) it is patterned after a highly successful program in Santa Barbara County implemented in 1999 (for further information see: <https://www.countyofsb.org/uploadedFiles/phd/EHS/21029Final%20Report.pdf>); (b) it aims to utilize and track OWTS maintenance information that is already routinely collected by most septic tank pumping contractors; and (c) it avoids the difficulty and cost of enforcing new requirements on existing OWTS owners. Additionally, the proposed approach is intended to address the County's Local Agency responsibilities for on-going monitoring and assessment of OWTS under the new State OWTS Policy. Lastly, it should be noted that while regular septic tank pump-outs are an important OWTS maintenance practice, pump-outs are mainly to protect against dispersal field clogging, plumbing backups, surfacing effluent and associated public health hazards; they have little to do with reducing nitrate loading from OWTS. See page 93 in Chapter 3 of this FPEIR for revisions based on this comment.

- 2-11 This comment requests analysis of the salt loading effects on groundwater associated with OWTS that would result from the proposed Ordinance.

An analysis of salt loading effects of OWTS discharges in the County has been completed and added to Appendix B (Growth Memorandum), which is a part of the appendix of this FPEIR. Also see changes to the EIR text on page 93 in Chapter 3. Total dissolved solids (TDS), one of the two common measures of the salinity of

water, was used for the analysis. The analysis was conducted watershed-by-watershed, similar to the nitrate loading analysis presented in the DPEIR. Calculations were made for existing conditions, development projections under the current Ordinance, and development projections under the proposed Ordinance. The discussion under section 4.2.A.6.b (“Dissolved Solids”) has been expanded to include a summary of the results of the salt loading analysis, which indicate insignificant salt loading increases in groundwater due to OWTS. Under existing conditions, the average TDS contribution from OWTS is about 2 mg/L in the North County watersheds and 3 mg/L in the South County watersheds, projected to increase by about 0.5 mg/L and 1.0 mg/L (due to induced development), respectively, under the proposed Ordinance. The TDS contribution is simply a function of the wastewater volume from new development. The typical background TDS concentrations in the County range from about 200 mg/L to 400 mg/L. Thus, the projected increase would amount to less than about 0.5 percent of background, which is insignificant. The recommended TDS level for drinking water is 500 mg/L; the maximum level is 1,000 mg/L. The results for watersheds having the highest OWTS density are summarized in the table below. This additional information provided as part of the Final PEIR does not identify a new significant impact from the project..

- 2-12 This comment expresses the commenter’s concern about protecting source of supply watersheds, states their opposition to allowing use of alternative OWTS for new development in these watershed areas, and asserts that the DPEIR fails to address growth-related impacts of the proposed Ordinance.

The Water District’s long-standing stewardship and concerns about watershed protection is noted, along with their opposition to the proposed changes that would allow use of alternative systems for new development in source-of-supply watersheds. Regarding growth-induced impacts, the commenter is referred to the discussion of “Indirect Impacts” beginning at the bottom of page 34 of the DPEIR, and to the respective section in Chapters 4.1 through 4.9 where the potential growth-induced impacts of the proposed Ordinance are reviewed for each environmental topic area.

- 2-13 This comment discusses the commenter’s support of policies for enhanced practices for source water protection and opposition to policies increasing vulnerability of source water reservoirs to high risk contaminating activities.

The Water District’s strong advocacy for source water protections is noted for the record. The proposed Ordinance supports enhanced practices for source water protection through a variety of measures, including: (a) adoption of more restrictive setback requirements from streams and water bodies near water supply intakes per the recently enacted State OWTS Policy; (b) new requirements for inspection and reporting of OWTS conditions at the time of septic tank servicing; and (c) requirements for operating permits, including monitoring and reporting, for all alternative systems in the county.

Regarding greater setback distances near surface water supply intakes, following is the relevant text of the State Water Resources Control Board's OWTS Policy regarding this issue, which became effective May 13, 2013:

"9.4.10.4 Where the effluent dispersal system is within 1,200 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body.

9.4.10.5 Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water systems' surfacewater intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body.

9.4.11 For replacement OWTS that do not meet the above horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such cases, the replacement OWTS shall utilize supplemental treatment and other mitigation measures, unless the permitting authority finds that there is no indication that the previous system is adversely affecting the public water source, and there is limited potential that the replacement system could impact the water source based on topography, soil depth, soil texture, and groundwater separation.

9.4.12 For new OWTS, installed on parcels of record existing at the time of the effective date of this Policy, that cannot meet the above horizontal separation requirements, the OWTS shall meet the horizontal separation to the greatest extent practicable and shall utilize supplemental treatment for pathogens as specified in section 10.8 and any other mitigation measures prescribed by the permitting authority."

The above requirements are applicable statewide under the Tier 2-Local Agency Management Program option, which is how they are proposed to be implemented in Santa Clara County. The text of the proposed Ordinance issued with the DPEIR included, under section B11-67, a footnote referring to the authority of the Director to prescribe more restrictive setbacks for water source protection per State and Regional Water Board policies. Based on the now effective State OWTS Policy, the horizontal setback table in section B11-67 of the proposed Ordinance has been revised as follows (again, additions to the text are underlined):

- “(6) Horizontal Setbacks. Minimum horizontal setback distances from various site features to OWTS components shall be as follows:

Site Feature	Minimum Setback Distance* (feet)	
	To Dispersal Field	To Septic Tank
Non-public water supply wells and springs	100	100
Public water supply wells	150	150
Watercourses		
• <u>General</u> (from top of bank)	100	100
• <u>Between 1,200 to 2,500 feet from public water system intake*</u>	<u>200</u>	<u>100</u>
• <u>Within 1,200 feet from public water system intake*</u>	<u>400</u>	<u>100</u>
Reservoirs (from high water mark)		
• <u>General</u>	200	200
• <u>Within 1,200 feet from public water supply I intake*</u>	<u>400</u>	<u>200</u>
Cuts or steep embankments (from top of cut)	4 X h**	10 feet
Steep slopes, >50%(from break of slope)	4 X h**	10 feet
Drainageway/drainage swale (from edge of flow path)	50	50
Foundation	10	5
Property line	10	10
Septic tanks	6	N/A
Swimming pool	25	25
Road easement, pavement, or driveway	5	5
* <u>For areas tributary to and upstream of water supply intake; setback distance measured from high water mark. Exceptions allowed per SWRCB OWTS Policy, as follows: (a) for replacement OWTS, comply to the maximum extent practicable and incorporate supplemental treatment unless director finds no impact or significant threat to water source; (b) for new OWTS on pre-existing lot of record (pre-May 2013), comply to maximum extent practicable and incorporate supplemental treatment for pathogens per sections 10.8 and 10.10 of SWRCB OWTS Policy.</u>		
** h equals the height of cut or embankment, in feet. The required setback distance shall not be less than twenty five feet nor more than one hundred feet.		

These changes provide additional water quality protections by providing greater buffer (setback) area between OWTS and water supply intakes and do not change EIR conclusions regarding impact significance.

Regarding the commenter’s stated opposition to high risk, high intensity development in source reservoir watersheds, the proposed Ordinance neither promotes nor contains any plans for development. As discussed in the Project Description (Chapter 3 of the DPEIR), the proposed Ordinance: (a) retains the current minimum lot size restriction of 2.5 acres for new land divisions in reservoir watershed areas; and (b) specifically precludes alternative systems from being used as the basis for new land divisions. Additionally, as noted in the introduction to Chapter 4 and

various other locations in the DPEIR, any new development using OWTS would be subject to other County planning and building requirements (e.g., building site approval, design review, grading ordinance) as well as other constraints that could make development infeasible (e.g., severe slopes, geologic hazards, road access, sensitive biological resources, and water availability). To conclude, adoption of the Ordinance will not result in any significant water quality impacts. Additionally, the Board of Supervisors will independently approve or deny the Ordinance and consider all relevant information prior to making that decision, including correspondence from the District.

- 2-14 This comment (a) presents the commenter's position regarding project alternatives; (b) states their opinion about the limited life span, erosion hazards and cumulative water quality impairment from OWTS; and (c) expresses their continued support for current planning and zoning requirements in drinking water reservoir watersheds.
- a. The commenter's position in favor of not allowing the use of alternative OWTS for new construction in source of supply watersheds and maintaining the current Lexington Basin 1-acre minimum lot size for new OWTS is noted for the record. The suggested alternative that would prohibit alternative OWTS in source of supply watersheds would be a hybrid alternative combining aspects of the project as proposed and Alternative 2. As the DPEIR notes, the County has the option of approving such a hybrid alternative. This alternative would reduce the number of potential new units, thereby reducing indirect project impacts, but not as much as Alternative 2. As noted in responses to this letter, this alternative would not be required to reduce potential water quality impacts to a less-than-significant level.
 - b. The commenter's opinion about the limited (10 to 30 years) life span of OWTS reflects the thinking of the past when septic systems were commonly viewed as temporary measures for vacation homes or until the municipal sewers arrived. However, OWTS are now considered a long-term wastewater solution for the life of the structure (http://www.nesc.wvu.edu/pdf/ww/septic/pl_su04.pdf); and this is reflected in OWTS code requirements and the thoroughness of site evaluation, design and construction procedures. In their 1997 Response to Congress (http://water.epa.gov/infrastructure/septic/upload/septic_rtc_all.pdf), the US EPA reported that approximately 25% of the U.S. population and 37% of new development in the U.S. is served by decentralized (onsite) wastewater treatment systems. The warning that all OWTS eventually fail within a 10 to 30-year period, leading to water quality impairment, is contradicted by the experience with OWTS in the Lexington Basin. There are currently over 1,300 OWTS in the Lexington Basin, estimated in the 1981 Montgomery Report to be mostly 30 to 50 years old and installed under antiquated code requirements. These OWTS are now mostly 60 to 80 years old and, while many have been repaired or upgraded over the years, they have not caused impairment of the water quality or any beneficial uses of Lexington Reservoir.
 - c. The Water District's support for current planning and zoning requirements in drinking water reservoir watersheds is noted. Nothing in the proposed Ordinance promotes high-intensity development in rural areas or changes the County's

existing planning and zoning requirements aimed at protecting water quality and other environmental resources within the source of supply reservoir watersheds.

- 2-15 This comment challenges the analysis of cumulative wastewater loading impacts presented in the DPEIR in regard to inadequate consideration of: (a) design and operational aspects of alternative OWTS; and (b) effects of anticipated climate change in the region.
- a. Regarding OWTS Design and Operational Aspects, the commenter incorrectly asserts that the cumulative water quality impact analysis relies on the assumption that the OWTS would function at "...maximum efficiency throughout its planned existence..." As explained in the cumulative wastewater loading analysis contained in Appendix B, the estimated nitrogen loading rates for OWTS were based on widely accepted data for conventional septic tank systems, with no "credit" given for the improved level of nitrogen reduction generally provided by alternative designs. This is a conservative (safe) assumption. With respect to nitrogen removal, the analysis assumes that alternative treatment systems can be expected to perform at least as good as septic tanks, and that alternative dispersal fields will perform at least as good as gravity trenches.

In regard to failure of alternative OWTS because of design or operational issues, the requirement for ongoing inspection and maintenance under the conditions of an operating permit will limit the occurrence and duration of system failures, with negligible effect on cumulative nitrogen loading rates. The fact that many existing OWTS will eventually fail and require repair/replacement is inevitable. However, it is not the policy or practice in Santa Clara County to let OWTS failures go unattended. Based on experience of other counties in the region, under the proposed Ordinance the ability to address OWTS failures with a broader range of alternative design approaches will likely lead to improved OWTS repairs; this will include the benefit of reduced nitrogen loading in many cases. Consequently, the cumulative impact analysis in the DPEIR reasonably assumes that future failure of existing OWTS will continue to be addressed as they arise and will have negligible effect on projected nitrogen loading rates.

- b. Regarding climate change Impacts, should climate change in the region over the next 50 years bring about warmer air and water temperatures and lower rainfall, as suggested in this comment, the effects related to OWTS could be both positive and negative. On the positive side: (1) warmer temperatures would contribute to greater treatment effectiveness, for both anaerobic (septic tanks) and aerobic (supplemental) treatment processes; and (2) lower rainfall totals could lead to a decline in the groundwater levels in certain locations, providing greater unsaturated soil depth available for assimilation of wastewater constituents. On the negative side: (1) lower rainfall amounts would reduce the volume of water available for recharging the local aquifers, increasing the projected nitrogen concentration effects of OWTS discharges on groundwater quality; and (2) where surface waters are supplied by groundwater inflow, surface water nitrogen levels could also be affected. Due to the

significant uncertainty about the anticipated magnitude of climate change in the area, it would be highly speculative to attempt to quantify whether the net effect would be positive or negative in regard to operation and effects of OWTS. Additionally, other factors that would have to be considered are: (1) improvements in onsite wastewater treatment technologies over the next 50 years; and (2) institution of new water management practices, such as the current trend toward requiring onsite percolation of roof and other drainage waters, that could compensate for lower rainfall-recharge amounts.

This comment also expresses concerns about the possibility of climate change leading to more severe winter storm events which could adversely affect the operation of OWTS, due to more extensive soil saturation, erosion and landslides. The proposed Ordinance, like the existing Ordinance, includes provisions for thorough site evaluation, including soil testing, groundwater exploration and geotechnical/slope stability analysis (in steeper terrain) for OWTS design and approval. Additionally the proposed Ordinance includes new requirements for erosion control as part of new OWTS installations, which is not covered in the existing Ordinance. Finally, it should be noted that several of the alternative system technologies incorporated in the proposed Ordinance are better suited than conventional OWTS to address more challenging soil, groundwater and slope constraints in the mountainous regions of the County. Moreover, the background experience with these alternative technologies in California has come from their widespread use over the past 20 to 30 years in the North Coastal counties of Marin, Sonoma, Mendocino and Humboldt, which are accustomed to much higher rainfall conditions and storm intensities than Santa Clara County.

- 2-16 This comment (a) expresses the commenter's concerns about future failure of inadequately sited OWTS in remote areas; (b) requests clarification regarding responsibilities for oversight of new OWTS; and (c) emphasizes the importance of maintaining current policies that promote large amounts of open space, forested land and low density residential development in watershed protection areas.
- a. The County does not support the commenter regarding the presumption that the proposed Ordinance will lead to a proliferation of failures and repair problems from new, inadequately sited OWTS. Current County code requirements and procedures for soil and site evaluations, testing, and design of OWTS are considerably more comprehensive and thorough than the practices followed in the past (e.g., 30 to 80 years ago) when the majority of OWTS in the County were approved and installed under minimal or antiquated codes. The proposed Ordinance strengthens several aspects of the existing requirements (e.g., percolation testing methods, steep slope design requirements, technology improvements) to incorporate current knowledge and advances in the field. Additionally, the background and training of individuals involved in the siting and design of OWTS (e.g., environmental health specialists, engineers, geologists, etc.) has also improved substantially over the years. Because of these factors, the common experience in the region and throughout Northern California is that existing older OWTS, not new systems, pose the greatest source of failures, repair problems and associated threats to public health and water quality.

- b. Requirements and responsibilities for ongoing monitoring and maintenance of alternative OWTS are addressed in Sections B11-92 and B11-93 of the proposed Ordinance. As indicated, the County will be responsible for administering this program through the use of renewable operating permits, supported through permit fees. The property owners will be responsible for their own OWTS. These requirements apply to both new and repair/replacement systems that involve alternative designs. For conventional OWTS (both existing and new), monitoring and maintenance will continue to be the responsibility of the property owner, augmented with the proposed adoption of new requirements for routine inspection and reporting of OWTS operating conditions as detailed in Section B11-89 of the proposed Ordinance.
- c. The commenter's concerns about maintaining current low risk land use practices for watershed protection is noted. Nothing in the proposed Ordinance changes the County's existing zoning and land use requirements that apply to development within the source of supply reservoir watersheds.

**Projected Long-term Groundwater-Salt Loading Effects for Selected Watersheds & Overall Average
(mg/L Total Dissolved Solids, TDS)**

Watershed Sub-basin	Typical Source Water Quality*	Estimated Background Groundwater Quality**	Existing Conditions	Projected for Existing Ordinance	Projected for New Ordinance	Projected Difference Existing Conditions vs New Ordinance
			TDS Increase due to OWTS (mg/L)	TDS Increase due to OWTS (mg/L)	TDS Increase due to OWTS (mg/L)	TDS Increase (mg/L)
Adobe Creek	270	200	16.9	19.0	19.5	2.6
Permanente Creek	270	200	8.7	9.1	9.4	0.7
Lexington Basin	270	200	5.6	6.3	7.0	1.4
Llagas Morgan Hill	340	270	10.0	11.4	12.3	2.3
Llagas San Martin	340	270	13.0	14.4	15.7	2.7
North County Watersheds (ave)	270	200	1.8	2.1	2.3	0.5
South County Watersheds (ave)	340	270	2.9	3.5	3.8	0.9

* TDS concentration of drinking water at properties served by OWTS

** TDS concentration due to mineral pickup through soil and geologic strata.

Note: TDS drinking water standards are 500 mg/l recommended, and 1,000 mg/l maximum.



Central Coast Regional Water Quality Control Board

April 15, 2013

Santa Clara County Planning Office, County Government Center
c/o David Rader
david.rader@pln.sccgov.org

Dear Mr. Radar,

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT, SANTA CLARA COUNTY ONSITE WASTEWATER TREATMENT SYSTEMS ORDINANCE, SCH# 2011112024

Thank you for the opportunity to review the Draft Program Environmental Impact Report (DEIR) for the February 2013 Santa Clara County Onsite Wastewater Treatment Systems Ordinance (OWTS Ordinance). The Central Coast Regional Water Quality Control Board (Water Board) is a responsible agency under the California Environmental Quality Act (CEQA). Water Board staff understands that the project is a comprehensive update and replacement of Santa Clara County's Onsite Wastewater Treatment System regulations for OWTS in the unincorporated parts of the county.

General/Opening Comments

Water Board staff supports and commends Santa Clara County for developing the ordinances, policies, and OWTS Manual presented. The OWTS Ordinance addresses issues critical to groundwater recharge area protection, stream setbacks, centralized development, centralized wastewater treatment, and collaborative regional planning. The successful implementation of policies addressing these critical issues should effectively restore and protect water quality (i.e. help mitigate potential cumulative impacts from projected land use activities). Santa Clara County is on the forefront of addressing these critical issues.

Wastewater Management - Salts Management

Salts (sodium, chloride, and total dissolved solids) loading from wastewater is a major cause of groundwater quality degradation. Salty wastewater also inhibits a community's ability to recycle water. The DEIR should address this environmental impact. To mitigate the environmental impacts of development, the final EIR should include a mitigation measure requiring Santa Clara County to adopt an enforceable regulation requiring all brine disposal to be performed offsite at a certified brine receiving facility, or be disposed of in a manner that will not have an effect on groundwater quality. In addition, mitigation measures for salt management should include a prohibition of self-regenerating water softeners (those which discharge salt) in all new development. These mitigation measures are key to reducing the environmental impacts of wastewater discharges.

3-1

While Santa Clara County staff need to develop policies for the construction of new OWTS, there should also be a policy that requires proof of the adequacy of wastewater treatment

3-2

JEFFREY S. YOUNG, CHAIR | KENNETH A. HARRIS JR., INTERIM EXECUTIVE OFFICER

services for new facilities. Proposed policies do not apply the requirements to existing satellite wastewater systems for possible future connections. Continuance of existing satellite wastewater treatment systems can have cumulative impacts to surface waters and groundwater. To mitigate for the environmental impacts of development, the final EIR should include a mitigation measure requiring Santa Clara County to include a Public Service policy stating existing satellite wastewater treatment systems must establish a connection to regional, urban, or rural center wastewater treatment system when these systems become available.

In addition, the mitigation measures should require adoption of an enforceable regulation requiring any new development's wastewater collection system be tied into the nearest county regional, urban, or rural center wastewater treatment facility when available, followed up by abandonment of the existing satellite system, if applicable. Santa Clara County should require assurances that the existing wastewater systems are capable of accepting maximum projected wastewater flows from projects at ultimate build-out. These mitigating measures are key to reducing impacts to surface water and groundwater.

3-3

Thank you for your attention to this letter. We look forward to your responses in the final EIR. If you have questions, or would like to meet to discuss these comments, please contact Cecile DeMartini at (805) 542-4782, or Chris Adair at (805) 549-3761.

Sincerely,



Digitally signed by Chris Adair
DN: cn=Chris Adair, o=Central
Coast Water Board, ou,
email=cadair@waterboards.ca.gov,
c=US
Date: 2013.04.15 11:07:14 -07'00'

for
Kenneth A. Harris Jr.
Interim Executive Officer

cc:

Ms. Cecile DeMartini
Central Coast Water Board
cdemartini@waterboards.ca.gov

CRD/xxx
April 15, 2013
s:\ceqa\comment letters\santa clara county\santaclara_owts deir comments.docx
ECM# 788849

Response to Letter from Kenneth A. Harris, Jr., Central Coast Regional Water Quality Control Board

- 3-1 The County agrees there is a need for adoption of appropriate management practices for disposal of the brine wastewater produced by water softeners. However, this issue is pertinent to domestic water users throughout most of Santa Clara County, and is not unique to properties served by OWTS. As pointed out in Comment letter No. 2 from the Santa Clara County Valley Water District, multiple parties are currently working with the Water District in the development of a Salt and Nutrient Management Plan (SNMP) for the Santa Clara County. The consideration of recommendations and requirements related to use and management of water softeners in the County is more appropriate under the SNMP than under the proposed OWTS Ordinance. However, please refer to Response 2-11 for information regarding the estimation of salt loading effects of OWTS discharges, as requested by the Water District. The analysis, which includes an allowance for the effects of water softeners, shows that OWTS represent a very minor source of salt (TDS) loading to the groundwaters in Santa Clara County. As described in more detail in Response 2-11, brine would not result in a new significant impact that was not addressed in the DPEIR, and no mitigation is required for this project.
- 3-2 The Regional Water Board's request that the EIR specify mitigation measures to address the potential water quality effects associated with existing "satellite" wastewater treatment systems falls outside the scope of the proposed Ordinance and EIR. The "satellite" wastewater treatment systems referred to by the Regional Water Board are understood to be small community systems which serve isolated residential subdivisions or clustered development. While County planning policies do not favor this type of development (see Tables D-1 and D-2) and "satellite" wastewater facilities are rare in Santa Clara County, Sections B11-60 and B11-66 clarify that the proposed OWTS Ordinance does not apply to community wastewater treatment systems, defined as those serving multiple discharges under separate ownership. Such systems specifically require approval from the appropriate Regional Water Board.
- 3-3 This comment regarding recommended mitigation measures for new "satellite" wastewater treatment systems also falls outside the scope of the proposed Ordinance and EIR, as explained in Response 3-2 above. It should be noted, however, that with respect to those OWTS encompassed by the proposed Ordinance, requirements for connection to sanitary sewer systems, where available, are covered in Section B11-62.

From: Colin Jung <ColinJ@cupertino.org>
Subject: **Cupertino City Comments on DPEIR for OWTS Ordinance**
Date: March 5, 2013 11:55:26 AM PST
To: "david.rader@pln.sccgov.org" <david.rader@pln.sccgov.org>
Cc: Aarti Shrivastava <AartiS@cupertino.org>, Chad Mosley <ChadM@cupertino.org>
▶ 1 Attachment, 44.9 KB

David:

Please find attach the City of Cupertino's comments on the DPEIR for the OWTS Ordinance. The courtesy of a receipt response is appreciated.

Colin Jung
City of Cupertino
408-777-3257



COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
(408) 777-3308 • FAX (408) 777-3333

March 5, 2013

David Rader, Planner
Santa Clara County Planning Office
70 W. Hedding Street, East Wing, 7th Floor
San José, CA 95110-1705

RE: City of Cupertino Comments on Draft Program Environmental Impact Report (DPEIR) for the OWTS (septic) Ordinance Project

Dear Mr. Rader:

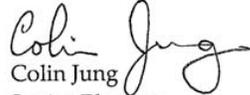
Thank you for the opportunity to comment on the DPEIR. The OWTS ordinance revisions will affect a small proportion of Cupertino residences and vacant residential properties that are primarily concentrated in the Regnart Canyon area of the City. New 2012 stormwater permit regulations were enacted in Cupertino to comply with the regional NPDES Permit. Some of those regulations affect new single-family residences with as low as 2,500 square feet of impervious surface. The City of Cupertino has elected to implement those new regulations by requiring all rooftop drains to drain to landscape areas.

4-1

The DPEIR, OWTS ordinance and technical manual does not appear to address potential conflicts between onsite stormwater filtration and septic effluent percolation, which could be problematic for smaller lot development, particularly in hillside areas with environmental constraints. We request that the County consider and develop standards for the separation of stormwater filtration and septic

systems. If you have any questions, feel free to contact Mr. Chad Mosley of the Public Works Department at 408-777-7604 and chadm@cupertino.org

Sincerely,


Colin Jung
Senior Planner

Response to Letter from Colin Jung, City of Cupertino

- 4-1 Facilities installed for treatment and/or infiltration of roof drainage or other stormwater runoff are considered to be similar to a “drainageway” as far as the potential impacts to (or from) OWTS. The same horizontal setback requirement for drainageways is considered appropriate for these types of facilities. Accordingly, runoff from buildings cannot be routed to leachfields. For clarification, the definition of “drainageway” in Section B11-64 of the proposed Ordinance has been revised to encompass stormwater treatment and infiltration drainage facilities. This clarification does not alter the impact assessments or conclusions of the DPEIR.



April 18, 2013

David Rader, Project Manager
Planning Office
County of Santa Clara
70 W. Hedding Street, 7th Floor, East Wing
San Jose, CA 95110

RE: Onsite Wastewater Treatment Systems Ordinance Draft Environmental Impact Report

Dear Mr. Rader:

Thank you for providing the Local Agency Formation Commission (LAFCO) of Santa Clara County with an opportunity to comment on the proposed Onsite Wastewater Treatment Systems (OWTS) Ordinance Draft Environmental Impact Report (DEIR). Furthermore, thank you for meeting with LAFCO staff on April 18, 2013 to discuss the project in greater detail. The following are our comments:

Ensure that the DEIR is Consistent with the Language in the Proposed OWTS Ordinance

As you know, per Government Code Section 56133, a city/special district cannot provide services (e.g. sewer and water) outside of its boundaries without LAFCO approval. LAFCO Policies discourage these connections (i.e. out of agency contracts for services) and favor annexation of the property to the city/special district instead.

5-1

Section B11-62 of the proposed OWTS Ordinance addresses the issue of connection to a public sanitary system and makes no distinction between unincorporated lands within or outside of an urban service area in terms of the consideration and approval process. However, the DEIR states that the proposed OWTS Ordinance would not apply within an urban service area. (Please see page 16, last paragraph of DEIR; page 3, 1st paragraph of Appendix B; and Tables 1 and 2 of Appendix D).

Since it is our understanding that the proposed Ordinance does not intend to differentiate between unincorporated lands within or outside of an urban service area, we request that the DEIR be revised to reflect that intent and made consistent with Section B11-62 of the proposed OWTS Ordinance.

70 West Hedding Street • 11th Floor, East Wing • San Jose, CA 95110 • (408) 299-5127 • www.santaclara.lafco.ca.gov

COMMISSIONERS: Pete Constant, Sequoia Hall, Margaret Abe-Koga, Linda J. LeZotte, Mike Wasserman, Susan Vicklund Wilson

ALTERNATE COMMISSIONERS: Johnny Khamis, Yoriko Kishimoto, Terry Trumbull, Cat Tucker

EXECUTIVE OFFICER: Neelima Palacherla

Notify LAFCO when the Full Text of General Plan Amendment is Available for Public Review and Comment

5-2

We also understand that a General Plan text amendment is required in order to adopt the proposed OWTS Ordinance and that the complete draft text of that amendment is not available at this time, but will be available prior to the County's final consideration and approval of the DEIR and adoption of the proposed OWTS Ordinance. Therefore, we are unable to understand or evaluate the impacts associated with the proposed General Plan text amendment at this time. We respectfully request that the County notify LAFCO once the complete draft text is available for public review and comment.

If you have any questions regarding this letter, please contact me at (408) 299-5127. Thank you again for providing us with the opportunity to comment on this project.

Sincerely,



Neelima Palacherla
LAFCO Executive Officer

Cc: LAFCO Members
Heather Forshey, Acting Director, Santa Clara County Dept. of Environmental Health

Response to Letter from Neelima Palachera. LAFCO of Santa Clara County

- 5-1 The proposed Ordinance applies to all parcels in the unincorporated part of the County that are not connected to a sanitary sewer system. The requirement that new development or a parcel where a failing OWTS needs to be replaced connect to a sanitary sewer system if the property abuts a street or alley in which an approved sanitary sewer system exists or where the property line is within 300 feet of an approved available sewer system applies to all properties in the unincorporated part of the County. In fact, nearly all locations where such systems exist are in urban service areas. However, to ensure accuracy, the text of the DPEIR (last paragraph on page 16, and Tables D-1 and D-2) has been revised to be consistent with the language of the proposed Ordinance Section B11-62, deleting reference to “urban service area”.
- 5-2 The request that LAFCO be notified when the full text of the General Plan Amendment is available for review is noted for the record. The draft text can be found on the Planning Office website:
<http://www.sccgov.org/sites/planning/PlanningStudies/OWTS/Pages/OWTS.aspx>



April 18, 2013

David Rader
Santa Clara County Planning Office
County Government Center
70 W. Hedding Street, 7th Floor
San Jose, CA 95110
E-mail: david.rader@pln.sccgov.org

Re: Onsite Wastewater Treatment Systems (OWTS) Ordinance and Program EIR

Dear Mr. Rader,

This letter constitutes the written comments of Committee for Green Foothills on the above-referenced matter. Committee for Green Foothills (CGF) is an environmental organization working to protect open space and natural resources in San Mateo and Santa Clara Counties. We have a strong interest in the impacts of the proposed changes to the OWTS ordinance upon open space and rates of development in the rural areas of Santa Clara County.

A. The EIR's Analysis of Indirect Impacts is Flawed.

According to the Environmental Impact Report (EIR) for this project, there are 5,082 existing vacant lots in the unincorporated areas of Santa Clara County. Of these, an estimated 2,613 parcels could support a conventional OWTS under existing regulations. EIR at p. 27. The remaining 2,469 could not be developed under the existing ordinance due to soil conditions, high groundwater table, or steep slopes. The EIR estimates that up to 1,091 of these currently undevelopable properties could accommodate an alternative OWTS under the proposed ordinance changes. Thus, the proposed changes would increase the amount of potential growth by 42% over the amount of growth that would be possible under the existing ordinance.¹

The EIR states that based on site-development constraints, "a more likely worst-case scenario would be an additional 600 lots developed through 2035, or 55% of the 1,091 lots projected." EIR at p. 28. However, this reduction in the projected growth rate is based on analysis that is specific to one small part of the County (the Lexington Basin area), and the EIR provides no rationale for why highly site-specific factors such as steepness of slopes, access to roads, size of lots, etc. should be presumed to apply to all the undeveloped rural lots in the County. 6-1

The EIR analyzes both direct and indirect impacts from the proposed ordinance changes, with indirect impacts being those attributable to the increase in projected development in the rural unincorporated areas of the County. However, the EIR's analysis finds a less than significant impact attributable to the proposed changes for 6-2

¹ Additionally, the analysis by Questa states that there are an estimated 158 already-developed parcels that would be both able to add a secondary dwelling unit under the proposed changes and would be likely to do so. Appendix B to EIR, p. 20. This further increases the rate of growth under the proposed changes.

every single category, including soils, hydrology, air quality, traffic, visual impacts, etc. It is not credible that a 42% increase in projected development over the next two decades could result in no significant impacts to the environment, especially since the rural unincorporated areas are particularly likely to contain sensitive biological resources, steep slopes vulnerable to erosion and landslides, narrow roads that may not be adequate to service the amount of traffic they already support, and hillsides and ridges that form a prominent part of the County's viewshed. In particular, the EIR provides no evidence to support the conclusion that there will be no significant impacts to the hydrology and groundwater of the area, even though the proposed ordinance changes will definitely result in additional OWTS being constructed above the number that would have been constructed under the existing ordinance. It is important to remember that the reduced land area requirements for conventional OWTS will mean that additional conventional OWTS as well as alternative OWTS will result from these changes, thus increasing the total amount of wastewater effluent to the County's soils. Although the potential volume of this increase is not discussed in the EIR, if this increase is proportional to the increase in residential development (as it seems likely it would be), that would suggest a 42% rise in the increase of wastewater discharge as a result of these changes. The EIR's characterization of these impacts as less than significant is unsupported by the evidence.

B. The EIR Does Not Adequately Analyze Impacts on Potential Subdivisions.

The EIR states that the proposed ordinance changes will not affect development potential associated with future subdivisions, because minimum lot size for subdivisions is determined in the zoning ordinance and the General Plan. EIR at p. 30. However, this does not answer the question of whether there may be large land holdings that are currently unable to be subdivided due to not having the conditions appropriate for a conventional septic system, but that could be subdivided under the reduced land area requirements under the proposed ordinance changes. Minimum lot sizes within subdivisions might not be the determining factor in whether a large parcel could be subdivided. Alternatively, a large land holding that could have been subdivided under the existing ordinance could, under the proposed changes, potentially accommodate a greater number of lots due to the reduced land area requirements for OWTS. This issue of subdivision potential is a significant factor for potential growth in the rural unincorporated area; thus, the EIR should analyze this issue rather than simply stating without explanation that there will be no impact on potential subdivision development.

In conclusion, CGF is concerned that the EIR does not adequately address the growth-inducing and indirect impacts of the proposed OWTS ordinance changes. As the population of the County increases and more and more development proposals arise, it is vital for the County decisionmakers to keep in mind the overall desired growth patterns and the County's policies of preserving the rural character of the unincorporated area, the viewsheds on the hillsides visible from the valley floor, the important wildlife corridors and other biological resources of the area, and everything else that makes Santa Clara County a place that values quality of life and environmental resources.

Thank you for your attention to these comments.

Sincerely,



Alice Kaufman

Legislative Advocate, Committee for Green Foothills

Response to Letter from Alice Kaufmann, Committee for Green Foothills

- 6-1 As noted in Section 5.1 of the DPEIR, CEQA mandates that an EIR “discuss the ways in which the proposal could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment” (CEQA Guidelines, Section 15126.2(d)). This discussion is provided in Section 4.0(B) (Projected County Development by 2035) in the Draft EIR. The County has identified potential residential development that could be induced by allowing use of alternative on-site wastewater treatment and disposal systems (OWTS), which would tend to reduce constraints to installing and operating a septic system on some lots that cannot support a conventional system.

The County employed a two-step process for quantifying this potential induced growth. First, a projection was made based on estimates of how septic system approval rates might increase in various watersheds, not considering any other development constraints or variables. This estimate projected a total increase of 1,091 septic system approvals for primary dwelling units and 158 additional approvals for secondary dwelling units. However, approvals of septic systems do not equate to approval of residential development, as individual proposals must meet many other requirements, which can make many vacant lots challenging and expensive to develop. To provide a projection more grounded in reality, the County employed a second step of factoring in other development constraints, such as slopes and access to roads. The focused analysis of parcel development potential in Lexington Basin (page 29 of the Draft EIR) was used as a proxy for these development constraints, which reduced the projection of additional dwelling units to 55% of the 1,091 septic approvals, or approximately 600 units through 2035 (an average of roughly 30 units per year). This compares to 900 residential dwelling units that have been approved under the County’s Building Site Approval (BSA) process since 1982 (also an average of approximately 30 units per year).

The comment takes issue with using one part of the County to represent development constraints in other parts of the County, where these constraints may not apply. Using Lexington Basin as a representative watershed led the County to project that up to 600 additional dwelling units could be developed in the unincorporated areas through 2035. Although it is true that there are differences between the Lexington Basin and other parts of the County, similar site development constraints are still present in most of the unincorporated area. For example, all of the watersheds in the Santa Cruz Mountains and Diablo Range contain vacant parcels with steep slopes and road access challenges. Furthermore, Lexington Basin represents a watershed with high potential for additional development if the proposed Ordinance were to be approved. Section B11-94 of the current septic ordinance restricts additional development in this watershed based on special design criteria, including lot size (minimum 1 acre or more depending upon watershed sub-area), maximum and minimum percolation rates, and slope. As the proposed Ordinance update would lift these constraints, Lexington Basin represents a worst-case example which would tend to over-predict development in most other unincorporated areas.

The County also considers the 600-unit projection to be a worst-case scenario because it would be a greater increase in development than would be expected based on the historic development rate. The estimated number of septic approvals under the current Ordinance is approximately 2,600 vacant parcels out of a total of 5,100 vacant parcels in the unincorporated areas. With this pool of 2,600 parcels that are considered feasible for septic systems, the County has processed an average of 30 Building Site Approvals (BSAs) per year, or approximately 1% of the available parcels. Under the proposed Ordinance update, the number of parcels where septic systems are considered feasible would increase by 42%--from 2,600 to 3,700. Therefore, where septic feasibility is the only factor that would change, the development rate would also be expected to increase by 42%--from 30 BSAs to 42 BSAs per year. This increase would represent an additional 240 units over the next 20 years, which is less than half of the 600-unit projection.

Nevertheless, there always remains a level of uncertainty and speculation when making projections over 20 years into the future. It is possible that actual development by 2035 could be greater or less than assessed here. However, given current information the growth projections are deemed reasonable and provide a worst case scenario against which potential indirect impacts can be identified and assessed.

Finally, it is noted that the air quality and climate change analyses were done for the extreme worst case assumptions of all 1,091 lots based only on increased septic approvals being developed.

- 6-2 The comment cites a 42% increase in projected development. However, this is the percentage increase in parcels that could potentially be developed if only septic feasibility is the sole limiting factor on possible development, and not the actual projected increase in lot development. As noted in Response 6-1, the DPEIR projects a worst case growth rate of an additional 30 dwelling units per year (approximately doubling the historic growth rate), or 600 new units by 2035. While this is a large percentage increase if measured against the number of units that could be developed in the unincorporated area under current septic regulations, it is a small percentage increase for the unincorporated portion of the County as a whole. As shown on Table 4.11-2, it is projected that 6,360 new households would be added to this area between 2010 and 2035. The new units that could be developed if the proposed Ordinance is approved would equal 9.4% of this projected growth. If compared to the total countywide growth (see Table 4.11-1) for this period, the new units allowed by the proposed project would constitute about 0.3% of that projected growth.
- 6-3 The DPEIR does not state that this future development may not have potentially significant impacts. It states that at a "program" level of analysis the impacts are less than significant for one or more of the following reasons: 1) existing Federal, State, and/or County policies and regulations would prevent significant impacts to certain sensitive resources (e.g., wetlands, special-status plant and animal populations); 2) existing County review requirements include the need for additional CEQA review to identify site- and project-specific impacts and any needed mitigation measures at the time of a project application, and County General Plan, zoning code, design review,

grading, stormwater, and other adopted regulations would also be applied at that time; and 3) induced growth would not make cumulatively considerable contributions to impacts (such as traffic) given other development that would occur in the County by 2035 (e.g., new traffic from 600 homes spread throughout the County). As stated on page 35 of the DPEIR:

In approving new residential development that could occur if the proposed Ordinance is adopted, the County would maintain environmental quality and consistency with CEQA requirements by enforcing General Plan policies and other pertinent environmental regulations when conditioning BSA, design review, ASA, and/or grading permit approvals for this new development.

Accordingly, at a program level no new County policies or project review regulations or guidelines are required.

The statement that a 42% increase in dwelling units in the unincorporated area is a de facto indication that the proposed project has significant impacts is not consistent with how CEQA requires environmental analysis to be conducted. To determine significance, effects of potential development must be evaluated in the proper context of how a proposed project could cause physical impacts in a relevant geographic area. As examples, hydrologic impacts would be evaluated in terms of effects on specific bodies of water or within a watershed or watersheds, traffic impacts would be evaluated within a relevant study area (intersections that could be affected), and aesthetic impacts would be evaluated in terms of potential visual effects on specific scenic resources or viewsheds. As noted above, because the proposed project consists of modifications to regulations, the impact evaluation also includes the context that impacts can only be evaluated at a program level, and that site-specific environmental review would be conducted at the time of any specific proposals that could result from the regulatory changes. The comment does not provide specific examples of how the environmental analyses provided in Sections 4.1 through 4.12 of the DPEIR are deficient at a program level of evaluation.

- 6-4 The DPEIR contains 14 specific impact assessments (covering 29 pages) that address hydrologic and groundwater impacts (Section 4.2 of the DPEIR). Given the nature of the proposed project, the hydrologic analyses were a principal focus of the EIR. The conclusions are that given the state-of-the-art treatment and disposal characteristics of alternative OWTS, the siting requirements provided in the proposed Ordinance and On-site Systems Manual, and the required annual oversight and monitoring of these systems, the impacts to groundwater and surface water would be less than significant.

The small potential increase in conventional OWTS approved due to reduced disposal areas is accounted for in the projections of additional lots that could be developed under the proposed project.

Please see Response 6-2 regarding the percentage increase in residential units. The DPEIR provides ample evidence that treated effluent from alternative OWTS would not significantly affect water quality (see Comment Letter 3 from the Central

Coast RWQCB that supports the project and states that it will restore and protect water quality).

- 6-5 The comment posits that there may be large land holdings that are currently unable to be subdivided due to not having the conditions appropriate for a conventional septic system, but that could be subdivided under the reduced land area requirements under the proposed Ordinance changes. It is assumed that the comment refers to the potential for reduced area of leachfields made possible by less conservative siting requirements for conventional septic systems as well as the option of using alternative technologies that could also theoretically reduce leachfield sizes. However, the proposed changes to septic regulations do not guarantee that land area requirements would be reduced for a particular project. Siting requirements would be evaluated on a case-by-case basis, taking into account soil conditions, topography, and proximity to on-site water wells and any streams that cross the property being evaluated for a proposed subdivision.

Second, the minimum lot sizes for rural zoning districts are large enough that it would be extremely rare that a proposed subdivision would be considered infeasible as a result of not having enough land area for leachfields, even under the more conservative siting criteria of the current septic Ordinance. Where the average slope of a parcel is less than 10%, minimum lot sizes start at 5 acres for the Rural Residential zoning district and go up to 20 acres for the Hillside and Agricultural Ranchland zoning districts. These minimum lot sizes increase in size with increasing average slope. In contrast, under the current septic regulations leachfields are typically less than 2,000 square feet for a 4-bedroom home, and seldom more than 1 acre in size where soil conditions are extremely poor. The Planning Office has evaluated dozens of land divisions over the past 20 years, and the experience has been that proposed subdivisions are much more challenged by other requirements than those related to septic systems. Given the extreme rarity of such a scenario, any attempt at estimating increased potential for subdivisions based on the possibility of reduced land area requirements for specific projects that could result from the proposed septic regulations would be too speculative for meaningful consideration.

Finally, the proposed OWTS Ordinance contains a provision in Section B1160 ("Intent and application") that requires subdividers to demonstrate that the onsite wastewater treatment system(s) design and siting is consistent with Section B1167 ("Onsite wastewater treatment system, conventional") of the proposed Ordinance, which are the requirements for conventional septic systems. In other words, a subdivision could not be designed based on use of alternative systems in order to reduce land area requirements for leachfields.

- 6-6 The DPEIR assesses in detail potential indirect impacts to viewsheds, wildlife corridors, and other biological resources. As described above, the proposed project could enable development of certain unincorporated parcels that otherwise could not be developed. However, this development, if approved by the County, would be consistent with the County General Plan, zoning, and other regulations aimed at protecting the County's environmental resources and its character. The commenter's difference of opinion regarding the EIR's assessment of these impacts

is noted for the record, but given that no additional information is submitted or questions asked, no response beyond the previous responses is possible.

From: Jim and Connie Rogers <jrogers@garlic.com>
Subject: **New Septic System proposed Ordinance and EIR**
Date: March 16, 2013 8:20:28 PM PDT
To: david.rader@pln.sccgov.org, Mike Wasserman <mike.wasserman@bos.sccgov.org>
Cc: Beth Wyman <bethwym@yahoo.com>, Carolyn Tognetti <clyntognetti@aol.com>, Eric Carruthers <ecarruth@earthlink.net>, Sharon Albert <laqueenie@verizon.net>, Terri Aulman <terri.lt@verizon.net>, Peter Leroe-Munoz <peter.leroemunoz@gmail.com>, Laura Brunton <cmm@garlic.com>, Paul Kloecker <paulkloecker@gmail.com>, Julie Hutcheson <Julie@GreenFoothills.org>

Dear Mr. Rader,

I am very concerned about the new proposed septic system ordinance and how it would affect South County in general. All of us in Gilroy and Morgan Hill, including the city residents, depend on wells for our drinking water (and all water). We want to know how the new, advanced septic systems will affect the ground water level and our underground aquifers.

There should be a notice to ALL South County residents, not just those on septic systems, of an information meeting, public hearing and opportunity to comment on the DEIR. There should be announcements in the Morgan Hill Times and Gilroy Dispatch of these deadlines and meetings. 7-1

We are also very concerned about the growth-inducing impacts and whether the new ordinance will affect the current rural zoning laws, ie, the 5, 10 and 20 acre lot sizes plus the County's 15,000 agricultural preserve in South County. 7-2

This information should certainly be brought before the South County Joint Planning Advisory Committee at their next meeting and before the DEIR comment period ends. I believe the comment period deadline should be extended beyond April 4, 2013. 7-3

It may well be that technological advances in septic systems have allowed updates to the health requirements, but there are MANY other areas affected, such as the groundwater level, aquifers which supply our essential water and lot sizes allowed per the County General Plan. 7-4

Please let me know how you plan to address these issues.

Thank you.

Connie Rogers, Save Open Space - Gilroy
Charter member of the South County Joint Planning Advisory Committee

Response to Letter from Jim and Connie Rogers

- 7-1 The recommendation regarding noticing is noted for the record. The comment does not contain a question regarding the EIR, so no additional response is required.
- 7-2 The concern is noted for the record. The DPEIR contains a substantial analysis of growth-inducing impacts. The proposed project would not change nor affect existing County zoning nor agricultural preserves. Any applicant seeking to construct a residence using an alternative OWTS would need to abide by all County General Plan policies and zoning requirements, including minimum lot size requirements for subdivisions of land. Also see the previous Response 6-1 regarding additional discussion of growth-inducing impacts.
- 7-3 The County presented the proposed project to the South County Joint Planning Advisory Committee on June 13. The comment period was extended as was requested in this comment (from April 4, 2013 to April 18, 2013).
- 7-5 The DPEIR did address all resources that could be directly or indirectly affected by the project, including impacts on groundwater. The DPEIR contains 14 specific impact assessments (covering 29 pages) that address hydrologic and groundwater impacts (Section 4.2 of the DPEIR). The proposed project would not affect County zoning nor minimum allowable lot sizes allowed under the base zoning for a parcel. As discussed previously under Response 6-6, new development, if approved by the County, would be consistent with the County General Plan, zoning, and other regulations aimed at protecting the County's environmental resources and its character. Finally, new development applications would need to undergo site- and project-specific County review, including additional CEQA analysis.

Rader, David

From: Jim and Connie Rogers <jrogers@garlic.com>
Sent: Monday, April 08, 2013 3:44 PM
To: Rader, David
Cc: Julie Hutcheson; Carolyn Tognetti; Wasserman, Mike; Don.Gage@ci.gilroy.ca.us; Sharon Albert
Subject: Comment on OWTS and EIR

Dear Mr. Rader,

I would like to submit the following comments on the County's plan to allow alternative septic tank systems and the draft environmental impact report on changes to your septic tank ordinance. I have read much of the material your office has made available and have spoken with both Rob Eastwood of Planning and Darrin Lee of Environmental Health. My comments are based on my experience as a charter member of the South County Joint Planning Advisory Committee and a member of the Gilroy City Council from 1993 to 1997.

1) You state that alternative wastewater treatment systems will only be permitted in locations where regular septic systems are infeasible. I understand the need for this and the fact that septic technology has advanced. I also understand from Mr. Lee that a third party (septic service of some kind?) must provide maintenance to these alternative septic systems. However he could not tell me how the County was going to make sure, after installation and use, that the systems were not adversely affecting the groundwater. **8-1**

I would like to see the proposed ordinance include some method for the County to "check up" on the functioning of these alternative septic systems once they are installed. There needs to be a way to guarantee that groundwater and underground aquifers are not affected. I did not see provision for any inspection system in the proposed ordinance. Perhaps the County should provide for annual or periodic inspections. Or at least require reports from the maintenance service (not the property owner). **8-2**

2) I believe the growth-inducing characteristics of the proposed ordinance should be analyzed in much more depth. It has been my experience that many developers are eager to expand rural residential dwellings in South County. Although you say that the new ordinance would only permit secondary dwellings in a limited area in San Martin, I believe it will encourage many others to intensify their land uses in the rural area, thus creating pressure on ag land and open space. This will be contrary to the County General Plan which tries to limit rural residential and to the new One Bay Area Plan which emphasizes more concentric, denser development located near transit lines. **8-3**

The properties in South County often have a very high water table and much of our land is in the flood plain. Old timers already say that "San Martin is a cesspool". Also all the residents of South County, including the cities of Morgan Hill and Gilroy depend entirely on well water. For this reason we are very cautious about any uses with the potential to affect our water supply. I believe this proposed ordinance and EIR should also be considered by the South County Joint Planning Advisory Committee before it goes to the Board of Supervisors. **8-4**

Thank you for considering my comments.

Connie Rogers
7690 Santa Theresa Drive
Gilroy, CA 95020
408-842-8494
jrogers@garlic.com

Response to Second Letter from Jim and Connie Rogers

- 8-1 Requirements for routine inspection and monitoring of alternative OWTS are covered in Sections B11-92 and B11-93 of the proposed Ordinance. As discussed in the Project Description (bottom of page 21 of the DPEIR), enforcement of these requirements will be through the issuance of a renewable operating permit (per B11-92) for each alternative OWTS, containing the particular inspection, monitoring and reporting parameters for each system. The performance monitoring requirements will be in accordance with the provisions of B11-93 and additional details contained in the *Onsite Systems Manual* related to the type of alternative system.
- 8-2 Section B-11-92 of the proposed Ordinance requires an operating permit for all alternative OWTS. The intent of the operating permit, which would be required to be renewed periodically, would be to verify the adequacy of alternative OWTS performance and to ensure on-going maintenance. Permit conditions would include monitoring and inspection requirements.
- 8-3 Please see Response 7-2 regarding growth inducement. With the exception of the elimination of the 5-acre minimum lot size requirement for secondary dwelling units in San Martin, the proposed project would not alter development regulations or densities allowed by the General Plan and the zoning code. Accordingly, the proposed project is consistent with the land use goals and objectives of the General Plan.
- 8-4 The DPEIR contains a substantial analysis of the potential impacts of the proposed project on groundwater in the South County area. Please see the discussion of nitrogen contamination of groundwater in this area under Impact 4.2-B (starting on page 76 of the DPEIR), the impacts of heavy metals and trace organic substances on ground water under Impact 4.2-D (starting on DPEIR page 83), as well as the other water quality impacts addressed in Section 4.2 of the DPEIR. On the bases of these analyses, the DPEIR concluded that the project would have less-than-significant impacts on groundwater quality. The comment does not present specific information that would warrant reconsideration of these conclusions. See Response 7-3 regarding the South County Joint Planning Advisory Committee.

From: "Karen Lemes" <karenlemes@earthlink.net>
Subject: **On-site waste treatment system ordinance review questions**
Date: March 25, 2013 2:51:12 AM PDT
To: <dehweb@deh.sccgov.org>, <david.rader@pln.sccgov.org>
Reply-To: "Karen Lemes" <karenlemes@earthlink.net>

I am attempting to digest the 266 pages of the EIR regarding OWTS with its 146 pages of appendix. I will be attending the March 25 public meeting at the Los Altos Library and hope to have the following information before the meeting.

Could you tell me where in the document to find the evidence of failure of existing septic systems using the existing guidelines? Page 10 of the EIR mentions

9-1

The California Water Code requires that all dischargers of waste, including sanitary wastewater from homes, file a report of waste discharge. The Regional Boards have traditionally waived this requirement for counties that have a program for on-site wastewater systems that is adequately protective of water quality.

What is the general rate of failure of septic systems? Who maintains the statistics for this information?

What will be the cost to the providers of pumping and maintenance service of providing the inspection service and conveyance of the results of this inspection to the County? What will be the additional cost to the homeowner?

I could not locate the manual (described in page 1) for homeowners installation of OWTS on the DEH website. Could you please send me that link.

9-2

Page 1 also mentions "reducing the environmental impacts associated with conventional OWTS by updating the regulations to incorporate currently recognized and accepted installation practices that are less harmful to the environment. What are the environmental impacts that have occurred in Santa Clara County? What other agency has provided the "accepted installation practices?"

9-3

Page 2 mentions "Alternative OWTS" is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank and/or a method of wastewater dispersal other than a conventional drainfield trench. Alternative OWTS are designed and employed to improve the quality of effluent before dispersal into the soil and/or to enhance the rate of manner of absorption of the effluent by the soil.

9-4

This sounds very promising. Where can one read about success with alternative OWTS?

Thanks so much for your help.

Karen Lemes
650-941-0252

;

Response to Letter from Karen Lemes

- 9-1 The DPEIR does not include specific information about failing OWTS in Santa Clara County. Failures are dealt with on a case-by-case basis by the DEH in response to complaints or voluntary requests from system owners. However, useful survey information about system failures and OWTS practices in counties throughout California are contained in the following document: "Status Report: Onsite Wastewater Treatment Systems in California", California Wastewater Training & Research Center, CSU Chico, August 2003.
(http://www.swrcb.ca.gov/water_issues/programs/owts/docs/stat_rpt0803.pdf)
- 9-2 The portions of the draft Onsite Manual that are pertinent to this environmental review can be found in Chapter 4 of this FPEIR. The complete draft Onsite Systems Manual (also termed OWTS Technical Manual) referred to in the DPEIR can be found at the following:
http://www.sccgov.org/sites/deh/Consumer%20Protection%20Division/Program%20and%20Services/Land%20Use%20Program/Documents/OWTS/Onsite_Systems_Manual_Combined_Feb2013.pdf
- 9-3 The DPEIR, principally in Sections 4.1 and 4.2, reviews and evaluates the types of problems that can be caused or experienced by OWTS, which include such things as accelerated soil erosion from construction, nuisance odors and public health hazards associated with surfacing effluent from overloaded dispersal fields, and contamination of groundwater from improper OWTS placement or design. Most of the OWTS problems experienced in California, including those in Santa Clara County, are associated with older systems installed many years ago under minimal or antiquated standards. Santa Clara County implemented improvements to septic system codes and practices in the early 1990s and, through the proposed Ordinance will incorporate additional improvements based on better knowledge and technologies that have evolved over the past 20+ years. The basis for the proposed Ordinance changes comes partly from the experience of other counties in Northern California, policies implemented by the State Water Resources Control Board, and a large body of research and development information generated by various segments of the OWTS industry (public and private sector) throughout the US.
- 9-4 A good source of information on aspects of onsite wastewater treatment, including experience with alternative OWTS, is the National Small Flows Clearinghouse (<http://www.nesc.wvu.edu/wastewater.cfm>), funded by the US EPA and based

MARCH 19, 2013 MEETING AT REDWOOD ESTATES PAVILION

TO: DEPARTMENT OF ENVIRONMENTAL HEALTH

FROM: JORGE BARRIGA

HOME OWNER AND RESIDENT OF LEXINGTON HILLS AREA SINCE 1960

SUBJECT: PROPOSED ORDINANCE CHANGES ON (O.W.T.S.)

(A) SHOULD BE DONE ONLY AFTER PROPER PUBLIC HEARINGS BY THE COUNTY BOARD OF SUPERVISORS.

(B) ITEMS 2,3 & 4 IN THE NOTICE BY YOU COULD RESULT IN SERIOUS CONSEQUENCES TO LEXINGTON HILLS AREA WATER TABLE ,STREAMS & FOREST FIRE RISK BECAUSE OF INCREASED DENSITY OF DEVELOPMENT. 10-1

(C) I, PERSONALLY, AGREE WITH PROPOSED CHANGE (1) ABOUT ALTERNATIVES TO THE TRADITIONAL SEPTIC SYSTEM DESIGN , BUT NOT AT THE EXPENSE OF (B). YES , THERE ARE MANY NEW ENGINEERING AND FIELD PROVEN SYSTEMS: 10-2
I WILL CITE ONLY TWO, AMONG MANY OTHERS:
1. INFILTRATOR CHAMBER SYSTEMS FOR SEPTIC LEACHFIELDS (WITH DRAMATIC EFFICIENCY OVER THE "OLD ROCK & PIPE TRENCH")
2. INDIVIDUAL HOME WASTE WATER TREATMENT PLANT.

(D) THE PROPOSED CHANGES 2 & 3 MAY BE IN VIOLATION OF REGULATIONS ENACTED IN 2008 BY THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, APPLICABLE TO ALL COUNTIES IN THE STATE OF CALIFORNIA. 10-3

REFERENCE: ASSEMBLY BILL 885 (AB885)

Response to Letter from Jorge Barriga

- 10-1 The comment is not on the DPEIR but regards a notice by the County inviting residents of the Lexington Basin to attend a March 19, 2013 OWTS public outreach meeting in Redwood Estates.
- 10-2 The commenter's opinion about alternative OWTS is noted for the record. However, because no specific questions are asked regarding the DPEIR, no additional response is possible.
- 10-3 As noted in Response 10-1, the comment is not on the DPEIR but regards a notice by the County inviting residents of the Lexington Basin to attend a March 19, 2013 OWTS public outreach meeting in Redwood Estates. The comment is not specific about which regulations that were adopted by the California State Water Resources Control Board in 2008. As noted on page 19 of the DPEIR, one of the objectives of the proposed project (No. 6) is to implement State Regulations for On-site Wastewater Treatment Systems (AB 885). An overview of these regulations is provided on page 65, and project compliance with these regulations is discussed on pages 47 of the DPEIR.

TO: David Rader, Santa Clara County
Planning Office
FROM: People's Coalition for Government
Accountability (PCGA)
DATE: April 2, 2013
SUBJECT: Santa Clara County Onsite Wastewater Treatment
Systems Ordinance (OWTS); and
California Assembly Bill 885

RE: Public Workshop held in San Martin on 03-12-13

PCGA OBJECTS TO ELIMINATING THE ONE ACRE MINIMUM
REQUIREMENT FOR SECONDARY DWELLING UNITS.

A NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT
(EIR) SANTA CLARA COUNTY ONSITE WASTEWATER TREATMENT SYSTEMS
APPEARED IN THE SAN JOSE MERCURY NEWS & INCLUDED THE FOLLOWING:

"The proposed project includes changes to a
County General Plan Policy as well as a change
to the Zoning Ordinance eliminating the minimum
lot size requirement for secondary dwelling units
in the San Martin Planning Area."

San Martin residents received notification citing "Santa Clara
County Proposes Ordinance Update for Septic Systems" indicating
that certain lot sized restrictions in San Martin would be
eliminated; but staff never discussed why they eliminated the
one acre restriction in San Martin only - not rural Gilroy,
Morgan Hill and Coyote.

Ironically, even though San Martin was especially targeted in
the notices, and County staff was meeting in San Martin, staff
failed to discuss why the minimum lot size requirement for one
(1) acre parcels would be eliminated. Or what the minimum square
footage was for secondary dwelling units on 1 acre parcels.

The discussion for 1½ hours seemed to revolve around the issue
of continuous yearly inspections if an OTWS was installed.

Not one word was mentioned about percolation tests & high ground
water testing that would have to be conducting prior to
installing OWTS; or how lots that are less than one acre in size
fit into the scheme of the new ordinance? There are numerous
lots in San Martin that are less than 1 acre in size.

11-1

After the 03-12-13 meeting, PCGA learned that the committee
to study OWTS was formed by the County in 2011. Staff invited
Marc Rauser, voting member of San Martin Planning Advisory
Committee (SMPAC), to participate in the OWTS Study.

Why did staff violate Rural Land Use Policy R-LU 116 that

PCGA Objection to OWTS
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Page 2

specifically states, "The County endorses the concept of community participation by residents and property owners in decisions affecting San Martin".

From 2011 - 2013, not one of the following entities contacted San Martin residents per **R-LU 116** to have meaningful discussions prior to attending the "public comment" meeting. Staff already approved the project for the Planning Commission and Board of Supervisors to approve without one "working group" meeting with San Martin residents and property owners. **(See Attach. A)**

11-2

SMNA, SMPAC, SCJPAC, Pajaro River Water Council and the Santa Clara Valley Water Resources Protection Collaborative (Water Collaborative) established in 2002 to bring the County of Santa Clara and the Santa Clara Valley Water District, 15 cities and various other governmental and non-governmental entities to promote stream protection and to develop consensus-based, more unified approach to land use and development.

The Water Collaborative concluded the most significant of its efforts in 2006 with the adoption of "Guidelines & Standards for Land Use & Streams. And, in 2007, the Board of Supervisors adopted a resolution approving the use of the guidelines. The Collaborative continues to meet and discuss issues related to the implementation of the Guidelines & Standards on an annual basis. Did the Collaborative approve this proposed project? **See Attach. B.**

Why were San Martin residents kept in the dark and not allowed to participate in discussions for the entire two (2) years that this project was under review by five (5) different committees or agencies?

Some members of SMPAC also are members San Martin Neighborhood Alliance (SMNA); which organized to keep San Martin residents informed of any major issues that affect our community.

The most serious violations of South County Joint Planning Advisory Committee (SCJPAC) Codes relate to water contamination under South County Joint Area Plan Policies, "Water Quality", i.e., SC 8.0, SC 8.1, SC 8.2, SC 8.3, SC 8.4, SC 8.11 & SC 8.13. **(Exhibit 1) See Attach. C** for names of SCJPAC members.

Under "Intergovernmental Coordination", the following Policies cannot be ignored by the committee studying this project: SC 10.0, SC 10.1, SC 10.2, & SC 10.3. **(Exhibit 2)**

The "Rural/Urban Land Use" Codes must be included in any discussion regarding eliminating minimum lot size restrictions.

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Those policies are: SC 17.1, 17.5 & 17.6. **(Exhibit 3)**

And more importantly are Policies under "San Martin", i.e., SC 18.0, 18.1, 18.3, 18.4, & 18.5. **(Exhibit 4)**

Under San Martin Planning Area, Rural Land Use Policy per R-LU 116, "The County endorses the concept of community participation by residents and property owners in the decisions affecting San Martin.

Per R-LU 139, "No new septic systems should be developed in the highly permeable soils of Llagas Creek."

Exhibit 5 includes 36 names of Water Collaborative members selected to represent their cities. When PCGA sent emails to SCJPA committee members regarding a previous project, one response was, "You must have sent this to the wrong person". Everyone else ignored the email; except one councilman stating that we should talk to our Supervisor.

When PCGA called people who were city councilmen or on the planning commission in the past as well as presently, they were asked if SCJPAC members report back to the cities after each quarterly SCJPAC meeting. Not one person knew anything about SCJPAC and said, "What are you talking about?" "No one has ever made a presentation about a SCJPAC meeting; even though SCJPAC was founded in the 1980's; as was SMPAC.

Two "At Large" positions on SCJPAC are allocated to San Martin; however, Mr. Knole passed away and has never been replaced.

When discussing the SCJPAC meetings with a Morgan Hill city employee, we were told that no one takes notes, and they do not have a tape recorder at the meetings.

Then we have the Pajaro River Water Council - that deals only with water contamination & consists of two (2) members from our county; San Benito, Santa Cruz & Monterey Counties. Not one person PCGA spoke with knew anything about any San Martin issues could add contamination to the Pajaro River Watershed.

WATER CONTAMINATION IS A SERIOUS ISSUE IN SAN MARTIN
AND WILL INCREASE IN INTENSITY DUE THE UTTER DISREGARD
FOR THE HEALTH & SAFETY OF SAN MARTIN RESIDENTS.

I. PERCHLORATE

When perchlorate became an issue, it was made public 3 years

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after the Water District conducted a study. We were allowed to drink the water for 3 years before being notified not to drink the water. On one country street, (1 mile block), there were 17 known cases of cancer, 10 of whom died prematurely. When the Health Director at a PMAG meeting was asked to investigate, his response was, "We only have funds for TB & HIV. On 2 other streets located in the belly of the plume, two 40 year old men and a 10 year old boy had thyroid cancer. The Director didn't care about that either. Nor did he care to listen to the father who talked about his baby girl who was born severely deformed. These were all "red flags" for the health department.

II. E-COLI, FECAL COLI AND NITRATES

We have a serious water quality degradation problem due to contamination from E-Coli, Fecal Coli and Nitrates in Llagas Creek; which recharges wells in San Martin and South County.

11-3

San Martin residents and property owners are demanding to know why DEH, CCRWQCB and Santa Clara Valley Water District has kept this a secret and are unwilling to clean up this contamination and/or to identify the source of the contamination.

CCRWQCB and the State Water Resources Board should be made aware of this problem prior to implementing Assembly Bill 885 in 2014.

San Martin residents are demanding that we have clean, safe water in Llagas Creek to recharge our wells.

III. NITRATE COUNT AT CORDE VALLE GOLF COURSE

In 2007, the Country News published an article regarding the Nitrate Count at Corde Valle citing that it was over 1000 ppm (about 125 ppm over the previous year). The reporter noted that each year the Health Department slaps their wrists and asks them to clean up the nitrate problem. DEH must publish current data from the most recent tests conducted for nitrates.

IV. FRY'S GOLF COURSE

Back in the mid 1980's, a property owner residing on Bartlett Court started testing her well water and found that the nitrate count went up every six (6) months. She was told that there was nothing that the County could do because Fry's Golf Course is located in the city limits of Morgan Hill.

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V. LARGE ANIMAL ORDINANCE

During the 1980's, Santa Clara County had an ordinance which limited the number of large animals to ONE LARGE ANIMAL PER ACRE.

A retired man decided he wanted to start a business raising Llamas; but he only had 8 acres. So he asked his supervisor to change the ordinance which resulted in the ordinance we have today; namely, "You can have as many horses or large animals as you wish as long as you are a good neighbor and routinely clean up the manure."

What we have been plagued with is a proliferation of the number of horses per acre. When people get in financial trouble, they board horses for people living in the city. No one removes manure and manure & urine contributes to high amounts of nitrates to the soil and ground water. Nitrates are getting into the Little Llagas Creek. THE BOARD OF SUPERVISORS MUST REINSTATE A ONE LARGE ANIMAL PER ACRE RULE.

VI. CENTRAL COAST WATER PRESERVATION PROGRAM

Farmers must participate in this program. However, the farmers who contribute the most nitrates to the groundwater are those who are involved with row cropping and do not participate in the program. When farmers who do participate complain to CCRWQCB, they respond by saying they can't possibly know who all the farmers are in South County. CCRWQCB needs to enforce the rules for every farmer or disband the program.

VII. PORTER-COLOGNE WATER QUALITY CONTROL ACT

The California Porter-Cologne Water Quality Act authorizes the Regional Board to regulate discharges to protect ground and surface water quality in accordance with Section 13263.

Principal factors affecting treatment process selection for land disposal are the nature of soils and ground waters in the disposal areas. Where percolation is considered, the nature of the underlying ground water is of particular concern. Treatment processes should be tailored to insure that local ground waters are not degraded.

Per California Code of Regulations, Title 23, Ch. 15, factors affecting site specific considerations include: depth to ground water, permeability of underlying soils, geologic structure and adequacy of monitoring systems which could result in imposing septic tank area prohibitions.

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VIII. STORM WATER RUNOFF

Storm water runoff which is a serious problem on the west side of San Martin can be a significant pollution source. The U.S. Environmental Protection Agency (U.S. EPA) estimates that at least 33% of all contamination in lakes and estuaries and 10% of all river contamination are caused by storm water runoff.

IX. FARMERS BLAMED FOR NITRATES

In the early 1980's, farmers were blamed for nitrates in ground water; so a few people got together and tested every well for twp (2) miles. What they found was that the farmer who had been engaged in farming for 50 years had the lowest nitrate count - 8 ppm. The highest concentration of nitrates was found in wells on one (1) acre subdivisions; then 2½ acre subdivisions had the second highest nitrate count, etc. WHAT PLAUSIBLE STUDIES DID THE COUNTY USE TO ELIMINATE THE 1 ACRE MINIMUM RESTRICTION FOR SECONDARY DWELLING UNITS? And, how many horses will be allowed on 1 acre lot with two dwelling units?

X. FAILURE TO GIVE PROPER NOTICE

Five different committees/agencies were adopted by the Board of Supervisors specifically to protect contamination of our groundwater. All five entities violated SCJPA Plan Codes and Rural Land Use Codes. San Martin residents were never afforded an opportunity for meaningful roundtable discussions to arrive at a decision regarding OWTS, and/or if it would be feasible to lift the 1 acre requirement for a secondary dwelling unit.

A notice appeared in the San Jose Mercury and residents received a card in the mail a few days prior to the 1½ hour "public comment" meeting held on 03-12-13. How do those two events satisfy R-LU 116? Why the rush to get this proposal through the approval process prior to the State Board completing their EIR and implementing the revised policies?

A perfect example arose when the expansion of the airport runway was proposed. San Martin Neighborhood Alliance (SMNA) posted these comments on their web site 1) The proposed expansion plan is inconsistent with the South County Joint Plan (SCJPAC) 2) The County has not provided sufficient public review for the affected communities and has not answered questions raised by San Martin residents 3) County consultants and staff have not included a regional analysis in the proposals, and 4) the proposal provides little factual documentation and is being rushed through the approval process, seemingly in order to avoid careful review, interrogation and open discussion.

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It took County staff 2 years to conduct the study for the proposed OWTS; but San Martin residents were limited to 1½ hours. The EIR for OWTS is 200-300 pages long and residents were expected to attend a "public comment" meeting for 1½ hours and discuss amendments and revisions contained in that document.

Discussion is described as an act of critical examination by argument; a debate. A "public comment" meeting allows for a "remark" or "criticism". San Martin residents gave staff an abundance of criticism regarding yearly inspections; but staff never discussed facts such as not be liable for any failure of the OWTS.

XI. ORDINANCE NO. NS-1200-310

Pursuant to Assembly Bill 1866, Ord. No. NS-1200-310 revised Sections 4.10.340, 2.20.020, 2.30.020 & 2.50.020 of the County Zoning Ordinance relating to secondary dwellings, states:

The Board of Supervisors of the County of Santa Clara makes the following finding regarding secondary dwellings in the San Martin Area:

The San Martin Water Quality Study, which was undertaken by the County in 1981 at the request of the Central Coast Regional Water Quality Control Board, evaluated present and potential groundwater quality problems in the aquifers underlying the San Martin area. The study documented a high concentration of nitrates in the area's groundwater, and identified the cumulative sewage from individual septic systems in the area as one of the primary sources on contaminants. The study demonstrated that specific adverse impacts to groundwater resources would occur unless the density of residential development was restricted within the San Martin area. Therefore, secondary dwellings have been prohibited, and will continue to be prohibited on lots smaller than five acres gross within the San Martin General Plan Area.

In reference to aforementioned Items II. E-Coli, Fecal Coli & Nitrates in Llagas Creek; III., Nitrate Count at Corde Valle, IV., Fry's Golf Course, V. Large Animal Ordinance, IX., Farmers Blamed for Nitrates & XII., Noxious Odors, are people expected to believe that since 1981 high concentration of nitrates have been remediated in San Martin and the one acre minimum requirement should be lifted?

If the Planning Commission and Board of Supervisors approve OWTS

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one year prior to the State having completed their EIR, what happens if a OWTS fails on a one acre parcel. To whom do we turn given the information cited on P. 43 of the EIR Report.

County not liable for damage and does not warrant.

The county, its officers, agents and employees assume no liability to the applicant or anyone else relying on the report issued hereunder for damage to persons or property caused by or arising from the inaccuracy of the report and/or undetection of sewage disposal problems; nor does the county make any warranty or guarantee of any kind to anyone, express or implied, regarding the condition and/or quality of the OWTS.

The County approved a method of sewage disposal without San Martin residents having had even one meaningful discussion to determine if the OWT System would be beneficial to our community. And, then had the temerity to include the aforementioned disclaimer at the end of the EIR.

What legal authority did the County use to absolve themselves of liability if OWTS fail and groundwater is contaminated?

Please send PCGA the legal authority referenced that allows a governmental agency the right to potentially cause irreparable damage to water quality without assuming any liability; so we can seek legal advise and retain an attorney to represent us at the Board of Supervisors meeting.

XI. OWTS NOT RELIABLE

In discussing OWTS with officials in surrounding counties, PCGA learned that OWTS are experimental and were told:

- 1) OWTS will still discharge effluent into leachfields;
- 2) Effluent discharged into the ground will contain contaminates such as viruses and bacteria;
- 3) Percolation tests will be mandatory which was not mentioned at the 03-12-13 meeting;
- 4) Policies regarding high ground water and soil permeability will be strictly monitored.

XII. NOXIOUS ODORS

San Martin Elementary School children have complained about offensive airborne odors that permeates the atmospher when they are outdoors on the playground. And, many residents

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have experienced smelling a very offensive odor also.

All of the aforementioned sources of nitrate contamination; and the noxious odors must be thoroughly investigated prior to the Board of Supervisors approving OWTS for San Martin on one acre parcels. Residents of San Martin are not criticizing the use of OWTS in any other community.

XIII. SEPTIC RULE - ASSEMBLY BILL 885

AB 885 was prepared and adopted but guidelines for the Basin Plan could not be implemented until the proposed revisions were reviewed under the California Environmental Quality Act (CEQA) EIR. The State Water Resources Control Board (Water Board) plans on implementing the revised Basin Plan in 2014. **AB 855** guidelines will supercede all County policies.

XIX. STATE WATER RESOURCES BOARD

The State Water Board is responsible for water quality objectives in the Basin Plan where impaired bodies of water are located. (Llagas Creek is an impaired body of water) The guidelines for the Basin Plan must prove that the standard they set does not contribute to the impairment of any water source.

It has been reported that the revised State Board guidelines for the Basin Plan does relax some policies; however, due to impairment of current water sources, the revised policies for use of OWTS and/or developments proposed near creeks will be far more stringent than the current State Basin Plan Policies.

Why is the analysis of OWTS; and changes to the General Plan and Zoning Ordinance being rushed through the approval process without careful review and/or open discussion with San Martin residents?

What factual information have residents in San Martin received from County Planning explaining how the County can legitimately avoid liability if an Onsite Wastewater Treatment System fails?

Sent by Certified Mail No. 7006 0100 0003 5252 1132

Land Use Policies

Rural Unincorporated Area Issues and Policies



Los Gatos Hillside Specific Plan

San Martin Planning Area

R-LU 111

The jointly adopted 'Los Gatos Hillside Specific Plan' shall serve to implement the provisions of the Land Use Element of the Santa Clara County General Plan for those lands included within the Study Area Boundary of the Specific Plan. Refer to the Specific Plan (not contained within the General Plan) for the allowable uses and densities permitted for each sub-area of the lands governed by the Specific Plan.

1. All policy provisions of the Specific Plan shall be deemed compatible with the County's General Plan.
2. For areas governed by the "20-160 acre variable slope density formula," development must fully conform to Hillside policies concerning clustering of residential development and open space dedication.

R-LU 112

Urban development shall not occur outside of city jurisdiction. Unincorporated land within the Urban Service Area of the Town of Los Gatos and which is suitable for urban development:

- a. should be annexed at a time consistent with the development schedule of the city; and
- b. shall conform to the city's General Plan.

Area Boundaries

R-LU 113

The San Martin boundary encompasses the area between Maple Avenue on the North; Masten Avenue on the South; the East Foothills and West Foothills (excluding those areas annexed to Morgan Hill). It excludes that part of the current study area which lies west of Monterey Road and between the hill crest north and paralleling California Avenue and West Middle Avenue.

General Policies

R-LU 114

San Martin should be viewed as a distinct entity, containing unique rural characteristics. Care should be taken to prevent premature commitment of land for uses which would restrict future options for the community.

R-LU 115

The density and location of future land divisions should reflect the recommendations of the San Martin Area Water Quality Study (1981) and take into consideration subsequent studies of ground water quality.

R-LU 116

The County endorses the concept of community participation by residents and property owners in the decisions affecting San Martin.

R-LU 117

If land use is to be significantly intensified, improvements and services will be required, such as additional fire protection, street improvements, a unified water distribution system, and a waste water management system. The County should determine the best method to finance these improvements and services and determine which government entity should administer and operate them.

The County of Santa Clara - Planning, Office of (DEP)



Print

Water Collaborative

The Santa Clara Valley Water Resources Protection Collaborative (Water Collaborative) was established in 2002, bringing together the County of Santa Clara, the Santa Clara Valley Water District, 15 cities, and various other governmental and non-governmental entities to promote stream protection, and to develop a consensus-based, more unified approach to land use and development near streams.



The Water Collaborative concluded the most significant of its efforts in 2006 with the adoption of the "GUIDELINES & STANDARDS FOR LAND USE NEAR STREAMS: A Manual of Tools, Standards, and Procedures to Protect Streams and Streamside Resource in Santa Clara County." In May of 2007, the Santa Clara County Board of Supervisors adopted a resolution approving the use of the "Guidelines & Standards" publication and related informational materials by County agencies and departments in the conduct of their missions and functions, including review of development applications and in the design and construction of County projects.

With the completion of its primary goals and responsibilities, the Collaborative has agreed to continue to meet and discuss issues related to the implementation of the Guidelines & Standards on an annual basis, to share information and insights, discuss possible improvements to standards and procedures, and generally promote further efforts to improve stream environments.

A series of seven informational handouts (see below) has been developed by the Santa Clara Valley Water District for adoption and use by all participating local governments and non-governmental organizations, providing an overview or summary of key information.

1. Frequently Asked Questions
2. Resource Agency Referrals
3. How to Be a Good Stream Steward
4. Bank Stability for Structures Built Near Streams
- 5a. Creekwise Use of Native Plants
- 5b. Creekwise Use of Ornamental or Non-Native Plants
6. Temporary Erosion Control
7. Grading and Drainage

For further information, contact Bill Shoe, Principal Planner, or Rob Eastwood, Senior Planner.

Attach. B

SOUTH COUNTY JOINT PLANNING ADVISORY COMMITTEE

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COUNTY PLANNING COMMISSIONER/Jack Bohan

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REMAINING PLANNING COMMISSIONERS/MORGAN HILL & GILROY

*Central Coast Regional Water Quality Boards (CCRWQB)
*Santa Clara Valley Water District (SCVWD)

County Executive's Office, Jeffrey Smith
San Martin Planning Advisory Committee (SMPAC) Donna Brodsky

Attach. C

South County Joint Area Plan Policies



SC 7.3

~~Each jurisdiction and agency pumping water from wells should be responsible for knowing the demand that its well pumping imposes on the direction of flow of water and how it affects others that are pumping from the same aquifer, and to prevent any adverse impacts on existing groundwater contamination problems.~~

SC 7.4

~~All jurisdictions and agencies pumping water from wells should cooperate in managing the aquifer so as to preserve the natural ecology of the region, securing the aquifer's utility as a water resource and ensuring the water's quality.~~

SC 7.5

~~Stream beds and other appropriate percolation areas should be protected.~~

SC 7.6

~~There should be continuing coordination among the South County jurisdictions and the Santa Clara Valley Water District to assure that the South County will get sufficient deliveries of San Felipe water as needs require.~~

SC 7.7

~~The water district should continue developing programs to assure effective management of the water resources, such as well monitoring, percolation of imported water, reclamation and conservation.~~

SC 7.8

~~New development should not exceed the water supply, and use of water should be made more efficient through appropriate means, such as conservation and reclamation.~~

SC 7.9

~~The development of water reclamation facilities should be encouraged, where feasible, in order to make reclaimed water available to help meet the growing needs of the South County region.~~

Water Quality

Policies

SC 8.0

Water quality should be protected from contamination, and should be monitored to assure that present policies and regulations are adequate. Such uses as waste facilities, septic systems and industries using toxic chemicals should be prohibited where polluting substances may come in contact with groundwater, floodwaters, and creeks or reservoir waters.

SC 8.1

Land use policies should be continued that limit the number of individual septic systems in areas vulnerable to groundwater contamination, because of the potential for cumulative degradation of water quality.

SC 8.2

In areas where future development is expected to be served by sewers, large lot policies (which allow minimal development and limited numbers of septic systems) should be continued. This approach increases the feasibility of designing future urban density subdivisions with smaller lots, which are more efficient for sewers in terms of service and cost.

SC 8.3

In the unincorporated area current County policies regarding septic systems and land use should be continued with no lessening of standards.

SC 8.4

Groundwater and surface water quality conditions throughout the South County should be monitored to determine if changes in regulations regarding septic systems and land use are needed.



South County Joint Area Plan Policies

SC 8.5

Protection of groundwater quality requires continued caution in the siting of landfills and transfer stations and rigorous enforcement of local and regional regulations.

SC 8.6

Continued caution should be taken as to the siting of landfills, the construction of landfills (i.e., they should have clay liners, etc.), and the waste allowed in a sanitary landfill in South County so as not to create hazards to groundwater quality.

SC 8.7

Solid waste and hazardous waste transfer stations should be sited and operated so as to minimize hazards to ground and surface water quality.

SC 8.8

Regulations relating to solid waste disposal should continue to be rigorously enforced by the local jurisdictions and by the Regional Water Quality Control Boards.

SC 8.9

Periodic household hazardous waste collection programs and other related activities should occur on a regular basis in order to limit the types and amounts of hazardous waste entering the ordinary waste stream.

SC 8.10

The jurisdictions in South County should work jointly and with other jurisdictions to achieve a balance between potential negative impacts and the benefits associated with the location of solid waste disposal sites and transfer stations.

SC 8.11

Properties located in areas that have soils with rapid water percolation shall be protected from future development in order to ensure existing water quality. Such development should not begin until preceded by the inclusion within the Cities' and County's Hazardous Materials Storage Ordinance a section specifically related to high percolation rates.

SC 8.12

Commercial and industrial developments proposed to be located in areas that have soils with rapid water percolation should be permitted only under the strict safety limitations as may be required by the Cities' and/or County's Hazardous Materials Specialists.

SC 8.13

In order to provide greater protection of the aquifers which supply drinking water to the South County, special consideration should be given to the management of contaminants (e.g., hazardous materials, sanitary effluents) in groundwater recharge areas where no protective aquitard layer exists.

SC 8.14

Each agency and jurisdiction responsible for well monitoring should continue to monitor wells and provide results to a central agency (yet known) which would coordinate the data and make it available to all jurisdictions and agencies.

SC 8.15

Programs for monitoring private wells should continue to expand the scope of testing by including tests of more wells and including tests on constituents not yet tested in private wells (i.e., volatile organics, bacteriological, radiological, etc.), and periodic retesting of selected private wells.



South County Joint Area Plan Policies

SC 9.10

The transportation of hazardous materials and wastes should be monitored to reduce risks and ensure notification of South County Cities in the event of a leak or spill.

SC 9.11

The South County jurisdictions should require that they receive reports from the Department of Transportation and the California Highway Patrol regarding spills or leaks on the highway.

SC 9.12

If a spill occurs while transporting hazardous materials or waste in one of the Cities or the County, the other jurisdictions should be notified by that jurisdiction immediately.

SC 9.13

The Cities and County should consider designating specific transportation routes for the conveyance of hazardous materials and waste, if the jurisdiction desires hazardous materials and waste to be transported on routes other than designated truck routes. Such controls should be consistent with the areawide emergency response plan prepared under AB 2185/2187.

SC 9.14

The County should implement a Memorandum of Understanding (MOU) between the Department of Health Services (DOHS) and the County Health Department, whereby the County would act as an agent in requiring hazardous material users and waste generators to provide annual records and in monitoring the haulers of hazardous materials and waste.

SC 9.15

To reduce the risk involved in transporting hazardous waste and to decrease the volume of waste that must be disposed of, generators of hazardous waste should be encouraged to use on-site pretreatment, such as: neutralization, precipitation and oxidation.

SC 9.16

A program to identify and abandon dry wells which have been used to dispose of contaminants should be initiated.

Intergovernmental Coordination

Policies

SC 10.0

Intergovernmental coordination between the Cities, the County and local agencies should be considered as an effective means of resolving issues of concern and investigating the feasibility of compatible standards, ordinances and enforcement procedures.

SC 10.1

The two Regional Water Quality Control Boards that have jurisdiction in South County should reach agreement upon compatible water quality standards for South County and consistent approaches to implementing the State Board's nondegradation policy, as compatible standards and consistent approaches would be less confusing to developers and owners of land and to jurisdictions which must carry out the Regional Boards' regulations.

SC 10.2

Close coordination should be maintained between the following agencies and organizations which share jurisdiction and interest relative to South County's water supply and water quality: the two Regional Water Quality Control Boards, the Water District, County Health Department, County Executive's Office, County Planning Office, Gilroy Planning Department, Morgan Hill Planning Department, and the San Martin Planning Committee.

SC 10.3

Where appropriate, the Regional Water Quality Boards, the Cities, County and other local agencies should have compatible ordinances (i.e., HMSOs), standards (i.e., septic tank and alternative treatment and disposal methods), and enforcement procedures (i.e., implementing "AB 2185" [Calif. Health and Safety Code Chap. 6.95 Division 20 Section 25500 et seq], etc.) regarding water quality so that there is no advantage for a company to locate in an area with lower standards.

South County Joint Area Plan Policies



SC 16.22

The South County Cities and the County together should:

- a. establish policies and implementation plans for greenbelts between cities, and
- b. identify and help establish a viable source of funding for acquiring and developing regional parks and pathways and, open space.

SC 16.23

The Preservation 2020 Task Force recommendation for using planned cluster development to preserve open space may be an appropriate mechanism for protecting South County's prime viewsheds and should be further investigated.

Rural/Urban Land Use

SC 17.0

[None]

SC 17.1

The County should continue its adopted land use policies for the unincorporated area in the South County in order to:

- a. promote a productive, primarily agricultural rural area;
- b. balance the needs of rural residents and landowners and the needs for effective natural resource management, enhanced rural scenic quality, and lands for planned urban growth, rural activities, and long-term open space,

SC 17.2

~~The County and the Cities should promote the long-term stability of their policies for land use and urban growth so that individuals, organizations, and appropriate entities can make rational decisions about long term land use and investment.~~

SC 17.3

~~The existing County /Cities referral process for review and comment on land use proposals should be enhanced by including a set of mutually agreed-upon criteria for analyzing land use proposals in the unincorporated area. The criteria would focus the review process on mutually-defined issues relating to rural land use decisions, while allowing for consideration of other concerns when appropriate.~~

~~Note: The Committee has prepared a draft process and criteria to implement this recommendation.~~

SC 17.4

~~The same referral process should be adapted by the three jurisdictions for review and comment on proposed major changes in city land use policy and for major city-area projects or expansions. The review should focus on area-wide objectives, such as jobs-housing balance, open space protection, and provision of infrastructure.~~

~~Note: The Committee has prepared a draft process and criteria to implement this recommendation.~~

SC 17.5

The Advisory Committee should have a process by which it will review projects of regional significance and projects referred to it by other agencies. The Advisory Committee's review should provide the lead agency, or agency having decision-making jurisdiction with input relative to the South County Joint Area Plan and issues of concern to the South County community.

~~Note: The Committee has prepared a process to implement this recommendation.~~

SC 17.6

If it is determined that a use proposed for the unincorporated area is needed in the South County, but would be more appropriately located in a city, then the use should not be located in the unincorporated area, but instead located in the City providing there is or could be sufficient and appropriately zoned land.

South County Joint Area Plan Policies



~~SC 17.13~~

~~The three jurisdictions should jointly review their land use and development standards for compatibility on the valley floor where appropriate. (eg: hazardous materials handling, major traffic way development, streaside development dedication). The review should also include hillside and ridgeline development standards compatibility, where appropriate.~~

~~SC 17.14~~

~~Since expectations of tax revenue may unduly influence land use decisions, resulting in less desirable land use patterns and competition among jurisdictions for control over territory,~~

- ~~a. the elected and chief administrative officials of the three jurisdictions should consider agreements regarding sharing of tax-base, revenues, and service provision as an element in joint land use planning;~~
- ~~b. net cost/revenue should be considered in land use planning and in the review of large scale proposals.~~

~~SC 17.15~~

~~In implementing these recommendations, conseration must be given to the limited funding and staff resources of the three jurisdictions.~~



Policies

SC 18.0

For the current period, San Martin should remain an unincorporated, predominately rural-residential community governed by the County Board of Supervisors. Current land use and septic regulations for San Martin should be continued with no lessening of restrictions, and conditions should be monitored to determine if changes are advisable. If, in the future, urbanization is recommended for San Martin, a wastewater management program should be developed which includes mechanisms for implementation and financing.

SC 18.1

Current County land use and septic system policies for San Martin should be continued with no lessening of restrictions.

SC 18.2

Land uses generating discharges which are high in volume or high in nitrates, organic materials or other problem chemicals should be restricted.

SC 18.3

Existing County policies regarding the density of development and the discharge of wastes, should remain in effect.

SC 18.4

Groundwater and surface water quality conditions in the San Martin area should be monitored to determine if changes in current policies regarding septic systems and land use are needed.

SC 18.5

If, in the future, higher intensities of development are recommended for San Martin, proposals should be prepared regarding a wastewater management system for the area and how it should be organized.

SC 18.6

Funding alternatives for financing the rehabilitation of existing water distribution facilities in San Martin should be explored.

SC 18.7

All future County facilities located in San Martin should be designed, landscaped, and maintained to be compatible with their surrounding environment.

SC 18.8

Existing County facilities in San Martin should be reviewed to ensure compatibility with their surrounding environment.

SC 18.9

Development around the South County Airport should adhere to Airport Land Use Commission (ALLC) Policies.

LIST OF COLLABORATIVE PARTICIPANTS

USERS MANUAL

Stanley M. Williams Chief Executive Officer Santa Clara Valley Water District	James M. Fiedler Chief Operating Officer Santa Clara Valley Water District	Marc Klemencic Deputy Operating Officer Santa Clara Valley Water District	Ann Draper Assistant Operating Officer Santa Clara Valley Water District	Bill Shoe Principal Planner County of Santa Clara	Lawrence Johnmann Board Member Guadalupe-Coyote Resource Conservation District
Sharon Fierro Community Development Director City of Campbell	Ralph Qualls Public Works Director City of Cupertino	Rick Smelser City Engineer City of Gilroy	Barbara Keegan Assistant Director of Public Works City of Sunnyvale	Trudi Ryan Planning Officer City of Sunnyvale	Beverly Bryant Home Builders Association of Northern California
Henry Louie City Engineer/ Public Works Director Town of Los Altos Hills	James Porter Director of Public Works City of Los Altos	Carl Cahill Planning Director Town of Los Altos Hills	Jenny Derry Executive Director Santa Clara County Farm Bureau	Shin-Roei Lee So Bay Watershed Management Division SF Bay Regional Water Quality Control Board	Ann Coombs The League of Women Voters of Santa Clara County
Carl Cahill Planning Director Town of Los Altos Hills	John E. Curtis Director of Parks and Public Works Town of Los Gatos	David M. (Mike) McNeely City Engineer City of Milpitas	James I. Tucker Vice President San Jose Silicon Valley Chamber of Commerce	Margaret V. Bruce Director of Environmental Programs Silicon Valley Manufacturing Group	
Tambri Heyden Planning Manager City of Milpitas	Gordon Siebert Director of Public Works/City Engineer City of Monte Sereno	Jim Ashcraft Public Works Director City of Morgan Hill	James I. Tucker Vice President San Jose Silicon Valley Chamber of Commerce	Trish Mulvey Co-Founder CLEAN South Bay	
Cathy R. Lazarus Director of Public Works City of Mountain View	Glenn Roberts Public Works Director City of Palo Alto	July Caporgno Advance Planning Manager City of Palo Alto	Brenda Torres-Barreto Executive Director Santa Clara Valley Audubon Society		
Carl Mosher Director of Environmental Services City of San Jose	Laurel Prevetti Deputy Director, Department of Planning, Building and Code Enforcement City of San Jose	Rajeev Batra City Engineer City of Santa Clara	John Cherbone Public Works Director City of Saratoga		

Land Use Policies



Rural Unincorporated Area Issues and Policies

R-LU 143

New and expanded intensive agricultural uses which have the potential for generating significant volumes of organic waste discharges may be permitted subject to use permit (i.e. mushroom farms, dairies, animal feed lots, poultry farms).

Areas of Special Concern**R-LU 144**

Three types of areas which have been designated areas of particular environmental concern for development activity are Federal Floodways, and Special Flood Hazard Rate Zones, and Soils of High Permeability.

R-LU 145

In the areas of Federal Floodways and Spills of High Permeability activities permitted should be limited to those specific uses which:

- a. do not provide the potential for contamination of surface runoffs;
- b. will not require additional septic systems; and
- c. will not add potential for generating significant volumes of organic liquid wastes or nitrates to the ground water aquifers.

R-LU 146

Soils of high permeability are defined as those with permeability rates exceeding 6 inches per hour as delineated on the maps of Soils of Santa Clara County, 1968.

R-LU 147

In the area designated a Special Flood Hazard in the National Flood Insurance Program, any development shall comply with special regulations regarding the construction and improvement of structures, mobile homes, water and sewer systems adopted by the County Board of Supervisors in order to minimize flood damage and potential contamination of surface waters.

Scenic Highway**R-LU 148**

The portion of Highway 101 (South Valley Freeway) in San Martin should be considered a scenic highway.

Monterey Highway Use Permit AreaUse Permit Area Boundaries**R-LU 149**

The Monterey Highway Use Permit Area shall consist of properties with access to and fronting on Monterey Road from Metcalf Road south the county boundary, excluding the Urban Service Areas of the cities of San Jose, Morgan Hill, and Gilroy and lands within the San Martin Commercial and Industrial Use Permit Areas.

Land Uses**R-LU 150**

While the predominant land use in the rural unincorporated areas of South County is agriculture, the County recognizes that there are along Monterey Road, within the areas designated 'Agriculture' and 'Rural Residential,' established, non-agricultural land uses serving the South County community. It is the policy of the County that they continue within the 'Agriculture' and 'Rural Residential' land use designations so that the needs of the South County may be served, provided that their legal status is secured in conformance with the following policies.

R-LU 151

Legally established land uses fronting Monterey Highway, south of Metcalf Road, in areas designated 'Agriculture' and 'Rural Residential' shall continue as allowable uses by right or by use permit, depending on the regulations governing their original establishment. To protect the area from undesirable strip commercial development, additional service uses will not be extended along Monterey Road.

Response to Letter from People’s Coalition for Government Accountability (PCGA)

- 11-1 The comment is not on the DPEIR but refers to a notice by the County to residents of San Martin inviting them to attend an OWTS public outreach meeting in San Martin on March 12, 2013. It is not clear what lot size restriction the commenter is referring to. The proposed project does not include a provision to eliminate a 1-acre lot size restriction in San Martin, because such a restriction does not exist. What is proposed for San Martin is to eliminate from the County’s zoning code the restriction that secondary dwelling units in San Martin not be allowed on lots smaller than 5 acres. It is not necessary to address this restriction for other portions of the unincorporated areas, because no other community besides San Martin is subject to this restriction. The DPEIR evaluates effects to groundwater quality in connection with elimination of the San Martin 5-acre minimum lot size requirement on pages 79 and 80 (Impact 4.2-B).
- 11-2. The comment does not refer to environmental analysis in the DPEIR but to the process for community participation with regards to development and approval of the OWTS Ordinance. The proposed project has not been adopted, contrary to what the commenter has stated. The San Martin public outreach meeting was part of the ongoing process to involve residents of San Martin in the decision-making process with regard to the proposed OWTS Ordinance. The San Martin Joint Planning Advisory Committee will make a recommendation on the General Plan and Zoning Amendments prior to Planning Commission consideration of these portions of the project. In addition, DEH has requested input on the OWTS Ordinance from any interested party. The Water Collaborative is not a body with decision-making authority with regard to County regulations. However, the Santa Clara Valley Water District, which is a member of the Water Collaborative, has commented on the DPEIR (see Letter 2).
- 11-3 Items I. through IX and XIII and XIX. in the comment letter are not in reference to the proposed project or the environmental evaluation of the proposed project in the DPEIR. Item X. is discussed in Response 11-2. With regard to Item XI., the DPEIR evaluates the San Martin Water Quality Study on pages 79 and 80 (Impact 4.2-B). It is not clear what the commenter is referring to on page 43 of the DPEIR, or what disclaimer is being cited. See Response 11-2 regarding community participation. The DPEIR evaluates the water quality effects of OWTS, including odors, in Section 4.2.

Rader, David

From: Eric Biederman <eric_anne@yahoo.com>
Sent: Wednesday, April 03, 2013 4:24 PM
To: Rader, David
Subject: Fw: UPDATE - Public Comment Period for OWTS Ordinance EIR extended to 4/18/13 at 5:00 pm

Mr. Rader,

I have read the proposed ordinance change but am confused about whether a proprietary treatment unit still requires the same size leach field and is subject to the same percolation rates and slope constraints as a standard drainfield. I am interested in septic system alternatives for steep sloped lots. The proprietary treatment units I have read about emit wastewater that is much cleaner than what comes out of the standard septic tank, possibly even clean enough for irrigation. Some of these systems are designed especially for steep slope lots. Will these proprietary treatment units be subject to different drainfield criteria, possibly on a case-by-case basis depending on the specific proprietary system being considered? 12-1

Any information you could provide on this subject would be greatly appreciated.

Anne Biederman

----- Forwarded Message -----

From: "Dowell, Sharon" <Sharon.Dowell@deh.sccgov.org>
Sent: Wed, April 3, 2013 11:07:22 AM
Subject: UPDATE - Public Comment Period for OWTS Ordinance EIR extended to 4/18/13 at 5:00 pm

Onsite Wastewater Treatment Systems (OWTS) Ordinance Change Draft Environmental Impact Report

The comment period for this project has been extended from April 4, 2013 to April 18, 2013 at 5:00 pm. For further information, or to submit written comments on the project, please contact David Rader at [david.rader\(at\)pln.sccgov.org](mailto:david.rader(at)pln.sccgov.org).

Background: This proposed project is an update of regulations governing individual on-site wastewater treatment systems within the unincorporated portions of the County. The project also includes updates to related sections of the General Plan and Zoning Ordinance.

Sharon Dowell MS, REHS
Management Analyst
Santa Clara County
Department of Environmental Health
1555 Berger Drive, Suite 300
San Jose, CA 95112
Sharon.dowell@deh.sccgov.org
(408) 918-1990

Response to Letter from Anne Biederman

- 12-1 Different alternative OWTS would have different siting and design criteria, depending on the type of system and the site characteristics.

From: Craig Lammers <vpssc@aol.com>
Subject: Fwd: Draft OWTS Ordinance
Date: March 20, 2013 10:58:42 AM PDT
To: david.rader@pln.sccgov.org

Mr. Rader,

Thank you for the informative presentation the group put on, I attended the public workshop held in San Martin.

Although they do not currently affect me I was pleased to hear of all except one of the proposed changes.

The one item where I believe the county government would be overstepping its bounds would be the requirement of the property owner to have their private OWTS system inspected each time or any time they have their tank pumped.

13-1

I further understood that the inspector, in this case the pump truck operator would be required to perform the inspection, fill out an inspection report, the format I presume to be approved by the county, and then submit it to the county health department.

During the presentation I attended a member of your group alluded to the EIR report and how it took nearly 30 years to complete, which sadly is becoming all too common with our governmental process, that aside the part that was mentioned that really caught my attention was that we were told that the OWTS systems in place and used throughout the un-incorporated areas both past and current present no danger to the water table. They are in fact doing their job.

So I have to ask myself why does the county want to force it's residents to have their systems inspected each time they have them pumped? And then have this information turned over to the county for tracking.

According to the EIR they are not causing any problems with the underground water supply.

The additional cost to inspect a system each time it's pumped will add approximately \$200 to the cost to the owner at today's rates. The cost of the inspection does not bother me personally although it may be an unbearable additional burden to some, it's the fact that the county would be forcing a landowner and private OWTS owner to have a system inspected when that decision should reside solely with the owner.

The county would then further be compiling a data base on each and every property owners private OWTS.

This sounds more like an intrusion into the private property rights of the county's citizens and it further sounds more like a pretext to a future OWTS tax.

Several years ago the county of Santa Clara and the Water District got together and deceived the residents by telling them that they were only counting the private wells in the county for statistical data, we all know what became of that.

Remove the mandatory inspections and tracking and you have a good proposal.

Sincerely,

Craig Lammers

Response to Letter from Craig Lammers

- 13-1 The commenter's opinion about the project is noted for the record and is hereby forwarded to the Board of Supervisors for its consideration.

Robert J. Benich
14400 Sycamore Drive
Morgan Hill, CA 95037

February 19, 2013

Mr. David Rader, Planner
Santa Clara County Planning Office
70 W. Hedding Street, East Wing, 7th Floor
San José, CA 95110-1705

Subject: Draft EIR and OWTS Ordinance Project - Public Comment Period

Dear Mr. Rader:

I am writing this letter to state that my wife and I are in favor of the proposed changes to the County of Santa Clara Department of Environmental Health's OWTS (Septic) Ordinance.

Specifically, we agree the changes contained in the revised language found in B11-65 (c) (copied below) are in the best interests of the residents of Santa Clara County.

(c) Every building, structure, or appurtenance that contains one or more waste producing fixtures such as toilets, sinks, showers or bathtubs, clothes washing machines, dish washing machines, animal wash pads, floor drains or other fixture or fittings intended to drain organic or inorganic waste material must be connected to an approved OWTS that meets the requirements of this chapter.

This is significant because it would allow the construction of a 1 bedroom "Granny Unit" to be hooked up to an existing conforming septic system that was designed "oversized", installed and approved by the County Health Department. What difference does it make if you add a "4th bedroom" to a 3 bedroom house, or build a separate 1 bedroom "Granny Unit" and hook them up to the same conforming septic system that was originally designed for 4 bedrooms?

We hope the County Planning Commission and County Board of Supervisors approve the proposed changes to this ordinance. I would be happy to answer any questions you may have.

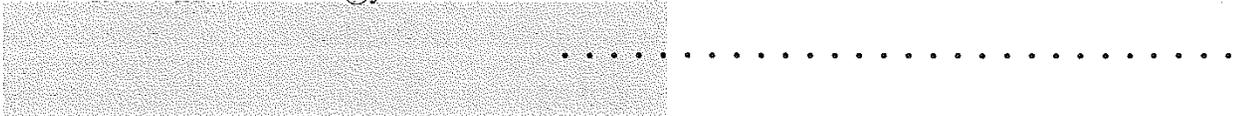
Sincerely,



Robert J. Benich

E-Mail: RJBenich@yahoo.com

13 FEB 2013
PLANNING
RECEIVED
14-1



Response to Letter from Robert J. Benich

- 14-1 The commenter's opinion about the project is noted for the record and is hereby forwarded to the Board of Supervisors for its consideration.

From: "Nancy Cook Long" <nancycooklong@comcast.net>
Subject: **Comments on OWTS ordinance**
Date: March 23, 2013 11:19:13 PM PDT
To: <david.rader@pln.sccgov.org>
Cc: "Nancy Cook Long" <nancycooklong@comcast.net>

Hello David,

Thank you for taking the time with your colleagues at Santa Clara County and presenting the OWTS ordinance changes at the Redwood Estates Pavillion last week.

15-1

My husband and I attended the session and wanted to provide you our comments formally. We think this ordinance is very well written, the EIR is thoughtfully and thoroughly considered – it is a win/win for property owners and the environment, and we 100% support the approval of this ordinance.

We have a parcel in the Santa Cruz Mountains which is amazingly *not* in the Lexington Basin. It was one of the original homes in the mountains off Summit Road back when the trains and stage coaches delivered weekend vacationers. The old home burned down a few years ago, and we want to rebuild it, however due to conventional septic system requirements, we are unable to proceed. Our property has everything needed to be inhabitable again, but not without this ordinance – as we need to get DEH clearance to rebuild and our soil does not meet the conventional perk test requirements. The OWTS ordinance provides the options we need to be able to restore the property to it's historic condition, and we could not be more delighted that the ordinance seems to be making its way through the process. We have waited three long years for this, and want to provide our vocal support to the passage of OWTS ordinance.

Please let me know if there is anything else we can do to help ensure this important ordinance passes. It is truly a win/win and gives the kind of green, environmentally sound alternatives to unique properties.

Please count us in for a big vote of support for this ordinance.

Sincerely,

Nancy & Jonathan Long
24130 Loma Prieta Ave.
Los Gatos, CA 95033
408-832-4347

Response to Letter from Nancy and Jonathan Long

15-1 The commenter's opinion about the project's benefits are noted for the record.

Rader, David

From: Paul Sanders <Paul@unioncommunityllc.com>
Sent: Thursday, April 04, 2013 9:35 AM
To: Rader, David
Cc: Dowell, Sharon
Subject: OWTS EIR comment

16-1

My family and my wife's family have lived in Santa Clara County since the early 50's. My wife (Laura Villemaire Sanders) and I have been unable to live near our families since getting married 13 years ago due to the high cost of living in the county. We currently live in Roseville. I have a job that is based in San Jose and could move to the area if desired. Laura's parents live off Old Santa Cruz highway just south of Summit Rd.

Here is where this new ordinance for OWTS has an impact for us and potentially other people with similar situations. The property referenced is becoming too much for Laura's aging parents to manage and they could be forced to sell and move out of the area. This new ordinance would allow us to modify the existing residence to accommodate her better. It would also allow us to live there producing a property that is more attractive, better maintained and have septic, water and other systems upgraded to current code.

Please approve the OWTS ordinance allowing for as many alternatives for OWTS disposal as possible. It will allow some of these old systems to be upgraded providing a safer environment for mountain residents. It will also keep residents that have strong ties to the area the ability to stay in their homes.

Thank you,

Paul Sanders

Response to Letter from Paul Sanders

16-1 The commenter's opinion about the project's benefits are noted for the record.

Rader, David

From: Beth Wyman <bethwym@yahoo.com>
Sent: Monday, April 08, 2013 3:54 PM
To: Jim and Connie Rogers; Rader, David
Cc: Julie Hutcheson; Carolyn Tognetti; Wasserman, Mike; Don.Gage@ci.gilroy.ca.us; Sharon Albert
Subject: Re: Comment on OWTS and EIR

Connie,
Excellently put!
Thanks!
Beth

From: Jim and Connie Rogers <jrogers@garlic.com>
To: david.rader@pln.sccgov.org
Cc: Julie Hutcheson <Julie@GreenFoothills.org>; Carolyn Tognetti <clyntognetti@aol.com>; Mike Wasserman <mike.wasserman@bos.sccgov.org>; Don.Gage@ci.gilroy.ca.us; Sharon Albert <laqueenie@verizon.net>
Sent: Monday, April 8, 2013 3:43 PM
Subject: Comment on OWTS and EIR

Dear Mr. Rader,

17-1

I would like to submit the following comments on the County's plan to allow alternative septic tank systems and the draft environmental impact report on changes to your septic tank ordinance. I have read much of the material your office has made available and have spoken with both Rob Eastwood of Planning and Darrin Lee of Environmental Health. My comments are based on my experience as a charter member of the South County Joint Planning Advisory Committee and a member of the Gilroy City Council from 1993 to 1997.

1) You state that alternative wastewater treatment systems will only be permitted in locations where regular septic systems are infeasible. I understand the need for this and the fact that septic technology has advanced. I also understand from Mr. Lee that a third party (septic service of some kind?) must provide maintenance to these alternative septic systems. However he could not tell me how the County was going to make sure, after installation and use, that the systems were not adversely affecting the groundwater.

I would like to see the proposed ordinance include some method for the County to "check up" on the functioning of these alternative septic systems once they are installed. There needs to be a way to guarantee that groundwater and underground aquifers are not affected. I did not see provision for any inspection system in the proposed ordinance. Perhaps the County should provide for annual or periodic inspections. Or at least require reports from the maintenance service (not the property owner).

2) I believe the growth-inducing characteristics of the proposed ordinance should be analyzed in much more depth. It has been my experience that many developers are eager to expand rural residential dwellings in South County. Although you say that the new ordinance would only permit secondary dwellings in a limited area in San Martin, I believe it will encourage many others to intensify their land uses in the rural area, thus creating pressure on ag land and open space. This will be contrary to the County General Plan which tries to limit rural residential and to the new One Bay Area Plan which emphasizes more concentric, denser development located near transit lines.

The properties in South County often have a very high water table and much of our land is in the flood plain. Old timers already say that "San Martin is a cesspool". Also all the residents of South County, including the cities of Morgan Hill and Gilroy depend entirely on well water. For this reason we are very cautious about any uses with the potential to affect our water supply. I believe this proposed ordinance and EIR should also be considered by the South County Joint Planning Advisory Committee before it goes to the Board of Supervisors.

Thank you for considering my comments.

Connie Rogers
7690 Santa Theresa Drive
Gilroy, CA 95020
408-842-8494
crogers@qarlic.com

Response to Letter from Beth Wyman

17-1 This letter is a re-submittal of Comment Letter 8; please see the previous responses to that letter.

March 28 Oral Comments on DEIR at Planning Commission Meeting

Richard van't Rood

I just wanted to speak briefly. I've been a landowner and resident of Santa Clara county pretty much all my life. I've also been a land use attorney and advised people, and I've fielded a lot of phone calls from people asking what they can do with their property. And lot of times I've said to them there's nothing you can do until the County updates its septic ordinance. This is a great thing that the County is doing, and I want to congratulate staff on doing a very thorough job. I've also owned property in Santa Cruz County and have installed these kinds of systems several times over the last ten years. And they are very effective. And they allow property owners alternatives for their property. And especially in a lot of areas of Santa Clara County will allow people to clean up their properties and make them more valuable and add to the community. So I commend the staff on this proposal, and I hope it gets approved.

18-1

Jennifer Sheer, Santa Clara County Farm Bureau

I want to thank the staff for preparing this new program. All the feedback that we've gotten has been really positive. Staff met with us one-on-one months ago, so we're up to speed in that regard. Everyone who attended the March 12 meeting in San Martin came back with really positive feedback. I was unable to attend, but folks said this is going to clean up our water, it's going to allow people, especially for wineries, to tie in their winery system to their home system, if it's adequately sized, instead of needing two different systems. So it seems like it has a lot of positive benefits for the community. The one caveat that we heard was the inspections, and just a little bit of clarity in that regard. To what extent the inspections will review the septic systems, what cost that might have, and also the nexus for that, whether that came from the State or whether that was County driven. And I don't know if that's already been addressed. If it has been, you certainly don't need to take time today. If we could just get an offline answer to that, that would be greatly appreciated. So overall, it looks really good. Especially from a water quality perspective, which is an area where we're very heavily engaged in terms of trying cleaning up the groundwater to reduce nitrates and that kind of thing. I think the systems are going to have a lot of impacts there, positively as well. We're looking forward to it.

18-2

18-3

Responses to Public Hearing Comments

A public hearing on the DPEIR was held before the Santa Clara County Planning Commission on March 28, 2013. Three comments addressing the information and/or adequacy of the DPEIR were made. They are summarized below along with responses to those comments.

- 18-1 The commenter's opinion about the project's benefits are noted for the record.
- 18-2 The commenter's opinion about the project's benefits are noted for the record.
- 18-3 The proposed septic tank pumping and inspection program is intended to make use of the work and observations normally carried out by a competent septic tank pumping contractor during the servicing of a septic tank. The work would consist of a basic "walk-through" inspection of the system, completion of a standard checklist type form, and submission of that form to the County DEH along with the normal pump-out report required to be submitted. It is anticipated that this would entail no more than about one hour of additional time during a typical pump-out. This inspection program (keyed to septic tank servicing) is patterned after a highly successful program that has been in effect in Santa Barbara County since the late 1990s, and a similar program in Santa Cruz County. This is not a State-mandated requirement; however, it is being proposed to aid in satisfying the County's obligations for ongoing monitoring and assessment of OWTS that will be required as part of the Tier 2 Local Agency Management Program under the newly enacted State OWTS Policy. Staff of the SF Bay Regional Water Quality Control Board have indicated strong support for the proposed inspection program as both a meaningful and practical approach to comply with the monitoring provisions of the State OWTS Policy.

CHAPTER 3

REVISIONS TO THE DPEIR

The following chapter presents changes to the text of the DPEIR that are warranted given the comments presented in Chapter 2. Changes are shown in the following manner:

- Additions to the text are shown as underlined text like this added text.
- Deletions from the text are shown as strike-out text, like this ~~strike-out~~.

1. Clarification

The County is concerned that the DPEIR discussion of how the proposed zoning change affects minimum lot sizes for subdivisions may be confusing and lead some to think that the proposed changes means that the County is eliminating minimum lot sizes for subdivisions, which is not the case. To clarify this issue the following text changes will be made to the second paragraph on page 19 of the DPEIR.

In addition, this Draft EIR has evaluated the impacts of eliminating design criteria in the current On-Site Sewage Disposal Ordinance that include minimum lot sizes of as small as one acre for septic systems the restriction on development of lots under one acre in the Lexington Basin (Division B11, Chapter IV, County Code, Article 3. - Private Sewage Disposal Within Lexington Basin, Sections B11-90 – B11-95). The Zoning Code cross-references this restriction in Zoning Code Section 2.20.070(B)limits new development in that basin to lots exceeding one acre, and the proposed project proposes to eliminate this cross reference that section of the Zoning Code (Zoning Code Section 2.20.070(B))to ensure consistency with the proposed OWTS Ordinance.

2. Errata

There is one page of the text (page 158) that contains errata. The corrections to page 158 are shown below:

Given these LOS F conditions, the potential project impacts to SR 17 were assessed. Based on location, residents of the 83 single-family homes that could be built through adoption of the Ordinance would access SR 17. Based on ITE trip generation rates, this would result in a worst case of 83 p.m. new peak hour vehicle trips generated. These 83 trips would be expected to be distributed on local roads accessing SR 17 ~~as follows~~ (based on recent County approved Redwood Estates Community Center traffic study:¹

- Summit Road - 54 27% (42 22 trips)
- Madrone Drive – 25% (21 trips)
- Idylwild Road – 24 20% (17 trips)
- Bear Creek Road - 17% (14 trips)
- Alma Bridge Road - 11% (9 trips)

¹ Multitrans Transportation Consultants, Inc. 2009. Planning Office analysis of vacant parcel locations in relation to SR 17 access ramps.

Current capacity on the SR 17 northbound segment from Summit to Bear Creek is 4,400 vehicles per hour. If all 42 estimated project trips access SR 17 from Summit Road, then the project would add 0.595 percent to the northbound segment's capacity ($=42 \cdot 22 / 4,400$), which falls below the one percent VTA CMP threshold for freeway facilities. Similarly, project trips added to Madrone Drive, Idylwild, Bear Creek, and Alma Bridge Roads that would access SR 17 would also represent an increase of less than one percent. As a result, the project is not expected to significantly impact SR 17 and its intersections/interchanges with Madrone Drive, Summit, Idylwild, Bear Creek, and Alma Bridge Roads based on VTA CMP standards.² As a result, the project impact would be **less than significant**, and no mitigation is required.

3. Revisions of the DPEIR Text Based on Comments Received

Based on comments received, the following DPEIR text revisions are warranted. These revisions are intended to clarify the EIR analyses. However, none of these revisions would result in a new potentially significant impact nor substantially increase the significance of any impact.

Page 16 (see Comment and Response 5-1)

"OWTS governed by the proposed Ordinance could not be used where a proposed residence, place of business, or other building is located ~~within an urban service area~~ and on property that abuts a street or alley in which an approved available sanitary sewer exists or where the property line is within 300 feet of an approved available sanitary sewer."

Page 38 (see Comment and Response 2-1)

The principal groundwater aquifer in the County is in the Santa Clara Valley, with two major sub-basins, the Santa Clara and Llagas Sub-basins. ~~This~~ The groundwater sub-basins are is described in more detail in *Section 4.2, Hydrology and Water Quality*. Groundwater is generally unconfined in the valley; however, a confined zone is created in the northern portion of the Santa Clara sub-basin where it is overlain by a low permeability clay layer. "Unconfined" groundwater is defined as groundwater that is hydrologically connected to the surface through high permeability sediments. "Confined" groundwater is defined as groundwater separated from the surface by a layer of very low permeability material such as clay.

Groundwater levels vary throughout the County and by season. Portions of the County near the margins of the San Francisco Bay tend to have some of the shallowest groundwater, sometimes only a few feet below the ground surface; however, there are very few OWTS located in this highly urbanized area of the County. Groundwater is also very shallow in many areas of the Coyote Valley located within the Santa Clara Sub-basin and in the Llagas Sub-basin, where many OWTS are located. In the Coyote Valley, groundwater is generally unconfined and is typically encountered between 5 and 40 feet below ground surface. The Llagas Sub-basin also has areas with shallow groundwater and, like the Coyote Valley, has permeable soils and high recharge rates. The 2012 "Groundwater Vulnerability Study for

² The cited Old Santa Cruz Highway intersection with SR 17 is the eastern component of the Bear Creek Road interchange. Even if all 14 peak hour trips used that portion of the interchange, it would still be less than one percent of capacity.

Santa Clara County” (Kennedy Jenks and Todd Engineers, prepared for Santa Clara Valley Water District) indicated that groundwater in the Coyote Valley and Llagas Sub-basin is highly vulnerable to land use related potentially contaminating activities. There are more than 3,000 domestic wells in the Coyote Valley and Llagas Sub-basin, where groundwater is the only drinking water source.

Page 57 (see Comment and Response 2-2)

An important feature of Santa Clara County’s surface water resources are the series of 10 reservoirs developed and managed by the SCVWD primarily for water supply and flood control purposes. The reservoirs have a total storage capacity of approximately 170,000 acre-feet and were constructed in the 1930s and 1950s for water conservation to catch storm runoff that otherwise would flow into San Francisco Bay. The reservoirs also provide incidental flood protection by containing runoff early in the rainfall season, serve recreational needs, and benefit the environment by storing water to maintain flow in the creeks. Of special concern are the reservoirs that serve as a local source of supply for drinking water, along with the land uses and activities in the source watershed areas. These include Almaden, Anderson, Calero, Coyote, and Lexington Reservoirs. Protection of the quantity and quality of water in these reservoirs and tributaries for existing and potential future drinking water uses is of highest priority for the SCVWD.

Page 65 (see Comment and Response 2-13)

With respect to how this Policy might affect Santa Clara County, it is expected that: (a) most all existing OWTS in Santa Clara County would fall under Tier Zero; (b) the provisions of the existing Ordinance are similar to Tier One requirements; (c) the proposed new Ordinance would likely meet the requirements for a Local Agency Management Program under Tier Two; (d) currently there are no OWTS impaired surface waters in the County that would warrant Tier Three requirements for any OWTS; and (e) the County’s procedures and practices for OWTS corrective actions, under both the existing and proposed Ordinance, are consistent with the Tier Four requirements.

~~An a~~ Additional aspects of the State Policy that would apply to counties administering a Tier Two program include:

- new minimum horizontal setback requirements between OWTS dispersal fields to (a) public water supply wells (150 feet) and (b) the edge of surface water bodies that drain to a public water system intake (varies according to distance from intake); and
- new requirements for submission of annual reports to the respective RWQCB(s) regarding OWTS status and assessment of water quality impacts every five years. The proposed Ordinance includes changes to horizontal setback requirements that comply with the added protections for public water supply wells and surface water intakes mandated by the new State OWTS Policy. The required monitoring, assessment and reporting of OWTS status and water quality impacts will be facilitated by various aspects of the proposed Ordinance changes, including, for example: (a) the operating permit and monitoring requirements for alternative OWTS; (b) the septic tank pumper inspection and reporting program; and (c) results of

cumulative impact studies for individual projects and for general watershed areas as contained in supporting documents for this EIR.

Page 69 (see Comment and Response 2-11)

Dissolved Solids. With the exception of distilled water, all water contains dissolved solids, which include various salts and other minerals such as calcium, chloride, magnesium, potassium, sodium, etc. Dissolved solids affect the taste and some uses of water, but are not normally injurious at levels found in most freshwater bodies. Seawater, of course, contains very high levels of dissolved solids, roughly 50 to 100 times the levels found in fresh waters. Domestic wastes can increase the concentration of total dissolved solids (TDS) in the wastewater (as compared with the water supply) by as much as 200 to 400 mg/L. Dissolved solids are not removed to any appreciable degree by passage through the soil. Therefore, this would contribute to an overall increase in the TDS levels in the groundwater beneath and down-slope of OWTS dispersal fields.

Appendix B (“Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes”) includes an analysis of salt loading effects from OWTS discharges in Santa Clara County. The analysis was conducted watershed-by-watershed and includes calculations for existing conditions, development projections under the current Ordinance, and development projections under the proposed Ordinance. The results of the analysis indicate insignificant salt concentration increases in groundwater due to OWTS. Under existing conditions, the average TDS contribution from OWTS (over background levels) is estimated to be about 2 mg/L in the North County watersheds and 3 mg/L in the South County watersheds. Under the proposed Ordinance, the OWTS contribution is estimated to increase to about 2.5 to 4 mg/L, respectively in the North and South County watersheds. According to the 2010 Groundwater Quality Report (Santa Clara County Valley Water District, 2011b), the median TDS concentrations in the principal aquifer zones range are about 400 mg/L in the Santa Clara Plain and about 340 mg/L in the Coyote Valley and Llagas Sub-basin. TDS levels tend to be substantially lower, often less than 200 mg/L, in the groundwater in the mountain regions of the County. Localized TDS contribution in watersheds containing the highest concentrations of OWTS (e.g., Adobe and Permanente Creeks, Lexington Basin, and Morgan Hill and San Martin areas of the Llagas Sub-basin), is estimated to be in the range of 7 to 20 mg/L, roughly amounting to about 5% of the total TDS loading to groundwater in those areas.

Page 76 (see Comment and Response 2-10)

Finally Also, the proposed Ordinance includes the establishment of an operating permit program for all alternative OWTS that would ensure ongoing inspection and monitoring of OWTS for verification of proper performance.

Finally, with respect to addressing special concerns about protection of public drinking water supplies, the proposed Ordinance (Section B11-67) includes new, more restrictive, horizontal setback requirements between OWTS dispersal fields and public water supply wells and public water supply surface water intakes, as mandated by the recently enacted State OWTS Policy.

Based on the above considerations, the proposed Ordinance changes relative to the depth to groundwater requirements, ~~and~~ use of alternative treatment and dispersal methods, and horizontal setback distances are consistent with the current state of knowledge and best management practices and would provide suitable protection against pathogen impacts from on-site wastewater treatment systems. This impact would be a **less than significant**, and no mitigation is required.

Page 77 (see Comment and Response 2-4)

Using the projected OWTS densities, calculations have been made to estimate the ~~potential incremental rise in contribution to~~ groundwater-nitrate concentrations for the five highest density sub-basins ~~as a result of from~~ OWTS discharges. The analysis includes the effects from the existing 12,500 OWTS in the County, plus the projected increases from new OWTS under the existing and proposed Ordinance. The projected nitrate concentrations increases per this analysis would be in addition to other sources of nitrate that might occur in each sub-basin, such as leaching of agricultural fertilizers, confined animal wastes, municipal wastewater discharges, etc. Supporting calculations and assumptions for nitrate loading estimates are presented in Appendix B. The results are summarized in Table 4.2-7, showing the estimated effects from the existing 12,500 OWTS, along with a comparison of how comparing the projected impacts would change under both the existing Ordinance and the proposed Ordinance. The projected nitrate concentration impacts in these areas of highest OWTS densities range from about 1.5 to 3.6 mg-N/L, well below the drinking water limit of 10 mg-N/L. The difference between the proposed Ordinance and the existing Ordinance is projected to be an incremental rise of about 0.2 mg-N/L or less in all sub-basins, which is within the margin of error in the basic assumptions used in the nitrate loading calculations for this Study (see Appendix B). Also, as discussed in a separate bullet point below, the projected impacts under the Ordinance would be reduced by the use of alternative systems, most of which provide greater nitrogen removal efficiencies than conventional systems. Overall, while some addition to groundwater-nitrate concentrations is probable under the proposed Ordinance, the magnitude would be low.

Page 79 (see Comment and Response 2-4)

**Table 4.2-7
Projected Groundwater-Nitrate Loading Effects
For Selected Watersheds**

Watershed Sub-basin	Existing OWTS		Existing Ordinance		New Ordinance	
	Density Acres/OWTS	Resultant NO ₃ -N (mg-N/L)	Density Acres/OWTS	Resultant NO ₃ -N (mg-N/L)	Density Acres/OWTS	Resultant NO ₃ -N (mg-N/L)
Adobe Creek	3.9	3.20	3.4	3.52	3.3	3.61
Permanente Creek	7.7	1.89	7.3	1.96	7.1	2.00
Lexington Basin	12.0	1.40	10.8	1.50	9.6	1.62
Llagas Morgan Hill	8.9	2.10	7.7	2.32	7.2	2.46
Llagas San Martin	6.8	2.58	6.1	2.80	5.6	3.01

**Table B-1
Summary of Proposed Ordinance Changes**

Code Section	Synopsis of Existing Code	Proposed Change(s)
Article 2. ON-SITE DISPOSAL SYSTEMS		
<p>Section B11-65. Private sewage disposal systems; when used.</p> <p>New title: Onsite wastewater treatment systems; when used.</p>	<p>Requires that every residence, place of business or other building where people congregate not connected to a sanitary sewer shall be provided with a flush toilet sewage disposal system, including compliance with RWQCB requirements, where applicable.</p> <p>Requires that, with exceptions for agricultural employee living units, all detached living units must have their own (separate) OWTS meeting the requirements of the code.</p> <p>Requires that every building having one or more waste producing fixtures must be connected to an OWTS.</p>	<p>Condensed to eliminate redundant reference to RWQCB requirements which are covered in Section B11-60.</p> <p>Eliminates requirement for detached living units to have their <u>own</u> OWTS; instead require connection to an approved OWTS with sufficient treatment and disposal capacity for the expected wastewater flow.</p> <p>Minor language changes to requirements related to OWTS for agricultural employee living units and buildings with one or more waste producing fixtures.</p>
<p>Section B11.66. Sewage disposal systems subject to California Regional Water Quality Control Board waste discharge requirements; county permit required; fee.</p> <p>New title: Onsite wastewater treatment systems subject to California Regional Water Quality Control Board waste discharge requirements; county permit required; fee.</p>	<p>Provides that OWTS falling under the jurisdiction of the RWQCB also require approval of sewage disposal plans by the director and the following additional requirements: (a) certification of installation by system designer; (b) minimum of one year of system monitoring per RWQCB requirements; (c) contract with private sanitary engineering firm for first 5 yrs of operation; and (d) obtain County permit and pay applicable fees.</p>	<p>Adds language clarifying which systems require RWQCB approval: (a) those with flows over 10,000 gpd; (b) community systems (multiple discharges under separate ownership); and (b) others as determined necessary by RWQCB for water quality protection.</p> <p>Retains requirements that specify:</p> <ul style="list-style-type: none"> • County permit and approval required for system construction. • Design, inspection and certification of installation by civil engineer or environmental health specialist.

		<p>Deletes requirements for:</p> <ul style="list-style-type: none"> • 1 year of monitoring • 5-year operations contract. <p>Refers to <i>Onsite Systems Manual</i> for details regarding site evaluations, plan submittal, design/construction details, construction inspection, and O&M.</p>
<p>Section B11-67. Private sewage disposal system.</p> <p>New title: Onsite wastewater treatment systems, conventional.</p>	<p>Specifies various procedural, design, siting, testing, and construction requirements for the approval and use of OWTS. Items covered include: (a & d) requirements for septic tank and subsurface leaching system; (b & c) plan submittal and permitting; (e & f) dual leaching system and additional reserve area; (g & h) accessibility and inspection risers; (i, j & k) soil exploration, percolation testing, and geological information; (l) soil depth, groundwater separation, flood areas, maximum slope, and minimum setback distances; (m) soil percolation limits; (n) no crossing of property lines; and (o) provisions for issuance of construction stop work order.</p>	<p>Title of this section changed to: "Onsite wastewater treatment systems, conventional."</p> <p>Reorganized and wording changes include:</p> <ul style="list-style-type: none"> • General requirements applicable to all OWTS (permits, plans, site evaluation, construction, setbacks); and • Siting requirements applicable to conventional OWTS (soil depth, fill, groundwater separation, flood areas, ground slope, setbacks, percolation and placement of OWTS on property served. • <u>Added new setback requirements for public water supply wells and surface water intakes per SWRCB OWTS Policy.</u>

CHAPTER 4
APPENDIX

The following appendix contains three items:

1. The proposed Ordinance as revised given comments received on the DPEIR;
2. Portions of the draft Operation Manual relevant to the EIR; and
3. Appendix B(1) (“Growth Projections and Cumulative Wastewater from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes”) of the DPEIR as revised per comments received on the DPEIR.

Revisions to the proposed Ordinance are marked in underline/strikeout format as was the case for revisions to the DPEIR.

APPENDIX 1

Proposed On-Site Wastewater Treatment System Ordinance

CHAPTER IV. ONSITE WASTEWATER TREATMENT

ARTICLE 1. GENERAL

Sec. B11-60. Intent and application.

The purpose of this chapter is to establish standards for the approval, installation, and operation of onsite wastewater treatment systems (OWTS) within Santa Clara County, consistent with the appropriate California Regional Water Quality Control Board standards and basin plans. The standards are adopted to prevent the creation of health hazards and nuisance conditions and to protect surface and groundwater quality.

OWTS may be considered for the treatment and dispersal of domestic sewage where a sanitary sewer is not available consistent with the provisions of section B11-62 of this chapter. No hazardous wastes shall be discharged into any OWTS.

This chapter applies to premises where there is proposed or exists a residence, place of business or other building or place which people occupy, or where persons congregate, reside or are employed and where the maximum daily flow volume of waste produced is ten thousand gallons per day (10,000 gpd) or less.

If the amount of waste produced is more than ten thousand (10,000 gpd) gallons per day, or where a community system serving multiple discharges under separate ownership is proposed, the method of treatment and dispersal must be approved by the appropriate California Regional Water Quality Control Board consistent with the requirements of section B11-66 of this chapter. Any proposed OWTS with a projected daily wastewater flow of more than two thousand five hundred gallons per day (2,500 gpd) will be referred by the director to the appropriate California Regional Water Quality Control Board for review and will also require the issuance of an operating permit as provided in section B11-92 of this chapter.

New divisions of land using OWTS shall be limited to a minimum parcel size of one acre, or to a minimum parcel size of two and one-half acres if within a reservoir watershed.

For any subdivision of land, the subdivider must demonstrate that the onsite wastewater treatment system(s) design and siting is consistent with section B11-67 of this chapter.

Sec. B11-61. County not responsible for damage.

The County is not liable or responsible for damage resulting from the defective construction of any OWTS as herein provided, nor will the County or any official or employee thereof be liable or responsible by reason of any inspection authorized hereunder.

Sec. B11-62. Public sanitary sewer; connection to.

Every property where there is proposed a residence, place of business, or other building or place which people occupy, or where persons congregate, reside, or are employed, and which abuts a street or alley in which there exists an approved available sanitary sewer, or which property line is within three hundred feet of an approved available sanitary sewer, must be connected to the sanitary sewer in the most direct manner possible, provided a right-of-way and any necessary approval from the appropriate sewer authority and the Santa Clara County Local Agency Formation Commission is first obtained. On property where an OWTS exists, and where such property abuts a street or alley in which there exists an approved available sanitary sewer or which property line is within 300 feet of an approved available sanitary sewer, connection to the available sanitary sewer will be required at the time of system failure or when the building is remodeled, increased in square footage or altered in a manner as to change uninhabitable space into habitable space provided any necessary approval from the appropriate sewer authority and Santa Clara County Local Agency Formation Commission is first obtained.

Sec. B11-63. Violations.

- (a) No person may construct, add to, repair, alter or maintain any OWTS, sewer pipes or conduits, or any other conduits for the treatment or discharge of sewage, impure waters, or any matter or substance offensive, injurious, or dangerous to health so as to cause any of the following to occur:
 - (1) Sewage, impure waters, or any matter or substance offensive, injurious, or dangerous to health to empty, flow, seep, or drain onto the surface of any land, or saturate the soil within twelve inches of the surface.
 - (2) Sewage, impure waters, or any matter or substance offensive, injurious, or dangerous to health to empty, flow, seep, drain into, or affect any well, spring, stream, river, lake, or other waters.
 - (3) Result in any condition which, in the opinion of the director, is unsafe or dangerous, or creates a nuisance.
- (b) A violation of this section is hereby declared a public nuisance.

Sec. B11-64. Definitions.

As used in this chapter, the following terms and phrases have the following meaning:

- (a) Alternative OWTS: is a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank and/or a method of wastewater dispersal other than a conventional drainfield trench for the purpose of producing a higher quality wastewater effluent and improved performance of and siting options for effluent dispersal.
- (b) At-grade: means a type of dispersal system consisting of a gravel distribution bed placed on top of a tilled, in situ soil absorption area, which is then covered by a minimum of 12 inches of suitable soil that will support vegetative growth. Wastewater effluent is applied to the gravel distribution bed using pressure distribution.
- (c) Basin plan: means the same as "water quality control plan" as defined in Division 7 (commencing with Section 13000) of the California Water Code. Basin plans are adopted by each Regional Water Quality Control Board, approved by the State Water Board and the Office of Administrative Law, and identify surface water and groundwater bodies within each Region's boundaries and establish, for each, its respective beneficial uses and water quality objectives.
- (d) Bedrock: means the rock, usually solid, that underlies soil or other unconsolidated, earthen material.
- (e) Beneficial uses: means those qualities in waters of the state that may be protected against quality degradation that include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; esthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife and other aquatic resources or preserves.
- (f) Cesspool: means an excavation in the ground receiving domestic wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. The use of cesspools is not authorized in Santa Clara County.
- (g) Community system: means an OWTS that provides for the collection, treatment and dispersal of wastewater from multiple discharges under separate ownership. Community systems are subject

to review and approval of the applicable California Regional Water Quality Control Board.

- (h) Conventional OWTS: is a type of OWTS consisting of a septic tank for primary treatment of sewage followed by a system of drainfield trenches for subsurface dispersal of effluent into the soil. A conventional OWTS may utilize gravity flow or a pump system to convey effluent from the septic tank to the drainfield.
- (i) Cut or embankment: means any altered area of land surface having a distinctly greater slope than the adjacent natural ground surface, over 24 inches in vertical height, and any part of which is lower in elevation than the ground surface at the nearest point of the OWTS. Cuts supported by retaining walls or similar structures shall be included in this definition, as shall steep natural ground surfaces where a sharp break in the ground slope is discernible.
- (j) Cumulative impacts: The persistent and/or increasing effect of OWTS resulting from the density of such discharges in relation to the assimilative capacity of the local environment. Examples include, but are not limited to: (a) nitrate or salt additions to ground water or surface water; and (b) rise in groundwater levels ("mounding of the water table") that interferes with the performance of an OWTS, causes drainage problems or results in other adverse hydrological or soil conditions affecting public health, water quality or public safety.
- (k) Dispersal system: means a series of trenches, beds, subsurface drip lines, or other approved method for subsurface infiltration and absorption of wastewater effluent, including all component parts, such as piping, valves, filter material, chambers, dosing pumps, siphons and other appurtenances.
- (l) Domestic wastewater: means wastewater with a measured strength less than high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater does not include wastewater from industrial processes or recreational vehicle dump stations.
- (m) Drainage swale: means any course of concentrated drainage water that has formed over time by either natural or man-made forces, and where the flow of water is either at or near ground surface.
- (n) Drainageway: means an unlined channel, with definite bed or banks, which conveys stormwater runoff and provides surface hydraulic continuity with either seasonal or perennial streams or water bodies. Also included in this definition are facilities used for the treatment and/or dispersal of roof runoff or other site drainage, such as vegetated swales and infiltration/percolation trenches or basins.
- (o) Drainfield: means a system of rock-filled trenches or beds that distribute treated sewage effluent for subsurface dispersal into the soil. A drainfield is also known as a "leachfield" or a "soil absorption system".
- (p) Failure: The ineffective treatment and dispersal of waste resulting in the surfacing of raw or inadequately treated sewage effluent and/or the degradation of surface or groundwater quality.

- (q) Geotechnical report: means a written document used to communicate soil and geologic site conditions, interpretations, analysis and recommendations pertinent to the design, installation and operation of an OWTS in areas of steeply sloping terrain. A primary emphasis of the geotechnical report is the evaluation of potential slope stability issues that may be affected by or result in impacts to the operation of the proposed OWTS.
- (r) Groundwater: means water below the land surface that is at or above atmospheric pressure.
- (s) High-strength wastewater: means wastewater having a 30-day average concentration of biochemical oxygen demand (BOD) greater than 300 milligrams-per-liter (mg/L) or of total suspended solids (TSS) greater than 330 mg/L or a fats, oil, and grease (FOG) concentration greater than 100 mg/L prior to the septic tank or other OWTS treatment component.
- (t) Holding tank: means a watertight receptacle used to collect and store wastewater prior to it being removed from a property by means of vacuum pumping and hauling, or other approved method. The use of holding tanks in Santa Clara County is authorized for limited circumstances, including, but not limited to, for the abatement of health hazards or for certain public use facilities.
- (u) Intermittent sand filter: means a packed-bed filter of medium-grained sand used to treat septic tank effluent to an advanced level. The sand filter consists of a lined excavation or structure filled with uniform clean sand, with an under-drain system at the bottom. The wastewater is dosed to the surface of the sand through a pressure-distribution network and allowed to percolate through the sand where biochemical oxygen demand (BOD) is reduced and suspended solids are removed; treatment is accomplished by physical filtration as well as microbial growth on the surface of the sand grains. After a single pass, the treated water is collected in the under-drain for further processing or disposal.
- (v) Mound: means an OWTS consisting of above-ground sand bed placed over a tilled, native soil absorption area, on top of which is placed a bed of gravel for distribution of septic tank effluent, which is then covered by suitable soil to stabilize the surface and support vegetative growth. Effluent is applied to the gravel distribution bed using pressure distribution.
- (w) Onsite Systems Manual: means the document developed, maintained, and amended by the Santa Clara Department of Environmental Health containing policy, procedural and technical details for implementation of this Chapter, as prescribed by the director and approved by the appropriate California Regional Water Quality Control Boards, as applicable.
- (x) Onsite wastewater maintenance provider: means a person capable of operating, monitoring, inspecting and maintaining an OWTS, and filing appropriate reports regarding OWTS performance in accordance with the requirements of this Chapter, and possessing minimum experience and qualifications as established by the director in the *Onsite Systems Manual*
- (y) Onsite wastewater treatment system (OWTS): means a system of pipes, tanks, trenches and other components used for the collection, treatment and subsurface dispersal of domestic wastewater at or near the building or buildings being served. The short form of the term may be singular or plural. For the purposes of this Ordinance, OWTS do not include "graywater" systems pursuant to Health and Safety Code Section 17922.12.
- (z) Operating permit: means the administrative document issued by the director authorizing the initial and/or continued use of an alternative OWTS in conformance with the provisions of this Ordinance,

intended to aid in verification of the adequacy of alternative OWTS performance, and that may contain both general and specific conditions of use. An operating permit may also be issued for circumstances other than alternative OWTS, such as in connection with holding tank exemptions or where, in the opinion of the director, the type, size, location or other aspects of a particular OWTS installation warrant the additional level of oversight provided by an operating permit.

- (aa) Percolation test: means a method of evaluating water absorption of the soil. The test is conducted with clean water and test results are used in the design and sizing of the dispersal system.
- (bb) Permeable soil: means soil having a percolation rate of 120 minutes per inch or faster or having a clay content of less than 60 percent, and shall not include solid rock formations or those that contain continuous channels, cracks or fractures.
- (cc) Installation permit: means a document issued by the director that conveys approval of and sets forth applicable conditions for the installation of an OWTS, or component thereof.
- (dd) Portable toilet: means an enclosed unit intended for temporary use at a given location. Portable toilets can also be known as, but not limited to, chemical toilets in this chapter.
- (ee) Pressure distribution: means a method of wastewater dispersal employing a pump or automatic dosing siphon and distribution piping consisting of small diameter plastic pipe with small perforations spaced uniformly along its length; it is used to achieve equal distribution of wastewater within a treatment unit (such as a sand filter) or a dispersal field.
- (ff) Pressure-dosed sand trench: means an alternative dispersal system consisting of a variation of a shallow pressure distribution system that utilizes specially graded sand in place of gravel to backfill the bottom portion of the dispersal trench, improving the treatment of effluent, and controlling the percolation rate before it reaches the trench bottom.
- (gg) Raised sand filter bed: means an alternative dispersal system consisting of a raised or terraced sand bed, commonly supported by a low retaining wall or bulkhead, where the bottom surface is even with or slightly below ground surface and forms the absorption surface. Used following a supplemental treatment unit, the raised sand bed provides additional polishing treatment and final dispersal of water into the ground.
- (hh) Recirculating sand filter: means a packed-bed filter of coarse-grained sand used to treat septic tank effluent to an advanced level. It is a modified version of an intermittent (single pass) sand filter which includes a recirculation system that causes the wastewater to pass through the sand media several times prior to final dispersal, usually controlled by a timer.
- (ii) Regional Water Quality Control Board: means the California Regional Water Quality Control Boards designated by Water Code Section 13200, which have authority for adopting, implementing and enforcing water quality control plans (basin plans) which set forth the State's water quality standards and the objectives or criteria necessary to protect those beneficial uses. There are two RWQCBs having jurisdiction over different parts of Santa Clara County: San Francisco Bay Region (2), and Central Coast Region (3). Any reference to the Regional Water Quality Control Board in this Ordinance also refers to an action of its Executive Officer, including the conducting of public hearings, pursuant to any general or specific delegation under Water Code Section 13223.

- (jj) Registered Septic Tank Pumper: means a person with an active liquid waste pumper permit issued by the director, per Santa Clara County Code Division B11, Chapter X, beginning with section B11-210 , as qualified to pump and haul septic tank sludge ("septage") and to perform service inspections of septic tanks and associated components of OWTS as required in this chapter.
- (kk) Sanitary sewer: means a system for collecting residential or municipal wastewater and directing the collected wastewater to a treatment works prior to dispersal.
- (ll) Septic tank: means a watertight, covered receptacle designed and constructed for primary treatment to receive the discharge of sewage from a building sewer, separate solids from the liquid, digest organic matter and store digested solids through a period of detention, and allow the clarified liquids to discharge for supplemental treatment and/or final dispersal.
- (mm) Shallow pressure-distribution trench: means an alternative dispersal system which consists of a variation of a conventional gravity drainfield that uses a pump and small-diameter pressure piping to achieve broad, uniform distribution of wastewater in the shallow soil zones for improved soil absorption and enhanced treatment of percolating effluent.
- (nn) Site: means the land area occupied, or proposed to be occupied, by the OWTS, including any designated reserve area.
- (oo) Site evaluation: means an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of this chapter. Site evaluations shall be in accordance with procedures and criteria established by the director and contained in the Onsite Systems Manual.
- (pp) Soil: means the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material.
- (qq) Subsurface drip dispersal: means a method for releasing treated wastewater to the soil for final treatment and dispersal via small diameter flexible plastic tubing manufactured with emitters spaced uniformly along its length; the drip field is designed and installed such that the drip tubing is installed in the shallow surface soils, typically 8 to 12 inches below finished grade.
- (rr) Supplemental treatment: means a device or system used in an OWTS to perform additional wastewater treatment functions, beyond primary treatment, and capable of reliably producing wastewater effluent of secondary quality or better, prior to discharge to the dispersal system. For the purposes of this chapter, secondary quality is defined as effluent meeting 30-day average concentration limits of 30 mg/L for biochemical oxygen demand and 30 mg/L for total suspended solids.
- (ss) Waste discharge requirements (WDR): means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.
- (tt) Wastewater maintenance provider: means a person capable of inspecting, monitoring, and maintaining an OWTS in accordance the provisions of this chapter, and meeting minimum qualifications as established by the director.
- (uu) Watercourse: means a definite channel with bed and banks within which water flows either

perennially, ephemerally or intermittently, including overflow channels contiguous to the main channel. A watercourse may be either a natural or man-made channel.

ARTICLE 2. ONSITE WASTEWATER TREATMENT SYSTEMS

Sec. B11-65. Onsite wastewater treatment systems; when used.

- (a) Every residence, place of business, or other building, or place where persons congregate, reside, or are employed, and which cannot be connected to a sanitary sewer, must be provided with a water flush toilet connected to an approved OWTS.
- (b) Each detached living unit shall be connected to an approved OWTS determined to have sufficient treatment and dispersal capacity for the expected wastewater flow from the detached living unit as well as from any other facilities connected to the OWTS.
- (c) Every building, structure, or appurtenance that contains one or more waste producing fixtures such as toilets, sinks, showers or bathtubs, clothes washing machines, dish washing machines, animal wash pads, floor drains or other fixture or fittings intended to drain organic or inorganic waste material must be connected to an approved OWTS that meets the requirements of this chapter.

Sec. B11-66. Onsite wastewater treatment systems subject to California Regional Water Quality Control Board waste discharge requirements; county permit required; fee.

Review and approval by the applicable California Regional Water Quality Control Board is required for OWTS in cases where: 1) the peak wastewater flow handled by the OWTS is more than 10,000 gallons per day; 2) the OWTS is categorized as a community system, which serves multiple discharges under separate ownership; or 3) the California Regional Water Quality Control Board has otherwise determined that their review and approval is necessary and appropriate for water quality protection. OWTS that are subject to the requirements and approval of the California Regional Water Quality Control Board are also required to obtain approval of the director in accordance with the following:

- (a) The proposed system must be designed to accommodate the waste discharge consistent with the requirements of the appropriate California Regional Water Quality Control Board.
- (b) The director will require engineered sewerage plans to be submitted by a registered civil engineer or a registered environmental health specialist with experience in OWTS design before issuing a permit.
- (c) A registered civil engineer or a registered environmental health specialist will be required to inspect the construction of the OWTS and, upon completion, to submit a letter of certification to the director verifying the proper installation and operation of the OWTS;
- (d) Site evaluations, plan submittals, design and construction details, inspection, and operation and maintenance shall be consistent with guidelines and procedures prescribed by the director and contained in the *Onsite Systems Manual*.
- (e) The applicant must obtain a permit(s) from the director and pay a permit fee(s) in an amount established by resolution of the Board of Supervisors.

Sec. B11-67. Onsite wastewater treatment system, conventional.

- (a) Where an OWTS is required it shall, at a minimum, consist of a septic tank and subsurface dispersal system for absorption and leaching of the effluent into the soil. The septic tank and subsurface effluent dispersal system must be so constructed as to meet the requirements prescribed by this chapter and the rules, regulations and guidelines contained in the *Onsite Systems Manual*.
- (b) OWTS must be installed in accordance with the plans approved by the director. Any changes in the installation plans must be reviewed and approved by the director prior to installation.

- (c) No person may construct, add to, repair or alter any existing OWTS without first submitting plans to the director for approval and obtaining a permit pursuant to the requirements of this chapter.
- (d) Two dispersal fields (dual leaching), each one hundred percent of the total size required by the director, must be installed and interconnected with an approved flow diversion device, intended to allow alternate use of the two fields.
- (e) OWTS must be located to be easily accessible for maintenance and repairs.
- (f) For all locations where an OWTS is proposed to be installed, soil profiles, percolation tests and other exploratory tests, as necessary, shall be performed to verify adequate depth and permeability of soil and separation between trench bottom and groundwater. Testing shall be conducted in accordance with requirements and guidelines prescribed by the director in the *Onsite Systems Manual*. Such procedures shall include provisions for completion of groundwater observations during the wet season, as well as wet season percolation testing in cases where soils exhibit high shrink-swell characteristics related to clay content, plasticity and/or structure. Where the director has been provided adequate evidence to demonstrate suitable soil conditions and groundwater separation, testing requirements may be waived.
- (g) For new divisions of land, soil profiles, percolation tests and groundwater determinations will be required on every parcel unless the director determines, on a case-by-case basis, that such testing is not necessary due to the availability of sufficient information to demonstrate conformance with applicable siting criteria for all proposed OWTS locations.
- (h) When a geological report is required by the county geologist, it must be made available to the director.
- (i) Approval of any Conventional OWTS shall require compliance with the following minimum siting criteria:
 - (1) Soil Depth. Minimum depth of permeable soil beneath the bottom of the proposed dispersal field shall be 5 feet. Permeable soil is defined as having a percolation rate of 120 minutes per inch or faster or having a clay content of less than 60 percent, and shall not include rock formations that contain continuous channels, cracks or fractures;
 - (2) Soil Fill. Maximum depth of soil fill covering any portion of the area proposed for installation of a dispersal system shall not exceed twelve inches in depth.
 - (3) Vertical Groundwater Separation. Minimum required vertical separation distance between trench bottom and groundwater shall be determined according to the soil percolation rate as follows::

Percolation Rate (Minutes/Inch)	Vertical Distance (feet)
Less than 1	Not Permitted
1-5	20
6-30	8
31-120	5
More than 120	Not Permitted

- (4) Areas of Flooding. OWTS shall not be located in areas subject to flooding as defined by the limits of the 10-yr floodplain, determined or estimated from published floodplain maps or on the basis of historical evidence acceptable to the director. New OWTS that are to be located in areas of special flood hazard, as identified in division C12 of this Ordinance Code, must comply with all relevant provisions of division C12 of this Ordinance Code.
- (5) Ground Slope. Maximum ground slope in the dispersal field area shall not exceed thirty percent. Additionally, for any site where the ground slope exceeds twenty percent,

approval shall be dependent upon completion of a geotechnical report as provided in section B11-83 of this chapter.

- (6) Horizontal Setbacks. Minimum horizontal setback distances from various site features to OWTS components shall be as follows:

Site Feature	Minimum Setback Distance* (feet)	
	To Dispersal Field	To Septic Tank
Non-public water supply wells and springs	100	100
Public water supply wells	150	150
Watercourses		
• <u>General</u> (from top of bank)	100	100
• <u>Between 1,200 to 2,500 feet from public water system intake*</u>	200	100
• <u>Within 1,200 feet from public water system intake*</u>	400	100
Reservoirs (from high water mark)		
• <u>General</u>	200	200
• <u>Within 1,200 feet from public water supply intake*</u>	400	200
Cuts or steep embankments (from top of cut)	4 X h**	10 feet
Steep slopes, >50%(from break of slope)	4 X h**	10 feet
Drainageway/drainage swale (from edge of flow path)	50	50
Foundation	10	5
Property line	10	10
Septic tanks	6	N/A
Swimming pool	25	25
Road easement, pavement, or driveway	5	5
* For areas tributary to and upstream of water supply intake; setback distance measured from high water mark. Exceptions allowed per SWRCB OWTS Policy, as follows: (a) for replacement OWTS, comply to the maximum extent practicable and incorporate supplemental treatment unless director finds no impact or significant threat to water source; (b) for new OWTS on pre-existing lot of record (pre-May 2013), comply to maximum extent practicable and incorporate supplemental treatment for pathogens per sections 10.8 and 10.10 of SWRCB OWTS Policy.		
** h equals the height of cut or embankment, in feet. The required setback distance shall not be less than twenty five feet nor more than one hundred feet.		

- (7) Soil Percolation Rate. The average soil percolation rate in the proposed dispersal field area shall not be faster than one minute per inch (1 mpi) nor slower than one hundred twenty minutes per inch (120 mpi), determined in accordance with procedures prescribed by the director in the *Onsite Systems Manual*.
- (8) OWTS Located on Property Served. OWTS shall be located on the same property as the building(s) being served.
- (j) Upon notice from the director that work on the OWTS is being conducted in violation of this chapter, or in an unsafe or dangerous manner, the work must stop immediately. The stop-work order must be in writing and must be issued to the owner of the property involved by first class

U.S. mail. A copy must also be supplied to the owner's agent, or to the person doing the work. It must state the conditions under which work may be resumed.

Sec. B11-68. Plans.

The OWTS plans must comply with and contain all information as prescribed by the director in the *Onsite Systems Manual*. Any change in the OWTS plans after the issuance of a permit must first be approved by the director. Failure to obtain approval from the director will invalidate the permit.

Sec. B11-69. Fees.

Permit fees for OWTS subject to this chapter and all related fees will be an amount established by resolution of the Board of Supervisors.

Sec. B11-70. State contractor's license required for installation or repair; registration fee.

- (a) No person may install, construct, alter, enlarge, reconstruct, replace, improve, recondition or repair an OWTS pursuant to this chapter unless the person possesses a general engineering contractor's license (class A) as defined in section 7056 of the Business and Professions Code, or a Class C-42 sanitation system contractor's license or Class C-36 plumbing contractor's license from the Contractors State License Board of the State of California.
- (b) In the case of a conventional OWTS, the property owner may construct or repair an OWTS on his/her own property, which system serves or will serve the building on the property that is neither being offered for sale nor intended to be so offered, provided: 1) persons hired by the owner to do the subject work must comply with section B11-70(a); or 2) persons hired by the owner must be hired as employees of the owner and the owner must provide workman's compensation insurance, as required by law; and 3) an OWTS permit is obtained.

Sec. B11-71. Refusal to issue building permit.

No building permit may be issued for any building requiring a sewage disposal system that is not to be connected to an approved sanitary sewer unless the applicant has received written approval of the director for an OWTS.

Sec. B11-72. Refusal to issue certification of occupancy.

- (a) No certification of occupancy may be issued for any building that is not connected to an approved sanitary sewer without written approval of the director for an OWTS.
- (b) No person may occupy or otherwise use any premises or building that has not been connected to an approved sanitary sewer unless the director has approved the method of sewage disposal.

Sec. B11-73. Onsite Systems Manual.

- (a) Policy, procedural and technical details for implementation of this Chapter shall be contained in a document titled the *Onsite Systems Manual*.
- (b) The *Onsite Systems Manual* shall be developed and maintained by the Department of Environmental Health, and shall provide a reasonable process for seeking input from the affected public and OWTS practitioners in connection with its development and when changes are made.
- (c) The *Onsite Systems Manual* and any amendments shall be subject to approval by the director and by the San Francisco Bay and Central Coast Regional Water Quality Control Boards in accordance with applicable State requirements and policies for onsite wastewater treatment.

Sec. B11-74. Cumulative impacts.

Where OWTS may have cumulative impacts on groundwater and/or watershed conditions due to such factors as the constituent levels (e.g., nitrogen content) in the wastewater, the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water

resources in the discharge area, the director may require additional technical studies (also termed "cumulative impact studies") or other information demonstrating to the satisfaction of the director, that use of the proposed OWTS will not create adverse cumulative effects on water quality, public health or safety. Cumulative impact studies shall be mandatory for any OWTS with wastewater flows of 2,500 gpd or more. In all cases, such cumulative impact studies will be conducted in accordance with the *Onsite Systems Manual*. The *Onsite Systems Manual* guidelines will cover items including, but not limited to, the following: (1) circumstances requiring cumulative impact assessment; (2) minimum qualifications of individuals performing the work; (3) data needs and assumptions; (4) analytical methods and calculations; (5) evaluation methods and criteria; and (6) provision for inclusion of specific requirements or recommendations of the California Regional Water Quality Control Board having jurisdiction.

Sec. B11-75. Sewer wells; cesspools; seepage pits.

All sewer wells, cesspools, seepage pits, and similar excavations are hereby declared a public nuisance and are prohibited.

Sec. B11-76. Holding tanks; portable toilets.

(a) All holding tanks are hereby declared a public nuisance and are prohibited.

Exception to this prohibition may be granted by the director:

- (1) If it is necessary to use a holding tank to abate a nuisance or health hazard caused by a failing OWTS.
- (2) For a publicly-owned nonresidential facility necessary for the public health, safety or welfare, where installation of an OWTS is not feasible and a holding tank is determined by the director to provide the safest and most acceptable method of sewage disposal.

Where exceptions are granted and holding tank(s) approved, an operating permit issued by the director will be required, which will provide for approval of the tank pumper, maintenance schedule, tank/sewage level monitoring, and reporting requirements.

(b) Portable Toilets. Portable toilets are intended to serve non-residential, limited use activities, such as field labor operations, special events, and temporary construction sites where connection to a sanitary sewer system or installation of an OWTS is not practicable. Excluding those activities covered under California labor and sanitation code requirements, the use of portable toilets at a particular location or event shall not exceed three consecutive days duration unless otherwise exempted by the director. Such exemption, where approved, may require the issuance of an operating permit in accordance with section B11-92 of this chapter, which will specify the terms and conditions for extended use of the portable toilet(s).

Sec. B11-77. Permit and onsite wastewater treatment system plans; new construction; rebuilding; remodeling.

No person may construct, build, rebuild or remodel any residence, place of business, or other building or place where persons reside, congregate or are employed which is not to be connected to an approved sanitary sewer without first submitting plans of the OWTS to the director for approval and 1) obtaining approval of the proposed construction, building, rebuilding or remodeling to be served by an existing OWTS, or 2) obtaining an OWTS installation permit pursuant to this chapter. The approval or permit cannot be transferred and expires one year after the date of issuance; except that the director, upon a showing of good cause, may extend the approval or permit for any time not to exceed one additional year. Failure to obtain an approval or permit from the director is a violation of this chapter.

The director may revoke a permit or approval issued pursuant to this chapter in case of any false statement, or misrepresentation of fact in the application or on the plans on which the permit or approval

was based.

Sec. B11-78. Reserved.

Sec. B11-79. Reserved.

Sec. B11-80. Subsurface dispersal systems requirements, conventional OWTS.

- (a) The conventional dispersal method approved for use in Santa Clara County shall be a gravity dispersal trench system, consisting of an 18- to 36-inch wide trench, no greater than 8-feet deep, filled with gravel filter material and perforated distribution pipe, with the total length determined based on soil percolation rates and the projected wastewater flow rate of the building(s) being served. Trench system designs utilizing chambers or other filter material in place of gravel may be approved by the director and addressed with specific criteria in the *Onsite Systems Manual* as a conventional dispersal system design option.
- (b) Conventional OWTS shall be designed and constructed in accordance with requirements prescribed by the director in the *Onsite Systems Manual*.

Sec. B11-81. Construction inspections.

A stamped copy of the building plans for the approved OWTS must be kept available at the jobsite during system installation and until the system passes final inspection by the director. Inspections of each new installation must be made to ensure compliance with all the requirements of this Code and the *Onsite Systems Manual*. Requests for inspection must be made at least one business day in advance of the commencement of work. In the event the director determines there has been an improper installation, a stop-work order may be posted on the jobsite. Before any further work is done on a posted system, clearance from the director must be obtained.

Sec. B11-82. Operation and maintenance guidelines.

- (a) Operation and maintenance guidelines for each OWTS installation shall be provided by the designer and/or the installer, with a copy provided to the director as well as to the system owner.
- (b) Final approval of system installation shall be contingent upon confirmation by the director that required operation and maintenance guidelines have been provided.

Sec. B11-83. Slope variances and erosion control.

- (a) No subsurface dispersal system may be constructed on slopes exceeding twenty percent. Variances to this slope requirement may be granted by the director where the applicant can demonstrate, through a geotechnical report and a complete engineering installation plan prepared by a California-registered civil engineer or a California-certified engineering geologist, that use of a subsurface dispersal system will not permit sewage effluent to surface, degrade water quality, create a nuisance, affect soil stability, or present a threat to the public health or safety. The geotechnical report must include but not be limited to soil percolation rates, contours, soil depth, seasonal groundwater elevation(s), location of all existing or proposed ground cuts, rock formations, soil stability, drainage, and other data as determined by the director and the County geologist.
- (b) Pressure Distribution and Drip Dispersal Methods. In addition to the provisions of subsection (a) of this section, any OWTS proposed for construction on slopes exceeding 30 percent shall require the use of pressure distribution or drip dispersal methods, which are classified as an alternative OWTS and shall be designed and permitted in accordance with applicable provisions contained in Article 3 of this Chapter and in the *Onsite Systems Manual*.
- (c) Erosion Control. In addition to the provisions of subsections (a) and (b) of this section, an erosion control plan shall be prepared and implemented for the following circumstances:
 - (1) Any alternative or conventional OWTS located on slopes exceeding 20 percent;

- (2) Any alternative or conventional OWTS that includes the use of above-ground fill, regardless of the slope of the terrain;
- (3) Any OWTS with a design capacity of greater than 1,000 gallons per day (gpd); and
- (4) Any OWTS which is part of a development project requiring a grading and/or drainage permit per requirements of the County grading ordinance, Division C12, Chapter III of the County Code.

The erosion control plan shall incorporate measures consistent with guidelines and requirements contained in Division C12, Chapter III of the County Code, and shall be included as a part of the installation plan for the OWTS.

Final approval of the OWTS installation by the director is contingent upon confirmation that the specified erosion control measures have been implemented.

In addition to the above requirements, the director may require implementation of erosion control measures where, in his or her judgment, there is found to be a significant threat of sediment discharge to a drainageway or watercourse as a result of the manner in which the OWTS was installed.

Sec. B11-84. Life extending construction.

- (a) Major Expansion and/or Major Intensification of Use. Where construction associated with an existing structure will result in a major expansion of the structure resulting in greater than five hundred cumulative square feet of all additions since March 2, 1982 or where the construction will result in a major intensification of the use of the property, (such as any increase in number of bedrooms for a residence or any increase in occupancy or wastewater flow for a commercial building), the OWTS must meet the minimum prevailing wastewater treatment and dispersal requirements of this Code.
- (b) Minor Expansion. Where construction associated with an existing structure will result in a minor expansion of the structure resulting in five hundred cumulative square feet or less of all additions the director shall require the following:
 - (1) Conduct an on-site inspection to determine adequacy and safe functioning of the existing OWTS in accordance with guidelines prescribed by the director in the *Onsite Systems Manual*.
 - (2) Exposure and pumping of the existing septic tank except where the applicant can document that the tank has been pumped within the last three years; a receipt for service from a licensed septic tank pumping firm may be considered sufficient documentation.
 - (3) Determination of the location of existing dispersal trenches and identification of area where future dispersal system expansion may occur; the septic tank file will then be updated.
 - (4) Improvement and/or expansion of the existing OWTS when, in the judgment of the director, the system is determined to be inadequate to accept current and/or projected waste flows. The determinations are to be made based on size and functioning of the current system, coupled with slope, soil, hydrological, and related factors. Where inspection results in a determination that the OWTS is failing, can reasonably be expected to fail or to contaminate surface waters or groundwaters, the director will require the replacement or improvement of the sewage disposal system pursuant to section B11-65 of this Code.

Where improvement and/or expansion of the OWTS is required, but required repairs cannot be made, the director will disallow the application.

- (c) Remodeling or Repair. Where the existing OWTS does not meet requirements of this chapter, but is functioning safely and cannot be improved, construction will be limited to the remodeling or repair (as defined in the Uniform Building Code) of the existing structure provided:
- (1) The construction will not constitute any major expansion or major intensification of the use of the property or structure.
 - (2) Construction will not result in conversion of uninhabitable area(s), such as a garage, deck, porch, patio, or similar area(s), to habitable area(s).

For purposes of implementing this section, the term "intensification of use" means a change that may place an additional demand on the OWTS of a property. The magnitude of the intensification (major or minor) will be determined by the director.

The restrictions in this section also apply in the event of accidental or natural damage to a structure.

For purposes of implementing this section, the terms "remodeling" and "repair" are as defined in the Uniform Building Code which is adopted by reference into the County's building ordinance.

Sec. B11-85. Abatement.

To the extent possible, failing OWTS must be brought into compliance with this Code. In case of any failure, malfunction or breakdown of any OWTS, if not corrected within a time designated by the director, the director may order or cause corrections to be made and bill the property owner for the costs and may place a lien on the property for the abatement costs. The director may also order the premises to be vacated if no safe manner of abatement is possible.

Sec. B11-86. Abandoned onsite wastewater treatment systems.

Every OWTS that has been abandoned or has been discontinued from further use or to which no waste or waste discharge pipe from a plumbing fixture is connected must:

- (a) Have the sewage removed from, and disposed of, in an approved manner.
- (b) Have the tank top and bottom crushed, backfilled and compacted with material approved by the director or be removed and disposed of in an approved manner.

Completion of the above-described work shall require that the property owner obtain a septic tank abandonment permit from the director.

Sec. B11-87. Notice of Violation.

The director may provide a notice of intent to record a notice of violation to the owner of property upon which a failing or substandard OWTS exists. Notice will be provided to the property owner by mail at the address shown on the latest assessment roll or at any other address of the owner known to the director. The notice will also be posted on the property. The notice will state that within 15 days of the date of the notice, the property owner may request a meeting with the director to present evidence that a violation does not exist.

If, within 15 days of the date of the notice, the property owner does not request a meeting and the violation has not been corrected, or if, after considering the evidence presented by the property owner at the meeting, the director determines that a code violation in fact exists, the director may record a notice of violation in the office of the County Recorder. Upon recording the notice, the director will notify the owner of the action. The notice is to inform all parties that no improvements, including building additions, can be approved while the failing or substandard OWTS continues in operation.

At the request of any affected property owner and upon full payment of any fees established by resolution of the Board of Supervisors for recovery of associated enforcement costs and payment of any fee for the recordation of the notice of violation, the director will issue a notice of expungement of violation upon proof to the director that the noticed violation has been remedied. The notice of expungement may be recorded by the property owner at his or her expense.

Sec. B11-88. Appeal from denial, revocation or suspension.

Any appeal to the decision of the director pursuant to this chapter must be made in writing to the Office of the County Hearing Officer, per Division A28 of Title A of the County of Santa Clara Ordinance Code, within fifteen days after the decision is received by the applicant. A copy of the appeal must also be filed with the director. The appeal must specifically describe the grounds upon which it is taken. The decision issued by the County Hearing Officer will be final.

Sec. B11-89. Septic tank pumping, inspection, and reporting requirements.

- (a) Septic Tank Pumping. Whenever an OWTS is serviced for the purpose of septic tank pumping, the following shall occur:
 - (1) All compartments of the septic tank shall be pumped of all scum and sludge by a registered septic tank pumper.
 - (2) The septic tank shall be inspected for signs of damage, deterioration, corrosion, leakage, blockages, high liquid level or other deficiencies.
 - (3) Any pumping systems that are part of the OWTS shall be tested for proper operation and inspected for any deficiencies in the pump/sump tank, pump unit, piping, valves or control systems.
 - (4) The dispersal field shall be inspected for indications of system failure such as flooded trenches, soil saturation or surfacing sewage, backflow of water into the septic tank, down-slope seepage, erosion or drainage problems, or other deficiencies.
- (b) Report Required. A written report on form(s) provided by the director shall be completed by the registered septic tank pumper and shall be submitted to the director and the property owner no later than 30 days following septic tank pumping. The report shall include:
 - (1) The name of the property owner, the street address of the property where the OWTS is located, and the date of servicing.
 - (2) The name of the septic tank pumper, size of the septic tank(s), gallons pumped, the name and location of the disposal site and a description of servicing activities.
 - (3) A description of any OWTS maintenance performed.
 - (4) A description of any failure or uncorrected deficiencies in the OWTS. Reported deficiencies shall include, but not be limited to: deteriorated, corroded or damage septic tank components; deficiencies in the condition or operation of any pumping systems; dispersal field problems such as surface failure, flooded trenches, down-slope seepage, backflow of effluent from the dispersal field into the septic tank, or other deficiencies.
- (c) Notification to Property Owner. Upon being notified of a failure condition or other uncorrected deficiency in an OWTS, the director will notify the owner in writing, by hand-delivery or first class U.S. mail, of the needed corrections required to comply with the applicable standards in this Chapter.
- (d) Action by the Property Owner. Within 60 days of notice of such written notification, the property owner shall take all corrective actions necessary to comply with the applicable standards in this chapter, unless otherwise approved by the director.

ARTICLE 3. ALTERNATIVE ONSITE WASTEWATER TREATMENT SYSTEMS

Sec.B-11-90. Use of alternative systems.

- (a) Alternative OWTS may be permitted by the director for the repair or upgrading of any existing OWTS and for new construction on any legally-created parcel where:
 - (1) it is determined that sewage cannot be disposed of in a sanitary manner by a conventional septic tank–dispersal field system; or
 - (2) the director determines that an alternative system would provide equal or greater protection to public health and the environment than a conventional septic tank–dispersal field system.

Such alternative OWTS must comply with the specific requirements set forth in this section and as prescribed by the director in the *Onsite Systems Manual*.

- (b) Types of alternative OWTS permitted shall be limited to those identified in the *Onsite Systems Manual* for which siting and design standards have been adopted, and which have been approved by the director and the appropriate California Regional Water Quality Control Board(s).
- (c) All alternative systems shall be installed by a contractor duly licensed by the Contractors State Licensing Board of the State of California to install OWTS.
- (d) Notwithstanding any other provisions of this section, the director shall have the authority to deny and/or require modifications to any alternative OWTS proposal where, in his/her opinion, such proposal poses an unacceptable threat to public health and/or water quality.

Sec. B-11-91. Installation permit and review requirements.

- (a) Engineering plans and site data for alternative OWTS shall be submitted in accordance with application procedures prescribed by the director in the *Onsite Systems Manual*.
- (b) Site evaluations, including soil profile inspection, percolation testing and groundwater evaluation, shall be conducted in accordance with procedures in the *Onsite Systems Manual*.
- (c) Engineering plans and site data for alternative OWTS shall be submitted in accordance with application procedures established in the *Onsite Systems Manual*.
- (d) Engineering plans and site data for alternative OWTS shall be submitted in accordance with application procedures in the *Onsite Systems Manual*.
- (e) Engineering plans for alternative OWTS shall be prepared and signed by a California Registered Civil Engineer, Professional Geologist, or Registered Environmental Health Specialist who is knowledgeable and experienced in the field of onsite wastewater treatment and dispersal. The designer shall also be responsible for inspection of system installation to assure conformance with approved plans, and shall provide an "As-Built" drawing of the installation to the director and property owner. The construction inspection by the designer shall be in addition to standard County inspection work carried out in accordance with provisions of section B11-81 of this

chapter and any additional standards in the *Onsite Systems Manual*.

- (f) Engineering plans will be reviewed by the director and, where warranted, the director may refer the plans to the applicable California Regional Water Quality Control Board staff and/or external third-party consultant(s) for additional review, the costs for which would be the responsibility of the applicant.
- (g) Installation permits issued for alternative OWTS are subject to the same expiration and extension time frames as specified in section B11-77 of this chapter for conventional systems.

Sec. B-11-92. Operating permits

- (a) In addition to an installation permit, an operating permit is required for all alternative OWTS, including those installed in connection with the repair or upgrade of existing OWTS as well as those for new construction. General requirements pertaining to operating permits are as follows:
 - (1) The operating permit will be issued by the director following: (a) completion of construction of the alternative OWTS; (b) satisfactory compliance with the installation permit requirements; and (c) payment of applicable fees. Operating permits are non-transferable.
 - (2) After initial issuance, the operating permit is required to be renewed periodically, the standard renewal period being one year. The director may establish conditions allowing the time period between renewals to be extended for certain types of OWTS based on a record of favorable performance or other factors warranting a reduction in system oversight by DEH. Provisions for adjusting the operating permit renewal period shall be prescribed by the director in the *Onsite Systems Manual*. Operating permits must also be renewed at the time of change in property ownership.
 - (3) Operating permits are intended to serve as the basis for verifying the adequacy of alternative OWTS performance and ensuring on-going maintenance. Permit conditions shall include monitoring and inspection requirements, permit duration, and other provisions as prescribed by the director in the *Onsite Systems Manual* or as deemed appropriate by the director on a case-by-case basis.
 - (4) Renewal of an operating permit requires: (a) payment of the applicable fees, upon receipt of notice from the director; and (b) submission of the results of required system inspection and monitoring.
 - (5) Failure to pay the required fee or submit the specified monitoring and inspection information, or failure to undertake any required corrective work specified by the director may be cause for issuance of a citation, penalty fees, non-renewal and/or revocation of the operating permit by the director. The director may place a lien on the property for recovery of any associated abatement costs and unpaid fees.
 - (6) A certified copy of the following shall be recorded against the property in the office of the County Recorder of Santa Clara County: (a) initial operating permit issued for the system; (b) reissuance of operating permit to new owners; and (c) notices of withdrawal of any operating permit.
- (b) Other uses of operating permits. An operating permit may also be utilized for circumstances other

than alternative OWTS, such as for larger flow OWTS (>2,500 gpd), in connection with holding tank exemptions or where, in the opinion of the director, the type, size, location or other aspects of a particular OWTS installation warrant the additional level of oversight provided by an operating permit. In such cases, the issuance and scope of operating permits will be issued in accordance with the general requirements listed in section B11-92 (a)(1) through (a)(6) above, and any additional requirements prescribed by the director in the *Onsite Systems Manual* for particular circumstances.

Sec. B11-93. Performance monitoring and reporting

- (a) A monitoring program will be established for each alternative OWTS as a condition of the operating permit at the time of permit issuance, and may be amended at the time of permit renewal. Said monitoring shall be performed to ensure that the alternative OWTS is functioning satisfactorily to protect water quality and public health and safety. The monitoring program will be in accordance with guidelines in the *Onsite Systems Manual* and may also incorporate recommendations of the system designer, manufacturer, or third-party reviewer.
- (b) Monitoring requirements will vary depending upon the specific type of alternative OWTS in accordance with guidelines in the *Onsite Systems Manual*.
- (c) The required frequency of monitoring will be in accordance with guidelines in the *Onsite Systems Manual*. Monitoring frequency may be increased if, in the opinion of the director, system problems are experienced.
- (d) Monitoring of alternative OWTS shall be conducted by or under the supervision of one of the following:
 - (1) Registered Civil Engineer;
 - (2) Professional Geologist;
 - (3) Registered Environmental Health Specialist; or
 - (4) Other onsite wastewater maintenance provider registered with the Department of Environmental Health and meeting qualifications as established in the *Onsite Systems Manual*. Registration shall entail: (a) documentation of required qualifications; (b) participation in annual training/review conducted by the director; and (c) payment of an annual fee established by the Board of Supervisors.

Additionally, the director may require third-party or County inspection and monitoring of any alternative OWTS where deemed necessary because of special circumstances, such as the complexity of the system or the sensitive nature of the site. The costs for such additional monitoring would be the responsibility of the owner.

- (e) Monitoring results shall be submitted to the director in accordance with reporting guidelines provided in the *Onsite Systems Manual*. The monitoring report shall be signed by the party responsible for the monitoring. Notwithstanding formal monitoring reports, the director shall be notified immediately of any system problems observed during system inspection and monitoring that threaten public health or water quality.
- (f) In addition to regular inspection and monitoring activities, post-seismic inspection and evaluation of alternative OWTS located in high-risk seismic areas will be required in the event of an earthquake causing significant ground shaking in the region, as determined by the director in consultation with the County geologist. The director will be responsible for issuing appropriate notices when such inspections are required; those conducting the inspections will be required to report the inspection results to the director. The purpose of such inspections will be to assess

and document any damage to the OWTS and to implement corrective measures, as needed, in a timely manner. Post-seismic inspection shall be in accordance with requirements prescribed by the director, in consultation with the County geologist, and contained in the *Onsite Systems Manual*.

- (g) The director will, from time-to-time, compile and review monitoring and inspection results for alternative OWTS and, at least every two years, will provide a summary of results to the San Francisco Bay and Central Coast Regional Water Quality Control Boards. Based on this review, the director may require corrective action for specific properties or certain types of alternative OWTS, or general changes in monitoring and inspection requirements.

Sec. B11-94. Types of alternative systems permitted

- (a) Alternative Treatment Systems. Alternative treatment systems may be used to produce higher quality of wastewater effluent beyond that provided by a conventional septic tank and improve the performance of and siting options for the dispersal system. The following alternative treatment systems (also termed "supplemental" treatment) may be approved for use in Santa Clara County subject to compliance with the siting and design criteria specified in this section and the *Onsite Systems Manual*:
 - (1) Intermittent and recirculating sand filters;
 - (2) Proprietary treatment units that provide secondary or better effluent quality; or
 - (3) Other alternative treatment systems approved by the director and the appropriate California Regional Water Quality Control Board(s).
- (b) Alternative Dispersal Systems. The following alternative dispersal systems may be proposed for use in Santa Clara County subject to compliance with the siting and design criteria in the *Onsite Systems Manual*:
 - (1) Shallow pressure distribution trench;
 - (2) Mound;
 - (3) At-grade;
 - (4) Pressure-dosed sand trench;
 - (5) Raised sand filter bed;
 - (6) Subsurface drip dispersal; or,
 - (7) Other alternative dispersal systems approved by the director and appropriate California Regional Water Quality Control Board(s).

Sec. B11-95. Siting criteria, design and construction requirements.

All requirements specified in section B11-67 of this chapter for conventional OWTS also apply to alternative OWTS, except as specified below. Design and construction of alternative OWTS shall be in conformance with requirements in the *Onsite Systems Manual*.

- (a) Horizontal Setbacks. Horizontal setback requirements for alternative treatment systems are the same as those specified in this section B11-67 of this chapter for septic tanks. Horizontal setback requirements for alternative dispersal systems are the same as those specified in section B11-67 of this chapter for conventional dispersal systems.
- (b) Areas of Flooding. Alternative OWTS shall not be located in areas subject to flooding as defined

by the limits of the 10-yr floodplain, determined or estimated from published floodplain maps or on the basis of historical evidence acceptable to the director. Alternative OWTS shall be located and designed to avoid contamination of or damage from inundation by floodwaters during a 100-year flood event. As appropriate, such measures shall include: 1) protecting OWTS supplemental treatment, pressure distribution and/or drip dispersal components from flood damage using structural tie-downs and/or elevating critical components above the 100-year flood level; 2) preventing discharge of wastewater into flooded dispersal areas from pump systems (e.g., using flood-activated float switches to override/disable pump operation during high water conditions); and 3) providing additional emergency storage capacity for flood periods.

- (c) Ground Slope. Maximum ground slope for different types of alternative wastewater dispersal systems are as follows:

Maximum Ground Slope for Alternative Wastewater Dispersal Systems¹

Type of Disposal System	20%	30%	40%	50%
<ul style="list-style-type: none"> • Mound, • At-Grade 	X			
<ul style="list-style-type: none"> • Raised Sand Filter Bed 		X		
<ul style="list-style-type: none"> • Shallow Pressure Distribution • Pressure-dosed Sand Trench 			X	
<ul style="list-style-type: none"> • Subsurface Drip Dispersal 				X

¹Related Requirements: Any disposal system located on a slope greater than 20 percent shall require the completion and approval of a geotechnical report per section B11-83 of this chapter.

- (d) Vertical Separation to Groundwater. Where alternative OWTS are used, minimum vertical separation distance to groundwater, measured from the bottom of the dispersal system to the seasonal high water table, may be reduced from the requirements that apply to conventional OWTS (per section B11-67 of this chapter), as specified in the table below. Design requirements for alternative OWTS in the *Onsite Systems Manual* may impose additional restrictions on permissible groundwater separation distances based on system size (i.e., volume of wastewater flow) or for particular site conditions or geographic locations.

Minimum Vertical Separation Distance to Ground Water for Alternative OWTS (feet)¹

Type of OWTS	Percolation Rate (MPI)	Vertical Separation to Groundwater (feet) ¹			
		2'	3'	5'	8'
<ul style="list-style-type: none"> Conventional Trench w/ Supplemental Treatment 	1-5 6-30 31-120		X	X	X
<ul style="list-style-type: none"> Shallow Pressure Distribution (PD) At-Grade 	1-5 6-120		X	X	
<ul style="list-style-type: none"> Shallow PD w/Supplemental Treatment At-Grade w/Supplemental Treatment Mound Pressure-dosed Sand Trench (PDST) Raised Sand Filter Bed Subsurface Drip Dispersal w/Supplemental Treatment 	1-5 6-120	X	X		
<ul style="list-style-type: none"> Raised Sand Filter Bed, w/Supplemental Treatment & Drip Dispersal 	1-5 6-120	X X			

¹ Measured from the bottom of the dispersal system to the seasonal high water table.

- (e) Soil Depth. Minimum depth of permeable soil beneath the bottom of the dispersal field shall be as specified in the table below for different types of alternative OWTS. Permeable soil is defined as having a percolation rate of 120 minutes per inch or faster or having a clay content of less than 60 percent, and shall not include solid rock formations or those that contain continuous channels, cracks or fractures. Design requirements for alternative OWTS prescribed in the *Onsite Systems Manual* may impose additional soil depth requirements based on system size (i.e., volume of wastewater flow) or for particular site conditions or geographic locations.

Minimum Soil Depth Beneath Alternative OWTS (feet)¹

Type of OWTS	Minimum Soil Depth (feet) ¹	
	2'	3'
<ul style="list-style-type: none"> • Conventional Trench w/ Supplemental Treatment • Shallow Pressure Distribution Trench (PD) • At-Grade 		X
<ul style="list-style-type: none"> • Shallow PD w/Supplemental Treatment • At-Grade w/Supplemental Treatment • Mound • Raised Sand Filter Bed (Open Bottom Sand Filter) • Subsurface Drip Disposal w/Supplemental Treatment • Raised Sand Filter Bed, w/Supplemental Treatment & Drip Dispersal 	X	

¹ Measured from the bottom of the dispersal trench, bed or piping (drip dispersal only).

CHAPTER V. INSPECTION REPORTS OF ONSITE WASTEWATER TREATMENT SYSTEMS

Sec. B11-100. Application; limited inspection.

- (a) Any person may apply to the department, on forms approved by the director, for an inspection report of the OWTS located on the applicant's property in the county.
- (b) The agency will only inspect the OWTS for obvious deficiencies.

Sec. B11-101. Inspection fee.

The application must be accompanied by a nonrefundable inspection fee in an amount established by resolution of the Board of Supervisors.

Sec. B11-102. County not liable for damage and does not warrant.

The county, its officers, agents and employees assume no liability to the applicant or anyone else relying on the report issued hereunder for damage to persons or property caused by or arising from the inaccuracy of the report and/or undetection of sewage disposal problems; nor does the county make any warranty or guarantee of any kind to anyone, express or implied, regarding the condition and/or quality of the OWTS.

APPENDIX 2

Draft Onsite Systems Manual

Draft
ONSITE SYSTEMS MANUAL
February 2013



County of Santa Clara
Department of Environmental Health

1555 Berger Drive, Suite 300
San Jose, CA 95112
408-918-3400
www.EHinfo.org

Santa Clara County Onsite Systems Manual

INTRODUCTION

This *Onsite Systems Manual* (also “Onsite Manual” or “Manual”) provides the policy, procedural and technical details for implementation of the provisions of the Santa Clara County Onsite Wastewater Systems Ordinance, codified in Sections B11-60 through B11-95 of the Santa Clara County Code. Section B11-73 provides further that:

- The *Onsite Systems Manual* shall be developed and maintained by the Department of Environmental Health, and shall provide a reasonable process for seeking input from the affected public and OWTS practitioners in connection with its development and when changes are made.
- The *Onsite Systems Manual* and any amendments shall be subject to approval by the director and by the San Francisco Bay and Central Coast Regional Water Quality Control Boards in accordance with applicable State requirements and policies for onsite wastewater treatment.

This Manual replaces the former “Bulletin A”, and incorporates new and updated information regarding design details and guidelines related to both conventional and alternative systems, operation and monitoring requirements and related procedural matters.

It is expected that the Onsite Manual will be reviewed and updated from time-to-time, typically annually, to keep pace with new issues, policies, procedures, and technologies affecting the use and management of onsite systems.

The Onsite Manual is divided into five main sections as follows:

Section 1: Policies and Administrative Procedures

Section 2: Site Evaluation Methods and Investigation Requirements

Section 3: General and Conventional OWTS Requirements

Section 4: Guidelines for Alternative Systems

Section 5: Operation, Monitoring, and Maintenance

SANTA CLARA COUNTY ONSITE SYSTEMS MANUAL

PART 1

POLICIES AND ADMINISTRATIVE PROCEDURES

PART 1

POLICIES AND ADMINISTRATIVE PROCEDURES

A. OVERVIEW

Part 1 of the Onsite Systems Manual covers DEH policies developed for explanation and/or clarification of various Ordinance provisions along with administrative procedures, such as:

- General requirements and applicability for subdivisions, new construction on existing lots, remodeling projects, and system repairs;
- Construction permit process, including: application, fees, site plan information, design review process, installation and inspection, and final approval;
- Operating permit requirements and procedures for alternative treatment and dispersal systems;
- Application forms and fees; and
- Policy and procedures for amendments to On-site Systems Manual.

B. INSTALLATION PERMIT REQUIREMENTS

A permit must be obtained from the Department of Environmental Health (DEH) to construct, reconstruct, or repair an individual onsite wastewater treatment and dispersal system. Permits will only be issued in those areas of the County where a sanitary sewer is not available within 300 feet of the property line (or within 200 feet of the building in some cities). OWTS cannot be used if soil conditions, topography, high groundwater or other factors indicate this method of sewage disposal is unsuitable.

To obtain a permit, five (5) sets of the site plan showing the proposed OWTS, and any required supporting documents, must be submitted to DEH for review and approval.

C. FEES

Fees, as prescribed by Resolution of the Board of Supervisors of the County of Santa Clara, are payable separately to the Department of Environmental Health for services described throughout this Manual.

D. DEVELOPMENT REQUIREMENTS

Land use and building permit applications are evaluated for adequate sewage disposal and domestic water supply. Other conditions such as hazardous materials storage or use, illegal dumping or illegal uses on the property may also be evaluated during field inspections. Evaluation/testing of any existing septic systems may also be required to determine condition and adequacy.

1. Site Approval – Individual Parcels, Subdivisions and Use Permits

To determine feasibility and size of a septic system, a site assessment, soil profile, and percolation test are required for sites for which septic systems are proposed.

An approved potable water supply is required as a condition of approval for building sites, subdivisions, and most use permits. Proof of adequate potable domestic water for subdivisions may be required prior to deeming the application complete if water availability is unknown or poor. Otherwise, proof of an adequate domestic water supply is required prior to map recordation. Individual wells or water systems with up to 14 connections are regulated by DEH. The California Department of Public Health, Drinking Water Division, regulates all other water systems.

2. Building Additions and Accessory Structures

a. Minor building additions (up to 500 square feet) and Accessory Structures (barns, detached garages, swimming pools, cabanas, etc)

Due to the variability involved, these projects are evaluated on a case-by-case basis. The construction of an additional septic tank/drainfield may be required if the existing system is undersized, shows evidence of failure, consists of a cesspool or other substandard septic system, or if there is intensification of use to the septic system (typically the addition of bedrooms).

b. Major Building Additions (over 500 square feet)

These projects require that the existing septic system meet current standards as defined by the Santa Clara County Sewage Disposal Ordinance. Current standards require the

minimum of a 1,500 gallon septic tank and a dual drainfield (primary and secondary drainfields) sized and sited to meet current code.

Building additions/accessory structures will not be approved in situations where it would result in a reduction in size of the drainfield(s) or any required reserve drainfield area.

c. Secondary Dwellings

Each secondary dwelling shall be served by an OWTS, which conforms to current code. This may be a separate OWTS serving only the second dwelling, or the second dwelling may be connected to the main house system, provided there is treatment and dispersal capacity.

Attached secondary dwellings must have direct access from the main house to the secondary dwelling. Breezeways, porches, etc. do not constitute direct access. For attached secondary dwellings, the septic tank will be sized based on the total square footage of the house (plus secondary dwelling) and the drainfield will be sized based on the number of bedrooms for both the main house and secondary dwelling.

E. ALTERNATIVE SYSTEMS

To provide a broader range of OWTS treatment and dispersal options for new construction and repair/replacement situations, alternatives to conventional OWTS may be used in accordance with certain general provisions and specific requirements as follows:

1. General provisions.

- a. Alternative systems may be permitted by the Director of Environmental Health for the repair or upgrading of any existing OWTS and for new construction on any legally-created parcel where: (a) it is determined that sewage cannot be disposed of in a sanitary manner by a conventional OWTS; or (b) the Director determines that an alternative system would provide equal or greater protection to public health and the environment than a conventional OWTS.
- b. Alternative systems are not to be used as the basis approval of creation of new lots (subdivisions).
- c. Types of alternative systems permitted are limited to those for which siting and design standards have been adopted and incorporated in the Ordinance and this Manual.

- d. All alternative systems must be installed by a contractor duly licensed by the Contractors State License Board of the State of California to install OWTS.

2. Specific Requirements

- a. **Design and Installation Permit.** Alternative OWTS require design by a licensed professional and completion of site evaluation and installation permitting as required for conventional OWTS. Additional engineering and design requirements applicable to different types of alternative OWTS are contained in Part 4 of this Manual.
- b. **Operating Permits.** A County-issued operating permit is required for all alternative systems. Operating permits are intended to serve as the basis for verifying the adequacy of alternative system performance and ensuring on-going maintenance, including requirements for system inspection, monitoring and reporting of results to the DEH, along with the requirement for permit renewal, typically on an annual basis.
- c. **Performance Monitoring and Reporting.** Performance monitoring and reporting is required for all alternative OWTS in accordance with conditions established by the DEH at part of the operating permit. Performance monitoring requirements are covered in Parts 4 and Part 5 of this Manual.

Design and Construction Guidelines. Design and construction guidelines for approved alternative treatment and dispersal technologies are provided in Part 4 of this Manual.

F. DEH POLICIES

DEH policies developed for explanation and/or clarification of various Ordinance provisions and DEH procedures are attached.

SANTA CLARA COUNTY ONSITE SYSTEMS MANUAL

PART 2

SITE EVALUATION METHODS AND INVESTIGATION REQUIREMENTS

DRAFT

SITE EVALUATIONS FOR ONSITE WASTEWATER TREATMENT SYSTEMS

A. GENERAL

Prior to approving the use of an OWTS, a site evaluation is required in all instances to allow proper system design and to determine compliance with the site suitability criteria identified in the Ordinance and this *Onsite Systems Manual*.

For new divisions of land, soil profiles, percolation tests and groundwater determinations will be required on every parcel unless the director determines, on a case-by-case basis, that such testing is not necessary due to the availability of sufficient information to demonstrate conformance with applicable siting criteria for all proposed OWTS locations.

Site evaluations shall be conducted by a qualified professional, and evaluations shall be made in accordance with the following requirements and referenced attachments.

For sites where a conventional OWTS is appropriate, the site assessment and soil profile evaluation may be conducted entirely by DEH staff. For more difficult sites (e.g., steeper terrain) and for any site requiring the use of an alternative OWTS, the site evaluation and system design will require the involvement of an OWTS consultant (civil engineer, professional geologist, or registered environmental health specialist), who is retained by the owner. All percolation testing shall be conducted by a qualified OWTS consultant. Where the work is conducted by a consultant, the DEH shall be notified prior to the site evaluation to coordinate with and allow for verification by department staff.

B. SITE ASSESSMENT

The first step in the site evaluation process is a preliminary review of the physical features of the site by DEH staff, including the slope of the land, proximity to cuts, steep slopes, watercourses and drainage swales, wells, and other features that may limit the available dispersal area.

Prior to conducting the site assessment, a Land Use Application form must be completed, along with a preliminary site plan. This form must be signed by the owner of the property in order to gain access to the parcel.

Site features determined by the field inspection and review of available maps and file information include:

- (1) Land area available for treatment components and for primary and secondary/reserve dispersal fields.

- (2) Ground slope in the primary and secondary/reserve dispersal area(s).
- (3) Location of cut banks, fills, or evidence of past grading activities, natural bluffs, sharp changes in slope, soil landscape formations, and unstable land forms within 50 feet of the primary and secondary/reserve dispersal area(s).
- (4) Location of wells, watercourses, drainage swales and other bodies of water within 150 feet of the primary and secondary/reserve dispersal area(s).
- (5) To the extent possible, the location of existing OWTS within 100 feet of the primary and secondary/reserve dispersal area(s).

Following the site assessment, a written report will be provided by DEH. The report will briefly describe any limitation to development of the site using an OWTS.

C. SOIL PROFILES

After the initial site assessment, soil conditions in the area(s) identified for the dispersal field require evaluation through soil profile observations. A soil profile typically consists of a backhoe excavation or soil boring to a depth extending below the anticipated dispersal trench bottom. For conventional OWTS, the backhoe excavation should extend a minimum of 5 feet below trench bottom; for alternative OWTS this depth may be reduced to 3 to feet below trench bottom.

The purpose of the soil profile is to:

- (1) Determine the suitability of the soils for absorption of wastewater in the dispersal trench zone; and
- (2) Verify that there will be adequate vertical separation between the bottom of the dispersal trench and bedrock, groundwater, or impermeable soil strata.

A minimum of one excavation in the primary dispersal field and one in the secondary/reserve area shall be required for this purpose. Additional soil profiles may be required if the initial two profiles show conditions which are dissimilar to the extent that they do not provide sufficient information for design and/or determination of code compliance.

Auger test holes may be an acceptable alternative to backhoe excavations where the DEH determines either that:

- (1) the use of an excavation vehicle is impractical because of access or because of the fragile nature of the soils; or

- (2) it is necessary only to verify conditions expected on the basis of prior soils investigations; or
- (3) it is done in connection with geologic investigations.

Also, where groundwater separation of more than 5 feet is required (e.g., for conventional OWTS in areas of rapid percolation rates), additional (deeper) subsurface exploration may be required for groundwater determination; and this can be done with an auger boring rather than backhoe excavation.

The following factors should be observed and reported from ground surface to the bottom of soil profile:

- Thickness and coloring of soil layers, soil structure, and texture according to United States Department of Agriculture (USDA) classification .
- Depth to a limiting condition such as hardpan, rock strata, impermeable soil layer, or saturated soil conditions.
- Depth to observed groundwater.
- Depth to and description of soil mottling (redoximorphic features).
- Other prominent soil features which may affect site suitability, such as coarse fragments, consistence, roots and pores, and moisture content.

Soil profile inspections should follow guidance provided in manuals such as:

- (1) USDA, Natural Resources Conservation Service. "Field Book for Describing and Sampling Soils". September 2002.
- (2) USEPA "Design Manual – Onsite Wastewater Treatment and Disposal Systems". 1980. (pages 28-38).

Various aids for soil profile observations and logging are provided in **Attachment A**.

D. DEPTH TO GROUNDWATER DETERMINATION

The anticipated highest level of groundwater in the primary and secondary/reserve area shall be estimated either:

- (a) As the highest extent of soil mottling observed in the examination of soil profiles;

Or

- (b) By direct observation of groundwater levels during the time of year when the highest groundwater conditions are expected or known to occur, i.e., wet weather testing period as defined by the DEH.

Where there is a discrepancy between soil profile indicators (mottling) and direct observations, the direct observations shall govern.

If there are site characteristics or historical documentation indicating that a shallow water table is likely to occur during the rainy season, a wet weather groundwater investigation will be required. This investigation must be conducted during normal wet weather ground water conditions in accordance with DEH policy and procedures (see **Attachment B**). DEH staff should be contacted early in the site evaluation process to determine if wet weather groundwater observations are likely to be required for a particular site and to coordinate the work.

E. PERCOLATION TESTING

Percolation testing is conducted to confirm the groundwater separation requirement for the proposed site and to determine the size of the dispersal field for the project. The applicant must hire a consultant to conduct the percolation tests. DEH will determine the level of oversight to be provided during the testing. Percolation testing shall be completed in accordance with procedures detailed in **Attachment C**.

With respect to percolation testing, the applicant is responsible for:

- (1) Contracting with an OWTS contractor or other qualified individual to excavate and set-up the percolation test holes in locations designated by the DEH and/or the applicant's OWTS consultant;
- (2) Contracting with an OWTS design consultant to run the percolation tests;
- (3) Making necessary arrangements to assure that adequate water is available for the required 24-hour pre-soaking and for refilling during testing.

Percolation testing will normally be conducted at the time of or shortly following the soil profile investigation. However, if the soil profile observations indicate the presence of expansive soils with high shrink-swell characteristics, percolation testing during the normal wet weather season will be required. This is because expansive, high shrink-swell soils may exhibit suitable soil percolation rates during the dry season due to shrinkage cracks in the soil; but, when they become wet, the same soils may swell to the point of providing little or no percolation. Field judgment of the need for wet weather percolation testing will be made based on: (a) visual evidence of soil shrinkage cracks; and/or (b) soils exhibiting high clay content (e.g., exceeding 40 percent) in combination with massive, columnar or angular blocky soil structure.

F. GEOTECHNICAL REPORT/SLOPE STABILITY ANALYSIS

For any site where the ground slope in the proposed dispersal field area exceeds 20%, additional geotechnical evaluation of slope stability, drainage, and other factors shall be required to verify that the proposed dispersal system will not degrade water quality, create a nuisance, affect soil stability or present a threat to the public health or safety. The requirements pertaining to this additional geotechnical evaluation are further detailed in **Attachment D**.

G. CUMULATIVE IMPACT ASSESSMENT

For certain projects, typically non-residential and large flow OWTS, the completion of additional technical studies, termed “cumulative impact assessment”, may be required. This is to address the cumulative impact issues (mainly groundwater mounding and nitrogen loading) from OWTS that can result from such factors as the constituent levels in the wastewater (e.g., nitrogen content), the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water resources in a particular location. These issues are not necessarily addressed by conformance with standard OWTS siting and design criteria.

Cumulative impact assessment is mandatory for any OWTS with wastewater flows of 2,500 gpd or more.

Cumulative impact assessment is not required for normal residential OWTS, regardless of the type of system (conventional or alternative).

The requirements and guidelines pertaining cumulative impact assessments are detailed in detailed in **Attachment E**.

H. REPORTING

All site evaluation information, including soil profile and percolation test results (and map) for primary and secondary/reserve dispersal areas, geotechnical report (if required), and cumulative impact assessment (if required) shall be submitted to the DEH with the OWTS permit application.

**Geotechnical Report and Engineering Installation Plan
Requirements
OWTS Proposed on Slopes Exceeding 20%**

When it is proposed to install an OWTS on slopes over 20% the County OWTS Ordinance, Code Section B11-83, requires that it be demonstrated “through a geotechnical report and complete engineering installation plan ... that use of the subsurface dispersal system will not permit sewage effluent to surface, degrade water quality, create a nuisance, affect soil stability, or present a threat to the public health or safety. The geotechnical report shall include, but not be limited to, soil percolation rates, contours, soil depth, seasonal groundwater elevation(s), location of all existing or proposed ground cuts, rock formations, soil stability, drainage, and other data as determined by the director and the County geologist.”

The following are the minimum requirements for the preparation of the geotechnical report and engineering installation plan.

1. The geotechnical report must be prepared by a state registered civil engineer or certified engineering geologist. The engineering installation plan must be prepared by a state registered civil engineer, professional geologist, or registered environmental health specialist. The report and plan may be prepared by different authorized professionals.
2. Engineering Installation Plan Requirements:
 - a) The plan must be wet-stamped by the designer and initialed or signed.
 - b) The plan must include cross section(s) through the dispersal field that show dispersal line depths and details, and any benching that will be necessary to install the system.
 - c) Any OWTS proposed for installation on slopes between 30% and 40% shall require the use of pressure distribution methods, designed in accordance with applicable guidelines in Part X of the Onsite Systems Manual.
 - d) Any OWTS proposed for installation on slopes between 40% and 50% shall require the use of subsurface drip dispersal methods, designed in accordance with applicable guidelines in Part X of the Onsite Systems Manual.
 - e) The plan must include an erosion control plan, incorporating measures consistent with guidelines and requirements contained in Division C12, Chapter III of the Santa Clara County Code (County Grading Ordinance).
 - f) The plan shall incorporate applicable recommendations contained in the geotechnical report regarding the avoidance or mitigation of slope stability concerns.

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3. Geotechnical Report Requirements:

- a) The report must specifically reference the “engineered” plan. If, at some future date, the dispersal field is appreciably modified an amended report must be submitted that references the modified plan.
- b) The geotechnical report must discuss the geology, slope stability and seismic hazards, soils, groundwater, drainage, percolation rate, topography, cuts, vegetation and other pertinent site features.
- c) The report shall include any recommendations deemed appropriate or necessary to mitigate potential slope stability concerns associated with either the installation or on-going operation of the proposed OWTS.
- d) The report must state specifically in the conclusion that the proposed OWTS will not (or other wording such as not likely to, risk is very low, etc.):
 - 1) Permit sewage effluent to surface
 - 2) Degrade water quality
 - 3) Affect soil stability
 - 4) Present a threat to the public health or safety
 - 5) Create a public nuisance
- e) The geotechnical report shall be wet-stamped and signed by the responsible licensed professional.

GUIDELINES FOR CUMULATIVE IMPACT ASSESSMENT
(Draft January 2013)

A. General Provisions. Code section B11-74 authorizes the director to require the completion of additional technical studies ("cumulative impact assessment") for OWTS proposals in situations where cumulative impacts on groundwater and/or watershed conditions are of potential concern. Cumulative impacts from OWTS may occur due to such factors as the constituent levels in the wastewater (e.g., nitrogen content), the volume of wastewater flow, the density of OWTS discharges in a given area, and/or the sensitivity and beneficial uses of water resources. Cumulative impact assessments to address potential concerns shall be conducted in accordance with the requirements outlined in these guidelines. The results of the assessment shall be submitted for review by the Director and may be the basis for denial, modification or imposition of specific conditions for the OWTS proposal, in addition to other siting and design criteria.

B. Cumulative Impact Issues. The primary issues to be addressed in cumulative impact assessments will normally include the following:

1. Groundwater Mounding. A rise in the water table, referred to as "groundwater mounding", may occur beneath or down-gradient of OWTS as a result of the concentrated or high volume of hydraulic loading from one or more systems in a limited area.
2. Groundwater Nitrate Loading. Discharges from OWTS contain high concentrations of nitrogen that may contribute to rises in the nitrate level of local and regional aquifers.

For individual cases, the Director may identify and require analysis of cumulative impact issues other than those listed above which, in his/her judgment could pose potential water quality, public health, or safety risks.

C. Qualifications. Cumulative impact assessments required for alternative system proposals shall be performed by or under the supervision of one of the following licensed professionals:

1. Registered Civil Engineer
2. Registered Environmental Health Specialist
3. Registered Geologist

Additionally, the licensed professional assuming responsibility for the cumulative impact assessment should have training and experience in the fields of water quality and hydrology.

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- D. Cases Requiring Cumulative Impact Assessment.** Cases where cumulative impact assessments shall be required are listed in **Table 1**. Additionally, the Director reserves the right to require the completion of a cumulative impact assessment in any case where, in his/her opinion, special circumstances related to the size, type, or location of the OWTS warrant such analysis.

**Table 1
Projects Requiring Cumulative Impact Assessment***

Type of Project	Geographic Location	Lot Size (acres)	Design Wastewater Flow (gpd)	Groundwater Mounding Analysis	Nitrate Loading Analysis
Individual Residence	Countywide	-	-	No	No
Residence with Second Unit	Countywide	-	-	No	No
	San Martin Area	< 5	-	No	Yes
Multiunit and Non-residential	Countywide	< 1	-	No	Yes
		-	1,500+	Yes	No
		-	2,500+	Yes	Yes
	San Martin Area	< 5	-	Per Countywide requirements above	Yes
		5+	1,000+		Yes
	Subdivisions	Countywide	2.5+	-	No
<2.5			-	No	Yes

*Note: Director may also require cumulative impact assessment based on project or site specific conditions.

E. Methods

1. Groundwater Mounding Analysis

- a. Analysis of groundwater mounding effects shall be conducted using accepted principles of groundwater hydraulics. The specific methodology shall be described and supported with accompanying literature references, as appropriate.
- b. Assumptions and data used for the groundwater mounding analysis shall be stated along with supporting information. A map of the project site showing the location and dimensions of the proposed system(s) and the location of other

ATTACHMENT E

nearby OWTS, wells and relevant hydrogeologic features (e.g., site topography, streams, drainage channels, subsurface drains, etc.) shall be provided.

- c. The wastewater flow used for groundwater mounding analyses shall be the design sewage flow, unless supported adequately by other documentation or rationale.
- d. Groundwater mounding analyses shall be used to predict the highest rise of the water table and shall account for background groundwater conditions during the wet weather season.
- e. All relevant calculations necessary for reviewing the groundwater mounding analysis shall accompany the submittal.
- f. Any measures proposed to mitigate or reduce the groundwater mounding effects shall be presented and described as to their documented effectiveness elsewhere, special maintenance or monitoring requirements or other relevant factors.

2. Nitrate Loading

- a. Analysis of nitrate loading effects shall, at a minimum, be based upon construction of an annual chemical-water mass balance. The specific methodology shall be described and supported with accompanied literature references as appropriate.
- b. Assumptions and data for the mass balance analysis shall be stated, along with supporting information. Such supporting information should include, at a minimum:
 - (1) climatic data (e.g., precipitation, evapotranspiration rates);
 - (2) groundwater occurrence, depth and flow direction(s);
 - (3) background groundwater quality data, if available;
 - (4) soils conditions and runoff factors;
 - (5) wastewater characteristics (i.e., flow and nitrogen content); and,
 - (6) other significant nitrogen sources in the impact area (e.g., livestock, other waste discharges, etc.)
- c. A map of the project siting showing the location and dimensions of the proposed system(s) and the location of other nearby OWTS, wells and relevant hydrogeologic features (e.g., site topography, streams, drainage channels, subsurface drains, etc.) shall be provided.

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- d. The wastewater flow (average) used for nitrate loading analyses shall be as follows, unless adequately supported by other documentation or rationale:
 - (1) For individual residential systems: 75 gpd/bedroom;
 - (2) For multi-family residential systems and other non-residential systems: average monthly wastewater flow for the proposed OWTS;
- e. Minimum values used for the total nitrogen concentration of septic tank effluent shall be as follows, unless supported adequately by other documentation or rationale:
 - (1) Residential wastewater: 50 mg/l
 - (2) Non-residential wastewater: as determined from sampling of comparable system(s) or from literature values.

The Director may require the use of more conservative values than cited above if, in his/her opinion, the values are not likely to be representative of the proposed system(s).
- f. All relevant calculations necessary for reviewing the nitrate loading analysis shall accompany the submittal.
- g. Any measures proposed to mitigate or reduce the nitrate loading effects shall be presented and described as to their documented effectiveness elsewhere, special maintenance or monitoring requirements or other relevant factors.

F. Evaluation Criteria

- 1. **Groundwater Mounding.** The maximum acceptable rise of the water table for short periods of time (e.g., one to two weeks) during the wet weather season, as estimated from groundwater mounding analyses, shall be as follows:
 - a. General Requirement for all OWTS. Groundwater mounding shall not result in more than a 50-percent reduction in the required minimum depth to seasonally high groundwater per section B11-67 or B11-95, as applicable, for the type of OWTS and site conditions. For example, where a 3-foot vertical separation to the native groundwater level is required, a short-term "mounding" rise of the water table to within 1.5 feet of trench bottom would be acceptable during peak wet weather conditions.
 - b. Requirement for Large Systems. Notwithstanding (a) above, for all OWTS of 2,500 gpd or more (i.e., "large systems"), the groundwater mounding analysis shall demonstrate that the minimum required groundwater separation, per

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B11-67 or B11-95 as applicable, will be maintained beneath the system during peak wet weather conditions.

The Director reserves the right to require, in any individual case, up to 24 inches of groundwater clearance (“mounded” conditions) where deemed necessary for protection of public health, or based upon specific requirements or recommendations of the applicable California Regional Water Quality Control Board.

- 2. Nitrate Loading.** Minimum criteria for evaluating the cumulative nitrate loading from proposed OWTS shall be as follows:
- a. For Areas Served By Individual Water Wells.
 - (1) Existing Lots of Record: New OWTS on existing lots of record shall not cause the groundwater nitrate-nitrogen concentration to exceed 7.5 mg-N/L at the nearest existing or potential point of groundwater withdrawal (e.g., water well location);
and
 - (2) New Subdivisions: The total loading of nitrate from new subdivisions shall not result in an average groundwater nitrate-nitrogen concentration over the geographical extent of the subdivision that exceeds 7.5 mg-N/L.
 - b. For Areas Not Served by Individual Water Wells.
 - (1) Existing Lots of Record: OWTS installed on existing lots of record shall not cause the groundwater nitrate-nitrogen concentration to exceed 10 mg-N/L at the nearest existing or potential point of groundwater withdrawal (e.g., water well location).
and
 - (2) New Subdivisions. The total loading of nitrate from new subdivisions shall not result in an average groundwater nitrate-nitrogen concentration over the geographical extent of the subdivision that exceeds 10 mg-N/L.

The Director reserves the right to require, in any individual case, more stringent nitrate-nitrogen compliance criteria where deemed necessary for protection of public health, or based upon specific requirements or recommendations of the applicable California Regional Water Quality Control Board.

Santa Clara County Onsite Systems Manual

PART 3

General and Conventional OWTS Requirements

1. GENERAL REQUIREMENTS

A. OWTS SITE PLANS

Site plans must include the following information and details:

1. Show all proposed and any existing OWTS drawn accurately to a scale of at least 1 inch = 20 feet. Large parcels must also show the entire site in a larger scale.
2. If the slope of the lot is less than 10%, indicate direction and percent of slope with an arrow. If the slope exceeds 10%, show elevation contour lines at 2-foot intervals. Note: If a 'grid' dispersal system is proposed, one foot contours are required to ensure the dispersal area does not exceed 5% slope.
3. Note the assessor's parcel number (APN), site address, County File Number (if applicable), and any subdivision, tract or lot numbers.
4. Show the North arrow and scale.
5. Show the location of all wells, springs, creeks, drainage swales and/or watercourses on the property or within 100 feet of the property lines.
6. Show all existing and proposed structures, driveways, culverts, patios, decks, paved areas, swimming pools, large trees, water lines, etc.
7. Show all existing and proposed cuts, slopes or embankments over 50% gradient, slides and flood plain boundaries.
8. Include the name, address, and telephone number of the legal owner and/or applicant.
9. Show the name of adjoining property owners.
10. Show the property boundaries and their recorded lengths.
11. Show all recorded easements and right-of-ways and their purpose.
12. Indicate the name of the water company or the domestic water source (individual well, shared well, mutual water system, etc).
13. Show all existing or proposed OWTS within 100 feet of an existing or proposed well.
14. Show the location of all components of the OWTS (septic tank, diversion valve, dispersal trenches, etc).

B. OWTS INSTALLATION REQUIREMENTS

1. The approved, permitted OWTS site plan (wet-stamped by the Department of Environmental Health) must be available at the job site.
2. Per County Ordinance, the contractor must hold the appropriate contractor's license and be registered with the Department of Environmental Health.
3. The appropriate Environmental Health Office or Specialist must be notified at least 48-hours prior to starting work.
 - a. Main Office (1555 Berger Drive, San Jose) 408-918-3400
 - b. South County Office (16450 Monterey Road, Morgan Hill) 408-779-0631 (call between 8:00 am and 10:00 am)
4. Trenches must not be excavated when the soil is wet so that the soil compaction and/or smearing of the trench walls occur. Compaction and smearing are problematic in clay soils and can cause reduced dispersal field efficiency.
5. No part of the septic tank or dispersal field may be covered without approval from the Department of Environmental Health.

C. WASTEWATER FLOWS FOR OWTS DESIGN

A. Single Family Residences and Second Units. Wastewater flows used for design of OWTS for single family residences and second units shall be based on a factor of 150 gal/day per bedroom for the first three (3) bedrooms, plus 75 gal/day for each additional bedroom, as indicated in **Table 3-1**. The design flows for a primary residence and secondary dwelling unit shall be determined independently, regardless of whether the flows are treated separately or combined in a single OWTS.

Table 3-1.
Wastewater Design Flows for
Single Family Residences and Second Units

No. of Bedrooms	Design Flow (gal/day)
1	150
2	300
3	450
4	525
5	600
6	675
>6	+ 75 per bedroom

B. Multiunit Residences and Non-residential Facilities. Wastewater flows used for the design of OWTS for multiunit residences and non-residential projects shall be developed based on full consideration of projected activities, occupancy, and facilities. **Table 3-2** provides guidelines for use in estimating design wastewater flows. For facilities not listed in **Table 3-2** the wastewater design flow shall be estimated based on either: (a) appropriate literature references (e.g., US EPA) for the type of facility proposed; or (b) documented wastewater flow monitoring data for a comparable facility. Additionally, the director may consider adjustment to the criteria listed in **Table 3-2** for specific facilities based upon documented wastewater flow monitoring data. In all cases, the design proposal shall include sufficient technical information to support the proposed design flow estimate. Notwithstanding the above, minimum design flow for any OWTS shall not be less than 150 gpd.

**Table 3-2.
Wastewater Design Flow Guidelines
Multiunit and Non-residential Facilities**

Type of Business or Facility	Design Flow (gallons per day)
Assisted living/rest home	
- per resident bed space	100
- per employee	15
Camps (per person)	
- day use	10
- overnight use, with flush toilets, no showers	25
- overnight use, with flush toilet and showers	35
Churches and assembly halls (per seat)	
- without kitchen	5
- with kitchen	15
Country clubs	
- per resident member or caretaker	75
- per guest	25
- per employee	15
Day care (per patron, employee)	15
Detention center	
- per resident bed space	100
- per employee	15
Factories and industrial buildings (toilet wastes only)	
- without showers (per employee)	15
- with showers (per employee)	35
Hotels or motels	
- per guest	50
- per employee	15
- additional for restaurant, spa or other facilities	case-by-case
Laundromat, with self-service washing machines	
- per machine	500
or	
- per customer	50
Mobile home parks (per space)	250
Multiunit residential housing	
- apartments, per bedroom	150
- boarding house and farm labor housing, per bed	50
Offices and stores (per employee)	15
Parks with picnic areas (per person)	
- with flush toilets	5

- with flush toilets and showers	10
Type of Business or Facility	Design Flow (gallons per day)
Recreational vehicle parks	
- without individual sewer hook-ups (per space)	50
- with individual sewer hook-ups (per space)	100
Restaurants and Food Service	
- toilet and kitchen wastes (per patron)	10
- kitchen wastes only (per meal served)	5
- additional for bars (per patron)	2
- per employee	15
Service Station	
- per vehicle served	10
- per employee	15
Schools, boarding	
- student and live-in staff (per person)	75
- daily staff (per person)	15
Schools, day	
- without cafeteria or showers (per student)	15
- with cafeteria (per student)	20
- with cafeteria and showers (per student)	25
- staff (per person)	15
Swimming pools	
- per patron	10
- per employee	15
Theaters	
- per seat	5
- per employee	15
Wineries (sanitary waste only)	
- tasting room, per visitor	2.5
- per employee	15
- special events	case-by-case

C. Flow Equalization. Flow equalization may be used for non-residential and mixed use facilities that experience significant, regular and predictable fluctuations in wastewater flows. Examples of applicable facilities include, but are not limited to:

- Churches
- Schools
- Special event venues

Flow equalization is the process of controlling the rate of wastewater flow through an OWTS by providing surge capacity storage and timed-dosing of the incoming flow. Installed following the septic tank, it allows peak surges in wastewater flow (e.g., from a weekend event) to be temporarily stored and metered into the treatment system and/or dispersal field at a relatively even (“average”) rate over an extended number of days (e.g., during the subsequent week). This generally aids OWTS performance.

Where flow equalization is proposed to be incorporated in an OWTS the following apply:

1. the septic tank capacity shall be sized based on the peak daily flow for the facility;
2. the design flow used for sizing supplemental treatment unit(s) and/or the dispersal field may be based on the equalized (“average”) flow rate rather than the peak daily flow rate for the facility;
3. engineering calculations and specifications must be submitted substantiating the proposed design and operation of the flow equalization system; and
4. an operating permit (per OWTS Ordinance section B11-92) will be required.

2. CONVENTIONAL OWTS REQUIREMENTS

A. DESCRIPTION

Per Santa Clara County OWTS Ordinance, a "Conventional OWTS means a type of septic tank for primary treatment of sewage followed by a system of drainfield trenches for subsurface dispersal of effluent into the soil. A conventional OWTS may utilize gravity flow or a pump system to convey effluent from the septic tank to the drainfield."

B. SITING CRITERIA

The following minimum siting criteria must be met for approval of any conventional OWTS:

1. **Soil Depth.** Minimum depth of permeable soil beneath the bottom of the proposed dispersal field shall be 5 feet. Permeable soil is defined as having a percolation rate of 120 minutes per inch or faster or having a clay content of less than 60 percent, and shall not include rock formations that contain continuous channels, cracks or fractures;
2. **Soil Fill.** Maximum depth of soil fill covering any portion of the area proposed for installation of a dispersal system shall not exceed twelve inches in depth.
3. **Vertical Groundwater Separation.** Minimum required vertical separation distance between trench bottom and groundwater shall be determined according to the soil percolation rate as follows:

Percolation Rate (Minutes/Inch)	Vertical Distance (feet)
Less than 1	Not Permitted
1-5	20
6-30	8
31-120	5
More than 120	Not Permitted

4. **Areas of Flooding.** OWTS shall not be located in areas subject to flooding as defined by the limits of the 10-yr floodplain, determined or estimated from published floodplain maps or on the basis of historical evidence acceptable to the director. New OWTS that are to be located in areas of special flood hazard, as identified in division C12 of the County Code, must comply with all relevant provisions of division C12.
5. **Ground Slope.** Maximum ground slope in the dispersal field area shall not exceed thirty percent. Additionally, for any site where the ground slope exceeds twenty percent,

approval shall be dependent upon completion of a geotechnical report as provided in Ordinance section B11-83. See **Part 2** of this Manual for geotechnical report requirements.

6. **Horizontal Setbacks.** Minimum horizontal setback distances from various site features to OWTS components shall be as listed in **Table 3-3**:

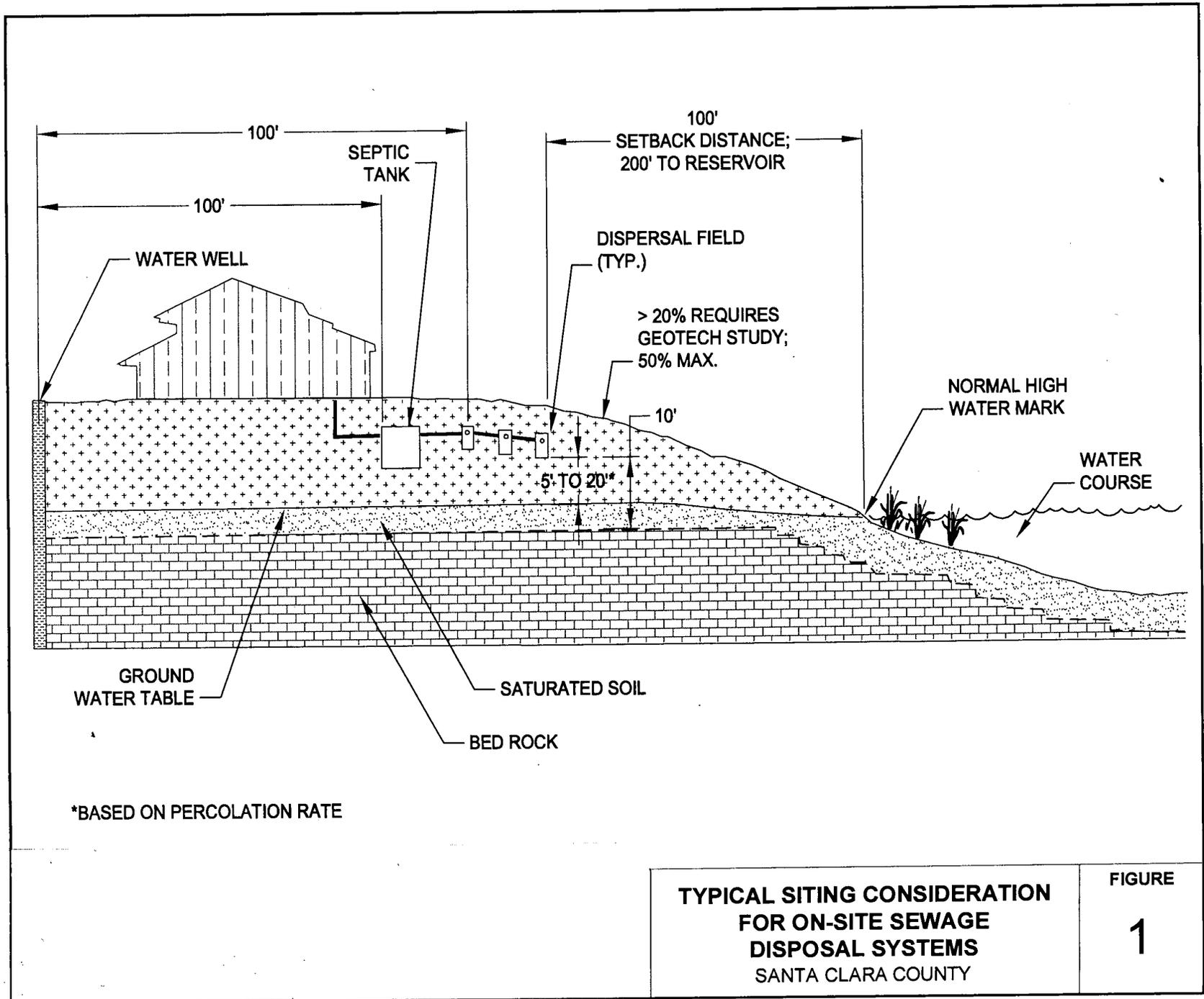
Table 3-3. Minimum Horizontal Setback Distances

Site Feature	Minimum Setback Distance* (feet)	
	To Dispersal Field	To Septic Tank
Non-public water supply wells and springs	100	100
Public water supply wells	150	150
Watercourses (from top of bank)	100	100
Reservoirs (from highwater mark)	200	200
Cuts or steep embankments (from top of cut)	4 X h**	10 feet
Steep slopes, >50% (from break of slope)	4 X h**	10 feet
Drainageway/drainage swale (from edge of flow path)	50	50
Foundation	10	5
Property line	10	10
Septic tanks	6	N/A
Swimming pool	25	25
Road easement, pavement, or driveway	5	5

* Note: the director may prescribe more restrictive (greater) horizontal setback distances from watercourses in the vicinity of a public water supply surface water intake, as needed, for implementation of State and Regional Water Quality Control Board policies.

** h equals the height of cut or embankment, in feet. The required setback distance shall not be less than twenty five feet nor more than one hundred feet.

7. **Soil Percolation Rate.** The average soil percolation rate in the proposed dispersal field area shall not be faster than one minute per inch (1 mpi) nor slower than one hundred twenty minutes per inch (120 mpi), determined in accordance with procedures prescribed by the director in **Part 2** of this Manual.



**TYPICAL SITING CONSIDERATION
FOR ON-SITE SEWAGE
DISPOSAL SYSTEMS
SANTA CLARA COUNTY**

**FIGURE
1**

8. **Location and Accessibility.** OWTS shall be situated on the same property as the building(s) being served and shall be located to be easily accessible for maintenance and repairs.

C. SEPTIC TANK REQUIREMENTS

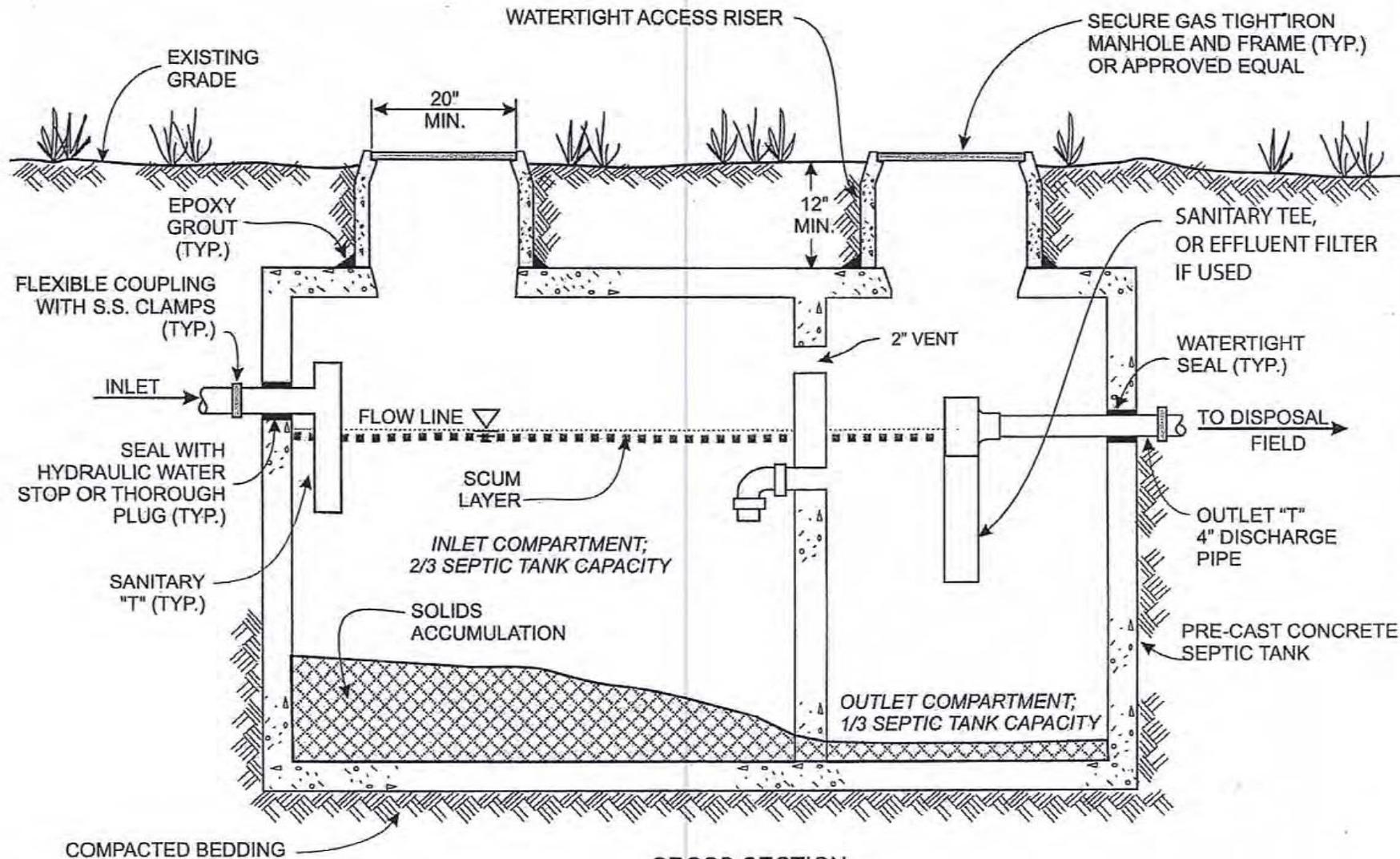
1. **Minimum Capacity.** Septic tanks must have a minimum capacity of fifteen hundred (1,500) gallons or twice the peak daily wastewater flow for the facility served, whichever is greater.
2. **Two Compartments.** Septic tanks must be of two-compartment construction, with the first compartment equal to two-thirds the total tank volume. The compartments must be separated by a baffle or equivalent arrangement.
3. **Materials.** Septic tanks must be watertight and constructed of reinforced concrete, heavyweight reinforced concrete blocks, or other materials as approved by the director. All interior surfaces must be coated with bitumastic or similar compound to minimize corrosion.
4. **Access Openings.** Access to each septic tank compartment must be provided by a manhole at least twenty inches in diameter and having a durable handle to facilitate removal.
5. **Access Risers.** A riser must extend from each manhole cover to or above the surface of the ground. The riser must be of a size larger than the manhole cover, be both gas- and water-tight, and be constructed of durable material.
6. **Tank Connections.** All connections from building to septic tank must conform to construction standards as required by the County building official.

D. PIPE REQUIREMENTS

1. **Solid pipe, joints and connections.** Solid (non-perforated) pipe for OWTS must conform to the standards of the most recent edition of the Uniform Plumbing Code, which is adopted by reference into the county's building ordinances. Pipe diameter must be four inches. All solid pipe joints and connections must be glued, cemented or made with an elastomeric seal so as to be watertight.
2. **Distribution pipe.** Perforated pipe for conventional OWTS dispersal systems must conform to the most recent edition of the Uniform Plumbing Code, which is adopted by reference into the county's building ordinances. The pipe diameter must be four inches.

E. DISPERSAL SYSTEM REQUIREMENTS

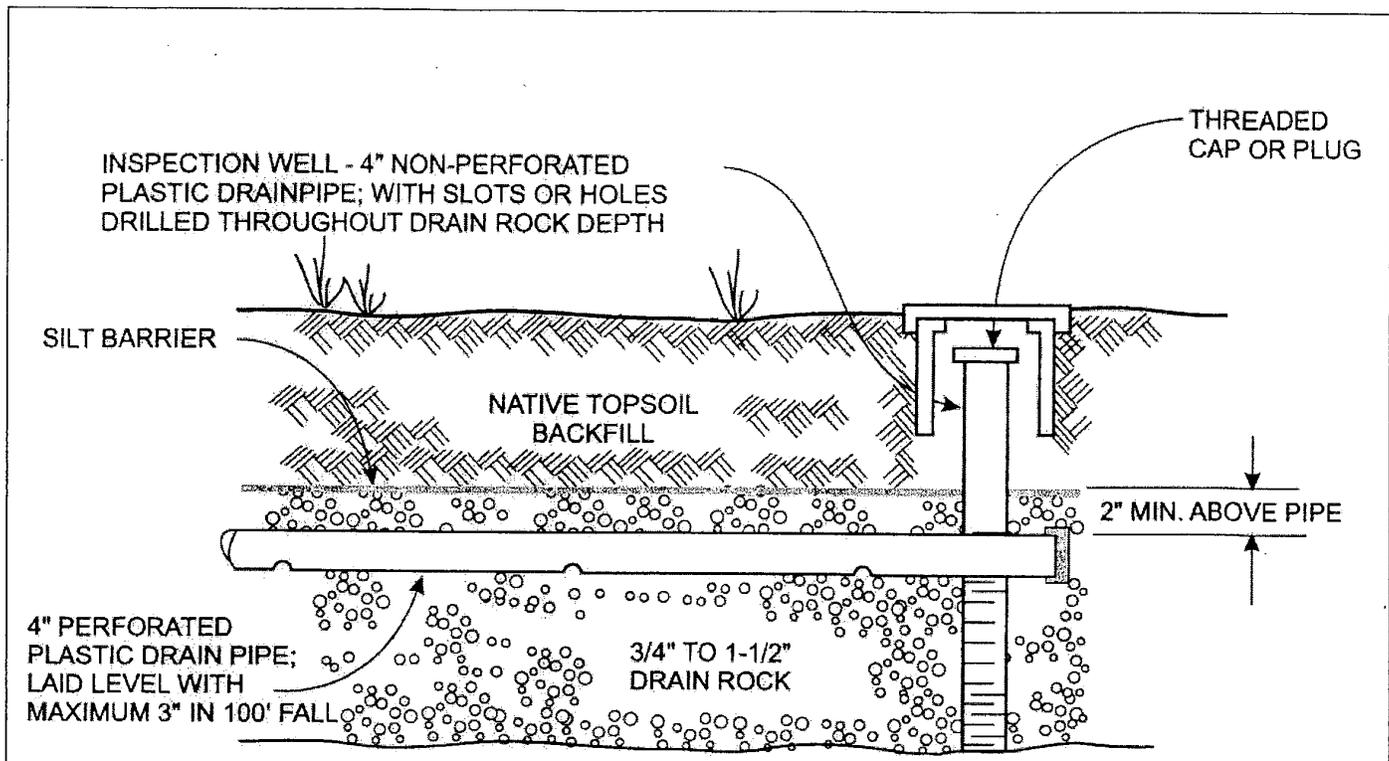
1. **Trench Specifications.** A conventional subsurface dispersal system must consist of a series of trenches meeting the specifications in **Table 3-4**.



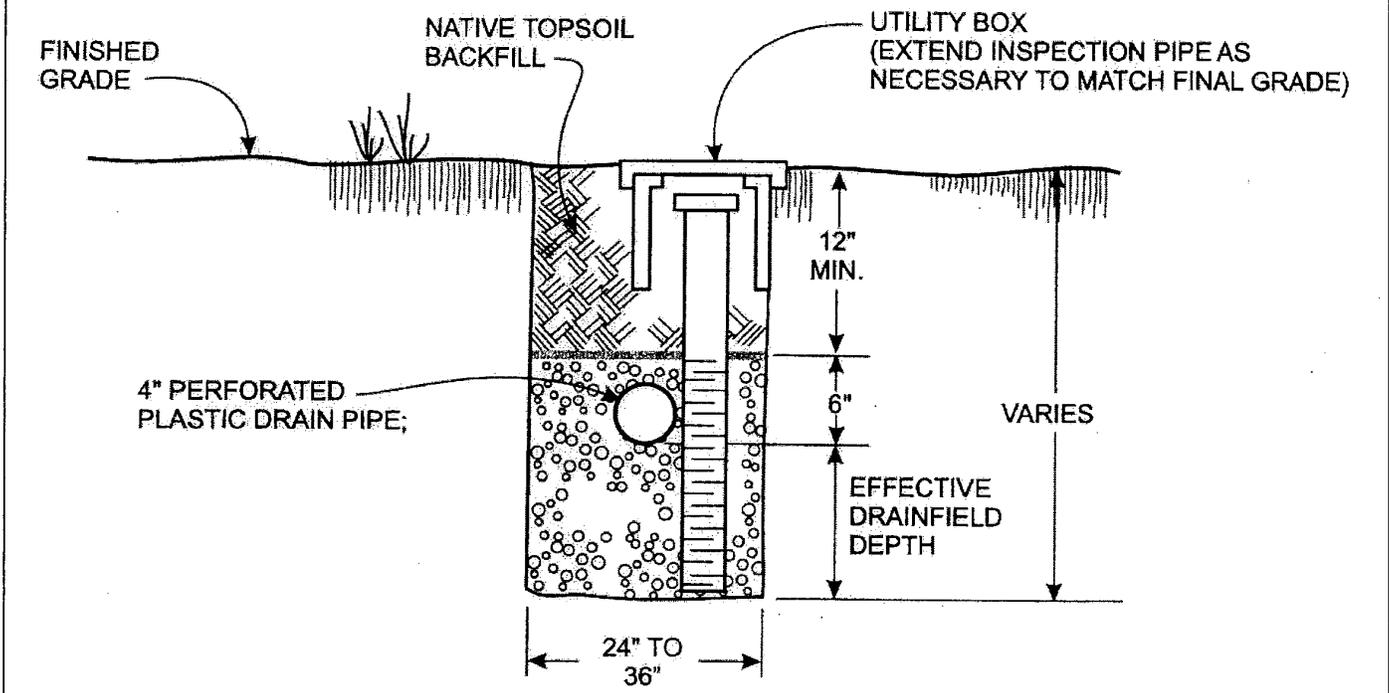
CROSS-SECTION

TYPICAL SEPTIC TANK

FIGURE
2



SIDE VIEW



END VIEW

<p>TYPICAL LEACHING TRENCH</p>	<p>FIGURE 3</p>
--------------------------------	----------------------------

Table 3-4. Conventional OWTS Dispersal Trench Design

Parameter	Requirement
Trench length	Determined based on design flow and percolation rate; see below
Trench width	18 inches minimum; 36 inches maximum
Trench Depth	3 feet minimum; 8 feet maximum
Minimum cover over rock, in inches*	12 inches
Depth of rock under pipe (minimum) *	12 inches
Depth of rock over pipe (minimum)*	2 inches
Size of rock *	¾ to 2½ inches
Spacing of trenches, center to center, in feet, minimum	2 times the depth of rock below pipe; 6 feet minimum

* Other materials may be substituted for drainrock in the dispersal trenches if it is determined by the director that the material will serve the same function as drainrock as follows: 1) support the trench sidewalls and maintain the integrity of the infiltrative surface: and 2) provide adequate storage for septic tank effluent surges. The length, maximum depth and spacing between trenches may not be modified. Materials approved as drainrock substitutes must provide equivalent effective infiltrative surface consistent with trench sizing requirements per paragraph E3 below.

2. Trench Construction.

- a. Trenches must be placed in undisturbed earth and in an accessible area.
- b. The bottom of a trench must be level, with a variation of no more than 2 inches per 100 lineal feet of trench.
- c. Adjacent trenches on slopes must be connected with a watertight overflow line (“relief line”) in a manner that allows each trench to be filled with sewage effluent to the depth of the rock before the sewage flows to the next lower trench.
- d. Trenches must not be excavated when the soil is so wet that smearing or compaction occurs.
- e. In clay soils when glazing occurs, the trench surfaces must be scarified to the depth of the glazing and the loose material removed.
- f. Rock material in the trench must be washed and free of fines, and must be covered with an approved filter fabric silt barrier (geotextile) prior to backfilling with natural earth.

3. Trench Sizing.

- a. **Design Flow.** Design wastewater flow used for determining the required square footage and length of dispersal trench shall be determined in accordance with the criteria in Part 3-1C of this Manual.
- b. **Wastewater Application Rates.** The wastewater application rate(s) used for determining the required infiltrative surface area and overall trench length shall be based upon representative percolation test results for the soil zone corresponding with trench bottom depth, and the criteria in **Table 3-5**.

Table 3-5
Wastewater Application Rates for Conventional Dispersal Trench Sizing¹

Percolation Rate (MPI)	Wastewater Application Rate (gpd/ft ²)
1-5	1.2
10	0.80
24	0.60
30	0.56
45	0.45
60	0.35
90	0.20
91-120	0.20

¹ Interpolate between reference values for other percolation rates; see attached table for expanded listing of interpolated values.

c. Effective Infiltrative Area.

- 1) **Standard Requirement.** For trench sizing, the “effective infiltrative area” shall be limited to four (4) square feet per lineal foot of trench length, which may include any combination of trench bottom area and trench sidewall area below the invert of the perforated distribution pipe. For example, this may be comprised of: (a) 3-ft wide bottom area plus two sidewalls of 0.5 feet each; (b) 2-ft wide bottom area plus two sidewalls of 1 foot each; and so on.
- 2) **Deep Trench Exception.** Under certain (favorable) soil and site conditions where deeper dispersal trench (e.g., up to 8-feet deep) construction is acceptable, the effective infiltrative surface may be increased up to a maximum of eight (8) square feet per lineal foot. This exception is applicable to individual residential OWTS, where the dispersal site meets all conventional OWTS siting criteria, and further limited to sites where: (a) ground slope is <20%; and (b) soil percolation rate is in the range of 5 to 60 mpi.

- d. Trench Length Calculation.** Required trench length for 100% capacity dispersal field shall be calculated as follows:

$$\text{Trench Length, } L = Q / (R * A)$$

Where:

Q = Design wastewater flow, gpd

R = Wastewater application rate, in gpd/ft²

A = Total infiltrative area per lineal foot of trench, in ft² (4 feet standard)

- e. Dual System Requirement.** Total dispersal trench capacity shall be provided for (2) 100% fields (primary and secondary) each sized per (d) above. Both primary and secondary fields shall be installed, and shall be equipped with an approved (manual) diversion device to allow alternating use of the two fields, typically switching between fields every 6 to 12 months.

Table 1. Standard Wastewater Application Rates - Septic Tank Effluent

Percolation Rate (MPI)	Application Rate (gpd/ft ²)		Percolation Rate (MPI)	Application Rate (gpd/ft ²)
1 to 5	1.20		51	0.41
6	1.12		52	0.40
7	1.04		53	0.40
8	0.96		54	0.39
9	0.88		55	0.38
10	0.80		56	0.38
11	0.78		57	0.37
12	0.77		58	0.36
13	0.75		59	0.36
14	0.74		60	0.35
15	0.72		61	0.35
16	0.70		62	0.34
17	0.68		63	0.34
18	0.67		64	0.34
19	0.65		65	0.33
20	0.64		66	0.33
21	0.63		67	0.33
22	0.62		68	0.32
23	0.61		69	0.32
24	0.60		70	0.32
25	0.59		71	0.31
26	0.59		72	0.31
27	0.58		73	0.31
28	0.57		74	0.30
29	0.57		75	0.30
30	0.56		76	0.30
31	0.55		77	0.29
4	0.55		78	0.29
33	0.54		79	0.29
34	0.53		80	0.28
35	0.52		81	0.28
36	0.52		82	0.28
37	0.51		83	0.27
38	0.50		84	0.27
39	0.49		85	0.27
40	0.49		86	0.26
41	0.48		87	0.26
42	0.47		88	0.26
43	0.46		89	0.25
44	0.46		90	0.25
45	0.45		91-120	0.20
46	0.44			
47	0.44			
48	0.43			
49	0.43			
50	0.42			

3. SITE AND DESIGN MODIFICATIONS

A. COVER FILL SYSTEMS

1. DESCRIPTION

The term “cover fill” refers to a dispersal trench system where the trenches are excavated entirely below grade, but up to 12 inches of soil fill is placed on top of native grade to provide the required backfill cover over the pipe and drain rock. The wastewater is dispersed into the native soils, not into the fill soil. The purpose is to allow for shallower trench depths where necessary or desirable to meet soil depth and groundwater separation requirements. It provides for improved use of the absorption capacity of the near surface soils, which tend to be most permeable and most effective for absorption and treatment of wastewater effluent. This is a design modification for use with a conventional dispersal trench system. Cover fill also be used in conjunction with certain alternative dispersal systems (shallow pressure distribution, pressure-dosed sand trench, and drip dispersal) presented in Part 4 of this Manual.

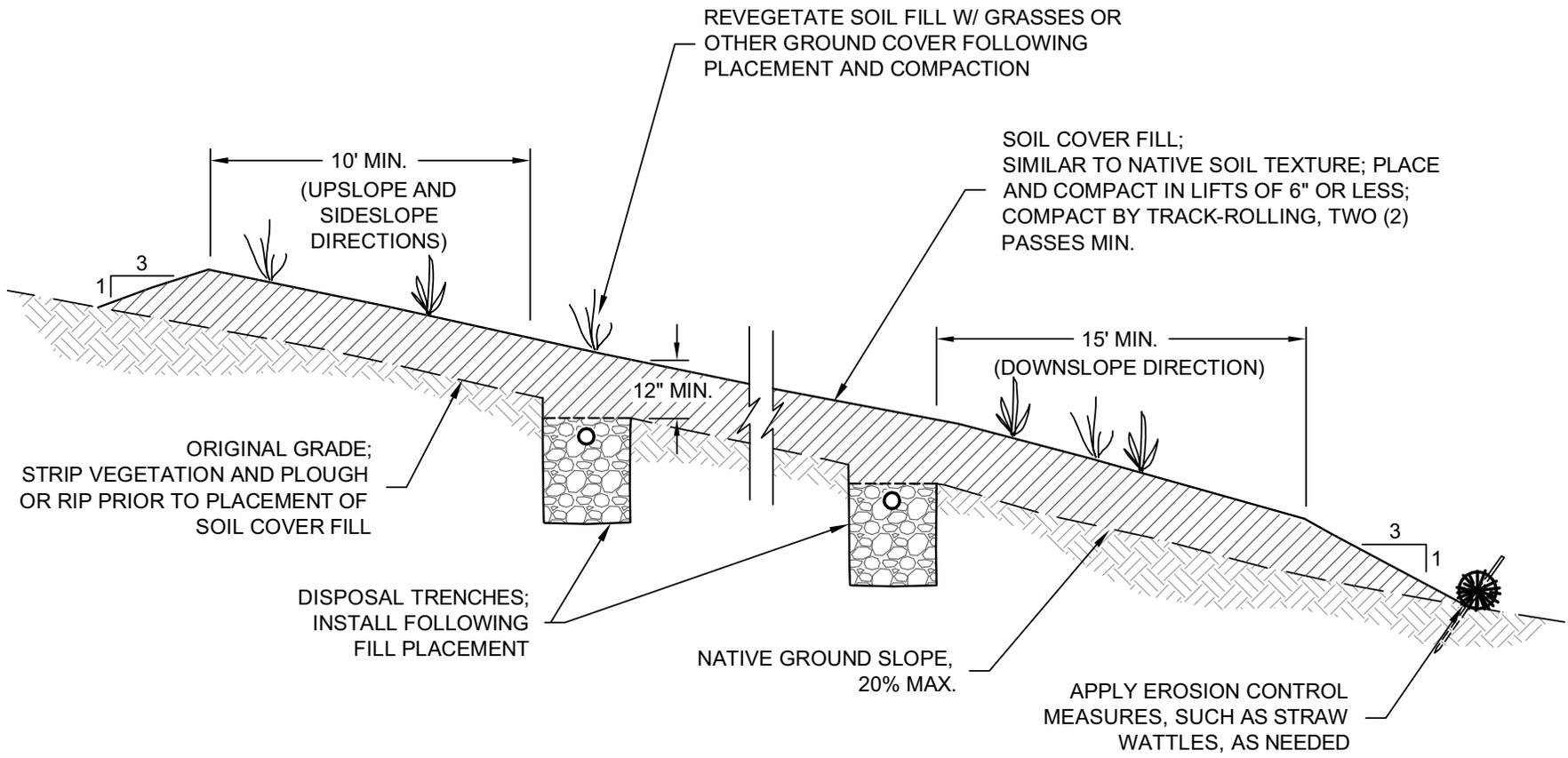
2. SITING CRITERIA

- a. **Setbacks.** All horizontal setback siting criteria applicable to conventional OWTS as specified in Ordinance section B11-67 and Part 3-2B of this Manual shall apply to OWTS where cover fill is used. Required setback distances for dispersal trenches shall be measured from the edge of trench, not from the edge of the installed cover fill.
- b. **Soil Depth, Groundwater Separation and Percolation.** Soil depth, groundwater separation and percolation shall conform to the requirements applicable to the type and design of the dispersal system proposed.
- c. **Ground Slope.** Maximum allowable ground slope for cover fill systems shall be 20%.

3. DESIGN AND CONSTRUCTION REQUIREMENTS

1. **Dispersal Trenches.** The drain rock and perforated pipe sections shall be installed entirely within native soil, and all other aspects of the dispersal trench design shall be in conformance with requirements for conventional dispersal fields, as specified in Part 3-2 of this Manual or, in the case of an alternative dispersal system, in accordance with requirements for the particular type of system (e.g., shallow pressure distribution trench, drip dispersal, etc) and detailed in Part 4 of this Manual.

2. **Site Preparation.** Prior to placement of fill material, all vegetation shall be removed and the ground surface ripped or ploughed to a depth approximately 6 to 10 inches to permit good mixing of native soil and fill material.
3. **Fill Material.** The soil used for fill shall be similar in texture to the native surface soil in the dispersal field area. Sand, gravel or rock do not qualify as acceptable material for cover fill. Particle size analysis (hydrometer method) of the dispersal site soils and fill soil shall be required for DEH review and acceptance of the proposed fill soil, except in cases where the fill is obtained from similar soils at the project site.
4. **Sequencing.** The fill shall be placed prior to dispersal trench excavation and installation of dispersal piping and appurtenances.
5. **Areal Coverage.** The fill shall be continuous and constructed to provide a uniform soil cover of at least 12 inches over the dispersal trenches. The fill shall extend a minimum distance of 15 feet from the edge of trench in the down-slope direction and 10 feet in the upslope and side-slope directions. On a level site, the fill shall extend a minimum of 10 feet in all directions. The toe of the fill shall be tapered at no less than a 3:1 grade, beginning at the above required 15-foot or 10-foot distance, as applicable. Where the primary and secondary dispersal fields are adjacent to one another, the cover fill should be continuous over both fields.
6. **Fill Compaction.** Fill shall be placed in layers (“lifts”) of not more than six (6) inches, and compacted to approximately the same dry density as the native soil. Normal compaction procedures to achieve this requirement shall consist of track-rolling each lift, two passes minimum. Alternative compaction procedures may be allowed by DEH in accordance with recommendations and supporting technical data supplied by a registered civil engineer.
7. **Revegetation and Erosion Control.** Following system installation, measures shall be taken to revegetate the soil fill and adjacent disturbed areas, and to apply other erosion control measures, as needed, such as straw mulch, silt fencing, straw wattles, and hay bales. The plan submittal for the OWTS shall include an erosion control plan in accordance with requirements of Ordinance section B11-83(c).



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**COVER FILL SYSTEM
CROSS-SECTION**

B. CURTAIN DRAINS

1. BACKGROUND

Controlling surface water and shallow perched groundwater may be an essential part of protecting the integrity and performance of OWTS dispersal fields in certain situations. A particular situation of concern is in areas where rainfall readily percolates through very permeable surface soils and perches along the contact with the less permeable substrata. Dispersal trenches can act as a collection area for this transient subsurface water flow, and in the worst case may be flooded during heavy rain events or throughout the rainy season. This reduces the dispersal capacity during the wet season; and it can also contribute to a long-term decline in the dispersal system effectiveness and potential surface failures. One of the most effective drainage measures is a “curtain drain” (also called “subdrain” or “french drain”), which consists of a gravel-filled trench installed uphill of a drainfield system, designed to intercept shallow perched groundwater flow and divert it away from or around the dispersal field.

2. SITING CRITERIA

a. Setbacks. Santa Clara County Code does not contain explicit regulations or specifications for the use or design of curtain drains. However, based on criteria contained in the RWQCB Basin Plans and requirements followed in other counties in the S.F. Bay Area the following horizontal setbacks shall apply to curtain drains.

Horizontal Setbacks Requirements for Curtain Drains

Reference Location	Horizontal Setback Distance* (ft)
Uphill of the dispersal field	15
Lateral of the dispersal field (along slope contour)	25
Downhill of the dispersal field	50

* measured from edge of dispersal trench to edge of curtain drain trench (perforated pipe section)

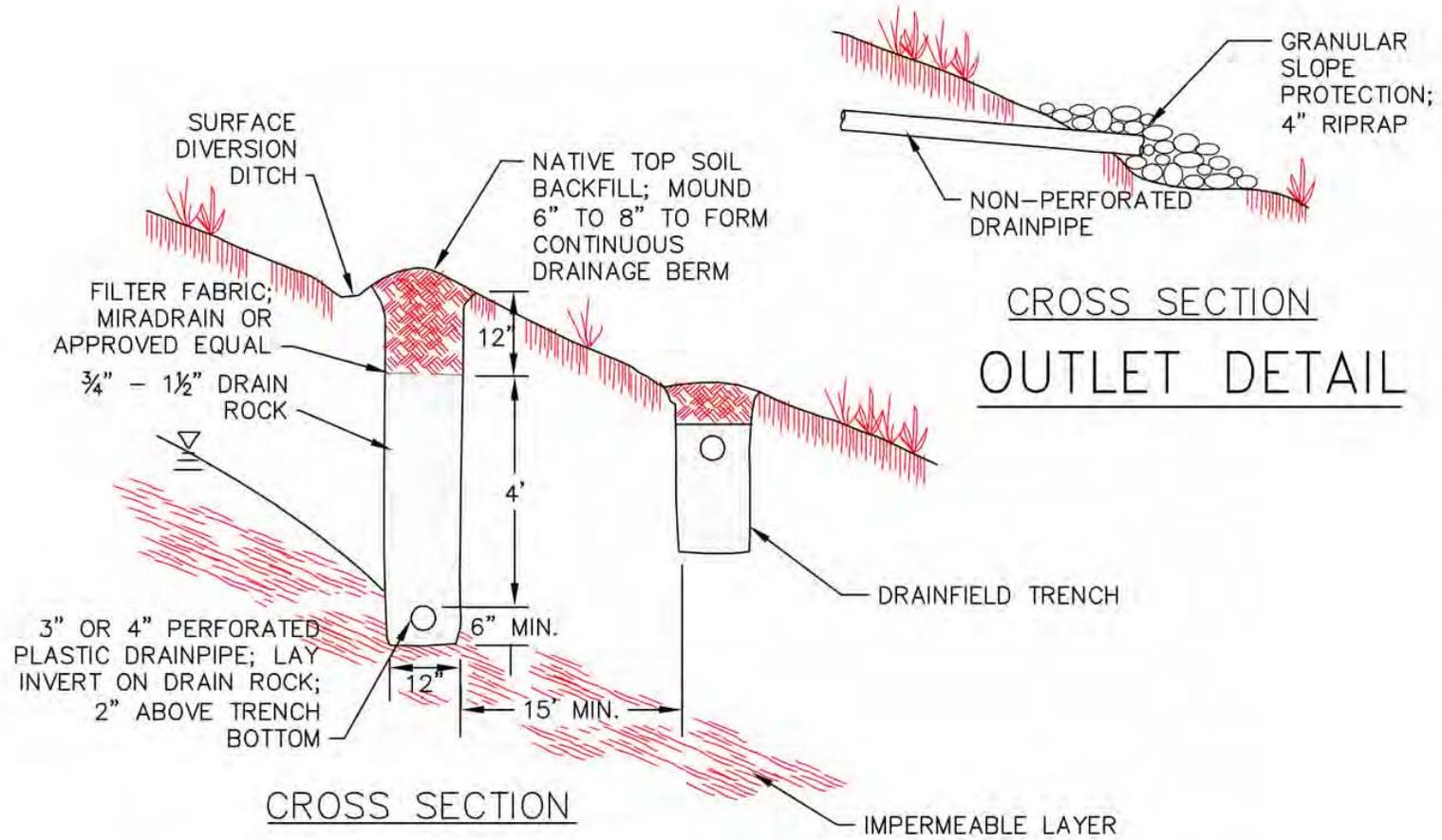
b. Site Investigation. Prior to approval of a curtain drain installation, a site investigation shall be conducted to:

- (1) document the presence or strong probability of groundwater perching on bedrock or a clearly definable restrictive/impermeable soil layer; and
- (2) determine appropriate depth and location for curtain drain and outlet point, based on soil, groundwater, and other site conditions.

3. DESIGN AND CONSTRUCTION REQUIREMENTS

A curtain drain shall consist of a gravel-filled trench constructed as diagramed in Figure ___ and designed in accordance with the following specifications:

- a. **Trench Width:** 12 inches minimum.
- b. **Trench Depth:** Shall extend to a depth of at least 6 inches into the underlying impermeable layer.
- c. **Filter/Backfill Material:** Filter material shall be clean, durable 3/4 to 1½-inch drain rock, extending from trench bottom to within 6 to 12 inches of grade; backfill to grade with native soil.
- d. **Filter Fabric:** A geotextile “filter fabric” envelope shall surround the drain rock.
- e. **Perforated Collection Pipe:** Collection pipe shall consist of 4-inch diameter perforated drain pipe, oriented with holes down and installed on top of the drain rock, approximately 2 to 4 inches above trench bottom.
- f. **Outlet Pipe:** The outlet pipe shall consist of minimum 4-inch diameter solid (non-perforated) drain pipe.
- g. **Cleanouts.** Provide cleanouts to grade: (a) at the upslope end of the drain; (b) at bends of 45° or greater; and (c) at least every 400 feet along the length of the drain.
- h. **Slope:** The trench and pipe shall be sloped for gravity flow at a minimum 1% gradient throughout the trench and extending to the outlet point.
- i. **Outlet Protection.** Protect downslope outlet against blockage or damage through the use of screening, rock cover, junction box or other suitable means.
- j. **Erosion Control.** As applicable, provide erosion protection at drain outlet point.



④ CURTAIN DRAIN SCHEMATIC DETAIL

C. PUMP SYSTEMS

The pump systems used in the connection with either conventional or alternative OWTS shall be: (a) appropriate for sewage applications; (b) of the size and type to meet the hydraulic design requirements; and (c) designed and constructed in accordance with attached pump system design requirements.

DRAFT

SANTA CLARA COUNTY ONSITE SYSTEMS MANUAL

PART 4

GUIDELINES FOR ALTERNATIVE SYSTEMS

GUIDELINES FOR ALTERNATIVE SYSTEMS

(Draft January 2013)

INTRODUCTION

“Alternative System” means a type of OWTS that utilizes either a method of wastewater treatment other than a conventional septic tank and/or a method of wastewater dispersal other than a conventional drainfield trench for the purpose of producing a higher quality wastewater effluent and improved performance of and siting options for effluent dispersal.

This part of the Onsite Systems Manual provides guidelines for the design and application of various alternative onsite wastewater treatment and disposal technologies suited to the conditions and constraints in Santa Clara County.

These guidelines provide the technical criteria and standards for the use of alternative OWTS as provided by Santa Clara County Code Section B11-90 through B11-95, and are intended to be followed for both new development and repair situations. Santa Clara County Code does not provide for the use of alternative OWTS as the basis for new lot creation (subdivisions). Schematic and cross-section diagrams are included to illustrate the key design features of each type of system.

ALTERNATIVE TREATMENT SYSTEMS

Guidelines are provided for the following alternative treatment systems:

- Intermittent and Recirculating Sand Filters
- Proprietary Treatment Units

ALTERNATIVE DISPERSAL SYSTEMS

Guidelines are provided for the following types of alternative dispersal systems.

- Shallow Pressure Distribution
- Mound
- At-Grade
- Pressure-Dosed Sand Trench
- Raised Sand Filter Bed
- Drip Dispersal

SITING CRITERIA

All requirements specified in section B11-67 of this chapter for conventional OWTS also apply to alternative OWTS, except as specified below.

- **Horizontal Setbacks.** Horizontal setback requirements for alternative treatment

systems are the same as those specified in section B11-67 of the County Code for septic tanks. Horizontal setback requirements for alternative dispersal systems are the same as those specified in section B11-67 of the County Code for conventional dispersal systems.

- Areas of Flooding.** Alternative OWTS shall not be located in areas subject to flooding as defined by the limits of the 10-yr floodplain, determined or estimated from published floodplain maps or on the basis of historical evidence acceptable to the director. Alternative OWTS shall be located and designed to avoid contamination of or damage from inundation by floodwaters during a 100-year flood event. As appropriate, such measures shall include: 1) protecting OWTS supplemental treatment, pressure distribution and/or drip dispersal components from flood damage using structural tie-downs and/or elevating critical components above the 100-year flood level; 2) preventing discharge of wastewater into flooded dispersal areas from pump systems (e.g., using flood-activated float switches to override/disable pump operation during high water conditions); and 3) providing additional emergency storage capacity for flood periods.
- Ground Slope.** Maximum ground slope for different types of alternative wastewater dispersal systems are as follows:

Maximum Ground Slope for Alternative Wastewater Dispersal Systems¹

Type of Disposal System	20%	30%	40%	50%
<ul style="list-style-type: none"> Mound, At-Grade 	X			
<ul style="list-style-type: none"> Raised Sand Filter Bed 		X		
<ul style="list-style-type: none"> Shallow Pressure Distribution Pressure-dosed Sand Trench 			X	
<ul style="list-style-type: none"> Subsurface Drip Dispersal 				X

¹Related Requirements: Any disposal system located on a slope greater than 20 percent shall require the completion and approval of a geotechnical report per section B11-83 of this chapter.

- Vertical Separation to Groundwater.** Where alternative OWTS are used, minimum vertical separation distance to groundwater, measured from the bottom of the dispersal system to the seasonal high water table, may be reduced from the requirements that apply to conventional OWTS (per section B11-67 of the County Code), as specified in the table below. See specific requirements for the type of alternative OWTS for additional restrictions on groundwater separation distances that may apply based on system size (i.e., volume of wastewater flow) or for particular site conditions or geographic areas.

Minimum Vertical Separation Distance to Ground Water for Alternative OWTS (feet)¹

Type of OWTS	Percolation Rate (MPI)	Vertical Separation to Groundwater (feet) ¹			
		2'	3'	5'	8'
<ul style="list-style-type: none"> Conventional Trench w/ Supplemental Treatment 	1-5 6-30 31-120			X	X
<ul style="list-style-type: none"> Shallow Pressure Distribution (PD) At-Grade 	1-5 6-120		X	X	
<ul style="list-style-type: none"> Shallow PD w/Supplemental Treatment At-Grade w/Supplemental Treatment Mound Pressure-dosed Sand Trench (PDST) Raised Sand Filter Bed Subsurface Drip Dispersal w/Supplemental Treatment 	1-5 6-120	X	X		
<ul style="list-style-type: none"> Raised Sand Filter Bed, w/Supplemental Treatment & Drip Dispersal 	1-5 6-120	X X			

¹ Measured from the bottom of the dispersal system to the seasonal high water table.

- Soil Depth.** Minimum depth of permeable soil beneath the bottom of the dispersal field shall be as specified in the table below for different types of alternative OWTS. Permeable soil is defined as having a percolation rate of 120 minutes per inch or faster or having a clay content of less than 60 percent, and shall not include solid rock formations or those that contain continuous channels, cracks or fractures. Design requirements for alternative OWTS prescribed in the Onsite Systems Manual may impose additional soil depth requirements based on system size (i.e., volume of wastewater flow) or for particular site conditions or geographic locations.

Minimum Soil Depth Beneath Alternative OWTS (feet)¹

Type of OWTS	Minimum Soil Depth (feet) ¹	
	2'	3'
<ul style="list-style-type: none"> Conventional Trench w/ Supplemental Treatment Shallow Pressure Distribution Trench (PD) At-Grade 		X
<ul style="list-style-type: none"> Shallow PD w/Supplemental Treatment At-Grade w/Supplemental Treatment Mound Raised Sand Filter Bed (Open Bottom Sand Filter) Subsurface Drip Disposal w/Supplemental Treatment Raised Sand Filter Bed, w/Supplemental Treatment & Drip Dispersal 	X	

¹ Measured from the bottom of the dispersal trench, bed or piping (drip dispersal only).

SANTA CLARA COUNTY ONSITE SYSTEMS MANUAL

PART 5

OPERATION, MONITORING AND MAINTENANCE

PART 5 OPERATION, MONITORING AND MAINTENANCE

1. OWTS PERFORMANCE REQUIREMENTS

A. GENERAL PERFORMANCE CRITERIA

1. All onsite wastewater treatment systems (OWTS) shall function in such a manner as to:
 - a) Be sanitary and not create a health hazard or nuisance;
 - b) Prevent backup or release of wastewater or wastewater effluent into the structure(s) being served by the OWTS; and
 - c) Not discharge wastewater or wastewater effluent onto the ground surface or into surface water, or in such a manner that groundwater may be adversely impacted.
2. All OWTS and the individual components shall meet the performance requirements for the specific site conditions and application for which they are approved.
3. All OWTS shall be operated in compliance with applicable performance requirements particular to the type of system, the facility served, and the site conditions.

B. CONVENTIONAL SYSTEMS

1. All septic tanks shall be structurally sound, watertight, provide clarified effluent, have adequate space available for sludge and scum storage, operate in such a manner as to not create odors or vector attraction, be properly vented, and have a functional baffle(s).
2. Dispersal systems shall: (a) have adequate dispersal capacity for the structures and/or uses served; (b) not result in seepage or saturated soil conditions within 12 inches of ground surface in or adjacent to the dispersal field; and (c) be free from soil erosion or instability.
3. Effluent shall not continuously pond at a level above the invert (bottom) of the perforated distribution pipe in the dispersal trench or serial distribution overflow line, as applicable.

4. All components of the OWTS shall be functional and in proper working order.

C. SUPPLEMENTAL TREATMENT

In addition to meeting criteria in A and B above, supplemental treatment systems shall comply with the following performance requirements.

1. **Effluent Quality.** Effluent produced by all supplemental treatment systems shall comply with the following minimum constituent limitations:

Constituent	(1) For Use with Trenches and At- grade Systems	(2) For Use with Drip Dispersal Systems
Biochemical Oxygen Demand (BOD)	30	20
Total Suspended Solids (TSS)	30	20

2. **Sand Filters.** Sand filters shall:

- a. be operated to maintain uniform effluent distribution throughout the sand filter bed;
- b. not result in continuously ponded effluent on the distribution bed infiltrative surface;
- c. be operated and maintained to prevent channeling of flow, erosion of the sand media or other conditions that allow short-circuiting of effluent through the system;
- d. not result in leakage of effluent through the sand filter liner or supporting structure; and
- e. conform to applicable requirements for pressure distribution in D.1 below.

3. Proprietary Treatment Units. Proprietary treatment units shall comply with the following:

- a. The unit and its components shall be structurally sound, free from defects, be watertight, and not create odor or vector attraction nuisance.
- b. The unit shall be operated in accordance with the approved manufacturer and certification/listing organization standards.

D. ALTERNATIVE DISPERSAL SYSTEMS

In addition to the requirements in A and B above, alternative dispersal systems shall also comply with the following.

1. Pressure Distribution Systems.

- a) Pump tanks, risers and lids shall be structurally sound, watertight and store wastewater effluent in such a manner as to not create odors or vector attraction.
- b) Pumps, floats, alarms and associated controls shall be in good condition and operate in accordance with design specifications.
- c) Dispersal field and components shall:
 - 1) be operable and in good condition;
 - 2) maintain uniform distribution of effluent throughout the dispersal field; and
 - 3) not result in continuously ponded effluent in the dispersal trench to a level above the invert (bottom) of the distribution pipe.
 - 4) in the case of pressure-dosed sand trenches, not result in continuously ponded effluent above the sand interface.

2. Mound, At-Grade and Raised Sand Bed Systems. Mound, at-grade and raised sand bed systems shall:

- a) not result in seepage or saturated soil conditions within 12 inches of ground surface anywhere along the perimeter toe or edge of the system;
- b) be free from erosion, slumping or damage to the soil cover;

- c) not result in continuously ponded effluent within the gravel distribution bed or in the sand fill (for mounds and raised sand bed systems); and
- d) conform to applicable requirements for pressure distribution in D.1 above.

3. Subsurface Drip Dispersal Systems. Subsurface drip dispersal systems and components shall:

- a) not result in seepage or saturated soil conditions within 12 inches of ground surface within or anywhere along the perimeter of the dripfield.
- b) be free from erosion, slumping or other soil disturbance that threatens to expose or cause damage to drip dispersal tubing or appurtenances;
- c) conform to applicable requirements for pressure distribution in D.1 above; and
- d) be operated and maintained in accordance with manufacturer recommendations.

2. OWTS MONITORING REQUIREMENTS

A. GENERAL

A monitoring program will be established for each alternative OWTS as a condition of the operating permit at the time of permit issuance, and may be amended at the time of permit renewal. Said monitoring shall be performed to ensure that the alternative OWTS is functioning satisfactorily to protect water quality and public health and safety.

B. MONITORING ELEMENTS

The monitoring requirements will vary depending on the specific type of alternative system, typically including the following:

1. Recoding of wastewater flow based on water meter readings, pump event counter, elapsed time meter, in-line flow meter, or other approved methods;
2. Measurement and recording of water levels in inspection/monitoring wells in the dispersal field;
3. Inspection and observation of pump operation and other mechanical equipment;
4. Water quality of selected water samples taken from points in the treatment process, from groundwater monitoring wells, or from surface streams or drainages; typical water quality parameters include total and fecal coliform, nitrate, BOD, and suspended solids;
5. General review and inspection of treatment and dispersal area for evidence of seepage, effluent surfacing, erosion or other indicators of system malfunction.
6. Other monitoring as recommended by the system designer or equipment manufacturer.

C. MONITORING FREQUENCY

The required frequency of monitoring for each installation will be established in the operation permit, generally in accordance with the following schedule:

- Years 1 and 2 of operation: quarterly monitoring
- Years 3 and 4 of operation: semi-annual monitoring
- Years 5 and beyond: annual monitoring

Monitoring frequency may be increased if system problems are experienced.

D. MONITORING RESPONSIBILITY

Monitoring of alternative OWTS shall be conducted by or under the supervision of one of the following:

1. Registered Civil Engineer;
2. Professional Geologist;
3. Registered Environmental Health Specialist; or
4. Other onsite wastewater maintenance provider registered with the Department of Environmental Health and meeting qualifications as established in this Manual. Registration shall entail: (a) documentation of required qualifications; (b) participation in annual training/review conducted by the director; and (c) payment of an annual fee established by the Board of Supervisors.

Additionally, the director may require third-party or County inspection and monitoring of any alternative OWTS where deemed necessary because of special circumstances, such as the complexity of the system or the sensitive nature of the site. The costs for such additional monitoring would be the responsibility of the owner.

E. REPORTING

Monitoring results shall be submitted to the director in accordance with reporting guidelines provided in this Manual and as specified in the operating permit. The monitoring report shall be signed by the party responsible for the monitoring. Notwithstanding formal monitoring reports, the director shall be notified immediately of any system problems observed during system inspection and monitoring that threaten public health or water quality.

F. POST-SEISMIC INSPECTIONS

In addition to regular inspection and monitoring activities, post-seismic inspection and evaluation of alternative OWTS located in high-risk seismic areas will be required in the event of an earthquake causing significant ground shaking in the region, as determined by the director in consultation with the County geologist. The director will be responsible for issuing appropriate notices when such inspections are required; those conducting the

inspections will be required to report the inspection results to the director. The purpose of such inspections will be to assess and document any damage to the OWTS and to implement corrective measures, as needed, in a timely manner. Post-seismic inspection shall be in accordance with requirements prescribed by the director, in consultation with the County geologist, and contained in this Manual.

G. DATA REVIEW

The director will, from time-to-time, compile and review monitoring and inspection results for alternative OWTS and, at least every two years, will provide a summary of results to the San Francisco Bay and Central Coast Regional Water Quality Control Boards. Based on this review, the director may require corrective action for specific properties or certain types of alternative OWTS, or general changes in monitoring and inspection requirements.

3. OWTS PERFORMANCE EVALUATION GUIDELINES

A. PURPOSE AND PERFORMANCE CRITERIA

Santa Clara County Code section B11-84 (Life extending construction) requires the completion of an OWTS inspection and performance evaluation in connection with certain types or level of changes or additions to an existing building served by an OWTS. The guidelines to be followed for such inspections are prescribed below. These guidelines may also be useful and employed for other circumstances, such as OWTS inspections in connection with property transfers, for lending institutions, etc.

The purpose of these inspections is to determine, on an individual basis, whether an existing OWTS is functional and meets minimum standards of performance established by the County of Santa Clara Department of Environmental Health (DEH). The following performance criteria are established as minimum requirements:

1. There is no surfacing effluent at any time.
2. The effluent is not discharged directly to groundwater; i.e., the dispersal trenches do not extend to or below the seasonal high groundwater level.
3. There is always positive flow to the dispersal field from the septic tank, with no backup to the tank or house plumbing during high groundwater conditions.
4. There is an adequately sized septic tank for the structure being served and it must be serviceable - e.g. access risers for maintenance. The septic tank must be water tight and constructed of approved materials.
5. There is no indication that the existing OWTS is adversely affecting any beneficial uses of surface water or groundwater.

The following sets forth procedures for conducting performance evaluations, to assure consistency and thoroughness in verifying the functioning status of existing OWTS.

B. INSPECTION RESPONSIBILITY

The inspections shall be carried out by any of the following:

1. Registered Civil Engineer
2. Professional Geologist (meeting the requirements of 4a or 4b)
3. Registered Environmental Health Specialist

4. Other onsite wastewater maintenance providers registered with DEH and having experience in the construction and/or operation of OWTS as evidenced by either of the following:
 - (a) possession of a valid contractor's license (A, C-36 or C-42);
 - (b) completion of an onsite wastewater certification training course by a third party entity, such as the California Onsite Wastewater Association (COWA), National Association of Waste Transporters (NAWT), National Sanitation Foundation (NSF), or other acceptable training program as determined by the director.

Registration shall require completion of an application form, demonstrated minimum qualifications, participation in an annual review/ training session conducted by the director, and payment of an annual fee. Registration shall require annual renewal.

The individual conducting the field inspection work shall be qualified in the operation and maintenance of OWTS and trained specifically in the testing and inspection procedures outlined in this document.

C. BACKGROUND DATA

Prior to conducting the onsite performance inspection available background information pertaining to the property, structures and septic system should be compiled and reviewed. This should include permit information, site plan, "As Built" drawings of the OWTS, prior inspection results, etc.

The site plan should show the location of the septic tank and dispersal, the locations of all buildings, decks, cutbanks, creeks, wells, reserve or failsafe area, direction and percentage of slope, or any other items which may affect the OWTS. The reserve dispersal field area(s) should be identified and evaluated for any conflicting encroachment by buildings or other site development.

D. INITIAL SITE RECONNAISSANCE

Initially, the inspector should walk the property to confirm the location of the septic tank, dispersal field, and other pertinent features of the system. In verifying the dispersal field location, the length of each line and the depth of the drainpipe (below ground surface) should also be determined for comparison with observed groundwater conditions. This may require probing with a metal rod or actual excavation to locate the pipe.

Site reconnaissance should also include a check of setbacks between the existing leach field and expansion areas and any man-made structures, e.g., to confirm no building foundations recently added within or too close to the existing leach field or expansion areas.

The septic tank and dispersal field areas should be checked for any obvious signs of existing system problems such as surfacing effluent, odors, greywater bypasses, selective fertility (i.e., lush vegetation in the dispersal field area) or any other condition that may suggest an existing or impending problem. The inspector should determine if the system has dual dispersal fields and, if so, locate and check the diversion valve: (a) to see that it is functional; and (b) to determine which field is in service. All observations should be noted.

As part of the initial site reconnaissance a hand-augured boring (3-inch minimum) should also be made within or adjacent to the dispersal field for observation of soils and groundwater conditions. An initial reading (i.e., depth to groundwater from ground surface) should be taken when the boring is made. The boring should then be left open for the remainder of the performance inspection so that a final reading may be taken after the water level has been allowed to stabilize for about 1 hour. The boring should be backfilled before leaving the site. If a hand-auger boring is not feasible and the area is known or estimated to have high groundwater conditions, a motorized drill rig may be necessary.

E. SEPTIC TANK INSPECTION

After the initial site reconnaissance has been conducted, the detailed inspection of the system should commence.

1. Access Risers

First, locate the septic tank and determine if permanent access risers have been installed on the septic tank. If the tank is equipped with risers, check their general condition. Ideally, the risers should be properly grouted or sealed to the top of the septic tank to prevent groundwater and/or surface water intrusion. The lids of the risers should also be properly sealed to prevent odors or the entry of insects, (e.g., flies, mosquitoes, etc.). Any observed defects in the access risers should be noted. If the tank lacks access risers, this information should be so noted; and the property owner should be provided information about access risers and advised to have them installed.

2. Opening the Tank

After inspecting the access risers the septic tank lids should be carefully removed. Care must be taken if gardens and shrubs are near to prevent damage and to disturb the yard area as little as possible. Concrete lids are heavy and may be "cemented" in place by silt. A

steel bar or other suitable tool may be needed to assist in opening the lids. During the tank inspection process, personnel should wear protective boots and gloves (neoprene) to guard against infection from pathogenic organisms.

3. Structural Condition

Once the tank is open, the inspector should observe and probe the structural condition of the septic tank to check for any obvious signs of cracking or other structural defects in the tank.

A steel rod is used to probe the walls and bottom of the tank. Normally, the tank will not need to be pumped-out to perform this procedure. The inlet and outlet sanitary "tees" should also be inspected to assure that they are in satisfactory condition, properly positioned, and free of scum accumulation, rocks, root matter or other obstructions. Any problems should be noted and the inspector should assess whether or not additional tests or observations are necessary to verify the structural integrity of the septic tank.

4. Liquid Level

The liquid level in the tank should be measured with respect to the outlet pipe. In a properly functioning system, the level in the tank should be even with the invert (i.e., bottom) of the outlet pipe. If the liquid level is below the outlet pipe, the tank is probably leaking. If the liquid is above the pipe, the dispersal field is either flooded or the line to the field is obstructed or possibly set with an improper grade. The depth of water above or below the outlet pipe should be measured and noted.

5. Tank Capacity

The capacity of the septic tank (in gallons) should be determined from as-built plans or from measurements of the width, length and depth (below outlet pipe) of the tank. The capacity can then be compared with the established water use/wastewater flow rates for the property.

F. HYDRAULIC LOAD TEST

1. General

The inspector should then proceed with the hydraulic load test of the septic tank and dispersal field. The test, as described here, is conducted only for conventional gravity-fed dispersal trench systems, and does not apply if the system utilizes a pump. A separate test to be conducted for pump systems is described in the next section. The hydraulic load test is conducted by surcharging the septic tank with about 150 gallons of water over a 20 - 30 minute period; and then observing the rise of water in the tank and the subsequent draining process. Although not always conclusive, tracer dye, added to the tank, may be

used to assist in investigating the possible contribution of effluent where surface wetness/seepage is suspected or observed. A garden hose discharging into the outlet side of the tank can be used to surcharge the tank. The hose outlet should remain at least 12 inches above the water level in the tank to prevent cross contamination. Before starting the test, the flow rate from the hose should be determined (i.e., with 5-gallon bucket and stop watch) to properly gauge the amount of surcharge water added to the tank. Alternatively, a portable water meter can be installed between the house faucet and the hose to directly measure the water volume added.

2. Test Procedures

The step-by-step procedures for the hydraulic load test are then as follows:

- Measure the location of the static water line in the septic tank (at the outlet side) as an initial reference point.
- Begin surcharging the tank with water to start the hydraulic load test.
- Observe any rise in the liquid level at the outlet pipe and measure the water level at the end of filling. Typically, the liquid level will rise from 0.5-to 1-inch, at which point the liquid level should stabilize for the remainder of filling, and then return to the initial level in a matter of minutes after filling is stopped.
- After the filling cycle is finished, the water level decline in the septic tank is observed until the initial level is reached; and the time to achieve this is recorded. If the initial level is not attained within 30 minutes, the test is terminated and the final water level is noted.

3. System Rating

Based upon the water level readings during the test, a hydraulic performance rating is then assigned to the system in accordance with the guidelines provided in **Table 1**. It should be emphasized that these are guidelines only; and special circumstances may be cause for modifying the evaluation and rating of a particular system. A system receiving a "Failed" rating will likely require upgrading and/or additional investigation to determine the underlying cause(s).

H. FINAL LEACHFIELD INSPECTION

At the completion of the hydraulic load test, the dispersal field area and downslope areas should be checked again for indications of surfacing effluent, wetness, or odors. If any of these conditions exist as a result of the hydraulic load test, this would likely be considered evidence

of system failure. If the field observations of wetness are not obviously the result of the hydraulic load test, further investigation may be necessary to determine if the drainfield is failing and the cause of the failure. Additional investigative work may include water quality sampling (for total and fecal coliform, ammonia and nitrate) or dye testing. The cause of seepage could be related to gopher holes, site drainage or erosion problems, excessive water use or simply the age of the system.

**TABLE 1
HYDRAULIC LOAD TEST RATING GUIDELINES**

RATING	SEPTIC TANK RESPONSE TO HYDRAULIC LOADING
EXCELLENT	No noticeable rise in water level during filling.
SATISFACTORY	Maximum water level rise of about 2 inches, with decline to initial level within about 15 minutes after end of filling.
MARGINAL	Maximum water level rise of about 3 inches, with decline to initial level within about 30 minutes after end of filling.
POOR	Water level rise of more than 3 inches, with decline not reaching initial level within 30 minutes after end of filling.
FAILED	Water level rise of more than 3 inches, with no noticeable decline within 30 minutes after end of filling.

I. PUMP SYSTEMS

For systems equipped with an effluent pump, the following inspection procedures should be followed. This is in addition to inspection of the septic tank as described under “E. Septic Tank Inspection”.

1. General

Remove the pump access cover and basin lid, taking care that no soil or other material enters the basin. Note any signs of scum or sludge buildup, indications of previous pump failure (such as scum line above the high water alarm switch), or evidence of soil or roots entering the basin. Look for any signs of groundwater infiltration or surface water inflow to the basin. Also, inspect the float controls to see that they have free movement, and check the electrical junction box (if located in the basin or access riser) for any obvious signs of corrosion. Measure the dimensions of the pump basin and determine the amount of

emergency storage capacity for comparison with the system design and County guidelines (1.5 times the daily sewage flow volume). If the water level in the basin is normal (i.e., between the high and low water controls) proceed with testing of the pump system.

2. Pump Test

The pump test is conducted by adding sufficient water to the basin to activate the pump "ON" control, and observing the performance of the system over at least one pumping cycle. The total amount of water added should be about 150 gallons, to approximate the same hydraulic loading of the dispersal field as for gravity systems. Using a garden hose, the water may be added to the outlet side of the septic tank, or directly to the pump basin. If filling the basin directly, care should be taken to minimize turbulence and disturbance of sediment or sludge that may have collected in the basin. This can be best accomplished by directing the stream of water against the interior side of the chamber, rather than directly toward the bottom of the pump chamber.

Observe the filling of the basin, and note and measure the point at which the pump is activated. Immediately stop the filling operation and observe the pumping cycle until the pump shuts off. While the pump is discharging, examine the piping system (where exposed) for any leaks. Even small leaks could be a forewarning of possible breaks in the pressure line at some point in the future; and these should be corrected as soon as possible. Note and measure the depth at which the pump shuts off, and calculate the volume of water between the "ON" and "OFF" measurements. Compare this dose with the design dose volume specified for the system. If the dose is too high or too low, float controls should be readjusted to correct the dose. Any adjustments to the pump system should be done by a licensed and properly qualified contractor (not by the inspector, unless so qualified).

The pumping cycle (from "ON" to "OFF") level should be timed and the results recorded on the inspection form. Typically, if the pump is sized and operating properly, pump operation lasts about 1 to 5 minutes per dose. Pump cycles lasting longer than this may indicate a flooded dispersal field and/or pump or piping deficiencies. If this is observed, it should be noted and further investigation of the pump and dispersal field should be conducted to determine the specific cause. Dividing the pump volume (in gallons) by the pump cycle time (in minutes) will give an approximate pump discharge rate (in gpm). The observed pump rate should be checked against the design requirement for the system, and any discrepancy noted.

If during filling of the pump basin, the pump does not activate when the water reaches the high liquid level control (i.e., "ON" float), discontinue the pump test. This indicates a pump failure, defective float switch or wiring problems and will require the repair service of a competent contractor familiar with these types of systems. The pump system failure should

be noted, communicated immediately to the resident/owner, and followed up with prompt corrective action.

3. Dispersal Field Inspection

At the completion of the pump test, the dispersal field area should be checked for signs of seepage in the same manner as previously described for gravity-fed systems following hydraulic loading.

J. CLEAN UP

At the completion of the OWTS inspection and testing, replace all access lids and clean all tools before leaving the site. All tools and equipment that come into contact with wastewater should be cleaned and disinfected with a 1:5 bleach solution, then rinsed with fresh water; and all contaminated rinse water should be disposed of in the septic tank.

APPENDIX 3

**Growth Projections and
Cumulative Wastewater Loading
from Implementation of Santa Clara County
Onsite Wastewater
Ordinance Changes**

Growth Projections and Cumulative Wastewater Loading from Implementation of Santa Clara County Onsite Wastewater Ordinance Changes July 2013

Background and Introduction

Santa Clara County is considering the adoption of a new ordinance covering the regulation of onsite wastewater treatment and dispersal systems (OWTS) in the County. The new Ordinance would update and replace existing regulations to incorporate changes based on the current state of knowledge and advances in practices and technologies for onsite wastewater treatment and dispersal, while also maintaining consistency with applicable requirements of the San Francisco Bay and Central Coast Regional Water Quality Control Board Basin Plans. The proposed Ordinance has been drafted by the Santa Clara County Department of Environmental Health, with consulting assistance from Questa Engineering and in cooperation with a local stakeholder working group.

The County contracted with Questa Engineering Corporation (Questa) and Leonard Charles & Associates (LCA) to conduct environmental studies and to prepare an Environmental Impact Report (EIR) addressing the proposed Ordinance. A significant topic to be addressed in the EIR is the potential growth-inducing impact of the Ordinance. This question arises from the fact that the Ordinance contains provisions and standards for the use of more modern, advanced onsite wastewater technologies (not recognized in the existing County Ordinance) to overcome certain types of soil constraints that currently may be an impediment to the approval of onsite wastewater systems and associated development in some areas of Santa Clara County. A related issue is the increase in the discharge of certain wastewater constituents (mainly nitrate-nitrogen) to the environment from new OWTS in different geographical areas of the County. Preparatory to initiating the environmental studies, Questa was authorized to undertake studies to address these two issues. Additionally, in response to comments on the draft EIR, an analysis of salt (total dissolved solids) loading from OWTS was also completed. This report presents the results of these analyses.

Part 1 - Growth Projections

General Approach and Scope

The overall objective of the analysis was to develop estimates of the potential amount of additional growth that may occur as a result of changes in the proposed Onsite Wastewater Ordinance compared with growth likely to occur under the existing regulations. Short of conducting a soil and site evaluation of every property within the County, there is no way to know or predict precisely which properties would or would not benefit (in terms of development potential) from the enactment of the proposed Ordinance changes. However, it was concluded that a reasonable approximation is possible by using a combination of published soils mapping, professional experience and judgment of DEH staff and

consultant, and application of GIS-based data and analysis methods. Following is a summary of the step-by-step approach taken for this analysis:

- **Step 1 – Soil/OWTS Suitability Mapping.** Define soil conditions and OWTS suitability constraints for the County based on published soil maps, augmented with DEH staff experience; geometrically match soil area boundaries with County GIS parcel polygon layer (using centroid of parcel);
- **Step 2 – Watershed Sub-basins.** Delineate watershed sub-basin boundaries and merge with soil/GIS mapping to organize all parcels according to soil suitability area and watershed sub-basin;
- **Step 3 – Ordinance Changes.** Identify specific differences between the existing and proposed Ordinance in terms of issues that would influence OWTS feasibility and, in turn, the potential for new development approval;
- **Step 4 – Estimates of OWTS Approval Rate.** In consultation with DEH staff, estimate how the proposed Ordinance changes (per Step 3) are expected to improve the likelihood of OWTS permitting in given soil suitability areas and according to parcel size; develop estimates of OWTS “approval rate” (percentage) under the existing and proposed Ordinance, for each soil suitability area;
- **Step 5 – Parcel Development Status.** Conduct a systematic GIS-based inventory to determine the development status (i.e., developed or vacant) of all parcels in non-sewered areas of the County;
- **Step 6 – Vacant Parcel Development Projections.** Multiply the estimated OWTS “approval rate” (per Step 4) to all vacant parcels per the applicable soil suitability category and parcel size to estimate the future development potential (# of lots) under existing and proposed Ordinance scenarios; compile and present the results according to watershed sub-basins, including the net increase due to the proposed Ordinance changes.
- **Step 7 – Second Unit Analysis.** Conduct a similar analysis to estimate the potential increase in second unit approvals for existing developed parcels that could be attributable to proposed Ordinance changes.

Two important assumptions used in the analysis were:

- (1) **Focus on New Single Family Residences and Second Units.** The analysis focused on development of single-family residences on existing lots of record. This is because: (a) single-family residential parcel development is considered to be the best indicator of growth potential; (b) this is the principal category of development addressed by the County’s onsite wastewater Ordinance (existing and proposed); and (c) the proposed changes in the Ordinance related to use of alternative technologies and design criteria will be limited to existing lots of record. The proposed Ordinance does not provide for alternative OWTS to be used for the creation of new subdivisions, nor does it include other significant changes in OWTS requirements affecting

subdivision development. It was also determined that some of the proposed Ordinance changes could improve the feasibility for existing developed properties to accommodate a second dwelling unit; therefore, this was also included in the analysis.

- (2) Geographic Study Area.** The geographic area covered in the analysis included the unincorporated area of Santa Clara County, plus those portions of the City of San Jose and Town of Los Altos Hills which do not have municipal sewer service and instead rely on the use of OWTS. The portions of San Jose served by OWTS are: (a) areas on the east side of the City in the foothills along the base of Mt. Hamilton; and (b) areas in the southern end of the City in the vicinity of Almaden and Calero Reservoirs. In Los Altos Hill about half of the Town is on public sewers and the other half is served by OWTS. Throughout the remaining incorporated areas of Santa Clara County there are a number of individual lots and small pockets development not connected to municipal sewers. These lots were not included in the study, as they tend to be widely scattered and represent a small fraction of the total OWTS in the County. Additionally, from the standpoint of growth implications, the location of these scattered parcels within an existing urban services area (with availability of public sewers) was judged to have more significance than the requirements applicable to OWTS.

Soils/ OWTS Suitability Mapping

Compile General Soils Map. Figure 1 presents a General Soils Map of Santa Clara County compiled from information contained in several soil surveys and mapping published by the U.S. Department of Agriculture, which include: (1) Soil Survey of the Gilroy Area, California, 1927; (2) Soil Survey Santa Clara Area, California, 1958; (3) Soil Survey of Eastern Santa Clara Area, California, 1974; and (4) Online soils data base maintained by the Natural Resources Conservation Service (NRCS). The General Soils Map contained in the 1974 Soil Survey of Eastern Santa Clara County provided the baseline groupings of general soil associations, which were extended to cover the other (western) portions of the County, as shown in Figure 1.

In general, soils in the County can be grouped into three general landform classifications as follows:

- **Alluvial Plains, Fans and Stream Benches.** Soils found in the northern portions of the Santa Clara Valley (Santa Clara Plain region) are deep, well drained, fertile soils derived from sedimentary parent material and formed in alluvial plains, fans and stream benches. The deep, well drained clay loam soils in these areas are well suited for conventional onsite wastewater systems. Deep alluvial soils continue throughout the southern portions of the Santa Clara Valley. In the San Martin area, soils are typified by well drained gravelly loams and clay loams that are generally suitable for onsite wastewater systems, although limited in some locations by excessively drained (rapidly permeable) gravelly soils combined with shallow groundwater levels. Some areas of poorly drained clays in agricultural areas generally south of Gilroy are characterized by perching layers, slow percolation and, and poor drainage that pose constraints for onsite wastewater systems.
- **Old Fans and Terraces.** The foothill soils of Santa Clara County are generally shallower, located on old fans and terraces that lie between the more recent alluvial soils on the valley floor and the soils of the uplands. Soils range from clays and clay loams to loam derived from the

alluvium of sedimentary and various other parent rock landforms. Limited soil depth over bedrock and shallow depth to groundwater pose moderate constraints for onsite wastewater systems in the foothill regions.

- **Uplands.** The mountain soils of the Diablo Range to the east and the Santa Cruz Mountains to the west are typically shallow, well drained to excessively well drained clay, silt or gravelly loams derived from hard sandstone or shale. In these areas, the shallow soil depths over bedrock and steep slopes up to 75% combine with drainage features to pose moderate to severe constraints for onsite wastewater systems. In the experience of County DEH staff, slope and soil constraints tend to be more significant in the Diablo Range than in the Santa Cruz Mountains. Some upland areas near southern San Jose have soils derived from serpentine and basalt bedrock that similarly are severely constrained for onsite wastewater systems by shallow soil depth over bedrock and steep slopes of up to 75%. Rock outcrops and eroded areas are common. Some of the best upland soil conditions for onsite wastewater systems occur in the County's northwest mountainous regions of Palo Alto, Los Altos Hills, Saratoga, Los Gatos and portions of the Lexington Basin. These areas are typified by deeper sand, clay or gravelly loams derived from residuum, although they may be limited on specific sites by steep slopes, soil depth or slow permeability

Soil-OWTS Suitability. The general mapping of soil conditions takes into account location and landform conditions, depth to bedrock, slope, subsurface texture, and drainage conditions of the soils, which are all key factors that can affect the suitability of the soils for onsite wastewater treatment. **Table 1** was developed from the published soil survey information, summarizing the soil characteristics of the general soil associations mapped in **Figure 1**.

The far right-hand column in **Table 1** highlights the key constraints and overall suitability designation for OWTS for each general soil association. The designations were developed and assigned based on the USDA soils information combined with input from DEH staff and Questa's best professional judgment. This is provided as a general assessment tool and is not a substitute for site-specific investigation of and planning for onsite wastewater treatment systems. It provides a general indication of the management and design issues likely to be encountered in each area. It does not take into account local constraints such as steep slopes, setback or other anomalous conditions that may be found on a particular site.

Soil-Parcel Boundary Adjustment. Utilizing the County GIS data, the soil suitability area boundaries were adjusted to conform to parcel boundaries. This was accomplished by geometrically matching the soils map with the County's GIS parcel polygon layer, using the centroid of the parcel polygons as the basis for assigning the respective soil suitability attribute.

Table 1. Santa Clara County General Soil Associations and OWTS Suitability

	Map Unit	Soil Name	Parent Material Landform	Slope	Soil Depth	Soil Texture	Drainage	OWTS Suitability and Constraints Summary
Alluvial Plains, Fans and Stream Benches	0	Millsholm-Los Osos-Los Gatos-Lodo	Fine-grained sandstone, shale and metamorphosed shale	15-75%	24-48"	Gravelly clay loam	Well drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	1	Yolo Association	Alluvium from sedimentary rock	0-9%	60+"	Loams and silty clay loams	Well drained	Generally to Highly Suitable for conventional OWTS
	2	Arbuckle-Pleasanton	Alluvium from sedimentary rock	0-15%	60+"	Gravelly loams and loams	Well drained	Generally Suitable , limited locally by areas of rapidly permeable soils
	3	Cropley-Rincon	Calcareous alluvium from mixed sources	0-9%	60+"	Clays and clay loams	Well drained	Moderately to Severely Constrained , limited by slowly permeable soils
	4	Clear Lake-Pacheco-Sunnyvale	Alluvium from sedimentary rock	<2%	60+" 16-26" to mottled layer	Clays and clay loams	Poorly drained	Moderately to Severely Constrained , limited by shallow restrictive (perching) layer, variable permeability, high groundwater and flooding
	5	Clear Lake	Alluvium from sedimentary rock	<2%	60+" 26" to mottled layer	Clays	Poorly drained	Moderately to Severely Constrained , limited by shallow restrictive (perching) layer, high ground water and flooding
	6	Novato-Reyes	Tidal flats alluvium from various rock and hydrophytic plant material	<2%	60+"	Clays	Very poorly drained and somewhat poorly drained	Unsuitable for OWTS due to flooding and slowly permeable soils
	7	Botella-Urban land	Alluvium from various rock	0-5%	60+"	Clay loam	Well drained	Generally to Highly Suitable for conventional OWTS, but mostly occupied by urban land uses

	Map Unit	Soil Name	Parent Material Landform	Slope	Soil Depth	Soil Texture	Drainage	OWTS Suitability and Constraints Summary
Old Fans and Terraces	8	Hillgate-San Ysidro	Alluvium from sedimentary rock	0-50%	60+" 10-26" to limiting layer	Clays and clay loams	Well drained	Moderately Constrained , limited locally by soil permeability and groundwater separation
	9	Francisquito-Urban land	Old alluvium from various rock	5-15%	60+" 16-26" to limiting layer	Loam to clay loam and clay	Well drained	Moderately Constrained , limited locally by soil permeability and groundwater separation
Uplands	10	Azule-Altamont	Soft sediments	9-75%	44-60+" 12-34" to limiting layer	Clays and clay loams	Well drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	11	Los Osos-San Benito	Sandstone and shale	15-75%	20-48" 10-26" to limiting layer	Clay loams	Well drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	12	Los Gatos-Gaviota-Vallecitos	Hard sandstone and shales	5-75%	6-50"	Gravelly loams and loams	Well drained and somewhat excessively drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	13	Gaviota	Hard sandstone and shales	30-75%	6-19"	Eroded gravelly loams	Somewhat excessively drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	14	Felton-Maymen	Sandstone and shale	15-75%	11-59"	Silt loams and fine sandy loams	Well drained and somewhat excessively drained	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes
	15	Montara-Inks-Henneke	Serpentine and metamorphosed basalt bedrock	15-75%	10-19"	Clay loams and gravelly loams	Somewhat excessively drained	Severely Constrained , limited by soil depth, bedrock and steep slopes
	16	Accelerator-Fagan-Urban land	Residuum derived from sandstone, shale and siltstone	5-15%	40-60"	Loam to clay loam and gravelly loam	Well drained	Generally Suitable , limited locally by areas of slowly permeable soils
17	Ben Lomond-Felton-Lompico	Residuum derived from sandstone, shale, siltstone and granitic rock	5-75%	37-60+"	Loams and sandy loams	Well drained	Generally Suitable , limited locally by steep slopes and soil depth	

Watershed Sub-basins

The majority of Santa Clara County drains in a northerly direction through various streams into San Francisco Bay; the southern portions drain into the Pajaro River, which ultimately discharges to the Pacific Ocean at Monterey Bay. The area draining north falls within the jurisdiction of the San Francisco Bay RWQCB; the area draining south is in the jurisdiction of the Central Coast RWQCB.

The Santa Clara Valley Water District (SCVWD) has defined five principal watershed management areas in the County for the purposes of their activities and operations. From north to south, these include: (a) Lower Peninsula; (b) West Valley; (c) Guadalupe; (d) Coyote; and (e) Uvas-Llagas. All but the Uvas-Llagas watershed area drain into San Francisco Bay. Excluded from the SCVWD watersheds are the northeastern, southeastern and southwestern portions of the County that drain, respectively, into the neighboring counties of Alameda, San Benito and Santa Cruz.

For this study of onsite wastewater treatment systems the SCVWD watershed management areas were amended to encompass all unincorporated lands in the County and were subdivided into smaller sub-basin areas to provide more detailed breakdown in geographic areas having higher concentrations of OWTS. For example, Guadalupe watershed was sub-divided into four sub-basins: Guadalupe River, Lexington Basin, Upper Los Gatos Creek and Alamos Creek. Also, the Uvas-Llagas watershed management area was divided into Uvas Creek and Llagas Creek watersheds, and Llagas Creek was further subdivided into five geographic sub-basins: Upper Llagas; Llagas Morgan Hill; Llagas San Martin; Llagas Gilroy; and Llagas East Gilroy.

Figure 2 shows the watershed sub-basin map overlain on the soils suitability map. Similar to the approach used for the soil mapping, the centroid of each parcel (per GIS polygon) was used to assign parcels to the applicable watershed sub-basin.

Ordinance Changes

The proposed Ordinance changes were developed in consultation with County staff, along with review and input from RWQCB staff and a Wastewater Advisory Group made up of various OWTS practitioners, agency representatives, and other interested stakeholders in Santa Clara County. Among other things, the proposed Ordinance is expected to remove some current constraints to the development of existing parcels that depend on the use of OWTS for sewage disposal mainly through: (a) reduction in land area requirements for dispersal fields; (b) the ability to utilize more advanced technologies (as compared with conventional onsite systems) to overcome certain types of site constraints, such as high groundwater and shallow soils; and (c) the removal of minimum lot size limitations for new OWTS in the Lexington Basin and for second units in the San Martin area.

Reduction in Dispersal Land Area Requirements

Reduction in land area requirements for OWTS will result from the following proposed Ordinance changes:

- **Modify Trench Spacing Requirement.** Under the current Ordinance the required spacing between trenches is 10 feet, on centers (o.c.). Under the proposed Ordinance this would be changed to a minimum of 6 feet o.c., with an increase of 1 foot for each 5% increase in slope over 20%. For example, at 30% slope the spacing would be 8 feet, at 40% 10 feet, at 50% 12 feet. Trench spacing affects the overall amount of area required for the dispersal field. Under the proposed Ordinance, the dispersal land area requirement would be reduced for slopes less than 40% percent, and would be equal or greater for slopes over 40%.
- **Delete Requirement for 400% Dispersal Field Capacity for Slower Percolation Areas.** For soils with percolation rates between 61-120 minutes per inch (mpi), the current Ordinance requires a dual dispersal field (two 100% capacity fields) plus a designated reserve area for complete replacement of the original dual field; i.e., total capacity of 400% dispersal field capacity. Requirements for soil percolation rates between 1 and 60 mpi include dual dispersal fields (i.e., 200% capacity), but not the additional reserve/replacement field area. Under the proposed Ordinance the requirement dictating 400% dispersal field capacity for 61-120 mpi would be deleted, making the current requirements for 1-60 mpi percolation applicable to all OWTS dispersal fields for percolation rates from 1 to 120 mpi. This would be consistent with Basin Plan criteria of both the San Francisco Bay and Central Coast RWQCB. It would reduce by about 50% the dispersal field land area requirements for sites with slower soil percolation rates, in the range of 61-120 mpi; it would not affect sites with soils having percolation rates of 1-60 mpi.
- **Delete Requirement for Separate OWTS for Detached Buildings.** The current Ordinance requires detached buildings (such as second dwelling units, workshops, pool houses) to have a completely separate OWTS, sized with a minimum capacity for a 3-bedroom residence (i.e., 450 gpd). An exception is provided that allows two agricultural employee living units to share a single OWTS. The proposed Ordinance would drop this requirement and allow detached buildings to be connected to the main OWTS, as long as sufficient treatment and dispersal capacity is provided for the total daily wastewater flow; the requirement to design for a fixed capacity of 450 gpd would also be deleted, as noted above. This would reduce the dispersal field land area requirements for a second unit or other detached building and, in some cases, could be the difference in whether or not such building project is feasible or not.
- **Revised Dispersal Field Sizing Criteria.** Dispersal fields are typically sized according to: (1) the defined wastewater flow rate from the building (gallons per day, gpd); (2) the dimensions of the effective infiltrative surface of the dispersal trench (i.e., portion of trench bottom and sidewall area in ft²); and (3) a wastewater application rate (gpd/ft²) based on the soil percolation rate. The County's current sizing standards specify: (a) a minimum design flow of 450 gpd for up to 3 bedroom house, plus 150 gpd for each additional bedroom; (b) standard allowance of 4 ft² of effective infiltration surface per lineal foot of trench; and (c) wastewater application rates that vary from 0.56 down to 0.2 gpd/ft², based on percolation rate. Because of very low

application rates (especially for faster percolation soils) the County sizing criteria result in excessively large dispersal fields compared with RWQCB criteria, other Bay Area counties and industry/EPA guidelines.

Under the proposed Ordinance, the wastewater application rates would be revised to be consistent with other industry/EPA guidelines and other jurisdictions in the region. **Table 2** shows a comparison of the existing and proposed Ordinance wastewater application rates (for a range of percolation rates) and the resulting land area requirements for a typical OWTS (3-bedroom capacity on a slope of 20% or less). The calculated land area requirements shown for the proposed Ordinance also include reduction in the minimum trench spacing from 10 to 6 feet and elimination of the additional dispersal field replacement area for slower percolation areas, as discussed above. The net result of these changes would be reduction of overall dispersal field area requirements to about 30 to 40 percent of that required under the existing Ordinance.

Table 2. Dispersal Field Sizing Comparison¹

Percolation Rate (MPI)	Existing Ordinance			Proposed Ordinance		
	Wastewater Application Rate (gpd/sq ft)	Dispersal Trench Length ² (lineal ft)	Land Area Required ³ (sq ft)	Wastewater Application Rate (gpd/sq ft)	Dispersal Trench Length ² (lineal ft)	Land Area Required ³ (sq ft)
5	0.56	200	4,000	1.20	94	1,128
10	0.56	200	4,000	0.80	140	1,680
20	0.45	250	5,000	0.66	170	2,040
30	0.30	375	7,500	0.56	200	2,400
45	0.26	433	8,660	0.45	250	3,000
60	0.23	489	9,780	0.35	320	3,840
90-120	0.20	562	22,500	0.20	563	6,756

¹ For: 3-bedroom residence; 450 gpd design flow; 3-ft deep trench; 20% slope.

² For 100% primary field

³ Total area for dual (200%) field

Use of Alternative Technologies to Overcome Site Constraints

The proposed Ordinance includes new provisions to allow reduced vertical separation requirements (soil depth and depth to groundwater) below the dispersal system in conjunction with the use of certain alternative treatment and/or dispersal designs. The current requirements for conventional septic tank – gravity dispersal trenches will not change. The proposed depth to groundwater criteria are presented in **Table 3**. The supporting rationale for the reduced vertical separation requirement for the various alternative OWTS designs is derived from research studies done over the past 30 to 40 years, largely funded by the USEPA and referenced in the *Onsite Wastewater Treatment Systems Manual* (USEPA, 2002). These studies have documented how various alternative treatment and dispersal methods can improve the operation and treatment effectiveness of OWTS as compared with conventional septic tank-gravity dispersal trench designs. The proposed depth to groundwater criteria related to type of OWTS

and percolation rates are similar to standards adopted and followed in many other counties in Northern California over the past 10 to 20+ years (for example, Marin, Sonoma, Napa, Contra Costa, Mendocino, Placer, Nevada, among others).

The land area requirements for alternative OWTS vary from one type of design to another; but, in general, they are reasonably similar to the land area requirements for conventional dispersal trenches under the proposed Ordinance, as presented in **Table 2**. The primary benefit of the alternative design options would be to improve the overall feasibility and options for individual properties to overcome inherent soil/OWTS suitability constraints, related to groundwater conditions and soil depth.

Table 3. **Proposed Depth to Groundwater Requirements**

Type of OWTS	Percolation Rate (MPI)	Min. Depth to Groundwater (feet ¹)				
		2	3	5	8	20
<ul style="list-style-type: none"> Conventional Septic Tank & Dispersal Trench² 	1-5 6-30 31-120			X	X	X
<ul style="list-style-type: none"> Conventional Trench w/ Supplemental Treatment 	1-5 6-30 31-120		X	X	X	
<ul style="list-style-type: none"> Shallow Pressure Distribution (PD) Trench At-Grade 	1-5 6-120		X	X		
<ul style="list-style-type: none"> Shallow PD w/Supplemental Treatment At-Grade w/Supplemental Treatment Mound Pressure-dosed Sand Trench Raised Sand Filter Bed Drip Dispersal w/Supplemental Treatment 	1-5 6-120	X	X			
<ul style="list-style-type: none"> Raised Sand Filter Bed, w/Supplemental Treatment & Drip Dispersal 	1-5 6-120	X X				

¹ Measured from the bottom of the dispersal system

² Conventional OWTS requirements must be met for all new subdivisions

Delete Minimum Lot Size Requirements

The current minimum lot sizes for new subdivisions (2.5 acres for reservoir areas and 1 acre elsewhere) will remain as is. However, the proposed Ordinance provides for elimination of the following OWTS minimum lot size requirements that apply to existing lots of record:

- Lexington Basin.** The 1-acre minimum lot size limitation (adopted in the early 1980s) that currently applies to any new development using an OWTS on an existing lot of record in the Lexington Basin.

- **San Martin Area.** The existing 5-acre minimum lot size required for approval of second dwelling units in the San Martin planning area. (Note: this is a zoning requirement, not a provision of the onsite wastewater Ordinance).

Whether or not a particular lot can be approved for use of an OWTS is normally determined site-specifically, based on compliance with adopted criteria that establish the necessary area for the treatment and dispersal system, reserve area, slopes and setbacks, while still allowing for the buildings and other development features. This is the approach followed throughout the rest of Santa Clara County and, under the proposed Ordinance, would also extend to Lexington Basin. The land area requirements for an OWTS can range from as little as a few thousand square feet, to as much as ½-acre or more, depending mainly on soil conditions. Having less than a 1-acre lot size does not preclude the feasibility of developing an acceptable OWTS, just as having more than a 1-acre lot does not guarantee suitable and sufficient area for an OWTS if the soil and/or other site features are not favorable.

Regarding the 5-acre minimum for second-units in the San Martin area, the lot size limitation is understood to have been adopted as a zoning control to limit the amount of nitrogen loading to the Llagas groundwater basin from OWTS. Under the proposed Ordinance the availability of alternative OWTS technologies that provide for substantial nitrogen removal (in many cases 50% or more) compared to conventional OWTS will provide an equally, if not greater, means of controlling nitrogen loading from OWTS, and consistency with the regulatory approach followed elsewhere in the County.

Estimates of OWTS “Approval Rate”

Based on the proposed changes in the Ordinance as outlined above, estimates were developed to quantify how the changes would improve the feasibility for OWTS in different soil suitability areas of the County. This was done in consultation with DEH staff, relying on their recent experience with OWTS permit approvals/denials under the current regulations, knowledge of the specific types of OWTS constraints in different geographic regions of the County, and an understanding of the nature of the design changes and alternatives that would be available under the proposed Ordinance to overcome soil and siting constraints. The process involved the following:

- **Detailed Maps.** Detailed maps, such as the one in **Figure 3**, were developed for use by DEH staff, showing the soil suitability boundaries in relation to roads and other geographic reference points.
- **Current Ordinance Approval Rates.** Using the general and detailed soil maps, soil suitability information from **Table 1**, OWTS file information, personal knowledge and experience, DEH staff systemically reviewed and assigned an estimated OWTS “approval rate” to each of the 17 soil suitability areas in the County, based on the current Ordinance requirements. The assigned “approval rate” (estimated to the nearest 5%) was intended to represent the best professional judgment of staff as to the probability of finding acceptable conditions for approval of an OWTS for new residential development (e.g., typical 3-bedroom house) on a vacant lot within each respective soil suitability area. The basic OWTS “approval rate” developed for each soil area assumed a lot size of at least 1 acre or more. For lot sizes of less than 1 acre, the basic approval rate for each soil suitability area was adjusted downward as follows, to account for additional limitations due to land area constraints:

- ¾-1 acre lot size: 20% reduction
- ½ - ¾ acre lot size: 40% reduction
- ¼ - ½ acre lot size: 60% reduction
- ¼-acre or less: 0% approval rate – insufficient area regardless of soil conditions

As noted in the table regarding soil suitability Map Units 12 and 17, an exception to the above adjustments was made for properties in the Lexington Basin, where the OWTS approval rate for all lots <1 acre was set at 0% due to the current 1-acre lot size minimum for new OWTS. At the upper probability end where DEH staff found OWTS approvals to be routinely achieved with no apparent constraints, an approval rate of 99% (rather than 100%) was assigned to account for the possibility of site-specific anomalies.

- **Proposed Ordinance Approval Rates.** Following the same process described above for the current Ordinance requirements, DEH staff then developed estimates of how the probability of OWTS approval would be improved in each soil suitability area, based on the proposed changes in the Ordinance as previously outlined. This included consideration of changes affecting dispersal land area requirements, flexibility to utilize alternative designs to overcome certain soil and groundwater constraints, and elimination of lot size limitations for the Lexington Basin and San Martin areas. A basic OWTS “approval rate” for each soil suitability area was established for lot sizes of 1 acre and larger. The same adjustments from above (reductions of 20%, 40% and 60%) were applied to estimate approval rates for lot sizes smaller than 1 acre; and lots less than ¼ acre were similarly assigned a 0% approval rate due to insufficient area. Under the proposed Ordinance scenario, the approval rates assigned for lots of <1 acre in the Lexington Basin were taken to be the same as those assigned for the rest of the County for the applicable soil conditions (Soil Map Units 12 and 17). This would account for the elimination of the current 1-acre minimum lot size requirement in Lexington Basin.

Table 4 presents the estimated OWTS approval rates developed for all soil suitability areas and lot size variation, for both the current and proposed Ordinance. It should be emphasized that the “approval rates” indicated in the table apply strictly to the permitting of an OWTS, and not to the probability of actually obtaining approval for a particular building project, which is also dependent on satisfying other planning and building requirements.

Table 4. Estimated Approval Rates for New OWTS on Existing Lots

Map Unit	Soil Name	OWTS Suitability and Constraints Summary	Estimated OWTS Approval Rate (%)					
			Ordinance	Lot Size				
				<1/4 ac	1/4 – 1/2 ac	1/2 - 3/4 ac	3/4 - 1 ac	>1 ac
0	Millsholm-Los Osos-Los Gatos-Lodo	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	25	45	65	85
			Proposed	0	35	55	75	95
1	Yolo Association	Generally to Highly Suitable for conventional OWTS	Current	0	35	55	75	95
			Proposed	0	40	60	80	99
2	Arbuckle-Pleasanton	Generally Suitable , limited locally by areas of rapidly permeable soils	Current	0	0	20	40	60
			Proposed	0	35	55	75	95
3	Cropley-Rincon	Moderately to Severely Constrained , limited by slowly permeable soils	Current	0	0	10	30	50
			Proposed	0	35	55	75	95
4	Clear Lake-Pacheco-Sunnyvale	Moderately to Severely Constrained , limited by shallow restrictive (perching) layer, variable permeability, high groundwater and flooding	Current	0	5	25	45	65
			Proposed	0	35	55	75	95
5	Clear Lake	Moderately to Severely Constrained , limited by shallow restrictive (perching) layer, high ground water and flooding	Current	0	30	50	70	90
			Proposed	0	35	55	75	95
6	Novato-Reyes	Unsuitable for OWTS due to flooding and slowly permeable soils	Current	0	0	0	0	0
			Proposed	0	0	0	0	0
7	Botella-Urban land	Generally to Highly Suitable for conventional OWTS, but mostly occupied by urban land uses	Current	0	35	55	75	95
			Proposed	0	40	60	80	99
8	Hillgate-San Ysidro	Moderately Constrained , limited locally by soil permeability and groundwater separation	Current	0	30	50	70	90
			Proposed	0	35	55	75	95

Map Unit	Soil Name	OWTS Suitability and Constraints Summary	Estimated OWTS Approval Rate (%)					
			Ordinance	Lot Size				
				<1/4 ac	1/4 – 1/2 ac	1/2 - 3/4 ac	3/4 - 1 ac	>1 ac
9	Francisquito-Urban land	Moderately Constrained , limited locally by soil permeability and groundwater separation	Current	0	10	30	50	70
			Proposed	0	25	45	65	85
10	Azule-Altamont	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	35	55	75	95
			Proposed	0	35	55	75	95
11	Los Osos-San Benito	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	30	50	70	90
			Proposed	0	35	55	75	95
12	Los Gatos-Gaviota-Vallecitos	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	0	20	40	60
			Proposed	0	30	50	70	90
13	Gaviota	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	30	50	70	90
			Proposed	0	35	55	75	95
14	Felton-Maymen	Moderately to Severely Constrained , limited by shallow soil depths over bedrock and steep slopes	Current	0	25	45	65	85
			Proposed	0	35	55	75	95
15	Montara-Inks-Henneke	Severely Constrained , limited by soil depth, bedrock and steep slopes	Current	0	20	40	60	80
			Proposed	0	30	50	70	90
16	Accelerator-Fagan-Urban land	Generally Suitable , limited locally by areas of slowly permeable soils	Current	0	40	60	80	99
			Proposed	0	40	60	80	99
17	Ben Lomond-Felton-Lompico	Generally Suitable , limited locally by steep slopes and soil depth	Current	0	0	10	30	50
			Proposed	0	30	50	70	90

Parcel Development Status

The next step in the analysis was to identify and create an inventory of the non-sewered parcels in the County along with their development status (i.e., developed or vacant). The objective was to identify all vacant lots that could potentially be developed using OWTS, along with their size, location and other attributes. It was found that this information is not readily available from any County department. Therefore, this was done according to the following process using the County GIS data base:

1. Identify Non-sewered Parcels.

- First, city and sanitary district boundaries were applied to the County-wide data base to exclude parcels located within areas served by public sewers. This included mainly incorporated lands, but it also included unincorporated areas of Lake Canyon and Lions Gate, which are served by their own community wastewater facilities. “Islands” of unincorporated lands falling within city boundaries were also excluded during this step.
- Next, properties in the City of San Jose and the Town of Los Altos Hills known (from city-supplied data) to be outside of established sewer system boundaries and served by OWTS were added back into the inventory of “non-sewered” parcels.

2. Exclude “Non-development” Areas.

- Using County-supplied shape-file data, public lands were removed from the non-sewered inventory, including such things as parks, public facilities, rights-of-way, and open space.
- Other private open space areas and easements (not classified as public lands) identified on maps supplied by the Santa Clara Open Space Authority were removed by best fit analysis.
- From the above analysis, the total number of non-sewered parcels in the County (excluding non-development areas) was determined to be approximately 17,625.

3. Determine Development Status.

- County Assessor’s and information and other GIS data were reviewed and found not to have any designation of whether or not a particular property is developed or vacant; “improvement value” for each property was judged to be the most reasonable indicator.
- An iterative process was followed to determine the “improvement value” most indicative of a developed vs vacant property. Starting with a \$20,000+ improvement value, properties were spot-checked against air photos to determine the presence/absence of buildings and other property features indicative of existing development for habitation. This was repeated sequentially for assessed improvement values of \$15,000, \$10,000, \$5,000, \$4,000, \$3,000, \$2,000 and finally \$1,000. By air photo inspection, properties with <\$1,000 assessed improvement value were shown consistently to be vacant, and therefore this value was selected as the developed vs. vacant indicator.

- The \$1,000 assessed improvement value indicator as derived above was then assigned to the County-wide GIS inventory of non-sewered parcels, with the following findings:
 - Developed Parcels: 12,543
 - Vacant Parcels: 5,082
 - Total Parcels 17,625

Vacant Parcel Development Projections

To quantify and compare the future development potential (# of lots) under the current and proposed Ordinance requirements, the estimated OWTS “approval rates” (from **Table 4**) were applied against the inventory of all 5,082 non-sewered vacant parcels per the respective soil suitability category and parcel size. The information was compiled according to watershed sub-basins and is summarized, respectively, in **Tables 5** and **6** for the North County area (RWQCB #2) and South County area (RWQCB #3). The supporting spreadsheet calculations for all watershed sub-basins are contained in a technical appendix to this report which is on file with DEH. Briefly, the results indicate the OWTS Ordinance changes could increase residential “development potential” in the non-sewered areas of the County by an estimated 1,091 parcels, which would be about a 42% increase over development projections under the current Ordinance. The projected increases in development potential would be distributed throughout most of the County, with greatest increases expected to occur in the Lexington Basin, Llagas Creek and Uvas Creek sub-basin areas. As noted previously, the proposed Ordinance changes will increase the potential for development to take place in some areas where soil and other site conditions pose limiting constraints under the current Ordinance. However, the projections do not assure the ability of any particular property to be developed, which is also dependent on satisfying other planning and building requirements.

**Table 5. North County - RWQCB Region 2
Parcel Development Projections by Watershed***

Watershed Name	Non-sewered Area (acres)	Existing Parcel Status (<1 Acre)			Existing Parcel Status (> 1 Acre)			Projected Parcel Development Potential		
		Total Parcels	Developed	Vacant	Total Parcels	Developed	Vacant	Current Ordinance	Proposed Ordinance	Net Increase
San Francisquito Creek	100	2	0	2	5	4	1	2	2	0
Adobe Creek	3,936	270	180	90	964	833	131	127	146	19
Permanente Creek	7,715	1,302	1,188	113	737	625	112	92	135	43
Calabazas Creek	711	2	1	1	15	9	6	3	5	2
San Tomas Creek	2,857	18	9	9	218	143	75	40	70	30
Guadalupe River	3,817	368	323	45	260	191	69	49	76	27
Lexington Basin	9,480	1,289	777	512	880	587	293	153	336	183
Upper Los Gatos Creek	4,042	2	0	2	70	38	32	19	29	10
Alamitos Creek	5,636	274	209	65	561	429	132	103	137	34
Coyote Creek	91,180	467	342	125	1,568	1,052	516	429	524	95
Calaveras Reservoir	50,820	31	13	18	292	111	181	133	171	38
Northeast County	78,712	1	0	1	393	110	283	231	266	35
TOTAL	226,348	4,026	3,042	984	5,963	4,132	1,831	1,381	1,897	516

* Does not include 985 parcels that are either publicly-owned or covered by open space easements (i.e., "non-development" areas).

**Table 6. South County - RWQCB Region 3
Parcel Development Projections by Watershed***

Watershed Name	Non-sewered Area (acres)	Existing Parcel Status (< 1 Acre)			Existing Parcel Status (> 1 Acre)			Projected Parcel Development Potential		
		Total Parcels	Developed	Vacant	Total Parcels	Developed	Vacant	Current Ordinance	Proposed Ordinance	Net Increase
Upper Llagas Creek	7,694	13	4	9	153	82	71	44	67	23
Llagas Morgan Hill	8,804	283	164	119	1,162	927	235	159	248	89
Llagas San Martin	11,397	530	409	121	1,809	1,487	322	215	335	120
Llagas East Gilroy	9,744	11	6	5	313	198	115	91	109	18
Llagas Gilroy	17,679	219	125	94	1,356	1,073	283	193	289	96
Uvas Creek	41,458	126	48	78	1,349	788	561	360	531	171
Pacheco Creek	75,546	14	1	13	282	55	227	160	215	55
Pescadero Creek	6,049	1	0	1	15	2	13	10	13	3
TOTAL	178,371	1,197	757	440	6,439	4,612	1,827	1,232	1,807	575

* Does not include 264 parcels that are either publicly-owned or covered by open space easements (i.e., "non-development" areas).

Second Unit Analysis

It was determined that some of the proposed Ordinance changes would improve the feasibility for existing developed properties to accommodate a second dwelling unit, specifically: (a) changes in the dispersal area sizing criteria for conventional OWTS; (b) elimination of the requirement to install an entirely separate OWTS for detached buildings, such as second units; (c) ability to utilize alternative OWTS designs to overcome certain soil and groundwater constraints; and (d) elimination of the current 5-acre minimum lot size requirement for second units in the San Martin area. Estimates of the number of additional second units that could potentially be attributable to these Ordinance changes were developed in accordance with the following assumptions and procedures.

1. The analysis focused specifically on the estimated 12,543 non-sewered developed properties determined through the parcel development status analysis above.
2. It was assumed that classification of a non-sewered parcel as “developed” is an indication that basic requirements for a conventional OWTS have been met under either the current or former Ordinance requirements. Undoubtedly, there are some developed properties in the County with OWTS that pre-date regulations and may have unsuitable site conditions per current practices. But the number of such properties was assumed to be relatively small, and no attempt was made estimate how many or where such parcels might be located in the County.
3. Because of the assumption in (2) above, lot size, rather than soil/OWTS suitability area, was judged to be the major factor on which to estimate the impact on second unit development potential for any given developed property under the proposed Ordinance changes.
4. In consultation with DEH staff the following estimates, according to lot size, were made of how the proposed Ordinance changes could improve the probability of being able to accommodate a second unit addition for any existing non-sewered developed property:
 - <1/4 acre: 0%
 - 1/4 - 1/2 acre: 10%
 - 1/2 – 3/4 acre: 20%
 - 3/4 – 1 acre: 30%
 - 1 – 2 acres: 25%
 - > 2 acres: 0% (except in San Martin area)
 - 2-5 acres in San Martin Area: 100% (assumes current 5-ac lot size limit lifted)
5. It is understood that second unit additions are an optional building activity that are only proposed on some percentage of all single family residences. An estimate of this percentage was not readily available from County records or published sources; therefore, it was developed with the assistance of Santa Clara County planning staff as follows:
 - A listing of Santa Clara County residential building permit activities (approximately 2,500 entries) for the past approximately 20 years were obtained compiled;

- County planning staff reviewed all entries and identified those where the permit activity appeared to involve a second unit building addition, with the following findings:
 - Total # of permit records reviewed: 2,508
 - # of permits for second dwelling units: 194
 - Calculated second unit percentage: 7.7%
 - Using the above results Questa adopted the 7.7% as the as the best available approximation of the apparent “second unit development rate” in the County for the purposes of this study.
6. The estimated increases in second unit development potential under the proposed Ordinance were calculated by multiplying the total number of non-sewered developed parcels by: (a) the lot-sized based “probability” factors (from 4 above); and (b) the “second unit development rate” (from 5 above).

The results of the above analysis were compiled by watershed sub-basin area and are presented in **Table 7**. The estimated total increase in second unit development potential, Countywide, is 158, with the largest number expected in the San Martin area mainly as a result of the elimination of the current 5-acre lot size limitation for second units in that area.

Summary

The overall results of the OWTS growth analysis study are summarized in **Figure 4**, which provides: (a) a summary (by watershed sub-basin) of projected single family residence development under the current and proposed Ordinance and the net increase; (b) the projected additional development of second units for existing developed parcels; (c) the combined net increase in vacant parcel development plus additional second units; and (d) an annotated map depicting the geographical distribution of the projected additional development potential throughout the County.

Table 7. Estimates of Additional 2nd Unit Development Potential under the Proposed Ordinance

Watershed Sub-basin	Estimated Additional Second Units
San Francisquito	0
Adobe	16
Permanente	20
Calabazas	0
San Tomas	1
Guadalupe River	2
Lexington Basin	10
Upper Los Gatos Crk	0
Alamitos Creek	6
Coyote Creek	10
Calaveras Reservoir	0
Northeast County	0
Upper Llagas	0
Llagas Morgan Hill	9
Llagas San Martin	74
Llagas East Gilroy	0
Llagas Gilroy	6
Uvas Creek	4
Pacheco Creek	0
Pescadero	0
Total	158

Part 2 – Cumulative Wastewater Volume, Nitrate and Salt Loading Projections

Based on the estimated number of existing developed properties using OWTS along with the projected future build-out potential from the Part 1 analysis, this section presents estimates of the associated cumulative wastewater loading and distribution throughout different geographical and hydrological regions of the County.

Cumulative wastewater loading projections were made for development projections under the current and proposed Ordinance and were compiled for the 20 watershed sub-basins defined in Part 1.

Wastewater loading projections focused on three parameters: (1) total wastewater volumes discharged via OWTS dispersal fields to the environment; (2) resultant total nitrate-nitrogen loading to the groundwater within each watershed sub-basin; and (3) resultant total dissolved solids (salt) loading to the groundwater within each watershed sub-basin.

Wastewater Volumes

Design Wastewater Flow. Individual OWTS are normally designed on the basis of the estimated maximum daily sewage flow from the residence or building(s) served. Under the current Santa Clara County Onsite Wastewater Ordinance, the standard design factor is 150 gallons per day (gpd) per bedroom, with a minimum size of 450 gpd for any system serving up to a 3-bedroom residence. Under the proposed Ordinance, the 150 gpd/bedroom factor would be retained, but the 450 gpd minimum would be eliminated in favor of requiring the design to be matched to the actual number of bedrooms in the residence.

Actual Wastewater Flow. The design sewage flow is purposely set with a margin of safety above the actual wastewater flows, in order to accommodate maximum usage of an individual system. The factor of 150 gpd/bedroom is based on the assumption of occupancy of two persons per bedroom and a sewage generation rate of 75 gpd per capita. The current 450 gpd minimum design flow in Santa Clara County equates to a household occupancy of 6 persons. According to the 2010 Census, the average occupancy in Santa Clara County is approximately 2.9 persons per household. Also, based on information from the US EPA OWTS Manual (2002) the actual residential sewage generation rates are found to be in the range of 45 to 70 gpd/per capita. Using these figures, the actual average wastewater flow from a group of residential OWTS would be in the range of about 130 to 200 gpd per residence. For comparison, wastewater flow monitoring of the Lake Canyon Community Wastewater System (51 connections) over the past 15 years indicates average wastewater flows in the range of 65 to 120 gpd/residence. Lake Canyon would be considered representative of a group of generally older residences; new homes of typically larger size would likely generate greater wastewater volumes. Considering all of these data, an average wastewater flow on the order of 150 gpd per residential OWTS is considered a reasonable estimate for Santa Clara County as a whole.

Watershed Sub-basin Estimates. Using the unit flow rate of 150 gpd per residential OWTS, **Tables 8** and **9** present the estimated volume of wastewater generated for each of the 20

watershed sub-basins for: (a) existing development conditions; (b) projected build-out under the current Ordinance; and (c) projected build-out under the proposed Ordinance. Estimated wastewater volumes are shown in gallons per day (gpd) and million gallons per year (Mgal/yr). Additionally, the average annual wastewater loadings, in gallons per acre, are calculated and presented based on the total acreage of non-sewered area within each watershed sub-basin.

As indicated in far right-hand column of **Table 8**, in the North County projected annual wastewater loading rates under the proposed Ordinance range from lows of a few hundred gallons per acre per year in the more remote northeastern areas, to the highest rates on the order of about 7,000 to 16,000 gal/ac-yr in the Adobe Creek and Permanente Creek sub-basins. The higher rates in these sub-basins are influenced by the large number of OWTS located in the Town of Los Altos Hills. The Lexington Basin has the next highest wastewater loading rates (4,600 gal/ac-yr currently, projected to increase to about 5,700 gal/ac-yr under the proposed Ordinance), followed by Guadalupe River and Alamitos Creek sub-basins.

In the South County, per **Table 9**, the projected annual wastewater loadings range from lows of less than 200 gal/ac-yr in the remote southeast and southwest corners of the County, to the highest in the Morgan Hill and San Martin areas of the Llagas Creek watershed, with loading rates in the range of about 6,000 to 8,000 gal/ac-yr currently, projected to increase to about 7,500 to 9,500 gal/ac-yr, under build-out conditions.

**Table 8. Projected Wastewater Loading Volumes
North County - RWQCB 2**

Watershed Sub-basin	Non-sewered Area (acres)	Existing Conditions				Current Ordinance Projections				Proposed Ordinance Projections			
		Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr	Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr	Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr
San Francisquito Crk	100	4	600	0.22	2,190	6	900	0.33	3,285	6	900	0.33	3,285
Adobe Creeek	3,909	1,013	151,950	55.46	14,188	1,140	171,000	62.42	15,967	1,159	173,850	63.46	16,233
Permanente Creeek	13,948	1,813	271,950	99.26	7,117	1,905	285,750	104.30	7,478	1,948	292,200	106.65	7,646
Calabazas Creek	855	10	1,500	0.55	640	13	1,950	0.71	832	15	2,250	0.82	961
San Tomas Creek	6,985	152	22,800	8.32	1,191	192	28,800	10.51	1,505	222	33,300	12.15	1,740
Guadalupe River	10,649	514	77,100	28.14	2,643	563	84,450	30.82	2,895	590	88,500	32.30	3,033
Lexington Basin	16,333	1,364	204,600	74.68	4,572	1,517	227,550	83.06	5,085	1,700	255,000	93.08	5,699
Upper Los Gatos Crk	6,549	38	5,700	2.08	318	57	8,550	3.12	477	67	10,050	3.67	560
Alamitos Creek	16,202	638	95,700	34.93	2,156	741	111,150	40.57	2,504	775	116,250	42.43	2,619
Coyote Creek	145,642	1,394	209,100	76.32	524	1,823	273,450	99.81	685	1,918	287,700	105.01	721
Calaveras Reservoir	73,040	124	18,600	6.79	93	257	38,550	14.07	193	295	44,250	16.15	221
Northeast County	81,343	110	16,500	6.02	74	341	51,150	18.67	230	376	56,400	20.59	253
TOTAL	316,227	7,174	1,076,100	393	1,242	8,555	1,283,250	468	1,481	9,071	1,360,650	497	1,571

**Table 9. Projected Wastewater Loading Volumes
South County - RWQCB 3**

Watershed Sub-basin	Non-sewered Area (acres)	Existing Conditions				Current Ordinance Projections				Proposed Ordinance Projections			
		Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr	Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr	Developed Parcels	Discharge Volume (gpd)	Discharge Volume (Mgal/yr)	WW Loading gal/ac-yr
Upper Llagas	8,840	86	12,900	4.71	533	130	19,500	7.12	805	153	22,950	8.38	948
Llagas Morgan Hill	9,685	1,091	163,650	59.73	6,168	1,250	187,500	68.44	7,066	1,339	200,850	73.31	7,569
Llagas San Martin	12,842	1,896	284,400	103.81	8,083	2,111	316,650	115.58	9,000	2,231	334,650	122.15	9,512
Llagas East Gilroy	10,108	209	30,600	11.17	1,105	295	44,250	16.15	1,598	313	46,950	17.14	1,695
Llagas Gilroy	18,192	1,198	179,700	65.59	3,605	1,391	208,650	76.16	4,186	1,487	223,050	81.41	4,475
Uvas Creek	47,522	836	125,400	45.77	963	1,196	179,400	65.48	1,378	1,367	205,050	74.84	1,575
Pacheco Creek	97,454	56	8,400	3.07	31	216	32,400	11.83	121	271	40,650	14.84	152
Pescadero	6,049	2	300	0.11	18	12	1,800	0.66	109	15	2,250	0.82	136
TOTAL	210,692	5,369	805,350	294	1,395	6,601	990,150	361	1,715	7,176	1,076,400	393	1,865

Overall, the total volume of wastewater loading in the northern part of the County is presently about 34% higher than in the South County, and this difference is expected to be about 26% under projected build-out conditions. Average wastewater loading rates (i.e., per acre) in the South County are higher, presently about 12% higher and expected to increase to about 19% higher for projected build-out conditions under the proposed Ordinance. **Table 10** presents a summary comparing existing and projected wastewater loading rates under the current and proposed Ordinance for the North and South regions of the County.

Table 10. Summary of Existing and Projected Wastewater Loading Concentrations¹

RWQCB Area	Existing Development	Current Ordinance Projections		Proposed Ordinance Projections	
	Annual Wastewater Loading (gal/ac-yr)	Annual Wastewater Loading (gal/ac-yr)	Percent Increase ²	Annual Wastewater Loading (gal/ac-yr)	Percent Increase ²
Region 2 North County	1,242	1,481	19%	1,571	26%
Region 3 South County	1,395	1,715	23%	1,865	34%

¹ Average loading rate for non-sewered areas

² Compared to existing development conditions.

Nitrate-Nitrogen Loading

Nitrate-nitrogen loading from OWTS can potentially degrade groundwater quality and contribute to nutrient enrichment of surface waters. Nitrogen occurs in high concentrations in domestic sewage, typically in the range of 50 to 90 mg-N/L. It occurs mostly as ammonia and organic forms, and is removed only partially through conventional septic tank treatment. Upon entering the unsaturated soil environment, these forms of nitrogen undergo transformation to nitrate. Nitrate is highly soluble in water and moves readily through the soil and groundwater with limited removal by the soil under most circumstances. High levels of nitrate in water supplies can cause methemoglobinemia (blue baby syndrome) in infants and pregnant women. The drinking water standard (MCL) for nitrate-nitrogen is 10 mg/L (as nitrogen, N), which is equivalent to 45 mg/L as nitrate, NO₃.

Nitrate loading is normally not an issue for individual residential OWTS, but can become a “cumulative impact” concern for large concentrations of OWTS in a given area or for larger commercial or community-type OWTS. Per the SCVWD 2010 Groundwater Quality Report (June 2011), elevated levels of nitrate, above the drinking water MCL, have been found in water wells located in two principal areas of Santa Clara County: (1) Coyote Valley, two (2) wells with nitrate above the MCL (9% of wells sampled); and (2) Llagas Sub-basin, 14% of wells sampled in the principal aquifer zone (wells screened at greater than 150 feet below grade) and about 50% of wells screened in the shallow aquifer zone. Additionally, Llagas Creek and Pajaro River have been designated as impaired water bodies per Section 303(d) of the Clean Water Act due to high nitrate concentrations. Agricultural fertilizers have been identified by the Central Coast RWQCB as the primary nitrate-nitrogen source and cause of impairment in these two water

bodies. Nevertheless, OWTS contribute to the overall nitrate loading to the various watersheds and groundwater basins in Santa Clara County; and the contributions will likely increase with future development using OWTS.

Using the estimates of existing and projected OWTS densities and wastewater loading volumes (per above), calculations have been made to estimate the existing contribution and potential incremental increase in groundwater-nitrate concentrations due to future residential build-out under the current and proposed Ordinance requirements. The projected nitrate concentration increases per this analysis would be in addition to other sources of nitrate that might occur in each sub-basin, such as leaching of agricultural fertilizers, confined animal wastes, municipal wastewater discharges, etc.

Methodology

The nitrate loading analysis was completed using an annual chemical-water balance analysis. The methodology followed is described in the publication “Predicting Groundwater Nitrate-Nitrogen Impacts” (Hantzsche and Finnemore, *Groundwater*, Vol. 30, No. 4, July-August 1992). According to this methodology, the long-term concentration of nitrate as nitrogen (NO₃-N or nitrate-nitrogen) in the upper saturated groundwater zone can be closely approximated by the quality of percolating recharge waters. Considering only the contributions from OWTS and natural sources picked up by rainfall leaching of soil and vegetation, the average concentration of nitrate-nitrogen in recharge water, n_r , is estimated using the following equation:



- where: n_r = resultant average concentration of NO₃-N in recharge water, mg-N/l
- W = average annual volume of wastewater entering the soil, acre-ft/yr (AFY)
- n_w = total nitrogen concentration of wastewater, mg-N/l
- d = fraction of NO₃-N loss due to denitrification in the soil
- R = average annual volume of rainfall recharge in sub-basin area, AFY
- n_b = background NO₃-N concentration of rainfall recharge at the water table, exclusive of wastewater, agriculture or other development influences, mg-N/l

Data and Assumptions

Per the equation presented above, resultant nitrate concentration in the groundwater is estimated to be the weighted average or combined concentration due to wastewater loading and recharge of

rainfall (“deep percolation”) contributed from the watershed sub-basin within the area of concern. For this analysis, calculations were made for each of the 20 watershed sub-basins covering the non-sewered areas of Santa Clara County. The analysis includes nitrate-nitrogen contributions from the existing and projected future OWTS plus a factor representing background nitrate concentrations associated with percolating rainfall in the open space areas. The following summarize the various assumptions.

- **Recharge Area.** The recharge area for each sub-basin includes the total estimated acreage of non-sewered land within each sub-basin, as listed in **Tables 8** and **9**. The acreage includes the parcels currently and potentially developable with OWTS, as well as the public lands and open space easement areas. Land areas served by public sewers are excluded from the “recharge area”.
- **Wastewater Flows.** The nitrate loading analysis was completed for the existing and projected annual wastewater volumes presented in **Tables 8** and **9**, which are based on an average wastewater flow assumption of 150 gpd per residential OWTS (3 persons per residence at approximately 50 gpd per person).
- **Wastewater Nitrogen Concentrations.** Total nitrogen concentration in wastewater effluent was assumed to be 70 mg/L, which is typical for domestic wastewater discharges from conventional septic tank – dispersal trench systems, based on a per capita wastewater volume of 50 gpd/capita (Crites and Tchobanoglous, 1998). This value is appropriate for calculations of nitrate loading from existing development and future OWTS under the current Ordinance. Under the proposed Ordinance the use of alternative treatment and dispersal methods will provide greater nitrogen removal, potentially up to 50% or more of that coming from conventional OWTS. Therefore, the value of 70 mg/L is a conservative (safe) assumption for analysis of impacts from the proposed Ordinance.
- **Background Nitrogen Concentration.** Limited water quality sampling data for local wells in non-agricultural areas indicate low to non-detectable levels of nitrate-nitrogen. Therefore, a nominal value of 0.5 mg-N/L was assumed as the background concentration associated with percolating rainfall.
- **Soil Denitrification.** Total nitrogen removal in the upper soil zones (via denitrification) was estimated to be 15 percent of the total nitrogen in the percolating OWTS effluent, which is on the low (conservative, safe) end of the common range of values (10% to 25%) normally attributed to soil denitrification. This value was selected based on the relatively permeable soil conditions in most parts of Santa Clara County.
- **Rainfall Recharge (Deep Percolation).** Deep percolation was estimated through completion of a water balance analysis, which takes into account rainfall, runoff, and evapotranspiration losses. Water balance calculations were made for four different geographic and climatic regions of the County: (1) Santa Cruz Mountains; (2) South Santa Clara Valley; (3) Diablo Range; and (4) Southeastern Diablo Range. Key data sources used in the water balance and the resulting estimates of annual recharge (inches per year) were as shown in **Table 11**; calculation sheets are attached provided in the technical appendix on file with DEH.

Table 11. Water Balance Data Source and Estimates

Geographic Area	Rainfall Station	Reference Evapotranspiration Zone (ETo)*	Estimated Annual Recharge	
			inches/yr	ac-ft/yr-ac
Santa Cruz Mountains	Los Gatos	3 – Coastal Valleys/Mountains	10.89	0.91
South Santa Clara Valley	Gilroy	8 – Inland SF Bay	8.16	0.68
Diablo Range	Mt. Hamilton	14 – Mid-Central Valley	7.22	0.60
Southeast Diablo Range	Gilroy	14 – Mid-Central Valley	2.93	0.24

*per California Irrigation Management Information System (CIMIS)

Results

The results of the nitrate loading calculations analysis are summarized in **Tables 12 and 13**, respectively, for the North County and South County watershed sub-basins. The estimated groundwater-nitrate concentration impacts from OWTS are presented for existing development conditions, projected build-out under the current Ordinance, and projected build-out under the proposed Ordinance. The results for the proposed Ordinance include projections for development of vacant parcels as well as results including contribution from additional second units, which were evaluated as being equivalent to an additional single family residence (conservative assumption).

The projected nitrate concentration impacts in the areas of highest OWTS densities range from about 1.5 to 3.6 mg-N/L, well below the drinking water limit of 10 mg-N/L. The difference between the proposed Ordinance and the existing Ordinance is projected to be an incremental rise of about 0.2 mg-N/L or less in all sub-basins, which is within the margin of error in the basic assumptions used in the nitrate loading calculations. Overall, while some addition to groundwater-nitrate concentrations is probable under the proposed Ordinance, the magnitude would be low.

The following should be recognized in regard to these results:

- The results are generalized over each sub-basin area and represent the average, integrated effect of all OWTS and rainfall-recharge contributions;
- The analysis and results do not account for the nitrogen contributions from other possible sources, such as agricultural and landscape fertilizer use, animal wastes, and wastewater discharges other than OWTS.
- Localized results for a specific parcel or group of parcels (e.g., neighborhood) within each sub-basin would most probably differ from the generalize results presented due to site specific conditions such as: parcel size(s) and configuration, local rainfall, site development and landscape features, runoff rates, and wastewater system flows and design.

**Table 12. Estimated Groundwater-Nitrate Concentration Impacts from OWTS
North County – SF Bay RWQCB 2**

Watershed Sub-basin	Non-sewered Area (acres)	Estimated Groundwater-Nitrate Concentration, mg-N/L			
		Existing Development Conditions	Current Ordinance Development Projections	Proposed Ordinance Development Projections	
				Vacant Lot Development	Vacant Lots Plus 2 nd Units
San Francisquito Creek	100	0.93	1.15	1.15	1.15
Adobe Creek	3,936	3.20	3.52	3.57	3.61
Permanente Creek	7,715	1.89	1.96	1.99	2.00
Calabazas Creek	711	0.63	0.67	0.69	0.69
San Tomas Creek	2,857	0.74	0.80	0.85	0.85
Guadalupe River	3,817	1.02	1.07	1.10	1.10
Lexington Basin	9,480	1.40	1.50	1.62	1.62
Upper Los Gatos Creek	4,042	0.56	0.59	0.61	0.61
Alamitos Creek	5,636	0.93	1.00	1.02	1.02
Coyote Creek	91,180	0.66	0.71	0.72	0.72
Calaveras Reservoir	50,820	0.53	0.56	0.57	0.57
Northeast County	78,712	0.52	0.57	0.58	0.58

**Table 13. Estimated Groundwater-Nitrate Concentration Impacts from OWTS
South County – Central Coast RWQCB 3**

Watershed Sub-basin	Non-sewered Area (acres)	Estimated Groundwater-Nitrate Concentration, mg-N/L			
		Existing Development Conditions	Current Ordinance Development Projections	Proposed Ordinance Development Projections	
				Vacant Lot Development	Vacant Lots Plus 2 nd Units
Upper Llagas Creek	8,840	0.61	0.66	0.69	0.69
Llagas Morgan Hill	9,685	2.10	2.32	2.45	2.46
Llagas San Martin	12,842	2.58	2.80	2.93	3.01
Llagas East Gilroy	10,108	0.79	0.92	0.95	0.95
Llagas Gilroy	18,192	1.44	1.59	1.67	1.67
Uvas Creek	47,522	0.69	0.77	0.81	0.81
Pacheco Creek	97,454	0.52	0.59	0.61	0.61
Pescadero	6,049	0.50	0.52	0.53	0.53

Salt Loading

With the exception of distilled water, all water contains dissolved solids, which include various salts and other minerals such as calcium, chloride, magnesium, potassium, and sodium. Domestic wastes can increase the concentration of total dissolved solids (TDS) in the wastewater (as compared with the water supply) by as much as 200 to 400 mg/L, based on average per capita sewage flow of about 50 gallons per day (Crites and Tchobanoglous, 1998). This includes the contribution from water softeners, which can make up a substantial portion of the added TDS loading. Dissolved solids are not removed to any appreciable degree through onsite treatment systems (septic tanks) or by passage through the soil. Therefore, the use of an OWTS would contribute to some incremental increase in the TDS levels in the groundwater beneath and down-gradient of OWTS dispersal fields.

To estimate the cumulative effect of TDS loading from OWTS on groundwater in Santa Clara County, an analysis was completed similar to the previously described nitrate-nitrogen analysis. The analysis was conducted watershed-by-watershed and includes calculations for existing conditions, development projections under the current Ordinance, and development projections under the proposed Ordinance.

Methodology

The salt loading analysis was completed using an annual chemical-water balance analysis, following the same approach as used for the nitrate-nitrogen loading analysis above. Under this approach, the long-term concentration of total dissolved solids in the upper in the upper saturated groundwater zone can be closely approximated by the quality of percolating recharge waters. Considering only the contributions from OWTS and natural sources picked up by rainfall leaching of minerals from the soil and formations, the average long-term concentration of TDS in recharge water, s_r , is estimated using the following equation:



- where: s_r = resultant average concentration of TDS in recharge water, mg/l
- W = average annual volume of wastewater entering the soil, acre-ft/yr (AFY)
- S_s = total dissolved solids concentration of water supply, mg/l
- S_w = total dissolved solids concentration of wastewater, mg/l
- R = average annual volume of rainfall recharge in sub-basin area, AFY

S_b = background TDS concentration of rainfall recharge due to mineral pick-up through percolation, exclusive of wastewater, agriculture or other development influences, mg/L

Data and Assumptions

Per the equation presented above, resultant TDS concentration in the groundwater is estimated to be the weighted average or combined concentration due to wastewater loading and recharge of rainfall (“deep percolation”) contributed from the watershed sub-basin within the area of concern. For this analysis, calculations were made for each of the 20 watershed sub-basins covering the non-sewered areas of Santa Clara County. The analysis includes TDS contributions from the existing and projected future OWTS plus a factor representing background TDS concentrations associated with natural mineral pick-up by percolating rainfall. The following summarize the various assumptions.

- **Recharge Area.** The recharge area for each sub-basin includes the total estimated acreage of non-sewered land within each sub-basin, as listed in **Tables 8** and **9**. The acreage includes the parcels currently and potentially developable with OWTS, as well as the public lands and open space easement areas. Land areas served by public sewers are excluded from the “recharge area”.
- **Wastewater Flows.** The TDS loading analysis was completed for the existing and projected annual wastewater volumes presented in **Tables 8** and **9**, which are based on an average wastewater flow assumption of 150 gpd per residential OWTS (3 persons per residence at approximately 50 gpd per person).
- **Wastewater TDS Concentrations.** Total dissolved solids concentration in wastewater effluent was assumed to be equal to the concentration in the domestic supply plus 300 mg/L due to waste additions.
 - **Domestic Supplies.** Review of published water supply data available from the SCVWD and other water suppliers in Santa Clara County (e.g., San Jose Water, California Water Service Company) indicate TDS concentrations for water supplies in the North County than in the South County areas. While values fluctuate from amongst different sources of supply, TDS values of 270 mg/L and 340 mg/l, respectively, were used for the North and South County watershed areas for this analysis.
 - **Wastewater TDS Addition.** Based on Crites and Tchobanoglous (1998), an average TDS addition of 300 mg/L was assumed to reflect the salt loading from residential sewage in an OWTS; this is for an average wastewater flow rate of 50 gal/capita/day. It includes the effects of the periodic backwash of brine from water softeners.
- **Background TDS Concentration.** Estimates of background TDS concentrations were made by reviewing groundwater data from SCVWD (2011) and from other well water sources to determine the typical minimum reported concentrations. This was taken as the

best approximation of the natural accumulation of TDS in groundwater as a result of leaching from soils and geologic materials by percolating rainfall. Typical values of 200 mg/L in the North County watershed areas, and 270 mg/L in the South County were selected based on inspection of these data.

- **Rainfall Recharge (Deep Percolation).** Deep percolation values were the same as those previously presented and used for the nitrate loading analysis.

Results

The results of the TDS loading calculations analysis are summarized in **Tables 14** and **15**, respectively, for the North County and South County watershed sub-basins. The estimated groundwater-TDS concentration impacts from OWTS are presented for existing development conditions, projected build-out under the current Ordinance, and projected build-out under the proposed Ordinance. The results for the proposed Ordinance include projections for development of vacant parcels as well as results including contribution from additional second units, which were evaluated as being equivalent to an additional single family residence (conservative assumption).

The projected TDS concentration impacts from new development in the areas of highest OWTS densities range from 0.2 mg to 2.7 mg/l for the different watersheds, with an average increase of 0.5 mg/L in the North County and about 1.0 mg/L in the South County watersheds. These projected TDS changes are insignificant in comparison to background water quality levels, additions from other sources, and the secondary drinking water standards for TDS, which are 500 mg/L recommended, and 1,000 mg/L maximum. Overall, while some addition to groundwater-TDS concentrations is probable under the proposed Ordinance, the magnitude would be very low and insignificant.

**Table 14. Estimated Groundwater-TDS Concentration Impacts from OWTS
North County – SF Bay RWQCB 2
(mg/L Total Dissolved Solids, TDS)**

Watershed Sub-basin	Typical Source Water Quality*	Estimated Background Groundwater Quality**	Existing Conditions	Projected for Exist. Ordinance	Projected for New Ordinance	Projected Difference Existing Conditions vs New Ordinance
			TDS from OWTS (mg/L)	TDS from OWTS (mg/L)	TDS from OWTS (mg/L)	TDS Increase (mg/L)
San Francisquito Crk	270	200	2.7	4.1	4.1	1.4
Adobe Creek	270	200	16.9	19.0	19.5	2.6
Permanente Creek	270	200	8.7	9.1	9.4	0.7
Calabazas Creek	270	200	0.8	1.0	1.2	0.4
San Tomas Creek	270	200	1.5	1.9	2.2	0.7
Guadalupe River	270	200	3.3	3.6	3.8	0.5
Lexington Basin	270	200	5.6	6.3	7.0	1.4
Upper Los Gatos	270	200	0.4	0.6	0.7	0.3
Alamitos Creek	270	200	2.7	3.1	3.3	0.6
Coyote Creek	270	200	1.0	1.3	1.4	0.4
Calaveras Reservoir	270	200	0.2	0.4	0.4	0.2
Northeast County	270	200	0.2	0.4	0.5	0.3
Average	270	200	1.8	2.1	2.3	0.5

* TDS concentration of drinking water at properties served by OWTS
 **TDS concentration due to mineral pickup through soil and geologic strata.

**Table 15. Estimated Groundwater-TDS Concentration Impacts from OWTS
 South County – Central Coast RWQCB 3
 (mg/L Total Dissolved Solids, TDS)**

Watershed Sub-basin	Typical Source Water Quality*	Estimated Background Groundwater Quality**	Existing Conditions	Projected for Exist. Ordinance	Projected for New Ordinance	Projected Difference Existing Conditions vs New Ordinance
			TDS from OWTS (mg/L)	TDS from OWTS (mg/L)	TDS from OWTS (mg/L)	TDS Increase (mg/L)
Upper Llagas Creek	340	270	0.7	1.0	1.2	0.5
Llagas Morgan Hill	340	270	10.0	11.4	12.3	2.3
Llagas San Martin	340	270	13.0	14.4	15.7	2.7
Llagas East Gilroy	340	270	1.8	2.7	2.8	1.0
Llagas Gilroy	340	270	5.9	6.9	7.4	1.5
Uvas Creek	340	270	1.2	1.7	2.0	0.8
Pacheco Creek	340	270	0.2	0.6	0.7	0.5
Pescadero	340	270	0.02	0.1	0.2	0.2
Average	340	270	2.9	3.5	3.8	0.9

* TDS concentration of drinking water at properties served by OWTS
 **TDS concentration due to mineral pickup through soil and geologic strata.

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