CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: Steven Paige

Mailing Address: 1554 Ninth Street

City: Los Osos Zip Code: 93402 Phone: 805-528-4738

SECTION II. Decision Being Appealed

1. Name of local/port government:

County of San Luis Obispo

2. Brief description of development being appealed:

Los Osos Wastewater Project

3. Development's location (street address, assessor's parcel no., cross street, etc.):

Los Osos Prohibition Zone wastewater collection system and LOWWP Wastewater Treatment Facility

4. Description of decision being appealed (check one.):

☒ ~~Approval; no special conditions~~ ← LOCAL CONDITIONS

☒ Approval with special conditions: ADOPTION OF P.C. FINDINGS AND MITIGATIONS. SUBMISSION OF LOWWP TO CC.

☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: A-3-SLO-09-055

DATE FILED: October 19, 2009

DISTRICT: Central Coast

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5. Decision being appealed was made by (check one):

☐ Planning Director/Zoning Administrator

☒ City Council/Board of Supervisors

☒ Planning Commission

☐ Other

6. Date of local government's decision: Sept. 29, 2009

7. Local government's file number (if any): DRC2008-00103

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

County of San Luis Obispo
976 Osos Street Rm. 300
San Luis Obispo, Ca
93408

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) Surfrider Foundation
San Luis Obispo Chapter
PO Box 13222 San Luis Obispo, Ca.
93406

(2) Mike Saunders
Orenco Systems, Inc.
814 Airway Ave
Sutherlin, Oregon 97479

(3) Attorney General's Office
California Department of Justice
Attn: Public Inquiry Unit
P.O. Box 944255

(4) Sierra Club
Santa Lucia Chapter Office
547-B Marsh Street,
San Luis Obispo, CA 93401

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SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

- Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section.
- State briefly **your reasons for this appeal**. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)
- This need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

I, Steve Paige, am claiming the CSLO's CEQA filing is incomplete because of CEQA Section 21091 d (2) (B) inconsistencies. Simply, there was no written responses to my several challenges to the SLOPC claim of "maximum affordability mitigation". This creates an incomplete and tainted filing to the Coastal Commission due to violations of my right to due process. Further, I sent a 25 minute request for time (see attachment) certified mail, two weeks before hearing on seven specific and complicated issues (see BOS filing) and was denied 15 minutes of 25 minutes of the time requested and rebuttal time at CSLO-BOS 9/29/09 hearing. My right to do process was violated a second time.
No mitigation is proposed for REO properties and properties in foreclosure. A new SEIR on Enviormental Justice and affordability mitigation is required that includes a independent study of recycling existing septic tanks to mitigate total project costs. Further, the Enviormental Justice FEIR impact study for CEQA is flawed. The CSLO FEIR EJ APPENDIX statistical methodology does not specifically delineate the Prohibition Zone Population but falsely includes wealthier homeowners outside the PZ to justify a 'negative declaration' for low income impacts and is inconsistant with Costal Act Sec.30253 (e). The present sewer project reduces low and middle income access to costal 'resources', including habitation, by economic attrition and lack of reasonable Enviormental Justice mitigation.

Issues ignored at the CSLO hearing but required to be addressed under CEQA include:

Issue 1--No written response by CSLO to my claim that the County assumption of a presumptive right to remove existing septic tanks is a "regulatory taking" in violation of the Costal Act "Sec. 30010: Taking of private property". Existing tanks can be used as STEP/STEG component without challenging property rights and creating assessment irregularties. No mitigation has been proposed using existing on site septic tanks as an affordability and enviormental mitigation. Primary waste treatment (see my County BOS Powerpoint) is not a "special benefit" under Article XIII D. It is occuring on site already. No regulatory takings study was done by either the RWQCB3 or the CSLO. The County has no right to demand the removal of the septic tank waste processing component from my property. It has zero discharge when tied to the project collection system. The CSLO gravity LOWWP as proposed, is an act of 'inverse condemnation' given that treated wastewater leaving the existing septic tank can go into a STEP collection system with beneficial enviormental results for a lessor cost to homeowners.

Issue 2--No written Response by CSLO, 23.02.035 Additional information required: Gravity collection I and I expands wasterwater system sizing to greater than the needs generated by existing home inventory. Added capacity may be used for justification of urban development after CC approval justifies added capacity for I and I impacts. LCP Public Works Policy states: "Policy 2: New or expanded public works facilities shall be designed to accommodate but not exceed the needs generated by projected

development within the designated urban reserve lines." "Projected development" cannot include infill lots without a water source, HCP findings, a 218 vote, and stoppage of salt water intrusion.
Gravity pipe 'infiltration' is a fresh water recharge removal of 300,000 GPD during the rainy season. STEP collection is an obvious mitigation. STEP collection retains recharge at the 'site' by not having any infiltration potential (pressure gradient). STEP collection is more consistant with 'on site provisions' Costal Watersheds-Policy-11. In gravity collection the county ROW is the 'site'. Gravity pipe infiltration removes recharge water from the 'site', pollutes it, transfers it to the wastewater plant, treats it then sends it back to a point source (Broderson) for release with questionable results. This process does not represent the best mitigation when gravity pipe infiltration can be avoided entirely. Costal Watersheds policy 11: "Preserving Groundwater Recharge In suitable recharge areas, site design and layout shall retain runoff on-site to the extent feasible to maximize groundwater recharge and to maintain in-stream flows and riparian habitats."

Issue 3--No written response by CSLO as per CEQA Act, 23.02.035 Additional information required: Grewater usage is given no economic credit as an incentive. Greywater is a non-point basin recharge benefit. Greywater reuse creates water conservation. Highly efficent conservation is related to gravity collection low flow impacts of odor and sulfide gas corrosion. No Grewater GHG reduction analysis was done.

Issue 4--No written response by CSLO as per CEQA Act, Costal Act 23.02.022 Determination of completeness, 23.02.035 Additional information required.
The CSLO failed to adequately review Environmental Justice impacts and did not minimize life cycle costs and mitigate affordability by omitting reference to and mitigation for the suspension of Senior Citizens' Property Tax Deferral Program used to garner votes in the 218 voting process. Petitioner claims the action is discrimitory aginst seniors and denies seniors the right to due process.

Issue 5-- Affordablity mitigation No response, Costal Act 23.02.022 Determination of completeness, 23.02.035 Additional information required.
The Planning Commission and CSLO failed to adequately review Environmental Justice impacts and did not minimize life cycle costs and mitigate affordability by the act of not acknowledging that the County of San Luis Obispo Broke Community 218 vote Contract for the inclusion of the STEP/STEG Option in the design bid build process. County claims paralegal advisory vote trumps constitutionally required engineer's report and assessment vote giving itself permission to break community contract that was to include STEP/STEG in design/build process. Petitioner claims the action is discriminatory.

Issue 6--Costal Act 23.05.140 Archeological resources discovery and impact study incomplete. SEIR for STEP using existing septic tanks is required. CSLO uses a 'heresay' evaluation based on a false assumption. The CSLO LOWWP EIR claimed Step and Gravity piping systems have the same archeological impacts by avoiding considering recycling of existing septic tanks. Where trenching is needed with STEP collection it seldom requires a depth of over 5 feet. For gravity trenching 14,784,000 cu ft of soil up to 22 feet deep and 4 feet wide is subject to archeological investigation and impacts. Dewatering makes archeological investigation impossible in low lying areas. For STEP collection in Los Osos, 369,000 cu ft are subject to investigation based on using directional boaring. On site STEP laterials are typically 1 1/2 " diameter HDPE pipe 18 inches below grade minimum without slope considerations. Petitioner claims CSLO ignored existing septic tank recycling to justify their own claims of co-equal mitigation. Petitioner will submit contrary evidence and engineering to back this claim by a licenced engineering firm knowledgable in step collection. END.

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SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signature of Appellant(s) or Authorized Agent

Date: 10/13/09

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby authorize None
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: 10/13/09

COUNTY BOS POWERPOINT 9/29/09

Appeal DRC2008-00103-#782 Steven Paige

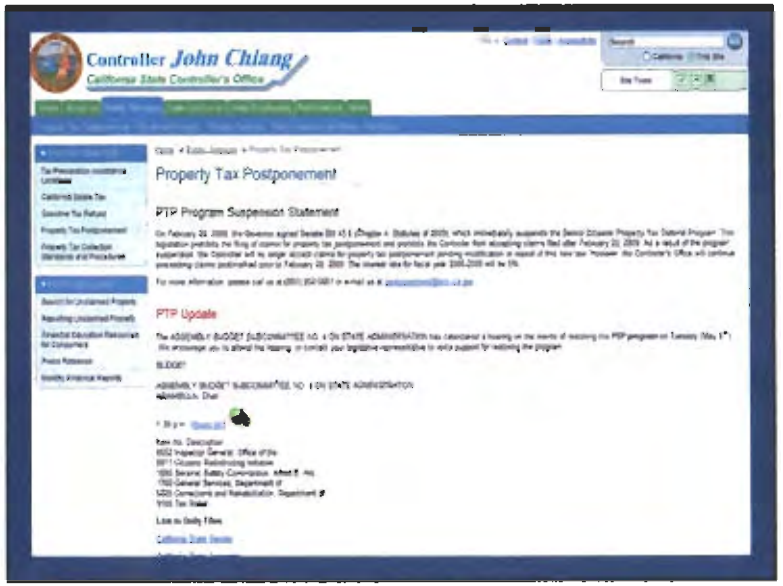
- I complain that My right to due process described in CEQA has been violated.
- My Certified Mail request for 25 min time was ignored on my seven complex issues.
- Abridging my right to an independent response to each issue in my petition violates my right to due process under CEQA.
- Staff is commingling and confusing my complaints with others and ignoring many.

CEQA Section 21091 d (2)(B)

- "The written response shall describe the disposition of each significant environmental issue that is raised by commenters."
- ***The Following issues were not responded to in writing as required under CEQA:***

NO Response Cost Mitigation for seniors PTP program discontinued

- No staff written response as required by CEQA .
- Seniors property tax program described in the 218 vote literature and FSR no longer exists.
- The County garnered votes for the 218 assessment using the PTP program as affordability mitigation.
- Without this mitigation many fixed income Seniors will loose their homes to tax liens.
- The County has the legal right to sell fixed income Senior's properties to receive payment.



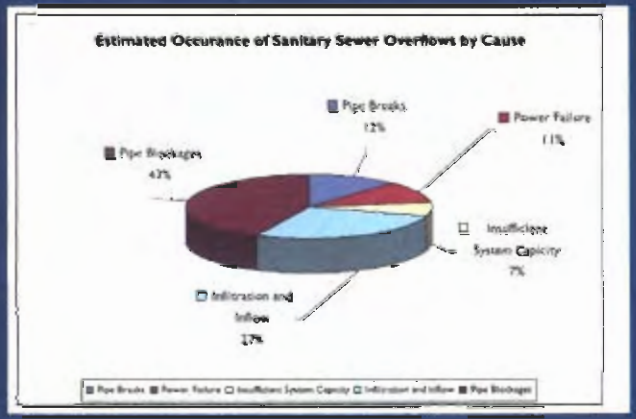
Eliminating STEP/STEG from the Design Build process as described in 218 vote.

- There is no staff written response required by CEQA relating to contractual obligations.
- A contractual obligation to voters-- STEP/STEG sewer system was removed from the Design/Bid/Build process prematurely.
- The County garnered votes with the inclusion of STEP/STEG described in the Design/Build process.
- STEP/STEG was removed from D/B using heresy conclusions and cherry picked science.

"I and I" is not a Special Benefit.

Howard Jarvis Taxpayers Assoc Vs. Salinas (1st App. 6/3/02

- There is no staff written response as required by CEQA.
- Infiltration from 17,000 pipe joints is a general tax not special benefit to our properties because it is an avoidable impact, affordability not mitigated.
- STEP/STEG sewer systems avoid plant over sizing by 30% due to I and I impacts.
- Absorbing clean groundwater, mixing it with sewage, treating it, and returning it to the basin has no special benefit to the homeowner, does not comply with AB 32.
- Plant over sizing will induce growth and is an unmitigated impact not covered in the FEIR.



USING EXISTING SEPTIC TANKS

- There are staff written response as required by CEQA.
- 70% of all septic tanks in Los Osos were installed and inspected by the County after 1970.
- Votes were garnered illegitimately for the advisory vote by ignoring testing and using existing tanks for a STEP/STEG sewer system.
- Using existing tanks would save home owner's approx $10,000 per property
- Voters were sent brochures overestimating on lot impacts for STEP before the advisory vote. Why are they not on your website?

Secondary vaults.

- Installing low impact pump vaults on existing septic systems saves homeowners thousands of dollars in unnecessary tank replacement.

The 'takings' flaw RWQCB overlooked you have inherited.

- Primary waste treatment is not a "special benefit" to PZ homeowners and adds **illegitimate taxation** to PZ owner's properties.
- Decommissioning on site septic tanks denies homeowners the economically beneficial use of private waste treatment without compensation.

Table 8.3 Treatment of Wastewater within Interceptor (Septic) Tank

TREATMENT

Parameter	Units	Influent	STEP Effluent	Percent Reduction
BOD_5	Mg/l	450	140	69%
Suspended Solids	Mg/l	500	30	94%
Total Nitrogen	Mg/l	70	70	0%
Total Phosphorus	Mg/l	17	16	6%
Oil and Grease	Mg/l	164	29	88%

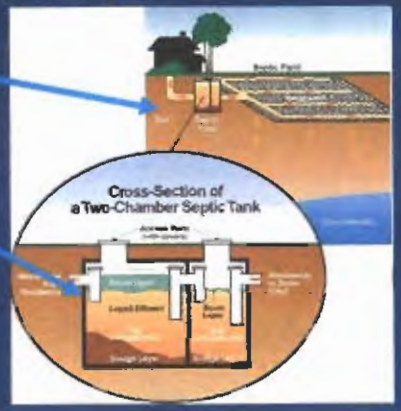
Forced decommissioning of septic tanks is called for legal purposes "Inverse condemnation".

- The RWQCB did no takings study as stipulated by presidential executive order 12630, Reagan, 3/15/1988.
- The County is complicit in the RWQCB's negligence.
- The precautionary rule for Environmental Justice has not been met as long as there is no takings study or renewed affordability mitigation.

- *Pennsylvania Coal Co. v. Mahon*
- *First English Evangelical Lutheran Church of Glendale v. Los Angeles County*
- *Dolan v. City of Tigard*
- *Palazzolo v. Rhode Island*
- *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*

RWQCB's and CSLO'S failure to divide septic system components in "decommissioning" creates a "regulatory taking".

- Leach field, 100% of discharge.
- Your septic tank has zero discharge. It meets the discharge order for the prohibition zone. You own it's beneficial use as a 'wastewater plant' as described by the RWQCB in it's actions against the Los Osos 45 CDO recipients.



Focus: Penn Central Transportation Co. v. City of New York

"Where a regulation places limitations on land that fall short of eliminating all economically beneficial use, a taking nonetheless may have occurred, depending on a complex of factors including the regulation's economic effect on the landowner [citing Penn Central].101"

A property seizure challenge would cut sewer bills almost in half if homeowners prevailed. *Homeowner's could recoup the following costs:*

- 100% the cost of primary treatment.
- The difference in cost between STEP and gravity collection.
- All on site improvements related to changing from STEP to a gravity sewer.
- Septic tank decommissioning.
- All maintenance costs and fines related to solids blockages and 'I and I' spills and repairs.
- 70 % of solids dewatering and shipping costs.

How can the BOS avoid a class action challenge for septic tank seizure of property?

1. Ripening of property seizure case starts with your approval today. To avoid the challenge:
2. Re-insert STEP/STEG into the Design/Build process.
3. Direct staff to revisit affordability, takings, and environmental justice issues with a supplemental EIR and open hearing.
4. Direct legal staff to perform a regulatory takings study to protect property rights and avoid illegitimate taxation that now exists.

SUBMISSION TO P.C.

San Luis Obispo Planning Dept
Planning Commission

TO: SLO County Planning Commission

RE: Hearing on Coastal Development Permit & EIR for Los Osos Wastewater Project, 7/23-24

Dear Commissioners,

My name is Steven Paige, I am a Los Osos resident, committee member of LOCAC Land use committee, member of Slo Green Build's Appropriate Technology Committee and Participate in joint meetings with Sierra Club, Surfrider Foundation and SLOGB's technical advisory committee. I have been building passive solar homes since 1976.

I presently am concerned about four misrepresentations relating to STEP/STEG collection systems found in the LOWWP EIR that has made the Gravity vs. STEP/STEG co-evaluation in the EIR meaningless and unscientific. I request that if possible you require the County to re-evaluate STEP systems and include them in the design build process using where possible existing septic tanks.

I find the following assumptions questionable:

1) Existing Septic tanks cannot be recycled as STEP tanks. All old septic tanks leak and cannot be tested therefore they all should be replaced.
2) Step treatment and collection has the same Archeological impacts as Gravity collection.
3) Step collection systems leak as much as gravity sewers and share the same geologic risks.
4) Step system tanks produce more GHG than the proposed system of wastewater nitrogen reduction.

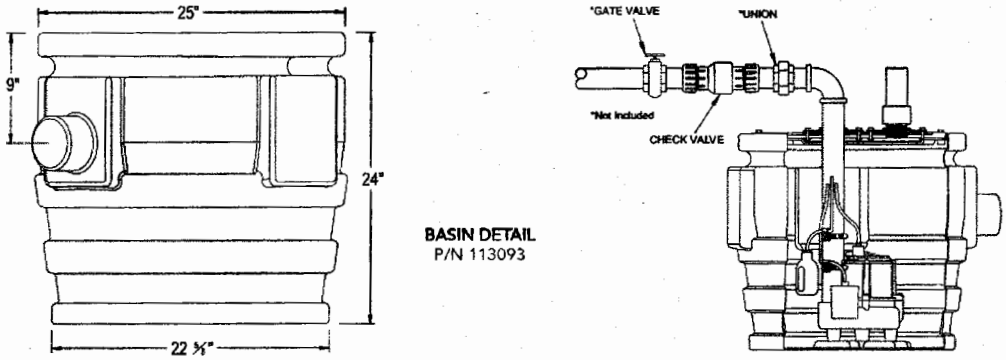
1) Existing Septic tanks cannot be recycled as STEP tanks.

Originally the Ripley Report claimed that a portion of the existing septic tanks could be used in a STEP system. Later for the sake of being conservative, Ripley presented their plan replacing all septic tanks with fiberglass tanks. Many of the existing tanks in Los Osos are concrete. In the LOWWP DEIR no mention was made of septic tank testing and using a secondary pumping vault to handle the liquids going into the system. Testing existing septic tanks is common practice. Septic tank testing mitigates greenhouse gas production for embedded energy costs in the new equiptment.

The LOWWP ignores testing and utilizing existing septic tanks in the EIR. Standardized pump vaults could be installed after the existing 'tested' septic tank avoiding 80% of on site impacts and much of the cost. On site STEP/STEG impacts were thoroughly misrepresented in the EIR and TAC findings because of this one fact. The misrepresentations about on site impacts are summed up in the LOWWP DEIR: `

"Proposed Project 1 would include a combination STEP/STEG system. A key feature of the STEP/STEG system is that it will require individual property owners to decommission their old septic tanks (pump the tank, remove the tank top, and backfill with sand). If room is not sufficient for installation of the new tank, it would be the responsibility of the property owner to have the old tank removed and hauled to the landfill prior to installation of the new tank."

Standardized pump vaults what would they look like?



Typical standardized pump vault for step collection.

Each property would have a hole dug for a 24" to 30" diameter and 5' deep and have installed a standardized pump vault. The vault would be 'leased' to the home owner (benefit) in exchange for a servicing contract that allowed access to the vault much like PG&E loans you an electrical meter and is allowed on site for meter reading.

Responsibility for the Septc Tank integrity and replacement would rest with the homeowner and would be evaluated by testing. This eliminates the need for complicated easements. On site septic tank pumping would be performed by the owner 'as required' with content evaluation every five years by ordinance, NOT pumping every five years as mentioned in the EIR.(Industry standard is 8 to 12 years.). Evaluation mitigates unnecessary greenhouse gas production and localized air pollution from over pumping well functioning septic systems. A third party commercial engineering company would be hired by the homeowner to initially and periodically test the septic tank. A form would be filled out for the County and put in the County data base like is now happening with repaired septic systems.

Hydrostatic testing of existing septic tanks, how is it done?

It has been said that "A water test to the top of the riser is the only valid test for watertightness." You should ask: "In what standard does this language appear?" Indeed the hydrostatic test is one alternative that can be used to evaluate the watertightness of a septic tank. However, it is certainly not the only valid test method for watertightness, nor is the need to fill to the top if the riser.

A review of existing industry standards reveals the fact that there are several accepted watertightness test methods. ASTM International standard C1227, "Standard Specification for Precast Concrete Septic Tanks," states that "Testing for leakage is performed using either vacuum testing or water-pressure (hydrostatic) testing." Further stated in ASTM C1227 are descriptions of these two test methods, the performance criteria for each and the requirements for approval of tanks.

Another industry standard is the International Association of Plumbing and Mechanical Officials (IAPMO) "Material and Property Standard for Prefabricated Septic Tanks" (PS-1), which references ASTM C1227, stating "Concrete septic tanks shall comply with ASTM C 1227, except when the requirements deviate from this standard in which case this standard will govern." The IAPMO standard

contains additional specific language regarding tank sampling and water testing and states, "Sample tanks shall be assembled per manufacturer's instructions, set level, and water raised to the flow line of the outlet fitting …," not to the top of the riser.

Finally, the Canadian Standards Association publication CSA B66, "Design, Material, and Manufacturing Requirements for Prefabricated Septic Tanks and Sewage Holding Tanks," states that "Following the appropriate tests … remove the load or vacuum and fill properly bedded tank with water to its outlet or overflow level …," not to the top of the riser.

It is important to note that all of these recognized industry standards include provisions allowing either a hydrostatic or vacuum test for watertightness. Given this fact, is the statement "A water test to the top of the riser is the only valid test for watertightness" fact or fiction?

Vacuum testing how is it done?

We have also heard from time to time that "Vacuum testing is not a real world test." Is this simply because tanks do not operate in a vacuum or that a vacuum test exerts a uniform pressure on all six sides of a tank, when in reality soil and ground water loads vary with depth? The fact is that a vacuum test can be designed such that it approximates the maximum loads the tank will experience in the ground. Although this is a conservative approach, it does not diminish its validity.

One of the benefits of vacuum testing is that it is a multipurpose performance evaluation – both watertightness and structural integrity can be evaluated during the same test cycle. Vacuum testing is commonly used to check other precast concrete structures, including installed manholes, and is gaining in popularity for checking septic tanks and wastewater-related products. This increase in popularity is primarily because the equipment is easily portable, and the test setup and procedures are relatively simple. For example, most tank delivery vehicles have a ready supply of air that can be used to run the vacuum testing equipment. The test equipment (gauges, hoses, lid, etc.) requires little space to transport to the installation site. Tank manufacturers can easily perform routine testing in the yard and also conduct any required performance testing on site.

Both ASTM C1227 and IAPMO PS-1 standards allow the performance of a vacuum test for watertightness evaluation as well as proof of structural design. For instance, the CSA B66 standard offers a vacuum test as an option for strength evaluation – both physical loading with sand bags and vacuum testing are allowed. Both tests are performed for approximately one hour and then the tank is checked for deformation and leakage. The strength testing is then followed by a watertightness test.

Again, we see that all three industry standards recognize the vacuum test as a perfectly viable performance evaluation method. It is certainly considered to be a "real world" test by these standards bodies.

How do other agencies test existing septic tanks?

Oregon
Watertight testing of the tank into the riser is required during installation. It is also recommended the tank manufacturer watertight test each tank before shipping.

Rule Reference:
340-073-0025(3):
Watertightness. After installation, all tanks must be watertight. The installer must test each tank for watertightness by filling the tank to a point at least 2 inches above the point of riser connection to the top of the tank. During the test there may be no more than a one gallon leakage over a 24 hour period. The tank manufacturer must deliver watertight tanks and should test each tank for watertightness before the tank is shipped from the manufacturing plant.

Arizona
State Comments
This provision requires that a field watertightness test be conducted for all septic tank installations. If water is available at the site, which will be the case in the large majority of installations, added materials and labor costs, will be an estimated $15 to $68. For the sites where water must be delivered, the estimated cost, including site labor for initial tank fill and refill after a 24-hour presoak, is $214. The field water tightness test has significant benefit in ensuring that the septic tank does not leak due to factory defects or damage during installation. In addition, the weight of water in the septic tank during testing ensures that the tank is properly bedded, reducing the chance of major malfunction of the tank upon use by the homeowner.

Rule Reference:
R18-9-A314.5.d:
The septic tank is tested for watertightness after installation by the water test described in subsections (5)(d)(i) and (5)(d)(ii) and repaired or replaced, if necessary.
i. The septic tank is filled with clean water, as specified in R18-9-A310(A), to the invert of the outlet and the water left standing in the tank for 24 hours and:
(1) After 24 hours, the tank is refilled to the invert, if necessary;
(2) The initial water level and time is recorded; and
(3) After one hour, water level and time is recorded.
ii. The tank passes the water test if the water level does not drop over the one-hour period. Any visible leak of flowing water is considered a failure. A damp or wet spot that is not flowing is not considered a failure.
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04/23/2008

Montana
Watertight, Vacuum or Pressure (fiberglass only) testing of all tanks used for commercial facilities, multiple-user systems or public systems must be tested in place for watertightness. The rules stop short of requiring this for single family residential systems.

Rule Reference:
7.3
1. All tanks must be watertight. Tanks used for commercial facilities, multiple-user systems or public systems must be tested in place for watertightness. Watertightness testing for a concrete tank may be conducted using a water test or vacuum test. Watertightness testing for a fiberglass tank may be conducted using a water test, a vacuum test, or a pressure test.

1. 7.3.1 Water testing must be conducted by sealing the outlets, filling the septic tank to its operational level, and allowing the tank to stand for at least 8 hours. If there is a measurable loss (2 inches or more), refill the tank and let stand for another 8 hours. If there is again a measurable loss, the tank must be rejected.
2. 7.3.2 Vacuum testing must be conducted by sealing all inlets, outlets, and accesses, then introducing a vacuum of 4 inches of mercury. If the vacuum drops in the first 5 minutes, it must be brought back to 4 inches of mercury. If the septic tank fails to hold the vacuum at 4 inches of mercury for 5 minutes, the tank must be rejected.
3. *7.3.3 For pressure testing a fiberglass tank, all inlets, outlets, and access ports must be sealed and adequately secured. The tank must be charged with 5 psig (3 psig for a 12-foot diameter tank). Allow tank pressure to stabilize. Disconnect the air supply. If there is any noticeable pressure drop in 1 hour, the tank must be rejected or repaired. Repeat the test after repair. Release air carefully through an appropriate valve mechanism.*

Rhode Island
All septic tanks and their risers are required to be certified watertight by the manufacturer or by on-site testing in accordance with the below rule (which is very similar to ASTMC-1227).

Rule Reference:
26.11
Performance Testing- All septic tanks and their risers must be certified watertight by the manufacturer or by on-site testing. On-site testing for septic tank leakage shall be conducted for tanks assembled at the installation site. The Director may require onsite testing on a case-by-case basis. The testing shall be conducted using either:
26.11.1 Vacuum Test- Seal the empty tank and risers and apply a vacuum to two (2) inches (50 mm) of mercury. The tank is approved if ninety percent (90%) of the vacuum is held for two (2) minutes; or
26.11.2 Water-Pressure Test- Seal the tank and risers, fill with water to the top of the risers, and let stand for twenty-four (24) hours. Refill the tank. The tank is approved if the water level is held for one (1) hour.
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04/23/2008

Vermont
Requires "leakage testing" in the field for all holding tanks and any tank utilized with a sand filter.

Rule Reference:
1-915(a)2(F) Sand Filters
After installation all components, including septic tanks, pump chambers, recirculation tanks and filter containers, shall be tested by filling to a point at least two inches, but not more than three inches, above the point of riser connection to the top of the tank, chamber, or container. During the test there shall not be a measurable leakage over a twenty-four (24) hour period.
1-919(c)(3) Holding Tanks
the tank, any piping connected to the tank, and all access structures connected to the tank shall be watertight. The tank shall be leakage tested prior to being placed in service;

Utah

Watertight testing in the field is required in accordance with ASTM C-1227 ***OR*** as stated in the below Utah rule. ASTM C-1227 "leakage testing" requires the tank be either vacuum or water tested. The vacuum testing is performed by applying a vacuum to 4 inches of mercury and the tank passes if 90% of the vacuum is held for 2 minutes. Water testing is performed by filling the tank with water (no specified level) and letting it stand for 24 hours then refilling the tank and it is approved if the water level is held for one hour.

Rule Reference:

R317-4-3.3.5

Final On-Site Inspection.

A. After an onsite wastewater system has been installed and before it is backfilled or used, the entire system shall be inspected by the appropriate regulatory authority to determine compliance with these rules.

B. Each septic tank shall be tested for water tightness. Testing may be performed in accordance with the requirements and procedure outlined in the American Society for Testing Materials' Standard ASTM C-1227, or concrete tanks shall be filled 24 hours before the inspection to allow stabilization of the water level. During the inspection there shall be no change in the water level for 30 minutes. Nor shall moving water, into or out of the tank, be visible. The regulatory authority may allow two piece tanks, with the joint below the water level, to be backfilled up to three inches below the joint to provide adequate support to the seam of the tank. Testing shall be supervised by the regulatory authority. Tanks exhibiting obvious defects or leaks shall not be approved unless such deficiencies are repaired to the satisfaction of the regulatory authority.

Page 4

04/23/2008

New Jersey

The *Aerobic Treatment System Guidance* document requires that all tanks be tested for watertightness through one of the following methods as established in the guidance document, see below.

Guidance Document Reference:

H.7

7. Watertightness of any septic, processing and dispersal system dosing tanks specified in the design must be watertight tested at the installation site after being installed using hydrostatic or vacuum tests. Testing of the tanks shall include all upper portions of the tank, including riser joints. Testing must be done in accordance with the following:

a. Water tightness testing procedures and criteria for concrete tanks shall follow the methods described in ASTM C-1227 standards or National Precast Concrete Association appropriate testing criteria and procedures

b. Tanks made of materials other then concrete shall be tested, after installation, in accordance with the methods described in ASTM C-1227 standards, if applicable, or other hydrostatic or vacuum testing methods approved by the tank manufacturer.

c. Water used for this testing shall be either from a potable water source or Reclaimed Water for Beneficial Reuse authorized by a NJPDES permit.

d. The use of an onsite potable well for purposes of supplying water for this testing is not recommended. If an onsite potable well is to be used, pumping of the well must be done in a

manner which will withdraw water at a rate less than 50% of the safe yield of that well and will not damage the pump or any other component of the well.

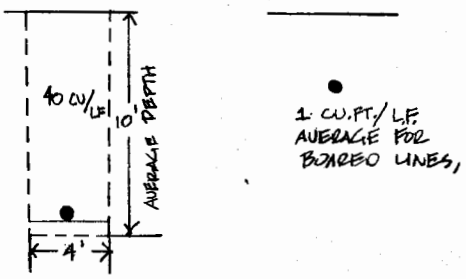
Finally, what if STEP/ STEG septic tanks were allowed to leak as much as a 'standard' gravity sewer?

During the rainy season the LOWWP gravity system is 'designed' to leak 310,000 gallons per day into the system (EIR I&I evaluation, 310,000 gpd / 5000 homes) 62 gallons/day is the amount each residential tank would be allowed to leak to have the same environmental impact as the gravity conveyance system .

If a standard tank was tested and the water level dropped 3 inches in one day in the tank, it would have the same leakage rate and environmental impact as the purposed gravity sewer system!

This is shown by the following simple math.
62 gallons/day/household / 7.481 = 8.2 Cubic Ft.
Average tank inner wetted surface 4.25 x 7.5 = 32 Sq. Ft.
8.2 Cubic feet/ 32 sq ft = 0.25 foot drop in water level
or three inches drop in the tank water level.

2) STEP has the same archeological impacts as the Gravity sewer.



As seen in the drawing to the left, the amount of earth subject to archeological investigation using STEP horizontal boring is 2.5 % that of gravity trenching. For gravity trenching 14,784,000 cu ft of soil is subject to archeological investigation. For step, only 369,000 cu ft are subject to investigation based on 70 miles of piping.

Horizontal boring is a valid archeological mitigation that cannot be matched by trenching. Its economic benefits have not been evaluated reasonably in the EIR.
Gravity trenching could incur extreme costs that would be added to the gravity sewer collection to meet state law with respect to archeological findings in the excavated earth. This cost would be passed on to the homeowner and could raise the price of the collection system for gravity by as much as 1/3. The in ground cultural resources of Los Osos are vast. A review of the Cultural Resource Appendix of the EIR makes that fact obvious. The LOWWP Engineers have misrepresented this added cost by not estimating it at all. The EIR claims that State law requires that:

> *"Mechanical backhoe trenching shall be conducted within the sensitive areas where any construction impacts will occur and shall be monitored by a qualified geoarchaeologist. Any identified intact deposits will be evaluated, and any deposits determined to be eligible to the California Register and/or National Register shall require project redesign to avoid impacts, or data recovery to mitigate unavoidable impacts."*

To counteract the obvious archeological benefits of STEP collection illustrated above, the County EIR made a series of vague claims about on site impacts without using septic tank recycling as an obvious mitigation and assuming that the tank when first installed did not have any archeological impact. Septic tank recycling avoids 80% of the described impacts. The LOWWP EIR for step collection erroneously concludes:

> *"Excavation for the new STEP/STEG tank as a replacement for the existing septic tanks at each property could result in an unknown amount of impact to human remains. Avoidance of burials in these situations would be difficult to attain due to limited space and the need for significant excavation to accommodate the STEP tanks.*

Recycling existing tested tanks with small pump vault impacts mitigates on site excavation by 80% on site.

3) STEP collection systems share the same geologic risks.

The County in the LOWWP EIR has made the assumption that infiltration of water into the collection system will occur during the rainy season in the amount of 310,000 gallons a day. What the county fails to add to that is the potential additional infiltration due to lateral spreading, subsidence, liquefaction or collapse in 20 percent of the piping system. STEP piping eliminates pipe slope failure due to soil conditions entirely. Instead of estimating the cost of the expected liquefaction conditions in six miles of sewer line in low lying areas, the County takes a pass on the analysis and differs that it will be covered in the Emergency Response Plan (ERP) for the wastewater facility. Many low income high elevation properties will be paying for geologic impacts of wealthier income owners adjacent to the bay that are in problematical soils. STEP collection eliminates this inequality.

To quote the EIR Geologic report which reads almost like a disclaimer by the engineers:

> *"Liquefaction could impact the pump station and pipelines in portions (about 20 percent) of the collection system areas, and where the conveyance crosses low-lying areas".*

> *"Based on a review of the additions and modifications of the collection system facilities, the Preferred Project facilities may be located on a geologic unit or soil that is unstable and could potentially result in lateral spreading, subsidence, liquefaction or collapse* ***Project Specific Impact Analysis Collection System LOWWP EIR- Geology.***

> *Mitigation. Liquefaction could impact the pump station and pipelines in portions (about 20 percent) of the collection system areas, and where the conveyance crosses low-lying areas or creeks. Mitigation for pump stations typically consists of site preparation and grading that will reduce the potential for liquefaction and seismic settlement to impact the pump station areas, or supporting the structure on deep foundations bearing below the liquefiable materials. Specific recommendations for designing pump stations considering liquefaction hazards should be provided in the design-level geotechnical report.*

> *When practical, pipelines should be founded below liquefiable soils. Because of the difficulty of predicting pipeline performance relative to liquefaction and seismic hazards, pipelines are commonly not mitigated as part of the design and construction of a pipeline*

project.

Alternatively, liquefaction and seismic hazards can be addressed in an Emergency Response Plan (ERP) for the wastewater facility. The ERP should recognize the potential for liquefaction and seismic hazards to impact the pipeline, and specific high hazard areas that should be inspected for damage following an earthquake. "Soft fixes" are sometimes incorporated in the ERP. Soft fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment associated with the pipeline and repair that can be difficult to obtain or have long lead times to obtain." (Geotechnical Report for Los Osos Wastewater Project May 22, 2008 (Michael Brandman Associates)

STEP collection system holds the following geological benefits in this environmentally sensitive area:

- System pressure is monitored, in ground leakage is caught immediately and contains no solids.
- Pipe slope settlement or damage is non-existent.
- The sewer plant cannot be damaged by salt water intrusion into the 6 miles of low near sea level elevation piping subject to failure from liquefaction and hydrostatic pressure. High water table piping may be impacted by global warming sea level rise.
- Extreme conservation coupled with on site greywater systems will have no negative effect on the design of the step collection system. (> 40 gal/person/day possible.)
- Dewatering impacts and unknown expenses related to pipe slope stabilization are reduced by 50% based on shallow trench depths (5') required for STEP and use of directional boring where possible.
- No massive surface spillage of raw sewage (black water plus solids) will ever contact the Bay Waters.
- ½ the system (solids digestion via septic tanks) is in place, well proven, and already built.

4) Step systems tanks produce more GHG impacts.

Gravity sewers have the mechanical potential to gas off more Ammonia and Methane than septic tanks.

Consider the case of the Los Osos piping system. There are 70 miles of sewer pipe including laterials (Table Q.3-2: Summary of Proposed Projects Los Osos Wastewater Project (LOWWP) with and average diameter of 10 inches creating an area of exposed sewage surface 82 % larger than the combined total of all septic tank effluent surface areas as shown by the calculations below. Both septic tank and sewer wetted surface areas are exposed to the atmosphere through home venting. And in the case of gravity, 907 manholes throughout the community will release greenhouse gasses as solids are actively digested in the piping system.

1) For the gravity piping system internal wetted surface area:
10/12 x 5280 x 70 = 307,999 square feet of surface area exposed to the atmosphere through home venting. But the wetted surface area in a gravity sewer is not flat. It is convoluted and therefore has a larger surface area than the minimum used in this calculation.

2) For the internal wetted surface area of 5000 septic tanks:
4.5 x 7.5 x 5000 = 168,500 square feet of surface area exposed to the atmosphere through home venting. Both areas are exposed continuously to the atmosphere during operation.

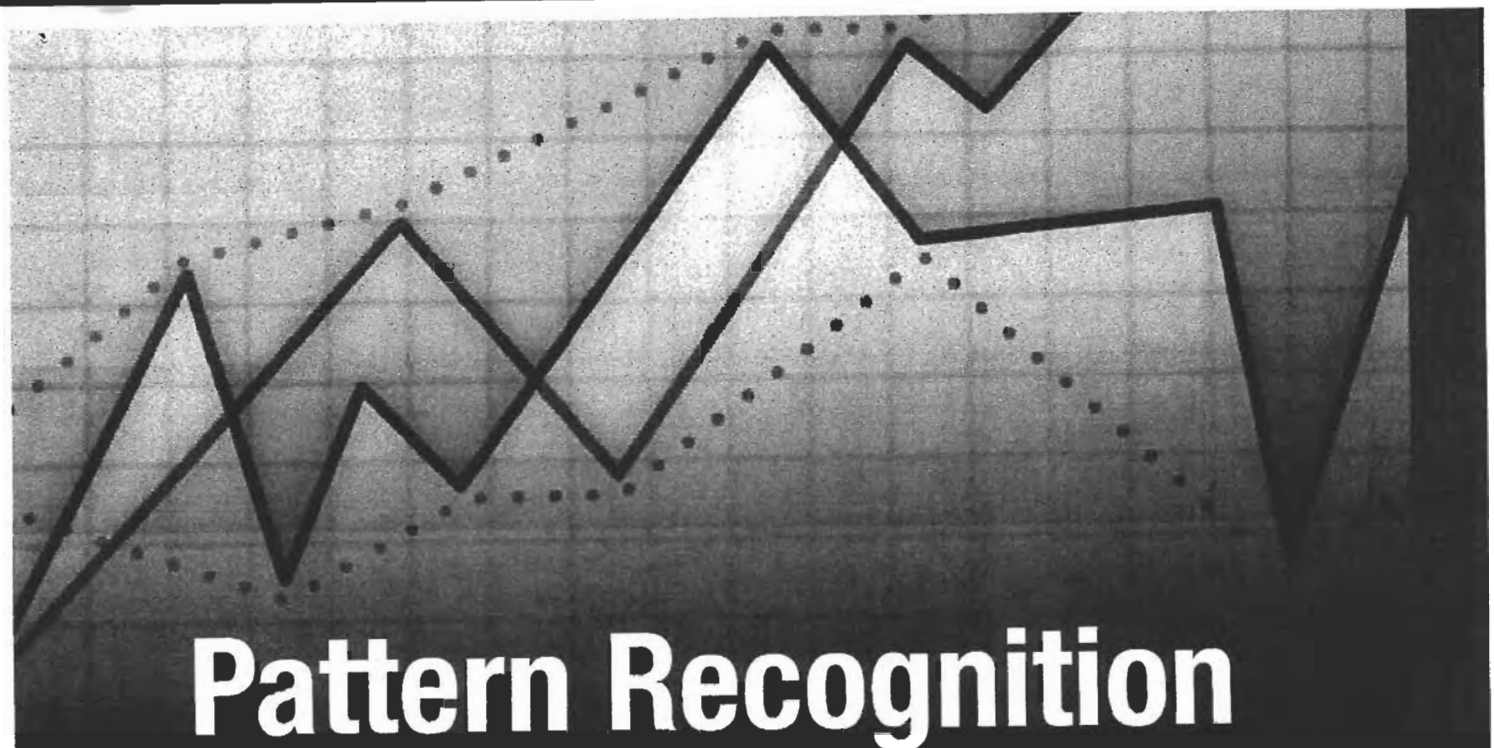
3) The sealed STEP piping system does not gas off through home venting like the gravity piping system does. A small amount of air is released through charcoal filters to remove air from the pressurized all liquid lines. There is no wetted area exposed to the atmosphere in STEP piping.

Carollo fails to recognize and compare the two surface areas in their evaluation and instead claims that only septic tanks expose sewage surfaces to the atmosphere. Carollo ignores the wetted surface area of the gravity piping system and claims in the EIR that:

> *Energy Use/GHG emissions – Gravity is more energy intensive, but emits less GHG due to the absence of septic tank venting and less chemical production. STEP/STEG is less energy intensive, but overall the process emits a large amount of GHG due to septic tanks and chemicals. (Carollo, June 2008)*

The actual volume of air in the gravity system is about twice that which is in the top of the 5000 septic tanks in Los Osos. Carollo, clearly did not do their homework on this important calculation. Public works staff has continuously misrepresented the co-evaluation on GHG assuming the EIR calculations were correct. They are not.

Steven Paige, Monday, July 20, 2009
Homeowner, Prohibition Zone
Los Osos , California



Pattern Recognition

Using diurnal flows to predict and prevent odors

Bryan Haan

Sporadic odors in a collection system are almost impossible to eliminate completely and usually come from an isolated event. Although odors may seem random at first, monitoring can reveal trends that quite often relate to diurnal flow patterns. Diurnal flows, which are basically the trend between collection system flows and human activity, can change throughout the day.

Adapting your approach or modeling your odor treatment to account for diurnal flow is not as difficult as it may sound. You may already have access to many of the resources needed to develop a greater understanding of the odor issues and how to proceed with treatment options. These options should be optimized to match the diurnal flow pattern to reduce treatment cost and increase treatment levels. Understanding this influence and correlating it with system retention times also may explain phantom odors.

What Smells?

Odor generation has a lot of building blocks, but a stable base of organic material and biochemical oxygen demand is usually enough to cause a large odor issue to develop. Hydrogen sulfide is the most common source of odor issues: its pungent rotten-egg smell is noticeable in concentrations as low as 0.1 ppm. Therefore, hydrogen sulfide is the driving factor for odor monitoring and quantification at most treatment plants and collection system emission points.

Table 1 (p. 64) lists additional predominant substances that cause odors from a wastewater perspective. These substances are the main compounds emitted from sewers but, by far, aren't the only ones. If a collection system has a large industrial influence, the list of odor compounds can grow exponentially, depending on the nature of the industry and how its wastes mix and break down in the collection system.

As no two sewers are exactly alike, no two sewers will share exactly the same odor-generation or emission rate. However, most sewers have a similar basis for odor generation and, thus, modeling and estimating can be done.

How Does Hydrogen Sulfide Form?

In order to understand how to control odor — and specifically hydrogen sulfide — it's necessary to look at odor production at the biological level in the wastewater system. Simply stated, sulfides in wastewater — which become hydrogen sulfide when released to the air — come from waterborne facultative bacteria finding an alternate oxygen source. Facultative bacteria prefer free or "dissolved" oxygen, but dissolved oxygen is scarce in wastewater streams and is consumed rapidly. However, sulfate — another sulfur compound found in most wastewater systems — contains oxygen atoms. The facultative bacteria attach to the sulfate compound and strip away the oxygen, thereby creating sulfides. Through various biological

processes, the sulfides become the source material for the formation of hydrogen sulfide and sulfuric acid compounds. These compounds, respectively, cause the severe odor and corrosion problems in a typical wastewater collection system, as shown in Figure 1 (p. 65).

When hydrogen sulfide is present in a moisture-laden atmosphere, the hydrogen sulfide mixes with water in the atmosphere to form sulfuric acid. These droplets will oxidize almost everything they come in contact with. As the hydrogen sulfide levels increase, so do sulfuric acid levels. In some instances, gaining corrosion control — not odor control — is the key objective for reducing hydrogen sulfide.

The three contributors to hydrogen sulfide at a control point — a location where odors are being emitted — are

- existing dissolved hydrogen sulfide in the contributing flow,
- production of hydrogen sulfide by bacteria in the bulk liquid, and
- production of hydrogen sulfide from the slime layer or sediment within the collection system.

An individual sewer can have multiple control points. As the wastewater moves along the sewer, it emits odors at all atmospheric release points.

How Does It Get Into the Air?

When considering odor or hydrogen sulfide generation, it's important to consider what sends the dissolved sulfide out of the water and into the air. The main factor that dictates how much hydrogen sulfide is released is the natural instability of dissolved sulfide, pH, and turbulence.

First, dissolved sulfides by their nature are prone to escape the liquid phase and become airborne. And as more sulfides are generated by the three contributors listed above, the more saturated the solution becomes and the more hydrogen sulfide is released.

Second, the pH of the water also contributes to the stability of the dissolved sulfide. As seen in Figure 2 (p. 65), dissolved sulfide is driven to hydrogen sulfide under increasingly acidic conditions. This factor should be taken into consideration, especially if there's an industrial input on the collection system that could affect pH.

Third, turbulence in the water can drive dissolved sulfide into the atmosphere. Any drop, turn, or splashing of the wastewater releases hydrogen sulfide from solution.

Small changes to the flow characteristics in the collection system can sometimes reduce releases; any change to reduce turbulence helps keep dissolved sulfide in suspension. Simple changes — such as reducing wastewater flow speed by increasing pump runtimes but decreasing the pump rate, implementing a variable-frequency drive pump arrangement versus an on–off pump-cycle arrangement, or removing obstructions or large elevation changes — can help.

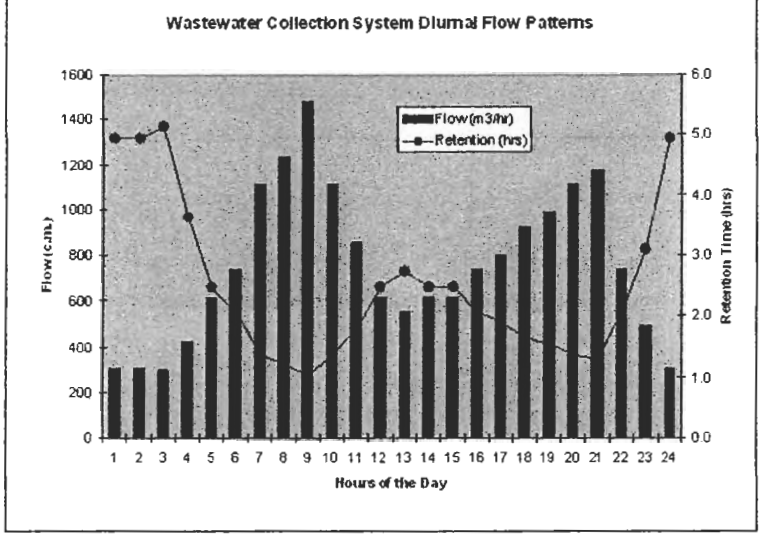
How Much Hydrogen Sulfide Is There?

Once control points have been identified, atmospheric and liquid testing should be conducted to quantify the raw levels. For liquid testing, special sample bottles must be used to preserve the dissolved sulfide. In atmospheric testing, "bag sampling" is commonly used for complete spectrum analysis, which also will quantify the hydrogen sulfide levels. This type of analysis is useful, especially early on, as it provides accurate

Table 1. Common Wastewater Odor Compounds

Substance	Formula	Characteristic odor
Allyl mercaptan	$CH_2 = CH–CH_2–SH$	Strong garlic – coffee
Amyl mercaptan	$CH_3–(CH_2)_3–CH_2–SH$	Unpleasant – putrid
Benzyl mercaptan	$C_6H_5–CH_2–SH$	Unpleasant – strong
Crotyl mercaptan	$CH_3–CH = CH–CH_2–SH$	Skunklike
Dimethyl sulfide	$CH_3–S–CH_3$	Decayed vegetables
Ethyl mercaptan	$CH_3CH_2–SH$	Decayed cabbage
Hydrogen sulfide	H_2S	Rotten eggs
Methyl mercaptan	CH_3SH	Decayed cabbage
Propyl mercaptan	$CH_3–CH_2–CH_2–SH$	Unpleasant
Sulfur dioxide	SO_2	Pungent – irritating
Tert-butyl mercaptan	$(CH_3)_3C–SH$	Skunklike
Thiocresol	$CH_3–C_6H_4–SH$	Skunk – rancid
Thiophenol	C_6H_5SH	Putrid – garliclike

Figure 3. Small-System Retention Time With Standard Flow Pattern



odors may not be generated evenly during the course of a day. Retention-time changes, however, drastically affect odor generation. The longer the wastewater is in a captive system, such as a sewer, the more time the biomass has to break down food sources and generate byproducts that lead to gases, such as hydrogen sulfide.

A lot of factors play a role in odor generation, but the diurnal flow pattern is going to compound a small or nonexistent issue into something that causes problems at certain times of the day.

Understanding the effect diurnal flows may have on odor generation is key, as is applying it to actual systems and their individual retention times. Figure 4 (below) shows how an untreated municipal sewer system's odor generation is being monitored in the form of hydrogen sulfide. Looking at the time scale on the bottom, this initially appears to be completely the opposite of how diurnal flow affects odor generation. Are the highest hydrogen sulfide results seen when you would expect to see the highest flows or the lowest retention times?

This collection system has roughly a 6-hour retention time, so the monitoring results taken from the downstream control point at the end of the collection system can have up to a 6-hour delay from when the actual generation occurred. In Figure 5 (p. 67), the time scale has been altered to show when the wastewater that causes the high levels actually enters the collection system. This view shows that the odor generation originates during the early morning low flows and the midday flows. Wastewater that enters during these times has

Figure 4. Untreated Sewer Odor-Generation Timeline

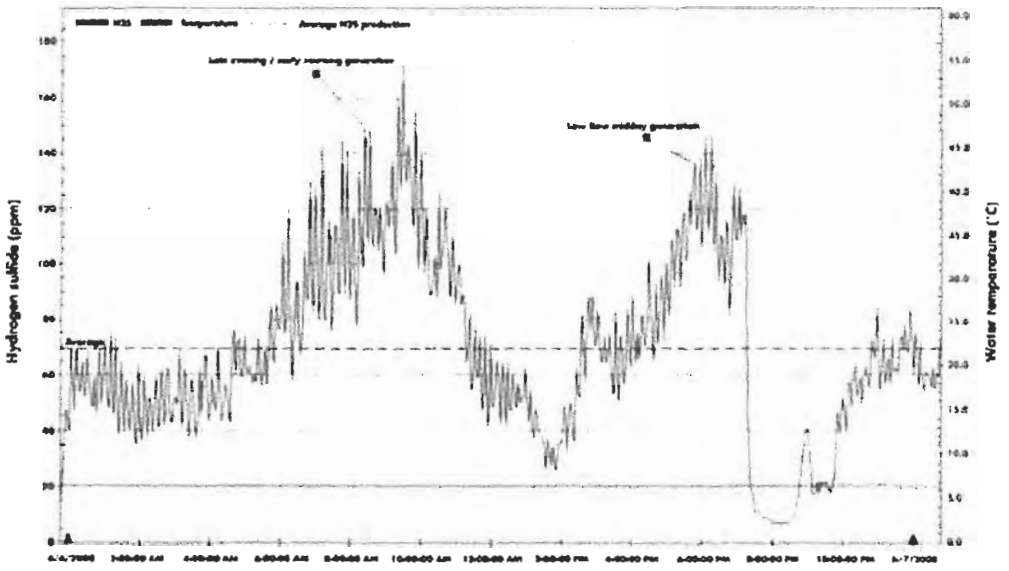
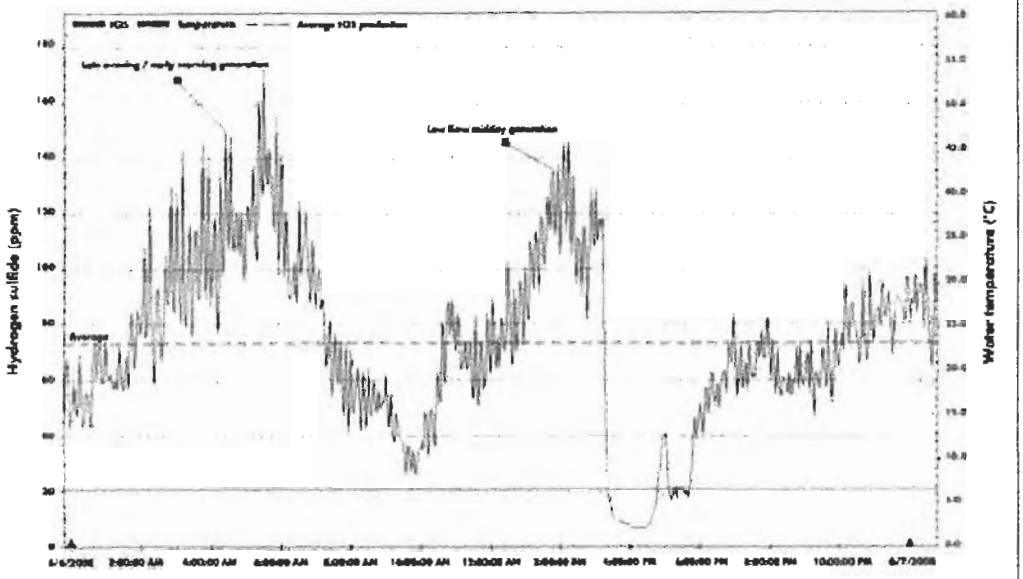


Figure 5. Untreated Sewer Odor Generation With Adjusted Timeline



longer retention times and thus causes higher odor levels at the control point downstream.

What Can I Do To Stop Odors?

A lot of treatment options can be applied when an odor-control issue is either present or expected to occur. Treatment options can be split into two main areas: liquid-phase treatment options that treat the wastewater and vapor-phase options that treat the atmospheric conditions generated.

The main liquid-phase options are oxidizers, iron salts, or nitrate addition. The main vapor-phase options are carbon adsorption, biofiltration and bioscrubbers, or wet–chemical scrubbers. Just as there are many factors that contribute to odor generation, there are many factors to consider when choosing the treatment technology. A few points that should be considered are listed below:

- Are the odors present at one specific location or at multiple release points?
- At the control point, what are acceptable odor levels (targets for control)?
  - For odor control, the typical target is a daily average of 1 ppm or less hydrogen sulfide.
  - For corrosion control, the typical target is a daily average of 5 ppm or less hydrogen sulfide.
- What space is available at the control point or an upstream dosing location for treatment equipment?
- Does the system generate odors at differing levels throughout the day? That is, does diurnal flow contribute to the problem?
- Can the treatment option be tailored or optimized for uneven odor generation?
- Does odor generation decrease in the cooler months due to a decrease in wastewater temperature, or does the generation increase due to a decrease in average daily flows and increased retention time?

Where Can I Go From Here?

These questions are the starting point to assessing an odor issue. When engaging a treatment option, technical help from the supplier or consultants should be readily available. As odors have received more attention, some consultants now specialize in this area, and some suppliers have developed a variety of proven technologies for various situations.

Remember that no two sewers are exactly alike, so treatment options must be considered on a case-by-case basis. Applying one proven technology to every odor issue most likely will not achieve the best treatment or the most cost-effective solution.

This is not to say that if one odor issue has similar characteristics to another that has an effective treatment option already in place, the new issue can't be approached in a similar manner, but ensure that testing and monitoring of the situation is done so that a complete understanding of the issue can be achieved before applying a technology.

Bryan Haan *is an odor-control applications engineer at Siemens Water Technologies Canada Inc. in Markham, Ontario.*

H-2: Archaeological Survey Report

Confidential Information Not for Public Distribution

The September 2008 Archaeological Survey Report and Sensitivity Study for Proposed Projects and Alternatives for the Los Osos Wastewater Project, San Luis Obispo County, California by Far Western Anthropological Research Group, Inc. is:

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CALIFORNIA CONSTITUTION
ARTICLE 13D [ASSESSMENT AND PROPERTY-RELATED FEE REFORM]

SEC. 4. Procedures and Requirements for All Assessments. (a) An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. **No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel. Only special benefits are assessable, and an agency shall separate the general benefits from the special benefits conferred on a parcel.** Parcels within a district that are owned or used by any agency, the State of California or the United States shall not be exempt from assessment unless the agency can demonstrate by clear and convincing evidence that those publicly owned parcels in fact receive no special benefit.

(b) All assessments shall be supported by a detailed engineer's report prepared by a registered professional engineer certified by the State of California.

(c) The amount of the proposed assessment for each identified parcel shall be calculated and the record owner of each parcel shall be given written notice by mail of the proposed assessment, the total amount thereof chargeable to the entire district, the amount chargeable to the owner's particular parcel, the duration of the payments, the reason for the assessment and the basis upon which the amount of the proposed assessment was calculated, together with the date, time, and location of a public hearing on the proposed assessment. Each notice shall also include, in a conspicuous place thereon, a summary of the procedures applicable to the completion, return, and tabulation of the ballots required pursuant to subdivision (d), including a disclosure statement that the existence of a majority protest, as defined in subdivision (e), will result in the assessment not being imposed.

(d) Each notice mailed to owners of identified parcels within the district pursuant to subdivision (c) shall contain a ballot which includes the agency's address for receipt of the ballot once completed by any owner receiving the notice whereby the owner may indicate his or her name, reasonable identification of the parcel, and his or her support or opposition to the proposed assessment.

(e) The agency shall conduct a public hearing upon the proposed assessment not less than 45 days after mailing the notice of the proposed assessment to record owners of each identified parcel. At the public hearing, the agency shall consider all protests against the proposed assessment and tabulate the ballots. The agency shall not impose an assessment if there is a majority protest. A majority protest exists if, upon the conclusion of the hearing, ballots submitted in opposition to the assessment exceed the ballots submitted in favor of the assessment. In tabulating the ballots, the ballots shall be weighted according to the proportional financial obligation of the affected property.

(f) In any legal action contesting the validity of any assessment,

the burden shall be on the agency to demonstrate that the property or properties in question receive a special benefit over and above the benefits conferred on the public at large and that the amount of any contested assessment is proportional to, and no greater than, the benefits conferred on the property or properties in question.

(g) Because only special benefits are assessable, electors residing within the district who do not own property within the district shall not be deemed under this Constitution to have been deprived of the right to vote for any assessment. If a court determines that the Constitution of the United States or other federal law requires otherwise, the assessment shall not be imposed unless approved by a two-thirds vote of the electorate in the district in addition to being approved by the property owners as required by subdivision (e).

CALIFORNIA CONSTITUTION
ARTICLE 13D [ASSESSMENT AND PROPERTY-RELATED FEE REFORM]

SEC. 5. Effective Date. Pursuant to subdivision (a) of Section 10 of **Article** II, the provisions of this **article** shall become effective the day after the election unless otherwise provided. Beginning July 1, 1997, all existing, new, or increased assessments shall comply with this **article**. Notwithstanding the foregoing, the following assessments existing on the effective date of this **article** shall be exempt from the procedures and approval process set forth in Section 4:

(a) Any assessment imposed exclusively to finance the capital costs or maintenance and operation expenses for sidewalks, streets, sewers, water, flood control, drainage systems or vector control. Subsequent increases in such assessments shall be subject to the procedures and approval process set forth in Section 4.

(b) Any assessment imposed pursuant to a petition signed by the persons owning all of the parcels subject to the assessment at the time the assessment is initially imposed. Subsequent increases in such assessments shall be subject to the procedures and approval process set forth in Section 4.

(c) Any assessment the proceeds of which are exclusively used to repay bonded indebtedness of which the failure to pay would violate the Contract Impairment Clause of the Constitution of the United States.

(d) Any assessment which previously received majority voter approval from the voters voting in an election on the issue of the assessment. Subsequent increases in those assessments shall be subject to the procedures and approval process set forth in Section 4.

CALIFORNIA CONSTITUTION
ARTICLE 13D [ASSESSMENT AND PROPERTY-RELATED FEE REFORM]

SEC. 6. Property Related Fees and Charges. (a) Procedures for New or Increased Fees and Charges. An agency shall follow the procedures

pursuant to this section in imposing or increasing any fee or charge as defined pursuant to this **article**, including, but not limited to, the following:

(1) The parcels upon which a fee or charge is proposed for imposition shall be identified. The amount of the fee or charge proposed to be imposed upon each parcel shall be calculated. The agency shall provide written notice by mail of the proposed fee or charge to the record owner of each identified parcel upon which the fee or charge is proposed for imposition, the amount of the fee or charge proposed to be imposed upon each, the basis upon which the amount of the proposed fee or charge was calculated, the reason for the fee or charge, together with the date, time, and location of a public hearing on the proposed fee or charge.

(2) The agency shall conduct a public hearing upon the proposed fee or charge not less than 45 days after mailing the notice of the proposed fee or charge to the record owners of each identified parcel upon which the fee or charge is proposed for imposition. At the public hearing, the agency shall consider all protests against the proposed fee or charge. If written protests against the proposed fee or charge are presented by a majority of owners of the identified parcels, the agency shall not impose the fee or charge.

(b) Requirements for Existing, New or Increased Fees and Charges. A fee or charge shall not be extended, imposed, or increased by any agency unless it meets all of the following requirements:

(1) Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.

(2) Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.

(3) The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.

(4) No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property in question. Fees or charges based on potential or future use of a service are not permitted. Standby charges, whether characterized as charges or assessments, shall be classified as assessments and shall not be imposed without compliance with Section 4.

(5) No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners. Reliance by an agency on any parcel map, including, but not limited to, an assessor's parcel map, may be considered a significant factor in determining whether a fee or charge is imp

COPY OF CERTIFIED MAIL REQUEST

Request for Time

From: Steven Paige DRC2008-00103–Protestant #782

To: Murry Wilson, Nicole Retana, Bruce Gibson-Supervisor, County of San Luis Obispo.

I am requesting a specific amount of time to address the Board of Supervisors on Sept 29, 2009. I will need 5 minutes for each claim in my petition for a sum total of 35 minutes of presentation time. I also request rebuttal time of ten minutes for staff's objections to my claims.

My legal standing on these issues was first set in my 'no' vote and tax protest filed with the County clerk before the 218 vote. Ignoring my request is in violation of Article XIII D of the State Constitution, Sec.(6)B-5 "In any legal action contesting the validity of a fee or charge, the burden shall be on the agency to demonstrate compliance with this article." Both taxation and environmental issues are at nexus in my complaint. Curtailing my time has a taxation effect.

I am aware that the Board of Supervisors is not holding hearings the previous week. I request that my time frame for rebuttal to the Planning Commission findings should not be reduced because of time lost the previous week.

Thank you,

Steve Paige

215-9025

COPY OF P.C. SUBMISSION

COASTAL APPEALABLE FORM

San Luis Obispo County Department of Planning and Building 7/25/08

Please Note: An appeal should be filed by an aggrieved person or the applicant at each stage in the process if they are still unsatisfied by the last action.

PROJECT INFORMATION Name: LOWWP (LOS OSOS WASTEWATER PROJECT) File Number: DRC2008-00183

Type of permit being appealed:

☐ Plot Plan ☐ Site Plan ☐ Minor Use Permit ☐ Development Plan
☐ Variance ☐ Land Division ☐ Lot Line Adjustment ☒ Other: LOWWP

The decision was made by:

☐ Planning Director (Staff) ☐ Building Official ☐ Planning Department Hearing
☐ Subdivision Review Board ☒ Planning Commission ☐ Other _____
Date the application was acted on: _____

The decision is appealed to:

☐ Board of Construction Appeals ☐ Board of Handicapped Access
☒ Planning Commission ☒ Board of Supervisors

BASIS FOR APPEAL

☒ INCOMPATIBLE WITH THE LCP. The development does not conform to the standards set forth in the Certified Local Coastal Program of the county for the following reasons (attach additional sheets if necessary).
Explain: SEE ATTACHED COMPLAINT AND EXHIBITS

☐ INCOMPATIBLE WITH PUBLIC ACCESS POLICIES. The development does not conform to the public access policies of the California Coastal Act - Section 30210 et seq of the Public Resource Code (attach additional sheets if necessary).
Explain: _____

List any conditions that are being appealed and give reasons why you think it should be modified or removed.

Condition Number's _____ Reason for appeal (attach additional sheets if necessary)

SEE ATTACHED APPEALS

APPELLANT INFORMATION

Print name: STEVEN PAIGE

Address: 1554 NINTH ST. Phone Number (daytime): 528-4738

I/We are the applicant or an aggrieved person pursuant to the Coastal Zone Land Use Ordinance (CZLUO) and are appealing the project based on either one or both of the grounds specified in this form, as set froth in the CZLUO and State Public Resource Code Section 30603 and have completed this form accurately and declare all statements made here are true.

Signature _____ 8/26/09 Date

OFFICE USE ONLY
Date Received: _____ By: _____
Amount Paid: _____ Receipt No. (if applicable): _____

Planning Commission Protest LOWWP

Wednesday, August 26, 2009,

My name is Steven Paige, I am the Petitioner named below.

I am a low income homeowner in the "Prohibition Zone" of Los Osos California. I am dissatisfied with the approval of the Los Osos Wastewater Project I have the right to appeal the Planning Commission decision to the Board of Supervisors up to 14 days after the date of action, in writing, to the Planning Department. Legitimate coastal resource issues related to The CSLO's Local Coastal Program are raised in the appeal, I claim there should be no fee.

I will appeal my claims to the California Coastal Commission pursuant to Coastal Act Section 30603 and the County Coastal Zone Land Use Ordinance 23.01.043 if they are not addressed by the board. I understand that exhaustion of appeals at the county is required prior to appealing the matter to the California Coastal Commission. The appeal to the Board of Supervisors must be made to the Planning Commission Secretary, Department of Planning and Building, and the appeal to the California Coastal Commission must be made directly to the California Coastal Commission Office.

I understand these regulations contain specific time limits to appeal, criteria, and procedures that must be followed to appeal this action. The regulations provide the California Coastal Commission 10 working days following the expiration of the County appeal period to appeal the decision. This means that no construction permits can be issued until both the County appeal period and the additional Coastal Commission appeal period have expired without an appeal being filed.

I am appealing the Planning Commission's findings and I claim that they violate the Coastal Act I reference the specific language in the Planning Commission findings:

STATEMENT OF OVERRIDING CONSIDERATIONS

The California Environmental Quality Act requires the lead agency to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. The County of San Luis Obispo proposes to approve the Los Osos Wastewater Project although unavoidable adverse impacts to agricultural resources will result, as identified in the Environmental Impact Report. Specifically, the significant and unavoidable project-specific and cumulative impacts are associated with the conversion of approximately 16 acres of agricultural land to non-agricultural uses, rendering the land incapable of agricultural production. Consistent with past County practice, mitigation in the form of agricultural easements over similar or better agricultural land are required, however, adverse impacts are not reduced to a level considered less than significant. Never the less, the County finds that those impacts are outweighed by the benefits of the Los Osos Wastewater Project. Further, alternatives identified in the Environmental Impact Report are not considered feasible to reduce the impacts on agricultural resources below the level of impacts that will result from the Project.

Consequently, the County finds as follows:

b) **The current method of wastewater disposal by individual septic tank systems located in areas of high groundwater are a major contributing factor to this degradation of water quality.**

NO reference to the division of system components. More analysis needed. I protest this finding.

4. **The Project will meet water quality requirements while minimizing life-cycle costs and mitigating affordability impacts on the community to the maximum degree possible**

More analysis is needed. I protest this finding.

Complaints By Petitioner

General Issues:

The petitioner's general complaints about the Planning Commission's findings that impact the Costal Act are related to inadequate Environmental Justice Review, affordability, Historical resources, GHG mitigation, greywater law, affordability and co-equal analysis between STEP/STEG and gravity sewers in the Planning Commission's Oversight of the LOWWP FEIR.

Seniors and other low income homeowner's affected by the present economic environment and $300 dollar a month sewer bills have not been addressed adequately. An update of the FEIR environmental Justice review is necessary. Under existing State law fixed income Seniors will have their homes condemned and sold out from underneath them to pay for the proposed assessment if they can't make monthly payments. A STEP/STEG sewer using existing septic tanks could cut the assessment and user fees in half contrary to County Claims that STEP/STEG will cost the same. Proof of further inconsistencies in the co-equal review can be found in **(Exhibit 2)**

More analysis is needed for the following:

1) Costal Act 23.02.022 Determination of completeness, 23.02.035 Additional information required.

The Planning Commission failed to adequately review Environmental Justice impacts and did not minimize life cycle costs and mitigate affordability by omitting reference to and mitigation for the suspension of *Senior Citizens' Property Tax Deferral Program*.

Omission of this program will have severe social and environmental impacts that the Planning Commission has ignored. Many seniors will not be able to afford the proposed monthly cost of the project yet voted for it because of the County's claim of tax deferral. The County of San Luis Obispo claimed PTP program as a mitigation of costs. The Planning Commission failed to acknowledge that the CSLO Broke the Community Contract with seniors for tax deferral. The CSLO assumed, advertised, and projected to voters the Senior Citizens' Property Tax Deferral Program prior to the 218 vote.

Quoting the State Comtrollers website:

"On February 20, 2009, the Governor signed signed Senate Bill X3 8 (Chapter 4, Statutes of 2009), which immediately suspends the Senior Citizens' Property Tax Deferral Program. This legislation prohibits the filing of claims for property tax postponement and prohibits the Controller from accepting claims filed after February 20, 2009."

"As a result of the program suspension, the Controller will no longer accept claims for property tax postponement pending modification or repeal of this new law. 6)Enacts the Governor's proposal to suspend indefinitely the Senior Citizens' Property Tax Deferral Program. This program is administered by the State Controller and allows the State to pay the local property tax for low-income seniors with reimbursement to the state (including interest) made when the property is sold. Suspension of the program will save the GF $6.5 million in 2008-09 and $32.0 million in 2009-10 and ongoing."

The program is discontinued. Before the 218 vote was cast, County literature stated that the property tax deferral program would help seniors. The CSLO must supply voters with a comparable deferral option or recast the 218 vote. The Planning commission missed this important issue in its entirety.

2) Costal Act 23.02.022 Determination of completeness, 23.02.035 Additional information required.

The Planning commission failed to adequately review Environmental Justice impacts and did not minimize life cycle costs and mitigate affordability by the act of not acknowledging that the County of San Luis Obispo Broke Community Contract for the inclusion of the STEP/STEG Option in the design bid build process.

The Petitioner claims that the assessment engineers report for the LOWWP and community brochures (**Exhibit 1**),constitute a contract with the Petitioner and other homeowners. It was readable by the petitioner before the vote. That contract included having a STEP sewer option in the design/bid/build process. The STEP sewer option was represented in the contract as being co-equal to gravity sewer in the design/bid/build process.

The Petitioner concludes that the omission of the STEP sewer from the design/bid/build process is a breach of contract. The Petitioner quotes a specific letter written on August 16, 2007, in a communication to the petitioner via an addendum the assessment engineers report labeled TO: Noel King, Director of Public Works, VIA: Paavo Ogren, Deputy Director of Public Works, FROM: Dean Benedix., P.E., Assessment Engineer of Work on the SUBJECT of: San Luis Obispo County Wastewater Assessment District No. 1, Determination of Special Benefits and Project Cost, said letter Dept of Public Works Stationery states without question that:

"In the current project selection strategy, the STEP and gravity alternatives would compete through the construction bidding phase using a competitive bid, design/build, and/or build/own/operate/transfer process. "

The engineers report for the Prop 218 tax vote assessment against the petitioner's property states unequivocally that STEP sewer would be included in the design bid build process. Since the contract

with the petitioner has been broken then the petitioner claims that the running time to challenge the assessment and 218 vote has not been closed. The petitioner claims that through passive negligence, that the County allowed the continuing process of evaluation for the LOWWP to eliminate prematurely STEP collection and on site primary treatment using existing septic tanks from the design build process without regard to the petitioners tax rights and contractual promise in the quote from the engineers report.
The petitioner claims that the proposed process presented in the engineers report and flyers and absorbed in the public psyche in the taxation vote is an implicit contract to perform co-equal analysis between STEP and gravity sewers, including using existing on site septic tanks. That contract has been subverted, mishandled, manipulated, and neglected by omissions, hyperbole and 'heresy' accounts against STEP collection and treatment. The potential low end cost of step collection using existing septic tanks is reviewed in a recent e-mail from Mike Saunder's of Orenco Systems to Al Barrow. I thank Al for sharing this with me. It outlines how subverted the process has become. **(Exhibit 2)**

3) Costal Act section 23.05.040 Drainage, 23.06.100 Water quality, 23.02.035 Additional information required.

The Planning commission failed to adequately review Environmental Justice impacts and mitigate affordability by <u>not</u> challenging the assumption that drainage runoff, and groundwater seepage into the gravity piping system is the petitioner's wastewater expense. It can be avoided at a lesser cost and environmental impact.

The County of San Luis Obispo has misrepresented what is sewer water in its cost analysis of the LOWWP. This was not overlooked by the petitioner during the challenge period but it was assumed by the petitioner that STEP sewers would be part of the design/bid/build process as stated. In the certified opinion of the appellate Court in HOWARD JARVIS TAXPAYERS ASSOCIATION et. al. v CITY OF SALINAS et.al ., Defendants and s. (Monterey County v. Super. Ct. No. M45873). The Court concluded that storm drainage is separate from sewer wastes and sided with this petitioner in his claim that drainage (and ergo I and I in the gravity sewer system that is equivalent to drainage) is subject to a separate vote or assumed to be subject to general tax assessments not ones specific to the owner's property. The Appellate Court ruled in HJ vs. SALINAS:

"For similar reasons we cannot subscribe to the City's suggestion that the storm drainage fee is "for . . . water services." Government Code section 53750, enacted to explain some of the terms used in articles XIIIC and XIIID, defines "[w]ater" as "any system of public improvements intended to provide for the production, storage, supply, treatment, or distribution of water." The average voter would envision "water service" as the supply of water for personal, household, and commercial use, not a system or program that monitors storm water for pollutants, carries it away, and discharges it into the nearby creeks, river, and ocean. We conclude that article XIIID required the City to subject the proposed storm drainage fee to a vote by the property owners or the voting residents of the affected area.
The trial court therefore erred in ruling that Ordinance Nos. 2350 and 2351 and Resolution No. 17019 were valid exercises of authority by the City Council."

The petitioner claims it is illogical to take 300,000 gallons a day of perfectly clean rainwater out of the Los Osos basin, that is part of a natural process of groundwater recharging and interject it into the gravity sewer lines, mix the clean water with polluted water, transfer it to the treatment plant, treat it, and re-dispense in into the water basin and claim that the actions are a special benefit to the petitioners property. The CSLO has by assuming that I&I is wastewater, has created a tax claim against the petitioner property that is thoroughly avoidable.

The petitioner then has good reason to assume that the BOS would concur that infiltration of stormwater into the gravity conveyance system should be subject to a separate 218 vote because it is storm drainage and not sewage and has no relevance to the waste discharge prohibitions in the prohibition zone against the petitioners property. It is a general benefit if it has any benefit at all. Assuming the appellate courts findings in HJ vs. CITY OF SALINAS, the petitioner contends that the CSLO cannot take unpolluted rainwater and groundwater seeping into the gravity piping system and charge sewer fees for its treatment. Petitioner claims that in the gravity collection system the treating and disposing of off site drainage, rainwater and groundwater have no relationship to the owner's property. The impact is avoidable in its entirety at no further expense to the property owner using STEP collection.

Hence fees and services, and infrastructure costs caused by CSLO's 'I & I' component of the gravity sewer lines, treatment and disposal need to be eliminated from the petitioner's assessment evaluation. It was assumed by the petitioner at the time of the engineer's report that STEP sewer system would be judged to be the superior method of avoiding the tax impacts of I&I. This assumption is founded in fact contained in the "Ripley Report Dec. 18, 2006 Final Report" commissioned by the Los Osos Community Service District and portions of it are submitted herewith as **(Exhibit 3, See end of document reference and hard copy of pertinent facts.)**. But the STEP sewer system was recently removed from the RFP- design/bid/build process with no public discussion on the subject of the tax ramifications of I&I impacts. These facts ripen the petitioner's claim to challenge its' inclusion in contemporary declaratory relief and injunctive action as it is the only way to assure that Article XIII D provision to limit taxation can be satisfied.

The petitioner claims that the cost of stormwater transmission and treatment within the total LOWWP must be removed from the Petitioner's special benefit. The Petitioner claims that the the County of San Luis Obispo must remove the related portion of special benefit assessment against the petitioners property representing the cost of infiltration of water into the Los Osos Wastewater Project gravity conveyance (piping) system, and the added cost of treating mixed sewage, stormwater and groundwater from the petitioner's "special benefit" sewage treatment costs. The Petitioner claims that runoff and groundwater infiltration into the wastewater piping system is not a sewage conveyance cost that the petitioner should bear but instead is a "Stormwater Transmission" expense.

The added cost for accidental or involuntary stormwater transmission and infiltration is not subject to Regional Water Quality Control Boards requirements aginst the homeowner and projected penalties related to the Petitioner's home waste discharge in the Prohibition Zone of Los Osos. The petitioner is correct in assuming that there is of no "special benefit" to the owner's property for involuntary or accidental off site stormwater and groundwater transmission and treatment related to gravity pipe leakage. The petitioner assumes that the Court would concur with the petitioner that Stormwater and groundwater infiltration into the gravity piping system is entirely avoidable at an equal or lesser cost using accepted engineering technology of a Septic Tank Effluent Pump sewer treatment system as

shown in the engineering study by Ripley **(Exhibit 3).** The petitioner assumes the Court would mandate that the cost of stormwater transmission and treatment within the total LOWWP be removed from the Petitioner's special benefit. This claim is based on constitutional law found in Section 4, Article XIII D.

"SEC. 4. Procedures and Requirements for All Assessments.
No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel. Only special benefits are assessable, and an agency shall separate the general benefits from the special benefits conferred on a parcel."

4) Costal act 23.02.035 Additional information required.
The Planning commission failed to adequately review Environmental Justice impacts, affordability and taxation irregularities by not reviewing the use of the existing septic tank component on each property to be used in conjunction with a low cost STEP/STEG sewer system.

A septic system consists of two components, a septic tank, and a leach field. The septic tank is a sealed system with no waste discharge into the environment. The Petitioner has afforded the environment of the Los Osos groundwater basin primary treatment in the sealed portion of the total septic system commonly referred to as the 'septic tank'. The septic tank component has no discharge into the water basin and the Petitioner claims that the CSLO's claims of endemic community wide leakage are "heresy". Septic tank testing standards are common. The local Regional Water Quality Control Board recognizes the most common standards for construction of concrete septic tanks **(Exhibit 4).** Many septic tanks in Los Osos installed after 1975 were built to the standards in exhibit 4. The Petitioner submits to the BOS that the CSLO's own estimate of reduced pollutants from waste treated in septic tanks by biological action in **(Exhibit 5).**

Petitioner claims that the pollutants found in a gravity sewer release from the Petitioner's property are well above the pollutants found in the release from the outlet side of the Petitioner's existing septic tank. Hence the Petitioner receives no credit in the special benefit from waste treatment related to the difference between the two different constituent discharges described in the LOWWP FEIR **(Exhibit 5,).** The CSLO by co-mingling the pollution consequences of the two separate parts of the Petitioner's waste handling system has denied the petitioner the right to claim partial treatment in the evaluation of what constitutes a special benefit for the petitioner's property and has omitted the tax ramifications in the engineers report.

The petitioner claims that requiring the homeowner to exchange a perfectly functioning septic tank for one that performs the same function and charge the petitioner for the new one is 'inverse condemnation' of the petitioner's property and subject to adjudication. Basically the petitioner's Fifth Amendment rights are being violated. The petitioner's septic tank is being taken without compensation either by physical reward or adjustment of the assessment. The existing septic tank is the property of the homeowner and is not discharging into the groundwater basin. This property right issue clouds the co-equal analysis and the Planning Commission has made no effort to remove the onus of Fifth Amendment challenges which could further delay the project.

The Petitioner contends that if the CSLO included accurate low end cost for STEP/STEG collection in the engineers report and included using existing tested septic tanks, the tax burden to the Petitioner's property would be approximately one half the present proposed assessments. Using the "Ripley Report and subtracting the savings of using the petitioner's existing septic tank the estimated special benefit would be $12,500 dollars not the proposed $24,000 dollars of the CSLO's preferred project. This fact illustrates the 'existing standing benefit' that the Petitioner's primary treatment of waste represents. The Ripley report illustrates how the savings are spread throughout the design of the total waster water project especially for energy consumption **(Exhibit 6).**

The petitioner's tax burden should be limited to secondary and final treatment only as redundant primary treatment of solids is not a special benefit. The petitioner claims that the Petitioner's existing septic tank biological system is already reducing pollutants in waste water by an amount shown in **(Exhibit 5).** The the petitioner concludes that the septic tank is distinct from the leach field and represents no further hazard to the environment than a gravity collection piping system does. The Petitioner claims that the cost of primary treatment is of no benefit to the petitioner and hence the cost of such should be removed from the petitioner's special benefit. The Petitioner would connect to the effluvent STEP piping at the effluvium outlet of the petitioners existing septic tank to the conveyance system of the County sewer project thereby eliminating groundwater contamination via the leach field on the owner's property and meeting the RWQCB's requirements to cease leachfield discharges in the prohibition zone regardless of the method chosen by the CSLO for the LOWWP.

Petitioner references the following codes related to using existing septic tanks. Existing tanks can be easily tested under ASTM C1227 procedures. It is impossible for me to believe that Public works is unaware of existing legitimate tank testing procedures already approved by the RWQCB Central Valley Region **(Exhibit 7)** .

Both ASTM C1227 and IAPMO PS-1 standards allow the performance of a vacuum test for watertightness evaluation as well as proof of structural design. For instance, the CSA B66 standard offers a vacuum test as an option for strength evaluation – both physical loading with sand bags and vacuum testing are allowed. Both tests are performed for approximately one hour and then the tank is checked for deformation and leakage. The strength testing is then followed by a watertightness test. Again, we see that all three industry standards recognize the vacuum test as a perfectly viable performance evaluation method. It is certainly considered to be a "real world" test by these standards bodies.

Petitioner claims that the Planning Commission ignored the following standards in its evaluation:

Oregon
Watertight testing of the tank into the riser is required during installation. It is also recommended the tank manufacturer watertight test each tank before shipping.
Rule Reference:
340-073-0025(3):
Watertightness. After installation, all tanks must be watertight. The installer must test each tank for watertightness by filling the tank to a point at least 2 inches above the point of riser connection to the top of the tank. During the test there may be no more than a one gallon leakage over a 24 hour period.

The tank manufacturer must deliver watertight tanks and should test each tank for watertightness before the tank is shipped from the manufacturing plant.

Arizona State Comments:
This provision requires that a field watertightness test be conducted for all septic tank installations. If water is available at the site, which will be the case in the large majority of installations, added materials and labor costs, will be an estimated $15 to $68. For the sites where water must be delivered, the estimated cost, including site labor for initial tank fill and refill after a 24-hour presoak, is $214. The field water tightness test has significant benefit in ensuring that the septic tank does not leak due to factory defects or damage during installation. In addition, the weight of water in the septic tank during testing ensures that the tank is properly bedded, reducing the chance of major malfunction of the tank upon use by the homeowner.

Rule Reference:
R18-9-A314.5.d:
The septic tank is tested for watertightness after installation by the water test described in subsections (5)(d)(i) and (5)(d)(ii) and repaired or replaced, if necessary.
i. The septic tank is filled with clean water, as specified in R18-9-A310(A), to the invert of the outlet and the water left standing in the tank for 24 hours and:
(1) After 24 hours, the tank is refilled to the invert, if necessary;
(2) The initial water level and time is recorded; and
(3) After one hour, water level and time is recorded.
ii. The tank passes the water test if the water level does not drop over the one-hour period. Any visible leak of flowing water is considered a failure. A damp or wet spot that is not flowing is not considered a failure.

Montana
Watertight, Vacuum or Pressure (fiberglass only) testing of all tanks used for commercial facilities, multiple-user systems or public systems must be tested in place for watertightness. The rules stop short of requiring this for single family residential systems.

Rule Reference:
7.3
1. All tanks must be watertight. Tanks used for commercial facilities, multiple-user systems or public systems must be tested in place for watertightness. Watertightness testing for a concrete tank may be conducted using a water test or vacuum test. Watertightness testing for a fiberglass tank may be conducted using a water test, a vacuum test, or a pressure test.
Falsehoods about STEP sewer design and piping systems. 6
1. 7.3.1 Water testing must be conducted by sealing the outlets, filling the septic tank to its operational level, and allowing the tank to stand for at least 8 hours. If there is a measurable loss (2 inches or more), refill the tank and let stand for another 8 hours. If there is again a measurable loss, the tank must be rejected.
2. 7.3.2 Vacuum testing must be conducted by sealing all inlets, outlets, and accesses, then introducing a vacuum of 4 inches of mercury. If the vacuum drops in the first 5 minutes, it must be brought back to 4 inches of mercury. If the septic tank fails to hold the vacuum at 4 inches of mercury for 5 minutes, the tank must be rejected.
3. *7.3.3 For pressure testing a fiberglass tank, all inlets, outlets, and access ports must be sealed and adequately secured. The tank must be charged with 5 psig (3 psig for a 12-foot*

diameter tank). Allow tank pressure to stabilize. Disconnect the air supply. If there is any noticeable pressure drop in 1 hour, the tank must be rejected or repaired. Repeat the test after repair. Release air carefully through an appropriate valve mechanism.

Rhode Island

All septic tanks and their risers are required to be certified watertight by the manufacturer or by on-site testing in accordance with the below rule (which is very similar to ASTMC-1227).

Rule Reference:

26.11

Performance Testing- All septic tanks and their risers must be certified watertight by the manufacturer or by on-site testing. On-site testing for septic tank leakage shall be conducted for tanks assembled at the installation site. The Director may require onsite testing on a case-by-case basis. The testing shall be conducted using either:

26.11.1 Vacuum Test- Seal the empty tank and risers and apply a vacuum to two (2) inches (50 mm) of mercury. The tank is approved if ninety percent (90%) of the vacuum is held for two (2) minutes; or

26.11.2 Water-Pressure Test- Seal the tank and risers, fill with water to the top of the risers, and let stand for twenty-four (24) hours. Refill the tank. The tank is approved if the water level is held for one (1) hour.

Vermont

Requires "leakage testing" in the field for all holding tanks and any tank utilized with a sand filter.

Rule Reference:

1-915(a)2(F) Sand Filters

After installation all components, including septic tanks, pump chambers, recirculation tanks and filter containers, shall be tested by filling to a point at least two inches, but not more than three inches, above the point of riser connection to the top of the tank, chamber, or container. During the test there shall not be a measurable leakage over a twenty-four (24) hour period.

1-919(c)(3) Holding Tanks

the tank, any piping connected to the tank, and all access structures connected to the tank shall be watertight. The tank shall be leakage tested prior to being placed in service;

Falsehoods about STEP sewer design and piping systems. 7

Utah

Watertight testing in the field is required in accordance with ASTM C-1227 ***OR*** as stated in the below Utah rule. ASTM C-1227 "leakage testing" requires the tank be either vacuum or water tested. The vacuum testing is performed by applying a vacuum to 4 inches of mercury and the tank passes if 90% of the vacuum is held for 2 minutes. Water testing is performed by filling the tank with water (no specified level) and letting it stand for 24 hours then refilling the tank and it is approved if the water level is held for one hour.

Rule Reference:

R317-4-3.3.5

Final On-Site Inspection.

A. After an onsite wastewater system has been installed and before it is backfilled or used, the entire system shall be inspected by the appropriate regulatory authority to determine compliance with

these rules.
B. Each septic tank shall be tested for water tightness. Testing may be performed in accordance with the requirements and procedure outlined in the American Society for Testing Materials' Standard ASTM C-1227, or concrete tanks shall be filled 24 hours before the inspection to allow stabilization of the water level. During the inspection there shall be no change in the water level for 30 minutes. Nor shall moving water, into or out of the tank, be visible. The regulatory authority may allow two piece tanks, with the joint below the water level, to be backfilled up to three inches below the joint to provide adequate support to the seam of the tank. Testing shall be supervised by the regulatory authority. Tanks exhibiting obvious defects or leaks shall not be approved unless such deficiencies are repaired to the satisfaction of the regulatory authority.

New Jersey

The *Aerobic Treatment System Guidance* document requires that all tanks be tested for watertightness through one of the following methods as established in the guidance document, see below.

Guidance Document Reference:

H.7
7. Watertightness of any septic, processing and dispersal system dosing tanks specified in the design must be watertight tested at the installation site after being installed using hydrostatic or vacuum tests. Testing of the tanks shall include all upper portions of the tank, including riser joints. Testing must be done in accordance with the following:
a. Water tightness testing procedures and criteria for concrete tanks shall follow the methods described in ASTM C-1227 standards or National Precast Concrete Association appropriate testing criteria and procedures
b. Tanks made of materials other then concrete shall be tested, after installation, in accordance with the methods described in ASTM C-1227 standards, if applicable, or other hydrostatic or vacuum testing methods approved by the tank manufacturer.
c. Water used for this testing shall be either from a potable water source or Reclaimed Water for Beneficial Reuse authorized by a NJPDES permit.
d. The use of an onsite potable well for purposes of supplying water for this testing is not recommended. If an onsite potable well is to be used, pumping of the well must be done in a Falsehoods about STEP sewer design and piping systems. 8
manner which will withdraw water at a rate less than 50% of the safe yield of that well and will not damage the pump or any other component of the well.

Finally, what if STEP/ STEG septic tanks were allowed to leak as much as a 'standard' gravity sewer? During the rainy season the LOWWP gravity system is 'designed' to leak 310,000 gallons per day into the system (EIR I&I evaluation, 310,000 gpd / 5000 homes) 62 gallons/day is the amount each residential tank would be allowed to leak to have the same environmental impact as the gravity conveyance system .
The Petitioner claims by comparison that if a standard septic tank was tested and the water level dropped 3 inches in one day in the tank, it would have the same leakage rate and environmental impact as the purposed gravity sewer system due to I & I.

This is shown by the following simple math.
62 gallons/day/household / 7.481 = 8.2 Cubic Ft.
Average tank inner wetted surface 4.25 x 7.5 = 32 Sq. Ft.

8.2 Cubic feet/ 32 sq ft = 0.25 foot drop in water level
or three inches drop in the tank water level.

To replace 5000 septic tanks has an environmental cost. That cost is called the 'embedded energy cost'. Each new tank takes energy to make, transport, and install. All those processes produce greenhouse gasses. One ton of concrete requires 3,700,000 btu's of energy to make. If you multiply that impact by 5.0 x 103 times 3.7 X 106 you get a greenhouse gas energy consumption penalty of 18.5 Billion BTU's energy to replace the existing septic tanks. Using existing tanks should be a valid GHG mitigation and be subject to analysis. Many existing tanks have a 60 year projected life span. The fact is, utilizing tested on site septic tanks and standardized pump vaults would have even more benefits. Among them are:

- Reduces on site step collection costs by 80% for homeowner's that qualify.
- Mitigates on site archeological impacts by 80%.
- Mitigates on site landscape and small lot impacts by 80% (no torn up yards)
- An estimated 75% of existing septic tanks appear in good condition and are concrete monolithic vaults with sealed lids.
- ***Reduces construction time***
- Lowers on site embedded energy costs by 80% with equal CO2 reduction.
- Mitigates and Eliminates surface spillage of untreated septic wastes containing solids and solid medical wastes into the estuary entirely.
- Reduces solids processing and hauling by 80 %, reduces embedded energy costs and reduces air pollution from solids handling by 80%.
- Widens scope of value engineering criteria to reduce the entire cost of project.
- Saves approx $5000 dollars in expenses to homeowners.
- Mitigates unknown dewatering environmental impacts for deep trenching associated with tank replacement.

5) 23.02.035 Additional information required.

The Planning commission failed to adequately review Environmental Justice impacts and did not minimize life cycle costs and mitigate affordability by not challenging the assumption that County of San Luis Obispo LOWWP EIR and FEIR made that the County of San Luis Obispo that Gives No Benefit Credit, Environmental credit, or AB 32 analysis for Greywater Installation.

On site greywater discharge for landscaping also reduces the homeowner's special benefit but is nowhere reflected in the Planning Commission analysis. This induces more water consumption. There is a conflict between the RWQCB's xero discharge order and State Greywater law that the CSLO has ignored at the expense of the enviorment and to the tax detrement of seniors and low income homeowners in the prohibition zone. Onsite greater usage benefits the water basin and lessons the cost of the wastewater project. From Article XIIID:

"(3) The amount of a fee or charge imposed upon any parcel orperson as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel."

For STEP, only 369,000 cu ft are subject to investigation based on 70 miles of piping (including laterals).

Horizontal boring is a valid archeological mitigation that cannot be matched by trenching. Its economic benefits have not been evaluated reasonably by the Planning Commission. Gravity trenching could incur extreme costs that would be added to the gravity sewer collection to meet state law with respect to archeological findings in the excavated earth. This cost would be passed on to the homeowner and could raise the price of the collection system for gravity by as much as 1/3. The in ground cultural resources of Los Osos are vast. A review of the Cultural Resource Appendix of the EIR makes that fact obvious. The LOWWP Engineers have misrepresented this added cost by not estimating it at all. The EIR claims that State law requires that:

"Mechanical backhoe trenching shall be conducted within the sensitive areas where any construction impacts will occur and shall be monitored by a qualified geoarchaeologist. Any identified intact deposits will be evaluated, and any deposits determined to be eligible to the California Register and/or National Register shall require project redesign to avoid impacts, or data recovery to mitigate unavoidable impacts."

To counteract the obvious archeological benefits of STEP collection illustrated above, the County EIR made a series of vague hearsay claims about on site impacts without using septic tank recycling as an obvious mitigation and assuming that the tank when first installed did not have any archeological impact. Septic tank recycling avoids 80% of the described impacts. The LOWWP EIR for step collection erroneously concludes:

"Excavation for the new STEP/STEG tank as a replacement for the existing septic tanks at each property could result in an unknown amount of impact to human remains. Avoidance of burials in these situations would be difficult to attain due to limited space and the need for significant excavation to accommodate the STEP tanks.

The petitioner incorporates by reference all documents presently held electronically at the LOCSD and CSLO Public Works Dept as printing documents that are already in the possession of the LOWWP project coordinators and the BOS represents an undue financial burden on the Petitioner and represents a waste of resources and energy. Their location is at:

http://www.slocounty.ca.gov/Assets/PW/LOWWP/document+library/Past+Project+Documents+4-15-09.pdf

And by reference the LOCSD's Ripley Report dated December 18, 2006 at:

http://losososcsd.org/pdf/ripley_final_report_12.18.06.pdf

Thank you for your time and consideration,

Steven Paige

End Complaint

PART OF ENGINEERS REPORT

SAN LUIS OBISPO COUNTY
DEPARTMENT OF PUBLIC WORKS

Noel King, Director

County Government Center, Room 207 • San Luis Obispo CA 93408 • (805) 781-5252
Fax (805) 781-1229 email address: pwd@co.slo.ca.us

SEE PAGE 4. TOP OF PG

August 16, 2007

TO: Noel King, Director of Public Works

VIA: Paavo Ogren, Deputy Director of Public Works

FROM: Dean Benedix, P.E., Assessment Engineer of Work

SUBJECT: San Luis Obispo County Wastewater Assessment District No. 1, Determination of Special Benefits and Project Cost

BACKGROUND

On February 6, 2007, the Board of Supervisors approved a contract for Assessment Engineering services with the Wallace Group for the Los Osos wastewater project. The contract contemplates the completion of an Assessment Engineer's Report through the combined efforts of the County and the Wallace Group. Craig Campbell, P.E. of the Wallace Group and Dean Benedix, P.E., Utilities Manager for the County Public Works Department were selected to serve jointly as the Engineer of Work for the assessment proceedings. The Scope of Work to be completed by the County included the following items as described in Table 1 of the contract:

1. Determine the proportional special benefits for overall project components as described in Article 13D, Section 4a of the California State Constitution.

2. Provide a summary of the proposed project and estimated total cost as required by Section 10204 of the 1913 Act.

3. Provide a notice and ballot to each parcel in the assessment district as described in Article 13D.

This memorandum summarizes the information required in the first two scope items, and provides the basis for the preparation of an Assessment Engineer's Report that delineates the special benefit amount for each parcel within the assessment district.

ANALYSIS AND CONCLUSIONS

In accordance with Assembly Bill 2701 (Blakeslee), the County commissioned the preparation of an engineering analysis that identifies a range of viable project options for the Los Osos wastewater project. The report was prepared by Carollo Engineers and is entitled, "Viable Project Alternatives Fine Screening Analysis" dated August, 2007 (Fine Screening Report). The Fine Screening Report provides a substantial body of evidence that can be used to estimate the overall special benefits that would accrue to properties within the assessment district. The selection of specific project elements such as the treatment plant site and collection technology will occur in future phases of the project, following the County's due diligence period and a community survey. However, costs can be assigned to each project element that would allow for a reasonable range of alternatives while providing a complete and functional wastewater collection, treatment, and disposal system. The following guidelines were used to identify the proportional special benefits for each project element:

Special Benefit Guidelines

1. The Fine Screening Report identified a range of water supply benefits that could be achieved with the wastewater project. Given that properties inside and outside of the assessment district benefit from water supply enhancements, incremental project costs that relate to providing a water supply benefit beyond the current condition (Level 1 identified in the Fine Screening Report) are deemed general benefits.

2. The cost assigned to each component should be sufficient to fund a range of viable alternatives, but would not necessarily fund the most costly alternatives. This guideline would apply even if the most costly alternative can be determined to confer a special benefit consistent with its higher cost. As a result, the proposed assessed special benefit is expected to be less than the maximum special benefit which could be assessed given the body of evidence. If more costly alternatives are ultimately selected, other/additional sources of revenue would be required to supplement the proceeds of the assessment district.

3. The cost of the inclusion of additional treatment processes beyond secondary treatment, such as tertiary filtration, if determined necessary to achieve a level of water supply benefit beyond the current condition, would be a general benefit. The cost of providing advanced sludge recycling through composting or other means would also not be included as a special benefit.

4. Given that overall project costs for engineering, administration, and legal expenses would include some efforts relating to general benefits, the low range of these project costs will be utilized as the proposed special benefit.

5. The mid-point of the estimated cost of the treatment plant site will be utilized as the proposed special benefit.

6. Given the uncertainties associated with permit and mitigation costs and the need for a reasonable contingency, the high end of the permitting/mitigation cost range will be used as the proposed special benefit.

7. In the event project components are implemented that result in total costs less than the allocated special benefit for the project, the County shall then reduce the assessment levied to reflect the actual special benefits of the total project costs incurred for project construction and implementation.

General Benefits

Costs of general benefits are not included in the estimate of Special Benefits included herein for project component costs. General benefits are capital improvements, general services, operations and/or maintenance, other amenities and/or programs which benefit the public at large or are a general benefit to all properties within a designated area. Examples of such general benefits are:

1. Repayment of the $6.5 million dollar State Revolving Fund (SRF) loan used by the LOCSD to initiate construction on the former wastewater project. While the County does not know whether the California SRF program will be utilized to help fund the project, nor whether the Governor's signing message with his approval of Assemble Bill 2701 will be binding, any such costs shall not be paid utilizing the proposed assessments.

2. Biosolids treatment and disposal measures beyond that required for the baseline wastewater treatment project.

3. Inclusion of additional treatment processes beyond secondary treatment, such as tertiary filtration.

4. Preparation, processing and/or implementation of a Habitat Conservation Plan.

5. Mitigation of seawater intrusion beyond the impacts of the wastewater treatment project.

6. Preparation of a regional water resources plan.

Costs for implementation of any general benefit improvement, service, program or amenity is anticipated to be funded through grants and/or with other legally permissible supplemental funding sources.

Collection System Special Benefit

Pursuant to Guideline No. 2 above, the special benefit of the collection system was selected such that a range of collection system alternatives could be funded. In the current project selection strategy, the STEP and gravity alternatives would compete through the construction bidding phase using a competitive bid, design/build, and/or build/own/operate/transfer process. If gravity system bids are received near the high end of the cost range, it is unlikely that gravity will be competitive with STEP. For this reason, the allocated special benefits will be based on the low end of the gravity system cost range, which would also cover the cost of a STEP system.

Consistent with previous assessment proceedings in Los Osos, the collection system can be separated into three components, defined as follows:

Lateral component: Laterals are defined as individual service lines that extend from the main in the street to the property line. In a STEP system, the lateral component would include the publicly financed and owned collection system components that are located on each private property within appropriate public easements that will need to be established for ownership and maintenance by the County, including the STEP tank, pump, control panel, and appurtenant facilities.

Trunk component: This component includes larger gravity mains, force mains, pump stations, and standby power facilities that serve regional areas. During the previous assessment proceedings, the trunk component was determined to include 19.1% of the planned pipelines. This percentage will also be used for the current assessment. Conveyance facilities required to pump wastewater to a treatment plant site if located east of Los Osos Creek would be included in this component.

Collector component: Collectors are defined as the localized sewer mains and pocket pump stations that convey water to trunks and regional pump stations. Some areas of the community, notably Bayridge Estates and Vista de Oro, have existing lateral and collector infrastructure as part of their existing community septic systems.

Table A.1 on the following page summarizes the proposed special benefits for each component of the collection system. The costs were derived from the low range of the gravity collection system, as summarized in the Fine Screening Report.

Treatment, Disposal, Permit, and Administrative Project Costs

In addition to the three collection system components described above, two additional project components are required to complete a functional wastewater system as follows:

Treatment/Disposal Component: This component includes the cost of the wastewater treatment facility, the effluent disposal system, and the wastewater treatment facility site.

Common Component: Project costs that are attributable to the entire project including engineering, administration, legal, permitting, and mitigation are included in this component.

The special benefits attributable to the wastewater treatment facility were determined based on a range of technologies that would form a functional Level 1 system. A number of different combinations of treatment technology and sludge processing would be fundable at a cost less than or equal to the proposed special benefit. Table A.2 on the following page summarizes sample technologies that could be funded at a cost at or near the proposed special benefit. As indicated in Table A.2, a total special benefit of $27,639,000 is recommended for this element of the project.

The special benefit associated with the effluent disposal system was determined by using the high range of the Level 1 cost estimate, or $15,600,000 in 2007 dollars. It should be noted that a Level 2 project could also be completed for essentially the same cost. The total special benefit for effluent disposal, including inflation of 24.5%, is therefore estimated at $19,422,000.

Table A.3 summarizes the proposed special benefit for the treatment/disposal and common assessment components, and the total wastewater project:

L:\UTILITY\AUG07\Special benefit memo-draft 6 Revised 8-16-07.doc.drb.taw

Table A.1 - Collection System Special Benefit and Component Allocation				Cost Allocation by Collection System Component	
Item Description	Low Range Construction Cost Estimate	Total Cost with Inflation 24.50%	Lateral Component	Collector Component 80.90%	Trunk Component 19.10%
Mob/Demob/GC's (split)	$3,700,000	$4,606,500		$3,726,659	$879,842
Gravity sewers / force mains (split)	$27,800,000	$34,611,000		$28,000,299	$6,610,701
Manholes (split)	$4,300,000	$5,353,500		$4,330,982	$1,022,519
Shoring and dewatering (split)	$4,800,000	$5,976,000		$4,834,584	$1,141,416
Duplex pump station (trunk)	$2,600,000	$3,237,000			$3,237,000
Triplex pump station (trunk)	$1,200,000	$1,494,000			$1,494,000
Pocket pump station (collector)	$2,400,000	$2,988,000		$2,988,000	
Standby power station (trunk)	$2,500,000	$3,112,500			$3,112,500
Misc facility requirements (split)	$3,200,000	$3,984,000		$3,223,056	$760,944
Laterals in right of way (lateral)	$8,800,000	$10,956,000	$10,956,000		
Road restoration (split)	$5,200,000	$6,474,000		$5,237,466	$1,236,534
Land and easement acquisition	No additional cost	N/A			
Overhead and profit	No additional cost	N/A			
Conveyance to out-of-town WWTF (trunk)	$2,900,000	$3,610,500			$3,610,500
Totals	**$69,400,000**	**$86,403,000**	**$10,956,000**	**$52,341,045**	**$23,105,955**

Notes: 1. Percentage split between trunk and collector from gravity main analysis performed by the LOCSD in the 2001 assessment district - applied to split items only.
2. Estimate of inflation from Fine Screening Report, Appendix C

Table A.3: Special Benefits Summary for Treatment/Disposal and Common Components		
Item Description	Proposed Special Benefits	Comments
Wastewater Treatment Facility (Secondary for Level 1 Disposal)	$27,639,000	Funds a range of secondary technology alternatives, not including tertiary treatment (see Table A.2)
Effluent Disposal System (Level 1)	$19,422,000	Water supply benefits beyond current conditions are general benefits
Treatment facility site	$2,490,000	Middle of cost range consistent with proposed guidelines
Total for Treatment/Disposal Component	**$49,551,000**	
Project costs including engineering, administration, and legal	$16,000,000	Low end of cost range consistent with proposed guidelines
Permitting and mitigation	$2,490,000	High end of cost range consistent with proposed guidelines
Total for Common Component	**$18,490,000**	
Total for Collection System Components from Table A.1	**$86,403,000**	
Total Project Special Benefits	**$154,444,000**	

APPENDIX B

PEOPLES BROSHURE

CONTRACT WITH ME. COUNTY IS IN BREACH OF CONTRACT.

Project Selection Strategies

(Summary of policies officially adopted by the County Board of Supervisors on August 14, 2007)

Design-Build

- First priority: Seek special legislation to provide greatest flexibility
- Second priority: Apply Gov't Code Section 5956 for design-build of STEP option and use traditional design-bid-build for gravity option
- Prepare design-build selection model based on life-cycle cost analysis and results of community survey

STEP Collection System

- Oppose requirements for separate electrical meters on individual properties
- Establish STEP tanks and pump equipment as public facilities—ie. maintained by the project

Co-Equal Environmental Analysis

- Begin preparation for environmental review work as soon as possible (before Prop 218 results)
- Near-concurrent release of draft Environmental Impact Report (EIR) and community advisory survey in 2008
- County Planning Commission review of EIR and Coastal Development Permit (CDP) after bids are received for design-build of collection system
  - Develop CDP consistent with previous CDP for project
  - Limit CDP modifications to specific project changes
- Evaluate risks to Morro Bay State Marine Reserve from wastewater treatment at alternative sites identified in EIR
- Evaluate greenhouse gases based on Assembly Bill 32 regulations

Consider Regional Options in EIR

- Regional treatment with Morro Bay and Cayucos
- Regional septage handling facilities
- Regional water supplies

Decentralized Wastewater System

- Develop technical memorandum reviewing proposal presented by Lombardo Associates, Inc.
- Obtain input from regulatory and permitting agencies
- Develop scope of additional studies for consideration in EIR

Demand-Based Sewer Rates

- Similar to City of San Luis Obispo demand-based sewer rate structure
- Provide incentives for permitted gray-water systems
- Seek special legislation to provide option for income based rate discounts

Financing Strategies

- Support State Water Board development of 30 year loans and 0% interest loans for disadvantaged communities and projects which exceed affordability standards
- Consider tax increment financing
- Consider redevelopment agency financing
- Consider Community Development Block Grant financing for on-lot costs incurred by disadvantaged individuals
- Support staff coordination of USDA grant applications for disadvantaged individuals
- Prioritize Prop. 50 (Integrated Regional Water Management) grant funds for disadvantaged individuals

Water Resources

- Coordinate with community water purveyors to identify
  - "Water Supply Enhancements"—wastewater project benefits to existing community water supply needs
  - "Additional Water Projects"—water projects to meet build-out and development needs
- Consider implementation and cost sharing contracts with community water purveyors to meet identified water needs

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Fw: Los Osos WWTP Cost Range Tuesday, August 25, 2009

From: "al barrow" <a.barrow@charter.net>

To: "steve paige" <shpaige@sbcglobal.net>

----- Original Message -----
From: Bill Cagle
To: 'al barrow'
Cc: 'Mike Saunders'
Sent: Tuesday, August 25, 2009 4:13 PM
Subject: Los Osos WWTP Cost Range

Sorry, this version should have the tables included.

Al,
Below is Mike's response to your question regarding cost. Can you please have you attorney explain how this statement might be used? This will help us be better prep should we be called to question. Thanks

I have worked with Orenco Systems, Inc for 4 1/2 year. Prior to that, I was the Cou Engineer for Charlotte County Utilities for nine years. During my time at Charlotte C experienced a failed conventional sewer approach (40,000 connections), executed t extension of STEP wastewater collection to 5,000 properties. The use of STEP sys Charlotte County provided significant capital cost savings when compared to the pro gravity system.

Charlotte County Utilities was and is the oldest and largest STEP systems in the wo operated in conjunction with a conventional gravity sewer system that serves more t 20,000 homes. Based on my experience and observations, I offer the following disc relative to the perceived cost of a STEP system in Los Osos.

introduction it is stated that the report provided "information on what the community expect through the County implemented solution, in terms of costs, benefits and ove approach". Presumably, this report was intended to be one of the primary documen the residents of Los Osos will utilize in deciding their vote with regards to the Count Proposition 218.

When the public voted on the County's Proposition 218, it was our understanding tha were approving a not-to-exceed expenditure and not a project. Additionally, it is our observation that the residents of Los Osos had an expectation that the most econor approach would become the constructed project.

Prior to the release of the Fine Screening, Orenco Systems had already expressed regarding the omission of input that we provided. This omission of key data, while n necessarily important to the vote, was critically important towards defining the most effective STEP project that was ultimately analyzed in the Fine Screening Study. De Orenco's vast experience with STEP projects, the consultant and the County unilate defined the scope of a STEP project and ultimately, the project that they defined.

Subsequent to the release of the Fine Screening Study, in a public presentation, the statement from the County Consultants that inferred that capital costs for STEP anc sewer would be comparable, while the coordination of STEP installation will be mor

In our opinion, the fine screening did not provide a comparison of STEP and gravity that adequately supported the statements made on public record.

The following table is included in the Appendix "C" of the Fine Screening Analysis. T explains the various Categories of Estimates with regards to the level of project def expected accuracy.

Table 1.1 Category of Cost Estimates[1]
Los Osos Wastewater Project Development
San Luis Obispo County

	Primary Characteristic	Secondary Characteristic			
ESTIMATE CLASS	LEVEL OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges (a)	PREPERATION EFFORT Typical degree of effort relative to least cost index of 1 (b)
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% - +100%	1
Class 4[2a]	1% to 15%	Concept Screening or Feasibility	Capacity Factored, Equipment Factored, Parametric Models or Analogy	L: - 15% to -30% H: +20% - +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: - 10% to -20% H: +10% - +30%	3 to 10
Class 2	30% to 70%	Control or Bid/ Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: - 5% to -15% H: +5% - +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: - 3% to -10% H: +3% - +15%	5 to 100

Notes:
1. Table 1.1 comes from the AACE International Recommended Practices and Standards, No. 18R-97.
2. Most of the estimates in the Fine Screening Report are at this level
   a. The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for a give scope.
   b. If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

It is critical that the public understand the significance of this table. The STEP estim Carollo are stated to be Class 4 while the gravity sewer estimates are stated to be The estimates for STEP are stated to be 1% to 15% of the total level of project def

required. Furthermore the accuracy of the estimate can be off by as much as 30% (low side and 50% on the high side.

Based on the level of estimate provided, did a Class 1 estimate support the statem by the consultant with regard to cost comparison? Furthermore, how could we conc state that STEP costs were actually comparable to gravity sewer? The public prese contained no explanation regarding the potential variance in cost estimates.

The following table, also from Appendix "C" in the Fine Screening Study, further pen STEP estimate for not being as accurate as the gravity sewer estimate.

Table 1.4 Basis for Estimating Project Costs
Los Osos Wastewater Project Development
San Luis Obispo County

Item	Estimated Cost[1]
Obtain Base Construction Cost from Bid Tabs, previous Engineers Estimates, analogous facility costs, parametric models and/or Carollo's unit price catalog. Adjust this cost to April 2007 cost for San Luis Obispo, California. Cost includes: • Adjustment to 'mid range' of bids for each item • Mobilization/Demobilization • Electrical • Site Work/Yard Piping • Sales Tax on materials only (8%) • Contractor overhead and profit (15%)	"A"
Add 30% of Subtotal Cost to Class 4 estimates and 10% to Class 1 estimates as Construction Cost Contingency.	+ 10% to 30% of "A"
Subtotal Estimated Construction Cost	"B"
Add 8% sales tax on materials and 15% for contractor overhead and profit	+ 15% to 22% of "B"
Subtotal Estimated Construction Cost	"C"
Escalate to June 2011 - 5% per year	+ 24.5% of "C"
Subtotal Escalated Estimated Construction Cost	"D"
Project Cost - will provide line items [2]	+ "E"
Total Estimated Project Cost	"F"

Notes:
1. Based on June 2011 costs for San Luis Obispo, California (Estimated ENRCCI projection for the 20-Cities Average is 7879 for February 2007 and location factor adjustment is 1.054.)
2. Includes design engineering contingencies, construction management, administrative, and legal costs.

Typically, contingency is added to projects in case unforeseen costs become applic during construction. In the context of this analysis, Carollo has added 30% continge STEP because there has been less detail in the estimate. Comparatively, only 10% contingency is added to gravity as a reward for a more detailed estimate. Accordin $11,000,000 (low estimate) to $15,000,000 (high estimate) is being added to STEF being added to gravity. In practicality, due to the complexity of construction, there is more inherent risk in gravity sewer construction than STEP construction. Change or unforeseen site condition are common in virtually all gravity sewer projects of this na despite the level of detail put forth during design. Regardless of the level of estimat highly questionable to assert that contingency should be higher for STEP. When a ra cost is presented, one has to understand that a large amount of subjective costs ha allocated to the cost of STEP, thereby inflating the possible range of cost.

Furthermore, the following table (Table 3.18), again from the fine screening analysis that 15% overhead and 8% taxes are added to STEP while they are omitted from g Since the gravity sewer estimate is more accurate, they have stated that the gravity estimate includes these costs while presumably, they can not effectively say the sa

their STEP estimate. This additional cost is added before contingency is added, so impact of the overhead and taxes is compounded by the additional contingency.

Table 3.18 Range of Probable Costs for STEP/STEG Collection System
Los Osos Wastewater Project Development
San Luis Obispo County

Item [2]	Range of Probable Costs Low ($M) [1]	High ($M) [1]	Notes on Development of Range
Mobilization/Demobilization /General Conditions	2.6	3.2	Based on 5% of Construction Cost Subtotal.
COMMON FACILITIES			
Force Mains and Laterals in Right-of-Way	11.7	15.2	Low estimate based on Los Osos Wastewater Mas Plan Update (Ripley 2005) and installation costs fr Tidwell. High estimate includes 30% contingency d conceptual design level.
Odor Control	0.1	0.3	Low and High estimates based on 100 and 500 air valves respectively at $500 each.
Road Restoration	1.3	2.6	Low and High estimates based on 25% and 50% o gravity system requirements, respectively, due to e reduction in pavement disturbance.
Land and Easement Acquisition	Assumed No Additional Cost [3]	Assumed No Additional Cost [3]	
ON LOT FACILITIES			
Project Facilities	29.5	25.8	Based on on-lot options and cost development info presented above. High estimate includes 10% cont similar to gravity system
Homeowner Facilities	6.1	6.7	Based on on-lot options and cost development info presented above. High estimate includes 10% cont similar to gravity system
Electrical Connection	9.1	14.3	Low and High estimates based on $1,900 and $3,0 connection as presented in Table 3.15 for 4769 Pro Zone lots.
Subtotal	$64.4	$88.1	
Overhead and Profit (15%)	$9.1	$13.2	
Subtotal	$62.3	$79.2	
Sales Tax (8%) [4]	$2.5	$3.1	
TOTAL CONSTRUCTION COST WITH BASE ELECTRICAL CONNECTION	$65.0	$91.4	
Separate Electrical Service Premium	$14.5	$24.1	
TOTAL CONSTRUCTION WITH SEPARATE ELECTRICAL SERVICE PREMIUM	$79.5	$105.5	

Notes:
(1) All costs in April 2007 dollars, based on an ENR of 7879.
(2) Prohibition Zone lots only - 4769 connections
(3) Land and easement acquisition assumed to be sunk cost as part of the previous Tri-W project.
(4) Sales Tax included on materials only.

Also in table 3.18, the low range cost shows the separate electrical premium. The e premium is contingent upon a hypothetical requirement from the State Water Board would require a public electrical supply rather than a simple service through the exis homes electrical panel. In execution, virtually all existing STEP systems installed in t Country utilize power service from the home. While this could be included in the high cost, we believe that the low end cost should be reflective of the methodology that i normally used to power a STEP pump package. The $14,500,000 in additional cost was added before contingeny, so this arbitrary cost addition was compounded by th additional contingency that was added.

What did all of this mean to the voter? We believe there are two very important poir note. They are as follows:

1) If we use Table 1.1 to restate the potential cost range of the project, th numbers are very startling. The actual range for STEP, without compromisi integrity of this Study could actually be $45.5 million to $121.5 million while range of gravity could be $73.8 million to $103.5 million. Accordingly, if thes technologies were bid head to head, STEP could come in at $45.5 million w gravity could come in at $103.5 million and this report wouldn't be wrong. S fact, by this report, could be half the cost of gravity. This potential variance was never explained to the voter.

2) If the same level of estimate had occurred, one would presume that cor overhead and taxes would be treated comparably for both technologies. Or provided bid tabs to the County, with overhead and profit included that supp cost that is lower than the stated low cost without overhead and sales tax. . the low estimate actually utilized the probable low cost of electrical supply t end cost would be significantly different. Without Sales Tax, Overhead, Ele Premium and with 10% contingency, our calculations show that the low esti would be in the range of $44 million while the high estimate would be in the

$75 million.

We do not believe that this Fine Screening Analysis adequately provided proper "inf on what the community can expect through the County implemented solution, in tern costs, benefits and overall approach". The report did not compare STEP costs and costs to the degree necessary to establish true comparative costs nor does it evalu on a level playing field with gravity sewer. We do not believe that an analysis that ut different levels of estimating is adequate to support any determination that capital c STEP and gravity sewer are comparable. Furthermore, it is extremely misleading tc apportion subjective costs such as sales tax, overhead, electrical premium costs an contingency in a manner that is not equitable between comparative technologies.

The consultant expended large resources in modeling treatment processes and in e the cost of gravity sewer. We have to question why that the same level of resource applied to the STEP cost estimates so that a Class 1 estimate of STEP is available comparison to the gravity sewer costs.

Our opinions were validated by an independent review that was done by the Nationa Research Institute (NWRI). Their findings included the following:

- "Alternatives should be presented with sufficient detail in terms of description and estimated costs so that rational comparisons can be ma
- "Cost estimates should be stated clearly and compared on an equiv basis with the same degree of variability and specificity. Refined and u cost estimates are needed for each alternative so that decision makers a stakeholders can make informed judgments."

It does not appear that either of these NWRI recommendations was adequately addressed.

Beyond the estimates, we can take a more practical approach to discussing the provision of a STEP system in Los Osos. Orenco Systems, in the early stages c development, recommended to the Los Osos Community Services District (LC that a Design Build approach be utilized for the procurement of a wastewater s Los Osos. We told them that a Design Build approach, if properly executed, co deliver the ingenuity and expertise necessary to provide a low cost sewer optio Osos. At another meeting, we actually introduced the community to our potent Design Build team members that were ready to respond if a Design Build Requ Proposal was issued.

When the Design Build approach was finally recommended by County Staff, w believed that the process would move forward as promised. Unfortunately, du execution of the process, our team was removed. We were not removed becau teams competency or qualifications (we may have been the most highly qualifi involved), but by the recommendation of County Staff, we were removed bec recommended STEP wastewater collection as a viable method for reducing cap In fact, during our presentation to County Staff, we stated the cost will be less will guarantee a not-to-exceed cost. Unfortunately, we were denied the opportu submit a proposal and therefore, we were denied the opportunity to make the not-to-exceed cost public.

At this time, the obvious question remains. Could STEP have delivered a low- in the $40 million dollar range? The Design Build team intended to work in pai with the County, starting with the County defined STEP project, and then offei value engineering alternative that were intended to reduce the project cost. Vali engineering alternatives included the following:

- The use of all or some of the existing septic tanks.
- The use of STEG (Septic Tank Effluent Gravity) systems when hy conditional allowed.
- The use of alternative STEP pump packages that are available fron Orenco.
- The use of decentralized treatment at sites that have a need for irri water.
- The use of shared interceptor tanks (2 and possibly 4 homes per ta
- The use of community tanks in areas of high density.
- The use of remote system monitoring.
- The possibility of including an O&M service at a fixed cost.
- The possibility of utilizing an extended period for connecting custc that prioritized the "hot-spots" first.

These options were never explored by the consultant and were never conveyed to t as alternatives for possible adjustments in capital cost.

Had the design build process moved forward and had the County partnered with ou Build team to achieve the best value for the residents of Los Osos, a final cost in th million dollar range was not only possible, but probable.

Respectfully,

Mike Saunders
Orenco Systems, Inc.

Mike Saunders
Orenco Systems, Inc.
www.orenco.com

Phone: (866) 914-9454
Cell: (941) 276-8586

Respectfully,

Bill Cagle
National Accounts
Orenco Systems Inc.
www.orenco.com
bcagle@orenco.com
(P) 800.718.4046 direct

(F) 541.459.2884

LOS OSOS WASTEWATER MANAGEMENT PLAN UPDATE

for the

Los Osos Community Services District

San Luis Obispo County, California

Wastewater Collection, Treatment, Storage, and Water Recycling: Beneficial Reuse of Water and Nutrients

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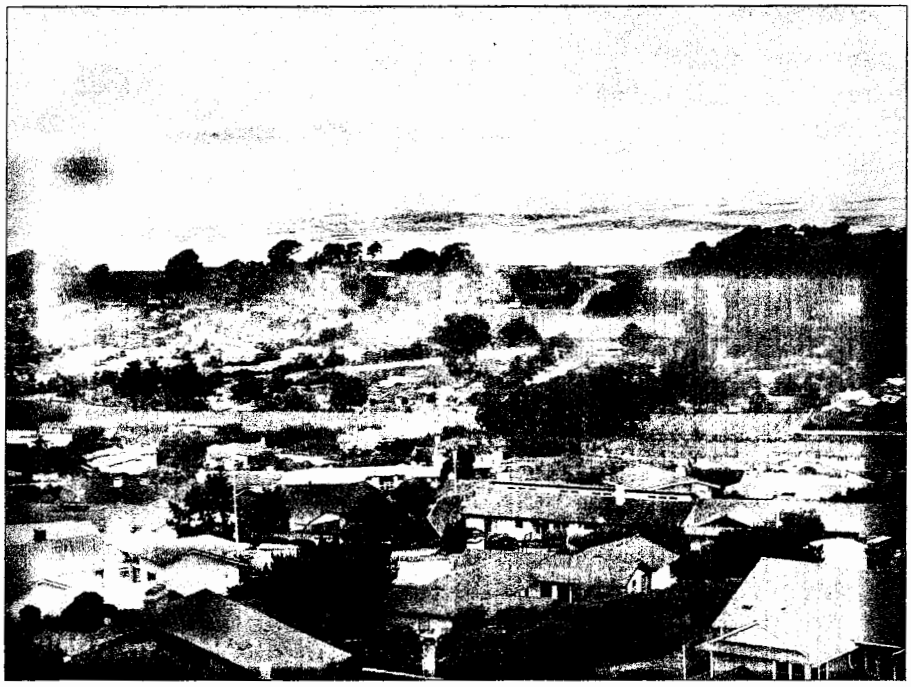

RIPLEY PACIFIC COMPANY

WATER REUSE INFRASTRUCTURE

SEE EXCERPTS

LOS OSOS WASTEWATER MANAGEMENT PLAN UPDATE

San Luis Obispo County, CA

Wastewater Collection, Treatment, Storage, and Water Recycling:

Beneficial Reuse of Water and Nutrients

Prepared for:

Los Osos Community Services District

P.O. Box 6064

Los Osos, CA 93412

Prepared by:

Ripley Pacific Company

5820 Stoneridge Mall Road, Suite 100

Pleasanton, CA 94566

Final Report: December 18, 2006

SHOWS USE OF EXISTING SEPTIC TANK.

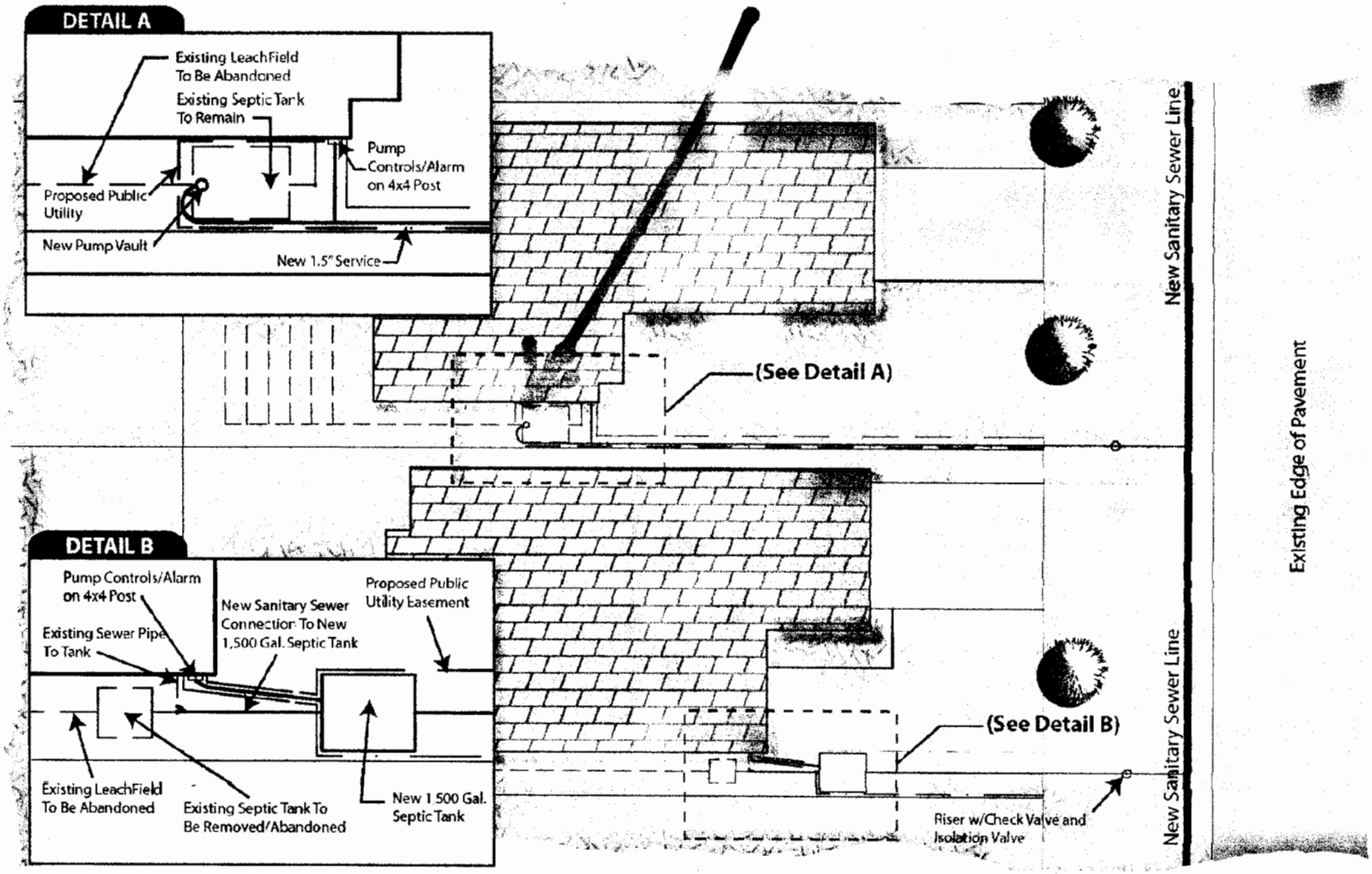

Figure 8.4 Typical Septic Tank Locations – Retrofit & New

Figure 8.3 below represents a typical service connection to the collection system.

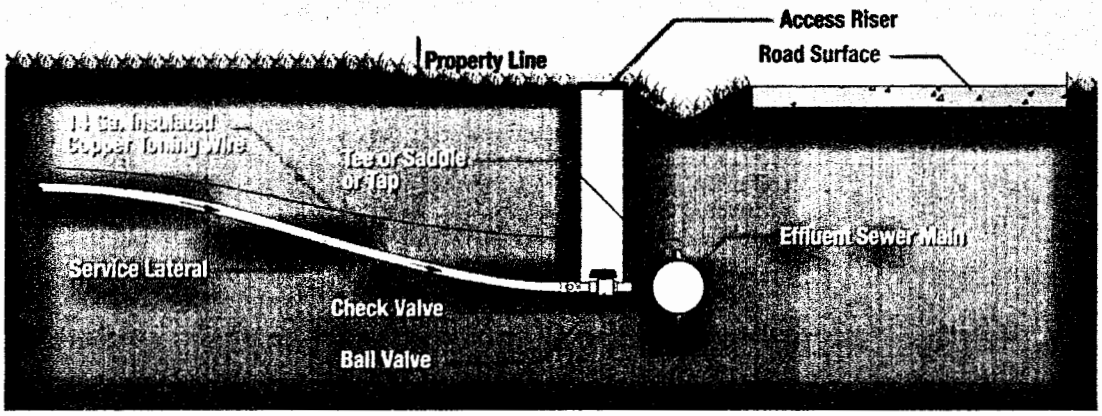

Figure 8.3 Typical Service Connection to Effluent Sewer Main

The configurations of existing septic tank/leach field locations vary throughout the town. As depicted in Figure 8.4 below, it has been conservatively assumed that two solutions will resolve most residential configurations:

1. Salvage existing septic tank; install pump vault/controls and service line to collection main (Detail A).
2. Remove/abandon existing septic tank; connect house service to new tank; install a new tank, pump vault/controls and service line to collection main (Detail B).

NEVER CONSIDERED IN COUNTY EIR,

1. Power intensive -- should a system such as this be incorporated into a District-wide system, power requirements for both the circulating pump and the effluent pump would be borne by the homeowner.

8.4. STEP Wastewater Collection System

While effluent sewer systems of varying size and complexity exist in nearly every state of the United States, the track record of the systems is largely based upon management of the systems, as previously noted in the EPA summary.

A significant benefit to the effluent sewer system is the wastewater treatment that occurs within the septic tank. Table 8.3 below summarizes the treatment realized from the septic tank prior to entering a wastewater treatment facility.

PREXISTING TREATMENT

Table 8.3 Treatment of Wastewater within Intercepter (Septic) Tank

Parameter	Units	Influent	STEP Effluent	Percent Reduction
BOD_5	Mg/l	450	140	69%
Suspended Solids	Mg/l	500	30	94%
Total Nitrogen	Mg/l	70	70	0%
Total Phosphorus	Mg/l	17	16	6%
Oil and Grease	Mg/l	164	29	88%

Source: Crites and Tchobanogous, 1998

The main components for the Effluent Sewer System include:

1. On-Lot Equipment (including interceptor tank, pump, sensors, controls)
2. Collection System Components
3. Wastewater Treatment Facility

The discussion below focuses on how the existing on-lot and collection system components could be incorporated into a solution for Los Osos. Discussion on the

Below represents a summary of the comparison between capital costs for MWH Gravity Collection system and the Effluent Sewer Collection system.

Table 4-4.1 Summary of Comparative Costs

Item	Description	FEB 2005 BID AMT	Soft Costs (a)	Subtotal Design & Construction	2004 MWH ANDRE (b) Low	2004 MWH ANDRE (b) High	Total Design & Construction Costs Low	Total Design & Construction Costs High	Additional On-Lot Costs Low	Additional On-Lot Costs High
1	Collection System (e)	$69,876,310	$2,980,000	$72,856,310	$3,214,969	$3,777,750	$76,071,279	$76,634,060	$14,935,950	$15,027,900
2	Treatment Facility (e)	$48,346,780	$1,000,000	$49,346,780	($2,908,781)	($897,000)	$46,437,999	$48,449,780	n/a	n/a
3	Aesthetic Mitigation	$5,830,000	$190,000	$6,020,000	n/a	n/a	$6,020,000	$6,020,000	n/a	n/a
4	Effluent Disposal (Leachfields)	$6,701,000	$750,000	$7,451,000	n/a	n/a	$7,451,000	$7,451,000	n/a	n/a
5	Land Costs								n/a	n/a
6	Harvest System (Groundwater Mitigation)	$2,552,000	$20,000	$2,572,000	n/a	n/a	$2,572,000	$2,572,000	n/a	n/a
	Total	$133,306,090	$4,940,000	$138,246,090	$306,188	$2,880,750	$138,858,465	$144,007,590	$14,935,950	$15,027,900

(a) Based upon *Los Osos Wastewater Project Table 7-5 Update - Estimated Construction Cost* @ 8% of original Estimated Construction Cost

(b) Based upon *Exhibit 3C - MWH Memo comparing costs of Tri-W with Andre*
(c) Based upon collection area of the Prohibition Zone
(d) Based upon total collection area

(e) Based upon *Los Osos Wastewater Project Bid Schedule (LOCSD BIDS 022405.PDF)* - replaces values from (a) for FEB 2005 BID AMOUNT

COLLECTION SYSTEM COSTS · COMPARE

Table 4-4.1 Summary of Comparative Costs (continued)

Item	Description	Grand Total MWH Gravity System Low	Grand Total MWH Gravity System High	MWH Gravity System Cost/Lot Low	MWH Gravity System Cost/Lot High	Effluent Sewer System Low (c)	Effluent Sewer System High (d)	Effluent Sewer System Cost/Lot Low	Effluent Sewer System Cost/Lot High
1	Collection System	$91,007,229	$91,661,960	$18,988	$19,124	$58,145,324	$68,277,071	$12,131	$14,245
2	Treatment Facility	$46,437,999	$48,449,780	$9,689	$10,108	tbd	tbd	tbd	tbd
3	Aesthetic Mitigation	$6,020,000	$6,020,000	$1,256	$1,256	tbd	tbd	tbd	tbd
4	Effluent Disposal (Leachfields)	$7,451,000	$7,451,000	$1,555	$1,555	tbd	tbd	tbd	tbd
5	Land Costs					tbd	tbd	tbd	tbd
6	Harvest System (Groundwater Mitigation)	$2,572,000	$2,572,000	$537	$537	tbd	tbd	tbd	tbd
	Total	$153,488,228	$156,154,740	$32,023	$32,580	tbd	tbd	tbd	tbd

MWH Gravity Collection = 4,793 Lots
Effluent Sewer Collection System = 5,151 Lots (low)
5,929 Lots (high)

Table 14.2 Cost Estimates for the Wastewater Management Plan Update with STEP/STEG Collection, Trickling Filter Treatment, Storage, Filtration, Disinfection, and Distribution of Recycled Water to Agricultural Customers

Basic Assumptions	Scenario 1	Scenario 2
Number of lots:	5,151	5,929
Flow of Wastewater, mgd:	1.30	1.50
Base Capital Costs	**$ millions**	**$ millions**
On-lot Costs	42.00	48.50
STEP Collection - ROW	16.00	19.70
WRF at Site D	19.50	22.50
Aesthetic Mitigation	0.50	0.50
Effluent Storage	4.25	4.90
Effluent Distribution	2.00	2.30
Groundwater Monitoring Wells	0.25	0.25
Subtotal Base Capital Cost	84.50	98.65
Land Costs		
Site D - 38 ac.	1.00	1.00
Reservoir Site #2	0.50	0.60
Subtotal Land Cost	1.50	1.60
Total Base Capital and Land Costs	**86.00**	**100.25**
Base Capital and Land Cost per Lot	**$16,696**	**$16,908**
Life Cycle Costs	**$ millions**	**$ millions**
Base Capital	84.50	98.65
Land	1.50	1.60
Total Capital Costs	**86.00**	**100.25**
Salvage Value - Land	0.42	0.45
Present Worth Capital Cost	**85.58**	**99.80**
O&M - Collection	0.45	0.52
O&M - WRF	1.00	1.10
O&M - Effluent Distribution	0.15	0.15
O&M - Groundwater Montioring	0.05	0.05
Subtotal O&M	**1.65**	**1.82**
Annualized Capital Costs, 6.625%, 20 yrs.	7.85	9.15
Total Annualized Costs	**9.50**	**10.97**
Total Annualized Costs per Lot - $/year	**$1,844**	**$1,851**
Total Annualized Costs per Lot - $/month	**$154**	**$154**

Table 14.1 Cost Estimates for the Previously Designed Gravity Collection, MBR Treatment at Tri-W, and Disposal at Broderson

Basic Assumptions	Values Used
Number of Lots	4,793
Flow of Wastewater, mgd	1.30

Base Capital Cost Elements	Cost, $ millions
On-lot Costs	15.00
Gravity Collection - ROW	72.80
MBR @ Tri-W	49.30
Aesthetic Mitigation	inc. in treatment
Effluent Disposal	inc. in collection
Groundwater Mitigation	inc. in collection
Engineering and Admin. - 25%	34.28
Subtotal Base Capital Costs	171.38

Land Costs	
Broderson	4.70
Tri-W	3.00
Subtotal Land Cost	7.70

Total Base Capital and Land Costs	**179.08**
Base Capital and Land Cost per lot:	**$37,362**

Life Cycle Costs	$ millions
Base Capital	171.38
Land	7.70
Total Capital Costs	**179.08**
Salvage Value - Land	2.15
Present Worth Capital Cost	**176.93**

Operation and Maintenance Costs	
O&M - Collection	0.45
O&M - WRF	2.10
O&M - Effluent Disposal and Harvest Wells	0.06
Subtotal O&M	**2.61**
Annualized Capital Costs, 6.625%, 20 yrs.	16.22
Total Annualized Costs	**18.84**
Total Annualized Costs per Lot - $/year	**$3,930**
Total Annualized Costs per Lot - $/month	**$328**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. R5-2007-0108

ALLOWING AN EXEMPTION FOR AN ENGINEERED RESIDENTIAL WASTEWATER DISPOSAL SYSTEM UNDER WASTE DISCHARGE REQUIREMENTS ORDER NO. 85-039 FOR 967 SIERRA BROOKS DRIVE (LOT NO. 81) SIERRA BROOKS SUBDIVISION UNIT 2A, LOYALTON SIERRA COUNTY

WHEREAS, the Central Valley Regional Water Quality Control Board (hereafter "Regional Water Board") proposes to grant an exemption for an engineered residential wastewater treatment and disposal system for Lot No. 81 at 967 Sierra Brooks Drive, Loyalton (APN 016-200-050) in the Sierra Brooks Subdivision under the terms and conditions of Waste Discharge Requirements (WDRs) Order No. 85-039; and

WHEREAS, Discharge Prohibition A.1. of WDRs Order No. 85-039 states, in part: "An exemption may be approved by the Regional Board if a report is prepared by a civil engineer registered in the State of California, supporting the engineering conclusion that a septic tank/leaching system on the parcel(s) in question will provide adequate treatment and disposal....The report must be approved by the Sierra County Health Department and the Regional Board before an exemption may be issued"; and

WHEREAS, the primary concern with residential wastewater disposal on this lot (and many other lots in the subdivision) is inadequate groundwater separation and high housing density. Evidence of seasonal high groundwater at 20 inches below ground surface (bgs) was reported for this lot. Order No. 85-039 requires a minimum of 60 inches of soil separation between the bottom of leachline trenches and water, rock, or the first impervious layer; and

WHEREAS, the proposed engineered on-site wastewater treatment and disposal system will consist of a septic tank, recirculating textile filter, pump tank, and pressure-dosed mound system for a three-bedroom residence. Wastewater will be pre-treated in a 1,500-gallon septic tank equipped with a recirculating textile filter. Pretreated septic tank effluent will be pumped to an engineered mound leaching system for disposal. The mound will be constructed of silty sand, and there will be a minimum of 40 inches of this engineered fill below the bottom of the distribution trenches. The three distribution trenches will be three feet wide by 54 feet long. The distribution pipes will have a minimum depth of 10 inches of gravel bedding, 2 inches of gravel cover, and 12 inches of capping fill. Pressure distribution of effluent to the trenches will provide even distribution across the disposal area. The design is based on an average percolation rate of 27.8 minutes per inch and a peak flow of 450 gallons per day; and

WHEREAS, Regional Water Board staff has reviewed the engineered residential wastewater treatment and disposal system design report submitted by Coombs Engineering Inc., dated 23 March 2007;

WHEREAS, the Sierra County Health Department has reviewed and approved the engineered system design report, including the conditions recommended by Regional Water Board staff; and

WHEREAS, Regional Water Board staff has reviewed the design report and concurs that the engineered system design, with conditions, will provide adequate treatment and disposal of domestic wastewater for the proposed residence; and

WHEREAS, the engineered system design and conditions recommended by Regional Water Board staff should ensure the long-term protection of water quality; and

WHEREAS, the action to grant this exemption under WDRs Order No. 85-039 for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), in accordance with Title 14, California Code of Regulations (CCR), Section 15301; and

WHEREAS, the Regional Water Board considered all testimony and evidence at a public hearing held on 2 August 2007 in Sacramento, California.

THEREFORE BE IT RESOLVED that the California Regional Water Quality Control Board, Central Valley Region, finds as follows for the residence at 967 Sierra Brooks Drive:

1. The engineered system shall be installed as described in the engineered system design report submitted on 23 March 2007, and in accordance with the following conditions:

    a. The septic tank and pump tank shall be manufactured in accordance with the American Society of Testing and Materials (ASTM) C1227 Standard Specification For Precast Concrete Septic Tanks;

    b. Tank lids and all tank penetration points shall be sealed to prevent groundwater inflow;

    c. A minimum set back distance of 10 feet shall be maintained between all property lines and the base of the mound system; and

    d. The bottom of each distribution trench shall be level.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 2 August 2007.

PAMELA C. CREEDON, Executive Officer

BPK:08/02/2007

San Luis Obispo County
Los Osos Wastewater Project Development

TECHNICAL MEMORANDUM

FLOWS AND LOADS

FINAL
November 2008

2700 YGNACIO VALLEY ROAD • SUITE 300 • WALNUT CREEK, CALIFORNIA 94598 • (925) 932-1710 • FAX (925) 930-0208

The treatment component comprises approximately 12 percent of the cost of the entire wastewater project. This sensitivity analysis shows that changing the dry weather or wet weather flow assumptions change the cost of the treatment facility by up to six percent, which corresponds to less than one percent of the total project cost. This difference is lower than was anticipated for the various flow estimates, and is much less than the contingency of the cost estimates, and is therefore insignificant.

8.0 LOAD ESTIMATES

The Rough Screening Report listed influent concentration for the future wastewater treatment facility. These values are considered valid and will be used for treatment facilities sizing for a gravity collection system.

If a STEP collection system is selected, the concentrations of BOD and suspended solids in the treatment plant influent are expected to be lower, due to solids removal and degradation in the septic tanks. Nitrogen concentrations are expected to be unchanged. Estimates for the percentage removal of BOD and suspended solids in septic tanks were obtained from a review of septic tank performance studies (Bounds, 1997). In seven studies, septic tanks reduced BOD by an average of 58 percent and suspended solids by an average of 78 percent. In 14 septic tanks fitted with filtering devices, it was estimated in the review that approximately 64 percent of BOD and 90 percent of suspended solids were removed. Concentrations of total nitrogen were expected to be unaffected by septic tanks. Using these removal efficiencies and the influent quality listed in Table 10 the septic tank effluent quality was calculated and presented in Table 11.

Table 10 Projected Characteristics of Wastewater, Gravity Collection System[1]
Los Osos Wastewater Project Development
San Luis Obispo County

Parameter	Units	Average Day	Peak Day
BOD	mg/L	340	350
Suspended Solids	mg/L	390	400
Total Nitrogen	mg/L	56	58

Note:
(1) The Wastewater Facilities Project Final Project Report, 2003.

Smaller loads of solids and BOD can reduce the size and cost of the wastewater treatment facility when reducing the concentration of these two constituents is the primary concern. However, nitrogen removal can be inhibited by low BOD because it depends on the presence of a carbon source for the microorganisms that perform this task. In order to ensure nitrogen removal, as will likely be required for the new Regional Water Quality

Table 11 Projected Characteristics of Wastewater, STEP[1] Los Osos Wastewater Project Development San Luis Obispo County			
Parameter	**Units**	**Unfiltered Septic Tank Effluent**	**Filtered Septic Tank Effluent**
BOD	mg/L	140	120
Suspended Solids	mg/L	80	40
Total Nitrogen	mg/L	56	56

Note:
(1) Removal efficiencies from Bounds, T.R., 1997.

Control Board (RWQCB) waste discharge requirement (depending on the final selected reuse/disposal alternative), plant operators may have to add a supplemental carbon source such as methanol to the biological treatment processes, which would increase the cost of treatment.

9.0 SUMMARY

The estimates of flows remains unchanged from the Fine Screening Report and the estimates for loading remain unchanged from the Rough Screening Report. An ADDWF of 1.1 mgd was assumed, including 0.1 mgd of conservation, to be implemented before buildout in 2020. Different collection alternatives will be associated with different levels of inflow/infiltration. Therefore, the facility will be designed to treat an ADWWF of 1.4 mgd if a gravity sewer is selected, or an ADWWF of 1.2 mgd if a STEP or low-pressure sewer is selected. The PHWWF was estimated to be 2.5 for gravity, 1.7 for STEP and 1.9 for low pressure.

A sensitivity analysis was performed to examine how the treatment facility capital and O&M costs would change if dry weather flows varied from 1.0 mgd to 1.4 mgd, and if the PHWWF factor changed to 2.5 from the Fine Screening Report estimate of 2.75. None of the costs for the three treatment technologies that have passed fine screening changed by more than approximately 6 percent which translates to less than 1 percent of total project cost. Because of the small fraction of the treatment component as part of the total project cost, these upper and lower boundary assumptions would not have a significant impact on the total project cost.

10.0 REFERENCES

Alferink, F, et al. "Old PVC Gravity Sewer Pipes: Long Term Performance" presented at the Plastics Pipe IX Conference, Edinburgh Scotland, September 1995.

Ripley Pacific Team
Los Osos Wastewater Management Plan Update

TECHNICAL MEMORANDUM #: 8

Author: Dana Ripley

Reviewer: Bahaman Sheikh, Mike Huck

Date: July 24, 2006

TM Title: Energy Intensity of Collection and Treatment Alternatives

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Introduction and Energy Awareness

In September 2005 Governor Arnold Schwarzenegger proclaimed the month of October "Energy Awareness Month" (See Attachment TM 8-1.) In that proclamation the Governor stated that *"an affordable, reliable and adequate energy supply is the lifeblood to California's economy"*. He also commended the efforts of the California Energy Commission for setting the most stringent standards for building and appliance efficiency in the country that have since become standards for the federal government and other states. He encouraged the use of sustainable and renewable energy resources and positioning the state as an international leader in this area. He set a goal of generating twenty percent of our state's power from these renewable sources by 2010 and closed the proclamation by stating *"Energy Awareness Month is a fitting time to focus on responsible energy use and to work towards building a secure energy future for our state"*. In the spirit of the Governors' 2005 energy proclamation the Ripley Pacific team in this technical memo examines and compares energy requirements for the previous wastewater design concept relative to alternative more conventional treatment and collection alternatives.

Energy Demands - Gravity Collection/MBR Treatment

Attachment TM 8-2 presents an analysis of power demands of the gravity collection system, 1.3 million gallon per day (mgd) membrane bioreactor (MBR) tertiary treatment system, and effluent transmission to the subsurface disposal sites included in the existing design for Los Osos. The source of information for this analysis was technical memos and design documents prepared by MWH in 2002 and 2004. Influent is assumed to be full-strength sanitary wastewater (biochemical oxygen de-

mand/suspended solids = 340/390 mg/l) and the effluent quality is assumed to be consistent with California Health and Safety Code (Title 22) for unrestricted irrigation uses. The MBR treatment includes integral nitrification and denitrification unit processes necessary to achieve a total nitrogen effluent limit of 7 milligrams per liter (mg/l). Not included in this analysis is the power required for the dewatering well network designed to intercept the down-gradient subsurface mound anticipated from the Broderson leach fields. Table TM 8-1 summarizes the power demands in units of kilowatt-hours per day (kWh/dy) and kilowatt-hours per acre-foot (kWh/af) assuming a 1.3 mgd treatment plant operating at full capacity.

Table TM 8-1 – Gravity Collection/MBR Treatment Summary

Energy Intensity by Category	kWh/dy	kWh/af
Collection	1,028	258
Headworks	564	141
Secondary Treatment	7,047	1,767
Filtration	5,315	1,333
Disinfection	1,296	325
Odor Control	886	222
Solids Dewatering	483	121
Effluent Pumping	1,235	310
Ancillary Loads	50	13
Totals	**17,904**	**4,490**

Energy Demands – STEP Collection/Trickling Filter

Attachment TM 8-3 presents a power demand analysis of a septic tank effluent pump (STEP) collection system, a hypothetical 1.3 mgd multi-stage trickling filter system, tertiary filtration and disinfection, and effluent transmission to agricultural exchange sites. Influent is assumed to be low-strength sanitary wastewater (BOD/SS = 130/40 mg/l) and the effluent quality is assumed to be consistent with California Health and Safety Code (Title 22) for unrestricted irrigation uses. The treatment process assumes no extra energy required for nitrification and denitrification due to the fact that all effluent will be applied at agronomic rates consistent with the nutrient uptake of crops. Table TM 8-2 summarizes the power demands for this collection and treatment alternative in units of kWh/dy and kWh/af.

Table TM 8-2 - STEP Collection/Trickling Filter Treatment Summary

Energy Intensity by Category	kWh/dy	kWh/af
Collection	705	177
Headworks	5	1
Secondary Treatment	2,391	599
Filtration	295	74
Disinfection	1,296	325
Odor Control	370	93
Solids Dewatering	81	20
Effluent Pumping	483	121
Ancillary Loads	50	13
Totals	**5,676**	**1,423**

Energy Demand Comparison

Table TM 8-3 presents a comparison of the power demands of the gravity collection/MBR design with the STEP collection/trickling filter design concept. As indicated, it is estimated that the overall power consumption will be reduced by 68% with STEP collection and trickling filter secondary treatment relative to the gravity collection/MBR design concept.

Table TM 8-3 Comparison of Gravity/MBR to STEP/Trickling Filter Energy Intensity

Unit Process	Gravity/MBR (kWh/af)	STEP/TF (kWh/af)	Reduction (Percent)
Collection	258	177	31%
Headworks	141	1	99%
Secondary Treatment	1,767	599	66%
Filtration	1,333	74	94%
Disinfection	325	325	0%
Odor Control	222	93	58%
Solids Dewatering	121	20	83%
Effluent Pumping	310	121	61%
Ancillary Loads	13	13	0%
Totals	**4,490**	**1,423**	**68%**

Attachment TM 8-4 presents reference values from various published sources relating power intensity (in terms of kWh/af) to various secondary treatment processes. For the MBR process, Günder estimates a power intensity of about 2,470 kWh/af assuming a mixed liquor suspended solids (MLSS) concentration of 25 grams per liter (g/L). This compares to the Tri-W MBR design requiring an estimated 1,770 kWh/af for aeration, nitrification, and denitrification. Added to this figure is an esti-

mated 1,330 kWh/af for submerged micro-filtration with is integral to the MBR secondary treatment process. The total estimate for secondary treatment and filtration for the MBR design is about 3,100 kWh/af. This energy intensity figure is about 25% higher than the Günder estimate for an MBR operating at 25 g/L MLSS.

Attachment TM 8-4 indicates a range of values for trickling filter secondary treatment from 225 kWh/af to 580 kWh/af. This compares with a value of about 600 kWh/af presented in Table TM 8-2 for trickling filter secondary treatment. This value appears to be within 5% of the high range value reported by NRDC for a 1-mgd trickling filter secondary treatment facility. It should be noted that while the alternative trickling filter facility has low-strength influent that theoretically would have a lower energy intensity, the process redundancy mandates of California Title 22 for irrigation of recycled water require more energy than would otherwise be necessary. Overall, the power intensity numbers presented with the alternative trickling filter secondary treatment process appear consistent with published values for a smaller 1.3 mgd facility appropriate for Los Osos.

Table TM8-4 summarizes power intensities presented in the prior LOCSD Wastewater Facilities Project Report (MWH 2001) for four secondary treatment process options considered at that time. These power intensities are higher than the reference values (Attachment TM 8-4) with differences likely attributable to Title 22 redundancy requirements, UV disinfection, and on-site sludge processing. It should also be noted that the figures presented below do not include power requirements for either gravity lift stations or STEP effluent pumping.

Table TM 8-4 Energy Intensity of Treatment Options Considered in 2001

Secondary Process Alternative	(kWh/af)
Advanced Wastewater Ponds	1,170
Sequencing Batch Reactor	1,370
Extended Aeration	1,370
Hybrid Extended Aeration	1,370

Source: MWH 2001, Chapter 4

It is apparent that all process energy intensities presented in the 2001 report are within a limited range, and generally consistent with the energy intensity of the trickling filter option (considered as a baseline in this analysis) which was not considered at that time. Further, it is evident that the gravity collection/MBR energy intensity is approximately three times the energy intensity of any of the secondary treatment options considered by MWH in 2001, and is likewise about three times the energy intensity of the baseline trickling filter plant considered in this present analysis.

Annual Power Cost Comparison

Attachment TM 8-5 presents the Pacific Gas and Electric Company time of use (TOU) rate schedule A-10. The preliminary power budgets presented herein were reviewed by a PG&E account representative, and an estimated average annual rate of $0.14705 per kWh is considered appropriate for estimating the Los Osos wastewater facility power costs for the remainder of 2006. An escalator of 3% per year is recommended for estimating power budgets beyond 2006. Based on the 2006 rate, the total power cost for collection, treatment, and distribution of the gravity/MBR design is approximately $960,000 per year assuming an effluent production volume of 1,455 acre-feet per year. The alternative STEP/trickling filter design option would have an annual power budget of approximately $310,000 per year. Of this amount, approximately $55,000 would be paid directly by ratepayers on their existing power bills for STEP pumping. This STEP pumping cost translates to about $1 per month per residential account. The annual power requirements and power costs are graphically compared on Figure TM 8.1

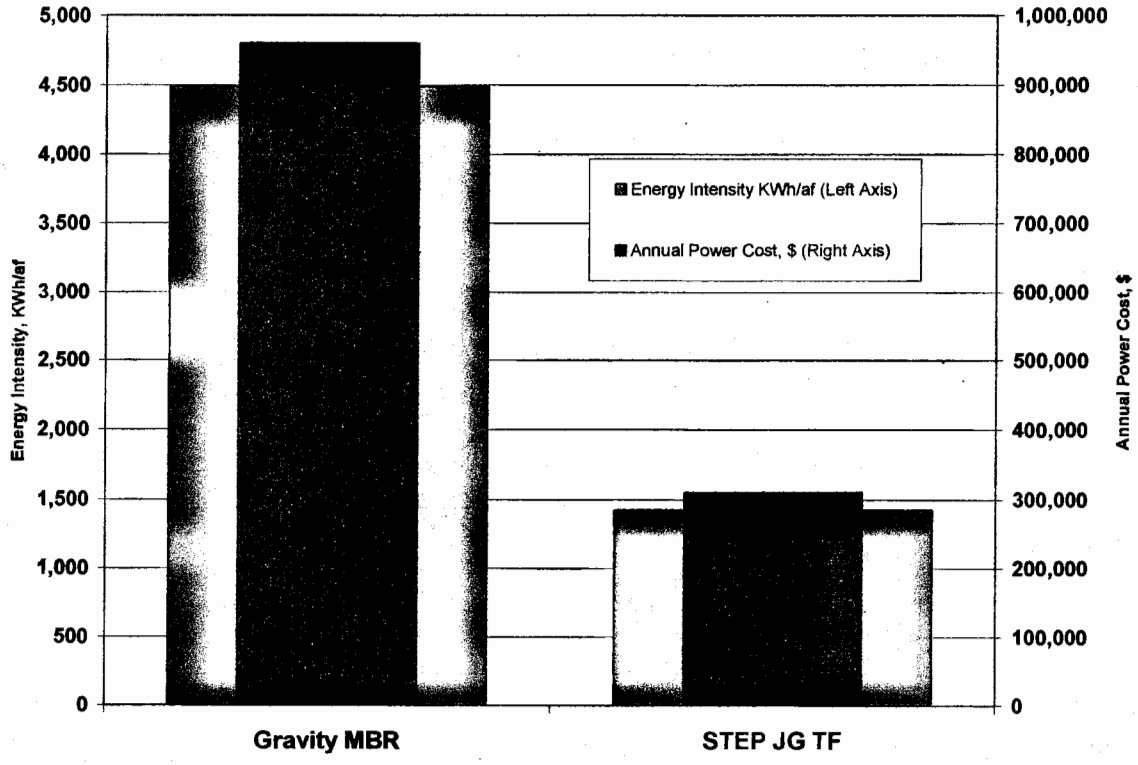

Figure TM-8.1 Energy Intensity and Cost for Two Collection/Treatment Regimes.

Summary & Conclusion

Significant differences exist between energy intensities of the MBR treatment option relative to the more conventional secondary treatment options available. Long term cost savings and environmental sustainability can only result by selecting a technology that is most appropriate for application in Los Osos and that is fundamentally energy efficient. Additionally, unnecessary excess energy usage, and resulting ongoing excessive energy costs, would become a encumbrance to ratepayers for the life of the operating facility. To borrow from the Governor's key points in his 2005 Energy Awareness Proclamation *"an affordable, reliable and adequate energy supply is the lifeblood to California's economy"* is akin to an affordable, reliable and adequate sewerage collection and treatment system for Los Osos. As stated by the Governor, now is *"a fitting time to focus on responsible energy use and to work towards building a secure energy future for our state."* The same is true for the community of Los Osos.

List of Attachments

Attach. TM 8-1	Energy Awareness Proclamation by Governor Scharzenegger
Attach. TM 8-2	Gravity Collection/MBR Energy Intensity Estimate
Attach. TM 8-3	STEP Collection/Trickling Filter Energy Intensity Estimate
Attach. TM 8-4	Energy Intensity Reference Values
Attach. TM 8-5	PG&E TOU Rate Schedule A-10

Office of the Governor

ARNOLD SCHWARZENEGGER
THE PEOPLE'S GOVERNOR

PROCLAMATION

09/30/2005

Governor Schwarzenegger Proclaims October "Energy Awareness Month"

PROCLAMATION by the Governor of the State of California

An affordable, reliable and adequate energy supply is the lifeblood of California's economy. Since 1975, the California Energy Commission has set the benchmark for balanced energy, economics and environmental policies.

The Commission developed the most stringent building and appliance efficiency standards in the nation, saving Californians more than $35 billion in costs over the last 30 years. These standards have become the guidelines used by the federal government and other states.

Through its forward-thinking programs, the California Energy Commission has encouraged renewable energy resources and positioned our state as an international leader of electricity produced from solar, wind, small hydroelectric, geothermal and biomass. These sources successfully generate more than 10 percent of our electricity, and we are on a path to attaining 20 percent of our power from these sources by 2010.

For 30 years, the California Energy Commission has supported innovative technologies through a successful public interest research and development program that brings environmentally safe, affordable and reliable energy services and products to the marketplace.

This year, Californians have witnessed how elevated market prices, fuel disruptions or natural disasters can affect their jobs, their household budget and their lifestyle. Energy Awareness Month is a fitting time to focus on responsible energy use and to work towards building a secure energy future for our state.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, do hereby proclaim October 2005 as "Energy Awareness Month."

IN WITNESS WHEREOF I have here unto set my hand and caused the Great Seal of the State of California to be affixed this the thirtieth day of September 2005.

/s/ Arnold Schwarzenegger

Governor of California

Los Osos Gravity/Tri-W MBR Energy Intensity Analysis

(Rated Hp for each motor below from MWH 2/16/04, Sheet AD-E-200)

	Rated Pump Motor (Hp)	Rated Pump Motor (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
Pocket Grinder Pump Stations									
Pocket Pump 4A #1	1	0.7	0.7		x		4	2.7	
Pocket Pump 4A #2	1	0.7	0.7		x		2	1.3	
Pocket Pump 4A #3	1	0.7	0.7			x	0	0.0	
Pocket Pump 7A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 7A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 8A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 8A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 9A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 9A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 10A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 10A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 11A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 11A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 12A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 12A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 13A #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 13A #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 9B #1	1	0.7	0.7		x		4	2.7	
Pocket Pump 9B #2	1	0.7	0.7		x		2	1.3	
Pocket Pump 9B #3	1	0.7	0.7			x	0	0.0	
Pocket Pump 9C #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 9C #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 13B #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 13B #2	1	0.7	0.7			x	0	0.0	
Pocket Pump 15B #1	1	0.7	0.7		x		2	1.3	
Pocket Pump 15B #2	1	0.7	0.7			x	0	0.0	
									21

(Duty pump loads below from MWH 12/16/02, p.7)

	Duty Pump Load (Hp)	Duty Pump Load (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
Submersible Pump Stations									
Lupine #1	28	20.9	20.9		x		10	208.8	
Lupine #2	28	20.9	20.9		x		5	104.4	
Lupine #3	28	20.9	20.9			x	0	0.0	
West Paso #1	27	20.1	20.1		x		10	201.3	
West Paso #2	27	20.1	20.1		x		5	100.7	
West Paso #3	27	20.1	20.1			x	0	0.0	
Baywood #1	23	17.2	17.2		x		10	171.5	
Baywood #2	23	17.2	17.2		x		5	85.8	
Baywood #3	23	17.2	17.2			x	0	0.0	
Scenic #1	7	5.2	5.2		x		5	26.1	
Scenic #2	7	5.2	5.2			x	0	0.0	
East Paso #1	23	17.2	17.2		x		5	85.8	
East Paso #2	23	17.2	17.2			x	0	0.0	
Sunny Oaks #1	6	4.5	4.5		x		5	22.4	
Sunny Oaks #2	6	4.5	4.5			x	0	0.0	
									1,007

(Rated Hp for each motor below from MWH 2/16/04, Sheet G-07)

	Rated Pump Motor (Hp)	Rated Pump Motor (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
Influent Pump Station									
Submersible #1	20	14.9	13.4		x		10	134.2	
Submersible #2	20	14.9	13.4		x		5	67.1	
Submersible #3	20	14.9	13.4			x	0	0.0	
									201
Plant Drain Pump Station									
Submersible #1	10	7.5	6.7		x		2	13.4	
Submersible #2	10	7.5	6.7		x		2	13.4	
Submersible #3	10	7.5	6.7			x	0	0.0	
									27
Influent Screens									
Screen Motor #1	3	2.2	2.0		x		20	40.3	
Screen Motor #2	3	2.2	2.0			x	0	0.0	
Sluice Water Pump #1	2	1.5	1.3		x		20	26.8	
Sluice Water Pump #2	2	1.5	1.3			x	0	0.0	
									67
Grit Removal									
Grit Pump #1	20	14.9	13.4		x		20	268.5	
Grit Pump #2	20	14.9	13.4			x	0	0.0	
									268
Pre-Anoxic Basins									
Mixer #1	2.5	1.9	1.7	x			24	40.3	
Mixer #2	2.5	1.9	1.7	x			24	40.3	
Mixer #3	2.5	1.9	1.7	x			24	40.3	
Mixer #4	2.5	1.9	1.7	x			24	40.3	
Mixer #5	2.5	1.9	1.7	x			24	40.3	
Mixer #6	2.5	1.9	1.7	x			24	40.3	
ML Recycle Pump #1	10	7.5	6.7	x			24	161.1	
ML Recycle Pump #2	10	7.5	6.7	x			24	161.1	
ML Recycle Pump #3	10	7.5	6.7	x			24	161.1	
									725
Aeration Basins									
Aeration PD Air Blower #1	100	74.6	67.1	x			24	1,610.7	
Aeration PD Air Blower #2	100	74.6	67.1	x			24	1,610.7	
Aeration PD Air Blower #3	100	74.6	67.1	x			24	1,610.7	
Aeration PD Air Blower #4	100	74.6	67.1			x	0	0.0	
									4,832
Post-Anoxic Basin									
Pump Mixer #1	5	3.7	3.4	x			24	80.5	
Pump Mixer #2	5	3.7	3.4	x			24	80.5	
Pump Mixer #3	5	3.7	3.4	x			24	80.5	
									242
Mixed Liquor Transfer Pumps									
ML Transfer Pump #1	25	18.6	16.8	x			24	402.7	
ML Transfer Pump #2	25	18.6	16.8	x			24	402.7	
ML Transfer Pump #3	25	18.6	16.8	x			24	402.7	
ML Transfer Pump #4	25	18.6	16.8			x	0	0.0	
									1,208
Waste Activated Sludge Pumps									
WAS Pump #1	5	3.7	3.4		x		6	20.1	
WAS Pump #2	5	3.7	3.4		x		6	20.1	
WAS Pump #3	5	3.7	3.4			x	0	0.0	
									40

(Rated Hp for each motor below from MWH 2/16/04, Sheet G-07)

	Rated Pump Motor (Hp)	Rated Pump Motor (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
Membrane Bioreactor Basins									
Permeate Pump #1	7.5	5.6	5.0	x			24	120.8	
Permeate Pump #2	7.5	5.6	5.0	x			24	120.8	
Permeate Pump #3	7.5	5.6	5.0	x			24	120.8	
Permeate Pump #4	7.5	5.6	5.0	x			24	120.8	
Permeate Pump #5	7.5	5.6	5.0			x	0	0.0	
MBR PD Air Blower #1	75	55.9	50.3	x			24	1,208.0	
MBR PD Air Blower #2	75	55.9	50.3	x			24	1,208.0	
MBR PD Air Blower #3	75	55.9	50.3	x			24	1,208.0	
MBR PD Air Blower #4	75	55.9	50.3	x			24	1,208.0	
MBR PD Air Blower #5	75	55.9	50.3			x	0	0.0	
									5,315
Disinfection - Low Pressure High Output UV									
UV Lamps - use 1.0 kWh/kgal			54	x			24	1,296.0	
									1,296
Effluent Pump Station									
Broderson Pump #1	60	44.7	40.3		x		12	483.2	
Broderson Pump #2	60	44.7	40.3		x		12	483.2	
Broderson Pump #3	60	44.7	40.3			x	0	0.0	
Service Area Pump #1	20	14.9	13.4		x		8	107.4	
Service Area Pump #2	20	14.9	13.4		x		8	107.4	
Service Area Pump #3	20	14.9	13.4			x	0	0.0	
Utility Water Pump #1	10	7.5	6.7		x		4	26.8	
Utility Water Pump #2	10	7.5	6.7		x		4	26.8	
Utility Water Pump #3	10	7.5	6.7			x	0	0.0	
									1,235
Solids Dewatering									
Centrifuge #1	120	89.5	80.5		x		6	483.2	
Centrifuge #2	120	89.5	80.5			x	0	0.0	
									483
Odor Control									
Residuals Bldg Blower #1	15	11.2	10.1	x			24	241.6	
Residuals Bldg Blower #2	15	11.2	10.1			x	0	0.0	
Treatment Bldg Blower #1	40	29.8	26.8	x			24	644.3	
Treatment Bldg Blower #2	40	29.8	26.8			x	0	0.0	
									886
Facitliy Lighting, Instrumentation, HVAC, and Other Ancillary Loads									
Lump Sum Estimate				x				50.0	
									50

Summary: Energy Intensity for Collection and Treatment

Total kWh Load per day @ 1.3 mgd	**17,904**

Summary: Energy Intensity by Category	**kWh/dy**	**kWh/af**
Collection	**1,028**	**258**
Headworks	**564**	**141**
Secondary Treatment	**7,047**	**1,767**
Filtration	**5,315**	**1,333**
Disinfection	**1,296**	**325**
Odor Control	**886**	**222**
Solids Dewatering	**483**	**121**
Effluent Pumping	**1,235**	**310**
Ancillary Loads	**50**	**13**
Totals	**17,904**	**4,490**

Los Osos STEP/Trickling Filter Energy Intensity Analysis

	Rated Pump Motor (Hp)	Rated Pump Motor (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
STEP Effluent Pumps									
1,700 Low Elevation STEP	0.5	0.4	0.3		x		900	302.0	
1,700 Mid Elevation STEP	0.5	0.4	0.3		x		700	234.9	
1,700 High Elevation STEP	0.5	0.4	0.3		x		500	167.8	
									705
Septage Receiving Station									
Grinder Motor	2	1.5	1.3		x		2	2.7	
Auger Motor	2	1.5	1.3		x		2	2.7	
									5
Flow Equalization Basin(s)									
Propeller Mixer #1	3	2.2	2.0	x			24	48.3	
Propeller Mixer #2	3	2.2	2.0			x	0	0.0	
Propeller Mixer #3	3	2.2	2.0	x			24	48.3	
Propeller Mixer #4	3	2.2	2.0			x	0	0.0	
PD Aeration Blower #1	10	7.5	6.7		x		24	161.1	
PD Aeration Blower #2	10	7.5	6.7			x	0	0.0	
PD Aeration Blower #3	10	7.5	6.7		x		24	161.1	
PD Aeration Blower #4	10	7.5	6.7			x	0	0.0	
Submersible Pump #1	7.5	5.6	5.0	x			24	120.8	
Submersible Pump #2	7.5	5.6	5.0			x	0	0.0	
Submersible Pump #3	7.5	5.6	5.0	x			24	120.8	
Submersible Pump #4	7.5	5.6	5.0			x	0	0.0	
									660
TF Recirculation Pumps									
Recirculation Pump #1	20	14.9	13.4	x			24	322.1	
Recirculation Pump #2	20	14.9	13.4	x			24	322.1	
Recirculation Pump #3	20	14.9	13.4	x			24	322.1	
Recirculation Pump #4	20	14.9	13.4	x			24	322.1	
									1,289
Secondary Clarifier Mechanical									
Sludge Scraper Drive #1	3	2.2	2.0		x		6	12.1	
Sludge Scraper Drive #2	3	2.2	2.0			x	0	0.0	
									12
Sludge Transfer Pumps									
WAS Pump #1	5	3.7	3.4		x		2	6.7	
WAS Pump #2	5	3.7	3.4		x		2	6.7	
WAS Pump #3	5	3.7	3.4		x		2	6.7	
WAS Pump #4	5	3.7	3.4		x		2	6.7	
									27
Aerobic Sludge Storage									
PD Aeration Blower #1	25	18.6	16.8	x			24	402.7	
PD Aeration Blower #2	25	18.6	16.8			x	0	0.0	
									403

	Rated Pump Motor (Hp)	Rated Pump Motor (kW)	Average Duty Load (kW)	Duty: Continuous	Duty: Intermittent	Duty: Standby	Average Hours per day	Average kWh per day	Subtotal kWh per day
Microfiltration Feed Pumps									
Submersible Pump #1	10	7.5	6.7		x		22	147.6	
Submersible Pump #2	10	7.5	6.7		x		22	147.6	
Submersible Pump #3	10	7.5	6.7			x	0	0.0	
									295
Disinfection - Low Pressure High Output UV									
UV Lamps - use 1.0 kWh/kgal			54	x			24	1,296.0	
									1,296
Effluent Pump Station									
Ag Delivery Pump #1	40	29.8	26.8		x		12	322.1	
Ag Delivery Pump #2	10	7.5	6.7		x		20	134.2	
Ag Delivery Pump #3	40	29.8	26.8			x	0	0.0	
Utility Water Pump #1	10	7.5	6.7		x		4	26.8	
Utility Water Pump #2	10	7.5	6.7			x	0	0.0	
									483
Solids Dewatering/Composting									
Monobelt Mini-Press	6	4.5	4.0		x		5	20.1	
Solar Sludge Dryer	5	3.7	3.4		x		18	60.4	
									81
Odor Control									
Process Blower #1	10	7.5	6.7	x			24	161.1	
Process Blower #2	10	7.5	6.7	x			24	161.1	
Process Blower #3	10	7.5	6.7			x	0	0.0	
Treatment Bldg Exhaust #1	3	2.2	2.0	x			24	48.3	
Treatment Bldg Exhaust #2	3	2.2	2.0			x	0	0.0	
									370
Facitliy Lighting, Instrumentation, HVAC, and Other Ancillary Loads									
Lump Sum Estimate				x				50.0	
									50

Summary: Energy Intensity for Collection and Treatment

Total kWh Load per day @ 1.3 mgd	**5,676**

Summary: Energy Intensity by Category	kWh/dy	kWh/af
Collection	705	177
Headworks	5	1
Secondary Treatment	2,391	599
Filtration	295	74
Disinfection	1,296	325
Odor Control	370	93
Solids Dewatering	81	20
Effluent Pumping	483	121
Ancillary Loads	50	13
Totals	**5,676**	**1,423**

Energy Intensity Reference Values for Various Secondary Treatment Unit Processes

Treatment Description	All Values converted to kWh/acre-foot				
	Burton 1996 National Average	Reardon 2001 Benchmark Average	NRDC 2004 1-mgd facility	NRDC 2004 100-mgd facility	Günder 2001 MCASP
Lagoons	–	245	–	–	–
Trickling Filter	311	380	580	225	–
Activated Sludge	431	660	750	340	615
Extended Aeration/Oxidation Ditch	–	945	–	–	–
Advanced Treatment without Nitrification	502	–	865	400	–
Advanced Treatment with Nitrification	623	–	980	520	–
MBR activated sludge @ 15 g/L MLSS	–	–	–	–	1,235
MBR activated sludge @ 25 g/L MLSS	–	–	–	–	2,470

List of Sources

1. Burton, Franklin L., 1996, *Water and Wastewater Industries: Characteristics and Energy Management Opportunities.* (Burton Engineering) Los Altos, CA, Report CR-106941, Electric Power Research Institute Report, p. 2-45.
2. Reardon, D.J., *Strategies for Managing Spiraling Energy Costs,* in California Water Environment Association Summer 2001 Bulletin, p.25.
3. Natural Resources Defense Council and Pacific Institute, *Energy Down the Drain, the Hidden Costs of California's Water Supply,* 2004, Table 6.
4. Günder, Berthold, Ph.D., *The Membrane-Coupled Acrivated Sludge Process in Municipal Wastewater Treatment,* 2001, p. 173.

Dana Ripley

From: Nishi, Greg [GHN2@pge.com]
Sent: Monday, July 24, 2006 9:37 AM
To: Dana Ripley
Subject: RE: LO Power rates

Dana, Yes A-10 given your information. Yes $.14705/Kwh is good ballpark #. I do not know of any official policy as to rate projections. I personally would input 3% per year just to be safe.

Greg

From: Dana Ripley [mailto:Ripac@comcast.net]
Sent: Monday, July 24, 2006 8:55 AM
To: Nishi, Greg
Subject: LO Power rates

Greg, question – if the LO ww plant uses say 5,000 kWh per day (say peak load of 250 kW), would the A-10 rate schedule apply? The E-20 table indicates >1,000 kW, so may not apply to this facility. For budgeting, we are using $0.14705/kWh. Does this sound reasonable? Any estimate of rate increases over the 2 to 5 year horizon? Your guidance on these power issues appreciated. Dana

Dana K. Ripley, P.E.
Ripley Pacific Company
5820 Stoneridge Mall Road, Suite 100
Pleasanton, CA USA 94588-3275
925-847-2086 Fax 925-398-8498
Ripac@comcast.net

SEE PG 2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. R5-2007-0108

ALLOWING AN EXEMPTION FOR AN ENGINEERED RESIDENTIAL WASTEWATER DISPOSAL SYSTEM UNDER WASTE DISCHARGE REQUIREMENTS ORDER NO. 85-039 FOR 967 SIERRA BROOKS DRIVE (LOT NO. 81) SIERRA BROOKS SUBDIVISION UNIT 2A, LOYALTON SIERRA COUNTY

WHEREAS, the Central Valley Regional Water Quality Control Board (hereafter "Regional Water Board") proposes to grant an exemption for an engineered residential wastewater treatment and disposal system for Lot No. 81 at 967 Sierra Brooks Drive, Loyalton (APN 016-200-050) in the Sierra Brooks Subdivision under the terms and conditions of Waste Discharge Requirements (WDRs) Order No. 85-039; and

WHEREAS, Discharge Prohibition A.1. of WDRs Order No. 85-039 states, in part: "An exemption may be approved by the Regional Board if a report is prepared by a civil engineer registered in the State of California, supporting the engineering conclusion that a septic tank/leaching system on the parcel(s) in question will provide adequate treatment and disposal....The report must be approved by the Sierra County Health Department and the Regional Board before an exemption may be issued"; and

WHEREAS, the primary concern with residential wastewater disposal on this lot (and many other lots in the subdivision) is inadequate groundwater separation and high housing density. Evidence of seasonal high groundwater at 20 inches below ground surface (bgs) was reported for this lot. Order No. 85-039 requires a minimum of 60 inches of soil separation between the bottom of leachline trenches and water, rock, or the first impervious layer; and

WHEREAS, the proposed engineered on-site wastewater treatment and disposal system will consist of a septic tank, recirculating textile filter, pump tank, and pressure-dosed mound system for a three-bedroom residence. Wastewater will be pre-treated in a 1,500-gallon septic tank equipped with a recirculating textile filter. Pretreated septic tank effluent will be pumped to an engineered mound leaching system for disposal. The mound will be constructed of silty sand, and there will be a minimum of 40 inches of this engineered fill below the bottom of the distribution trenches. The three distribution trenches will be three feet wide by 54 feet long. The distribution pipes will have a minimum depth of 10 inches of gravel bedding, 2 inches of gravel cover, and 12 inches of capping fill. Pressure distribution of effluent to the trenches will provide even distribution across the disposal area. The design is based on an average percolation rate of 27.8 minutes per inch and a peak flow of 450 gallons per day; and

WHEREAS, Regional Water Board staff has reviewed the engineered residential wastewater treatment and disposal system design report submitted by Coombs Engineering Inc., dated 23 March 2007;

WHEREAS, the Sierra County Health Department has reviewed and approved the engineered system design report, including the conditions recommended by Regional Water Board staff; and

WHEREAS, Regional Water Board staff has reviewed the design report and concurs that the engineered system design, with conditions, will provide adequate treatment and disposal of domestic wastewater for the proposed residence; and

WHEREAS, the engineered system design and conditions recommended by Regional Water Board staff should ensure the long-term protection of water quality; and

WHEREAS, the action to grant this exemption under WDRs Order No. 85-039 for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), in accordance with Title 14, California Code of Regulations (CCR), Section 15301; and

WHEREAS, the Regional Water Board considered all testimony and evidence at a public hearing held on 2 August 2007 in Sacramento, California.

THEREFORE BE IT RESOLVED that the California Regional Water Quality Control Board, Central Valley Region, finds as follows for the residence at 967 Sierra Brooks Drive:

1. The engineered system shall be installed as described in the engineered system design report submitted on 23 March 2007, and in accordance with the following conditions:

    a. The septic tank and pump tank shall be manufactured in accordance with the American Society of Testing and Materials (ASTM) C1227 Standard Specification For Precast Concrete Septic Tanks;

    b. Tank lids and all tank penetration points shall be sealed to prevent groundwater inflow;

    c. A minimum set back distance of 10 feet shall be maintained between all property lines and the base of the mound system; and

    d. The bottom of each distribution trench shall be level.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 2 August 2007.

PAMELA C. CREEDON, Executive Officer

BPK:08/02/2007