Please evaluate road impacts/damage and traffic flows. Why this obvious concern is not addressed is curious.

Similarly evaluate 3,750 truck loads of sandy soils to be removed from Broderson leach field and where it will be taken. If fill for what site? (leach field is 8 acres assuming 7 acres of leach area 6 feet deep with 4 feet of rock and 2 feet of other cover.)
Untitled 3 attachment: Shows utility pipes crossing gravity trench have to be cut, capped and replaced loss of service time needs to be identified for those properties. Have you evaluated this impact?

11. Appendix K Air Quality

All trucking mentioned above has AQ impacts. Will truck retrofits, as described by recent air quality legislation since this document was written, be implemented? That will increase the economics of this aspect of the project. Please re evaluates. Attach # 202

12. Appendix L Noise created by Brodeson truck and RO trucking need quantifying, What will those potential impacts be to humans, plants and animals? Attach #13

13. Appendix M Agriculture

AG lost from Tonini is a greater impact than Giacomazzi grade three grazing land that is hard pan clay in the summer and expansive in the wet season. What will you do to reduce those impacts or mitigate them?

14. Appendix N Visual Resources

15. Appendix O Environmental Justice

8.3 - EFFECTS FOUND NOT TO BE SIGNIFICANT

The environmental issues that were determined not to be significantly affected by the proposed
Project and therefore, do not require evaluation in the document, per section 15063(c) of the State
CEQA Guidelines, are as follows:

. Mineral Resources
. Population and Housing (Displacement of Substantial Numbers of Existing Housing and
People)
. Public Services and Utilities (Fire and Police Protection, Schools, Parks, Solid Waste, and
Other Public Facilities
. Recreation

The above environmental issues were determined not to be significantly affected by the proposed
project in the Notice of Preparation (NOP) for this Draft EIR (Appendix A), and in the Draft EIR for
the Los Osos CSD Wastewater Facilities Project (November 2000). The NOP, 2000 EIR, and the
following discussion are intended to provide adequate environmental documentation for the issues
that will not be further addressed in the EIR.

So the impact of losing your housing does not count?
When renters lose their housing due to proposed $250.00 a month cost of this sewer as defined by SLO County. Many can barely make the rent payments. That is not an impact of this sewer. When senior lose their homes, that is not an impact? When marginal population become refugees that is not considered a project impact? Attach # 189, Attach # 209
Please read Sierra Club sustainability policy for affordable housing stock:
“Affordable Housing Crisis Plagues America
More Americans than ever before live in inadequate housing or spend more than half of their monthly income on housing. As the growing population's demand for housing increases, we are failing to provide affordable, convenient options. Strip malls and cookie cutter housing developments do not represent the needs or wishes of most Americans. Suburban sprawl and limited transportation choices

often fail to provide affordable housing. Even middle income Americans are feeling the affordable housing crunch as new home prices escalate.
Sprawl pulls investment and the tax base away from existing communities, and forces the expensive construction of new roads, sewer lines and other infrastructure. Smart Growth provides a solution to sprawl and the affordable housing challenge. Fighting sprawl can and should include Smart Growth and affordable housing." See http://motherlode.sierraclub.org/challenge_sprawl.html Attach # 19, Attach # 52

Gentrification: An Unnecessary Evil
Many residents of inner cities fear revitalization projects. If their community becomes a more desirable place to live because of improved services, accessible jobs, and business opportunities, won't housing prices rise? To prevent gentrification-the displacement of current residents by more affluent newcomers--community members can create a development plan that incorporates exclusionary zoning, fair-share housing, and rent controls to keep housing affordable. Replacement ordinances make sure affordable housing is not lost in the construction of better communities. Giving all citizens a voice in planning is the key to Smart Growth. Revitalization does not need to drive out low-income residents. Attach #19 And:

http://www.lhc.ca.gov/lhcdir/house/FrankJun01.pdf

The impacts of this project will be to reduce the affordable housing stock. Under General Plan, CZLOU and Estero Plan policies and principles that is an impact. Again case law supports protecting coastal resources for affordable housing. See CA Coastal Commission laws and Policies. And Ca Housing Policies and statutes. A project in conflict, where there is a project alternative of a lesser impact should be selected. No where in the body of water law or state law does it state a community must implement the most costly alternative. In fact the opposite is true. Attach # 47, Attach # 54, Attach # 191, Attach # 210

Fair Share housing to promote neighborhoods, create a vibrant,

Diverse community, and meet the needs of a variety of income levels… This project does not allow our diverse community, but forced gentrification. Our work force will need to commute causing more traffic impacts with these added costs

http://www.sierraclub.org/sprawl/affordable.pdf Attach #19

16. Appendix P Alternative information

Constructed Wetlands: Effluent disposal using constructed wetlands would create habitat as
Well as recreational and aesthetic benefits for the community. Wetlands are considered primarily
As a storage device. However, disposal through evapotranspiration could also occur.
Constructed wetlands typically operate at depths of 1 to 5 feet, and areas of both vegetation and open water allow for different types of habitat. Attach # 64, Attach, # 159 Attach, # 175,
http://www.npr.org/templates/story/story.php?storyId=90043021
Yes and it remove the human carbon that causes disinfectant by products. Metals and emerging contaminant
sustainably. Polishing the water for AG reuse and exchange. At a low energy cost. Attach #9 See Clayton County Ga Attach # 51, # 101, # 109 Page 7, Attach # 302"I like to say it's raining everyday in Clayton County because we're putting right now about 10 million gallons back in our water supply," says Mike Thomas, general manager of the Clayton County Water Authority.

Thomas says the reservoirs here are full and have never been in danger of being too low. That's because back in the 1980s, folks realized there wasn't enough water to support the growth, so they decided to build a system of wetlands and reservoirs that would help them save water. And… The price tag is also an advantage — it can be as little as half the cost of building a regular wastewater treatment plant.

This idea probably won't work for bigger cities like Atlanta because it requires a lot of land. Still, it's attractive for smaller communities.

And there's an added benefit: Officials can create a nature preserve for those who live nearby.

Table 1: Summary of Evaluation Criteria
Baseline Criteria Sub-criteria Comments
1. Water Balance A. Salinity Management Project must contribute to mitigation of saltwater intrusion into lower aquifer

Due to lamellae lenses the effluent will not reach the lower aquifer and no seawater mitigation will occur. Attach, # 156 Project goal not met.
B. Groundwater Recharge Project must contribute to recharging groundwater resources in lower aquifer
Again: Due to lamellae lenses the effluent will not reac.h the lower aquifer and no seawater mitigation will occur. Project goal not met. Attach # 57 Attach # 186,

2. Water Quality A. Meeting RWQCB
Requirements for WDR
(Discharge limits)
Project must be effective in meeting
effluent discharge levels for: BOD, total
suspended solids (TSS), nitrogen, Attach # 183
viruses, and bacteria.
B. Meeting RWQCB
requirements for
elimination of pollution
to groundwater
Project must involve mitigation of
potential effects of effluent discharge
on domestic water wells. Attach, # 183, #184
C. Addressing emerging
contaminants:
pharmaceutical and
other constituents
Project is required to be consistent with
EPA standards for emerging
Contaminants
Project fails to meet this goal. RO and Advanced Oxidation required, not included in project description.
3. Energy The project is a higher energy user...not sustainable. See ponds and wetlands and AG exchange data in Ripley Project Report 2006. Attach, # 125
A. Contributing to
Improvements in air
quality
Project must demonstrate:
• Minimizing particulate emissions
As stated above in Traffic and AQ the trucks trips necessary for Broderson and RO brine hauling will have significantly greater impacts than Ag exchange in Lieu of pumping where RO and trucking 3,700 truck of dirt are not required.
• Effectiveness in minimizing release

Baseline Criteria Sub-criteria Comments
of airborne pathogens, and exposure
to vectors

Any septage hauling will cause spores to be air borne See SWRCB fines of the Pacifica Plant.
B. Promoting
sustainability
Project must increase energy efficiency
over conventional designs, reducing
overall use of natural resources
C. Reducing greenhouse
gas emissions
Project must result in reduction of
carbon footprint from conventional
designs Carbon footprint big with gravity construction. Fused pipe under estimated
4. Costs A. Life Cycle Costs Project must involve:
• Efficient use of funds for capital
improvements
• Lowest feasible and practical
Operations and maintenance costs
Necessary to meet WDR discharge
Limits.
Gravity sewers have a long history of violations; Here is a plant designed by MWH the designer of the 3 gravity projects you have listed as project 2,3 and 4.

Lila Tang of the San Francisco Bay Regional Water Quality Control Board said her agency would investigate the January spills in Pacifica.

"We have taken quite a few enforcement actions against the city (over time), possibly more action than against other cities," Tang said. "We haven't imposed any corrective actions on them for the January incidents or for these types of wet-weather events in general," she added, noting that the city of Burlingame ended up discharging more than 2 million gallons of fully treated wastewater into the Bay during the same weekend. Attach, # 145

Tang said the Pacifica plant could escape a fine if it had no alternative than to dump the wastewater, and demonstrates the ability to cope next time.

January's spill wasn't the only such incident in the plant's history, however. Documents provided to the Times show that another big storm -- lasting from Nov. 29 to Dec. 1, 2001 -- forced 110,000 gallons of partially treated wastewater out into Calera Creek without the benefit of the sand filters or the ultraviolet cleaning system.

Gromm attributes those incidents to growing pains at the plant, which had just come online in September of 2000.

"We had to figure out how to change the plant to respond to these high flows," he said. "Since then, I don't think we've had any problems" -- the most recent incident excepted.

But other violations of a different nature have plagued the wastewater plant since its inception.

The Regional Water Quality Control Board fined the Pacifica facility $396,000 for violating its discharge-permit limits 137 times between January 2001 and Nov. 30, 2007.

The list of violations included at least 74 discharges of fecal coliform, 23 discharges of ammonia and two mercury-limit violations, according to documents obtained from the board.

Some of these problems are attributed to the plant's anaerobic digester, which becomes clogged with foam. Plant engineers employed a temporary workaround, and next week, construction crews will begin the process of modifying the machine at a cost of $1 million, according to Gromm.

Other machine malfunctions have also led to fines. In December 2001, a pump station in the neighborhood of Linda Mar discharged over one million gallons of untreated sewage into the ocean, leading to fines of $125,000.

In December 2005, 253,000 gallons of sewage escaped from the Rockaway pump station during a pipe system replacement. Pacifica was fined $190,000 and sued the construction company for negligence.

Reach Julia Scott at 650-348-4340

B. Staffing Requirements Project must minimize number of
required management and staff
positions.
Ponds, vacuum or LPS would have the lowest staff hours as well as ADS pond treatment. Attach # 48, Attach, # 125
C. Community
Acceptance
Includes consideration of:
• Private property value
A large assessment of $25 to $40 million would be less acceptable than a project of $15 K. Nowhere in California even in areas of high income is there a sewer fee of $250.00 a month…it is outrageous taking of our rights to live under the constitution of the USA. Attach #19, Attach # 67. # 118, Attach, # 134
• Aesthetics
5. Permit ability A. Coastal Permit • Required for any work

• Must be in compliance with the Local
Coastal Plan (LCP) Not in this project, Attach # 54.
B. Endangered Species. Attach # 219, Attach # 220
Habitat Areas (ESHA)
Includes considerations of what is
permitted in the ESHA
C. Environmental Includes consideration of the following:
• Endangered Species Protection Act
Many species including homo sapiens will be adversely affected in the endocrine systems as they develop. EDSAP
http://www.cardam.eu/NR/rdonlyres/733613DB-623F-4A8A-B193-B38D28E24103/0/HildaWittersfinal.pdf and
Since 1998 teat are ongoing for all domestic chemicals sold or released into the USA environment http://www.epa.gov/endo/
National Resources Defense Council and other plaintiffs joined and won a decision to force USEPA to go forward with that evaluation.
" In recent years, some scientists have proposed that certain chemicals might be disrupting the endocrine system of humans and wildlife. A variety of chemicals have been found to disrupt the endocrine systems of animals in laboratory studies, and compelling evidence shows that endocrine systems of certain fish and wildlife have been affected by chemical contaminants, resulting in developmental and reproductive problems. Based on this and other evidence, Congress passed the Food Quality Protection Act in 1996, requiring that EPA initiate EDSP to screen pesticide chemicals and environmental contaminants for their potential to affect the endocrine systems of humans and wildlife."
http://www.epa.gov/endo/pubs/edspoverview/index.htm
World wildlife federation
http://wwf.worldwildlife.org/site/PageServer?pagename=can_results_endocrine

Dioxin Exposure, from Infancy through Puberty, Produces E
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2199303 endocrine Disruption and Affects Human Semen Quality. Attach # 20
There is ample and overwhelming evidence both from studies and common sense that the products we use daily. Prescription drugs, off of the shelf healthcare and cosmetics have levels of toxins and pollutants and other classes of chemicals that effect human health and development…mutagens and carcinogens that remain in sewer effluent after treatment process that is scheduled to be added to our potable and limited water supply for 15,000 people. Add to this the chemicals on the cleaning aisles of supermarkets, hardware and auto parts stores, local dry cleaners, auto Body and other stores that will be added pollutants…over 200,000 and we have a new source of potable water at Broderson that must meet recharge standards. You have failed to meet CEQA requirements to define impacts, classify impacts and meet mitigation standards. Our hope is a SEIR may do so. Attach # 192, Attach # 195

Stably transfected human breast cancer cell line,

developed by INSERM (Balaguer et al, 1999)
Section 7 consultations with US Fish
and Wildlife Service
• Archaeology
• Sensitive species/habitat
• State Marine Reserve
D. Land Uses Includes:
• No other feasible alternative for
ESHA
• Prime agricultural land
• Siting of public utility facilities
E. Engineering Includes the following elements:
• Health and Safety
• Drainage Attach # 75
• Noise
• Odor
• Traffic Trips
• Operational Dependability

5.1AG Exchange is different than reuse as we get potable water for treated effluent. Attach # 51. Using the AG X should be an A priority. ReCip TVA subsurface wetlands vector proof, in Small Flows article and followed by

page 432 DEIR 7-24 Table 7-5 screening level A,B,C
Disagree with the values in penalizing and minimizing bias, Attach, # 148

Table 7.7 page 456: Wrong $11.4 Capital cost $355,000 O&M
. Construction low:
$18 to $21 million
. O&M medium:
About $800,000/year.

Page 464 top Wrong… ponds need dredging 15-20 year

Page 474 Other Effluent Disposal Alternatives
Constructed Wetlands Can't harvest water see Clayton County Georgia

Conclusion:

There is evidences of constructive , Attach, # 144 *through the process.* Attach, # 132.. Attach, # 140, Attach, # 143 . *The values reported in the due diligence, Rough/Fine screening tech memos and the resulting conclusions are based on questionable values. The alternatives were not vetted in some cases leaving out*

known data from Carollo project that won awards recently…Petaluma Pond/wetland and Carnation WA Vacuum sewer with wetlands.
This plan has a lot of deferred costs and impacts. How ill these be identified in the disposal plans?
Please obtain a copy of Los Osos TAC Report Comments by Tom Ruethr March 30 through April 8, 2007 Dr, Ruehr has 35 years studying this project from the earlier TAC in the 80-90s, was a member of the citizens group that formed the LOCSD "The Solutions Group" and a retired (last year) Soil Scientist at Cal Poly San Luis Obispo. He has information that needs considering in this DEIR…lamellae layered at 2" to 4" depth hold the effluent in the soils and crerate a lateral flow. Attach, # 149 *As I have pointed out earlier. If you do not recognize these problems the CA Coastal Commission or the Courts may. It is after all scientific evidence.* Attach # 54, #88, #122
More study needs to be completed and Tom supports my view that Vacuum, Low Pressure and STEP have a superior outcome for collection in these conditions than does gravity. Please invite and evaluate the submissions of LPS, Vacuum and STEP/STEG as well has wetlands and AG exchange. Attach, # 137, Attach # 279
Thank You AL Barrow Coalition for Low Income Housing and Citizens for Affordable and Safe Environment.

**Eone puts a valve at the septic tank junction to the grinder pump for power outages,*

Statement of Key Environmental Issues
Los Osos Wastewater Treatment Project: Collection System

EXECUTIVE SUMMARY

Central to the missions of our groups is sustainability – protecting, preserving, and restoring for future generations the environmental, social, and economic gifts and opportunities we enjoy. Integral to this larger mission is protecting the past, the cultural resources of the California Native American Chumash, and, preserving and enhancing local watersheds, on which other vital systems depend, including coastal ecosystems. We agree that selecting the appropriate collection alternative for the LOWWP, a major component of the project, is key to the project's sustainability.

We believe that to achieve sustainability the collection system for the LOWWP should:

- Provide the greatest possible protection against overflows and other releases of partially treated or untreated wastewater from the system, which could pollute Morro Bay Estuary and other sensitive coastal ecosystems (e.g. Sweet Springs Nature Preserve).
- Provide the greatest possible protections to the groundwater of the Los Osos water basin.
- Avoid environmental impacts related to construction and installation of the system to the greatest extent possible, including the impacts of open trenching, e.g., dewatering, soil stabilization, and street reconstruction.
- Avoid impacts to California Native American Chumash sites to the greatest extent possible.
- Provide the most energy-efficient solution and enable the use of clean, renewable energy sources, to avoid environmental impacts related to non-renewable energy production (e.g., GHG emissions).

The project's environmental sustainability is ultimately tied to its social and economic sustainability. Therefore, we believe that the project should be as

affordable as possible to promote the project's sustainability.

Considering the site-specific characteristics of Los Osos - proximity to Morro Bay National Estuary (a State Marine Reserve), a Prohibition Zone, hilly terrain, sandy soil prone to shifting and liquefaction, high ground water, and sites of cultural significance to the California Native American Chumash - we agree that a STEP/STEG collection system is the most environmentally appropriate alternative. Based on our review of the LOWWP project reports and our own research, a STEP/STEG collection system affords significantly greater protections to the groundwater, sensitive ecosystems, and culturally significant sites in the area than either a conventional gravity collection system or a low pressure-conventional gravity combined system (LPCS) - while also providing other benefits important to a sustainable project.

We thank Chairman Patterson for the opportunity to provide input on this important matter, and the Board for its support for sustainability as stated in the LOWWP *Mission Statement*. Please see the attached for a detailed explanation of our analysis of the two collection systems, STEP and gravity, and conclusion regarding the collection system we see as the environmentally appropriate solution to meet the complex needs of Los Osos.

INTRODUCTION

After the August 5, 2008, San Luis Obispo County Board of Supervisors Los Osos Wastewater Treatment Project (LOWWP) Update, Chairman Jim Patterson requested that local environmental groups prepare an informational document that analyzes the environmental benefits and impacts of the collection systems under consideration for Los Osos and include a recommendation for an environmentally preferred system. The following is the work product of the San Luis Bay Chapter of the Surfrider Foundation, Santa Lucia Chapter of the Sierra Club, SLO Green Build, Los Osos Sustainability Group, The Terra Foundation, and Northern Chumash Tribal Council.

The collective mission of the above-stated groups is to preserve, enhance, and protect the biological health of our coastal environment and its contributing watersheds as well as the cultural resources of the California Native American Chumash. We are aligned with the statement of Jonathan Todd, CEO of the natural resources planning firm Todd Ecological, Inc., that the fate of the bay is dependent upon the town's having a centrally managed wastewater system.[i] Los Osos' proximity to the least tidal area of the bay makes a sewer

system a necessity. The consideration of the type of collection system and the treatment plant's location is also vital to the protection of the coastal environment and watershed.

The above-stated groups appreciate Chairman Patterson's request that we ***differentiate*** between the two primary collection systems being considered, STEP/STEG and conventional gravity combined with low pressure. We recognize that the Draft EIR has not yet been released nor has the NWRI Independent Peer Review occurred. We are specifically responding to Chairman Patterson's request for input at this time and hope that the following will raise issues that will receive further evaluation in the environmental review process.

BACKGROUND

Los Osos is located on the "Back Bay" of the Morro Bay National Estuary. A portion of the community, about 5,000 residences, has been designated a "Prohibition Zone" by the Central Coast State Regional Water Quality Control Board. This portion of the community, much of it adjacent to the bay, is the site of the LOWWP. The terrain in the Prohibition Zone is hilly with sandy soil, so the area is prone to ground movement and liquefaction with earthquakes or severe weather conditions. Due to the hydrogeology of the basin, many areas have high groundwater, even in the higher elevations, while the Prohibition Zone's location makes the groundwater basin (and collection system) prone to the effects of seawater intrusion - a factor particularly relevant with predicted sea level rises due to global warming trends. Having been a district of Chumash villages for thousands of years, Los Osos is situated on top of land that is of great sacred and cultural significance to the California Native American Chumash. Further, socio-economic factors come into play. A significant percentage of residents are retired, on fixed incomes, with most of the community middle and lower income. For these reasons, constructing a wastewater project in Los Osos requires a balance of environmental, cultural, social, and economic considerations in order to decide the most appropriate collection system solution. The solution must be in accord with the balanced metrics of Environmental, Social, and Financial Sustainability.[ii]

A key consideration is the fact that the portion of the Morro Bay Estuary adjacent to Los Osos and the Prohibition Zone was recently designated a State Marine Reserve. The Department of Fish and Game has stated Marine Reserves "shall be maintained to the extent practicable in an undisturbed and unpolluted state," and that "Take is not limited to fishing activities…. The high level of protection created by an SMR [State Marine Reserve] is based on the assumption that no other appreciable level of take or alteration of the ecosystem is allowed (e.g., sewage discharge…)." [iii]

Alex Hinds, former SLO County Director of Planning and Building, noted, "As wetlands continue to disappear, Morro Bay's international significance continues to grow. Morro Bay supports many birds protected by international treaty and provides a secure harbor for offshore marine

fisheries." [iv] Unlike the recent CMC 20,000 gallon raw sewage spill into Morro Bay, a spill from Los Osos would not have 6 miles or 10 minutes of dilution provided by creek waters before impacting the bay, and, the impact would be to the part of the bay with the least tidal flux. Therefore, it is imperative to build a collection system that offers the greatest protection to the bay.

DISCUSSION

In our analysis of the two collection systems, we have identified several key issues relating to wastewater collection and have examined each collection system within the context of these key issues:

1. I/I (Inflow/Infiltration) and Exfiltration

In line with our mission to preserve, enhance, and protect the biological health of our coastal environment and its contributing watersheds, one of our primary concerns is I/I (Inflow/Infiltration) and exfiltration. I/I is water leaking into a collection system; exfiltration is sewage or effluent leaking out. Both occur where a system is not sealed (water tight). Some main sources of I/I are rainwater (during storms), seawater (in locations near a bay or open ocean), and groundwater (in high groundwater areas). A system prone to I/I is also prone to exfiltration because both originate from leaks in a system. Peaks in I/I can lead to SSOs (Sanitary System Overflows), while significant exfiltration can pollute ground water and surface waters (through subsurface percolation and seeps). SSOs and exfiltration are leading causes of ground and surface water pollution in the United States.[v]

Contamination from raw sewage leaks would violate protection measures afforded by the bay's designation as an SMR and would be detrimental to the health of the bay, local wildlife, and the fishing industry. Prevention of sewage spills and unregulated discharges that would degrade coastal water quality or harm marine resources is consistent with Sections 30230 and 30231 of the Coastal Act, as well as Section 2852(d) of the California Fish and Game Code.

By demarcating part of Los Osos a "Prohibition Zone", it appears that the CCRWQCB identified what they see as the "low-lying area." As such, the structural integrity of the collection system, be it STEP or conventional gravity, is key to preventing I/I and exfiltration into the groundwater basin and SMR. Furthermore, future sea level rise could cause additional I/I and exfiltration issues that need to be considered. Conservative global warming predictions estimate sea level rise to be between 8 inches to two feet by 2050.[vi] This will only be 35 years into the LOWWP's lifespan. It has also been predicted that the rise in tides will bring larger coastal storm events, which further affirms the need for a sealed pipe solution that minimizes

I/I and exfiltration and avoids capacity stressors to the system.

STEP/STEG Collection System:

The STEP/STEG collection system (hereafter referred to as STEP) by design is a sealed pipe solution and pipes are laid (on average) at 4 feet deep following the natural topography. Because of the shallowness of the pipe (compared to gravity pipe being between 7'-23' deep) there is ease in leak detection, clean up and repairs. The matter transported through the pipes is effluent, not biosolids sewage as with gravity, thus reducing the impacts of leaks polluting the groundwater. Furthermore, there is a greater soil interface with STEP which creates a barrier to pathogen transport. Any excessive pumping due to leaks would be known immediately through the nearly real-time feedback information of STEP pump activity; if there were a pipe rupture or pinhole leak, it would be detected early on.[vii] STEP systems do not require manholes further reducing potential I/I that would result from runoff or storm events.

The most likely place for I/I issues in a STEP collection system is between the STEP tank and connection to the house. Prevention of I/I at this location can occur with maintenance and monitoring just as with on-lot monitoring of I/I with a gravity collection system.[viii] As noted in the Technical Memorandum, "Flows and Loads", I/I within a STEP collection system "presumably would be much lower than that estimated for a gravity collection system." [ix] Per Dr. Tchobanoglous' comments in the *Release of Draft Fine Screening Report*: all existing septic tanks must be replaced if a STEP system is used. This is to assure a watertight system from the beginning.[x]

Conventional Gravity Collection System:

A conventional gravity (combined with low pressure) collection system (hereafter referred to as gravity) can also be fusion welded, but the LOWWP Project Team has not indicated a firm position on the scope and extent of sealing. This is best summarized by an excerpt from the Technical Memorandum, "Flows and Loads", which states, "If a gravity collection system is selected, only a system that was constructed of fusion-welded PVC piping could be operated with as little I/I as the other types of systems." [xi] The LOWWP *Fine Screening Analysis* points out that an active maintenance program can reduce I/I in a gravity collection system, but the maintenance would be more expensive than for STEP.[xii] More detailed concerns include the following:

- A conventional gravity system means 45+ miles of pipe laid will have approximately 12,000 unfused joints (this figure does not include the additional 5,000 connections to homes nor the lateral joints every 20 feet from the main to the residences).[xiii] Even with the newer PVC pipe, gravity bell and spigot joints are known for loosening over time and will be laid at a ***minimum*** of 7 feet in depth (pipes will be laid 7'-9' deep in 63% of the roads, 10'-14' deep in 34% of the roads, 14'-18' deep in 2% of the

roads and 18'-23' deep in 1% of the roads - compared to 4 feet for STEP), making leaks more difficult to detect and expensive to repair.[xiv] According to the LOWWP ***Fine Screening Analysis***, Section 1.3, there is a higher risk of ground water pollution with gravity than with STEP because the bell and spigot joints loosening over time. Exfiltration from the loosened joints would further pollute Los Osos' drinking water as well as have damaging impacts to the bay.[xv]

- The sandy soils of Los Osos make conventional gravity bell and spigot pipes particularly vulnerable to earthquakes, increasing the chances of I/I and exfiltration.
- 807 manholes (each with 2-4 unfused manhole penetrations) are proposed for the gravity collection system, where STEP has none.[xvi] Here, too, is an opportunity for I/I and exfiltration: rainwater that would have recharged the aquifer is taken to the treatment plant for treatment instead, and, in a major storm event, this load on the collection system can cause sewage to be pushed up through these openings. Again, STEP is a sealed system so these issues are negligible. Furthermore, the STEP tank is designed with a 1-2 day emergency holding capacity for a storm event.
- For Los Osos, a conventional gravity collection system requires 20 pump stations which also makes the system more susceptible to I/I and exfiltration due to surges and/or system failures (pumps and valves). Larger conventional gravity pipe (8" diameter) allows for greater I/I whereas STEP's 3-4" diameter pipe is more restrictive simply because of the size. As the NWRI Independent Advisory Review stated December 4, 2006, "The economic benefits to reduced inflow and infiltration (I/I) achieved by the use of small-diameter effluent pressure collection should be considered in the cost estimate for alternative treatment technologies." [xvii]
- It is our understanding that at present 5% of the gravity collection pipe will be laid in groundwater thus requiring dewatering to install it. This will also make the pipe more susceptible to causing groundwater pollution from exfiltration.
- Unlike a STEP tank which settles out greases through pretreatment, gravity collection pipes carry greases to the treatment plant. As stated by the State Water Sources Control Board, grease blockages (along with manhole structure failures, pump station mechanical failures and excessive storm or ground water I/I) are a major cause of SSOs.[xviii] SSOs may pollute surface and ground waters, threaten pubic health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.[xix]

- The newer PVC gravity pipe has a maximum allowable exfiltration rate which indicates that exfiltration is assumed and already calculated into the system's design.[xx]

Summary:

The LOWWP *Fine Screening Analysis* estimates the average wet weather flow for a LOWWP conventional gravity system will be 200,000 gallons/day more than for a STEP system due to I/I. The LOWWP Technical Memorandum "Loads and Flows" estimates a gravity system's peak storm flows will be 800,000 gallons/day more than STEP (2.5 million gallons/day versus 1.7 million gallons/day). These peak flows make a gravity system more susceptible to controlled or uncontrolled SSOs.[xxi] The State of California Regional Water Quality Control Board Central Coast Region notes, "Communities need to address overflows during sewer system master planning and facilities planning," and, based upon these findings, a collection system that uses sealed pipes would be environmentally preferable to minimize I/I, exfiltration, and associated SSOs as well as to allow for diagnosis and repair of breaks or leaks in the system as they develop.[xxii] Therefore, we see STEP as the environmentally preferred collection system technology in regards to this key issue.

2. Soil Disturbance – General

Soil disturbance is a key issue divided into two separate sections: General, and, California Native American Chumash Sites. This section addresses the general issues of soil disturbance, runoff pollution, road and traffic disruption and personal property disruption. For example, the size and depth of soil displaced for gravity pump stations and for the 45+ miles of deep trenches for gravity pipe to be laid, or, for placing STEP tanks into the ground on properties will be analyzed:

STEP/STEG Collection System:

STEP tanks require soil displacement approximately 8'W x 14'L x 8'D (approximately 23 cubic yards) to accommodate the 1,500 gallon tank measuring 6'W x 11'L x 6.25'D.[xxiii] To reduce disturbance of personal property in the case of a STEP collection system, boring (as opposed to trenching) can be used to connect the lateral pipe to the STEP tank. There is very little road/traffic disturbance for boring the 4-inch diameter opening for inserting STEP pipe in roads, and it can be laid within 12-18 months. To further reduce soil disturbance, with 75% of the septic systems in front yards, STEP tanks can go where septic tanks are now with site enlargement. STEP tanks are approximately 50% larger than the preexisting septic tanks.[xxiv] Boring avoids the significant impacts and mitigations associated with excavation, runoff pollution,

and dewatering open trenches in high groundwater areas (e.g., disposing of the polluted water).

On-lot disturbance for monitoring and maintenance is equivalent to other utilities on-lot disturbance (e.g. electricity, water, and gas) though usually only once/year instead of once/month.

Conventional Gravity Collection System:

For gravity, pipes will be laid 7'-9' deep in 63% of the roads, 10'-14' deep in 34% of the roads, 14'-18' deep in 2% of the roads and 18'-23' deep in 1% of the roads.[xxv] It is estimated that the width of the 7'-8' feet deep trenches will be a minimum of 6 feet for the trenches spanning 45+ miles.[xxvi] A gravity collection system will also require disturbance of personal property in the form of trenching the lateral connection to the house and the decommissioning of the septic tanks will cause further on-lot disturbance.

There will be additional gravity collection soil disturbance for building 12 Pocket pump stations (10'L x 10'W x 10'D), 6 Duplex pump stations (10'L x 10'W x 10'D), and, 2 Triplex pump stations (12'L x 12'W x 12'D). Additionally, Duplex and Triplex stations require a standby power station that will also add to soil disturbance.[xxvii]

Open trenching requires shoring, restabalizing soils, and reconstructing streets for the 45+ miles of trenching as well as for the 20 pump stations. Unlike with STEP, the soils removed are hauled away and new material brought in that can be compacted and stabilized to allow maintenance of the required pipe grades. The trenches must be dug deeper than the actual pipe level to allow room for the new compactable material.

On-going monitoring and maintenance will be an on-lot disturbance to prevent on-lot gravity I/I and exfiltration.

Summary:

Conventional gravity trenching will greatly impact roads/traffic for a minimum estimated time of two years.[xxviii] The reduced time to bore for STEP pipe means lower construction costs and fewer impacts to roads and traffic. Based on the similarity of width and depth, the calculations of mileage length required to install 5,000 STEP tanks (compared to the 45+ miles of gravity pipe trenching) is *less than* 14 miles and is only 7 miles if STEP tanks are placed where the septic tanks are now.[xxix] The cubic yard soil disturbance estimates are 440,000cy for gravity versus 260,000cy for STEP.[xxx] We understand that the County is considering trenching the STEP lateral pipe with 4-feet deep trenches (but bore the 45+ miles for STEP mains). This trenching of the laterals appears unnecessary when horizontal boring can be utilized and displaces significantly less soil. Based on our analysis,

we disagree with the statement on soil disturbance made by TAC member David Dubink during a meeting of the LOWWP Technical Advisory Committee estimating that STEP and conventional gravity collection systems will displace an approximately equal amount of soil, and instead find that STEP/STEG will displace less soil.

3. Soil Disturbance – Native American Chumash Sacred Sites

The town of Los Osos, the Valley of the Bears, was built on an ancient Chumash district, multiple villages occupied for thousands of years.[xxxi] In 1990, for example, over 60 new Chumash archaeological sites were recorded in the area of Los Osos.[xxxii] Because of this, the aforementioned environmental groups support the Northern Chumash Tribal Council (NCTC) in their position that "the least amount of ground disturbance in Los Osos is the best." [xxxiii] Ancient Chumash sites are to "remain avoided whenever possible and complete data recovery when we have to disturb or destroy a site. Ancestral burials need to be avoided at all cost, and a plan in place for unavoidable encounters." [xxxiv]

Section 30244 of the Coastal Act also provides protections to archaeological and paleontological resources as identified by the State Historic Preservation Office requiring reasonable mitigation. Development would not likely be prohibited based on the presence of these resources, but steps to minimize impacts to these resources should be part of the development plan.

STEP/STEG Collection System:

The LOWWP *Fine Screen* Section 3.3.2 addresses the impacts of STEP/STEG stating, "Archeological impacts will occur, but determination of extent will be made complicated by subsurface installation (horizontal boring)," meaning damage to a site could occur for approximately 50' before evidence of damage is revealed.

As stated in the previous section, a minimum of 75% of the STEP tanks should be able to be located where there are currently septic tanks, creating less soil disturbance on properties and reducing the risk to California Native American Chumash cultural resources. For roadways, STEP is seen as preferred because the planned depth is 4' for horizontal boring that follows the natural topography. The LOWWP Technical Advisory Committee (TAC) in the *Pro-Con Analysis* showed that STEP is believed to pose less risk.[xxxv]

When discussing the complexity of these issues, Fred Collins, Tribal Administrator for the Northern Chumash

Tribal Council (NCTC), has said the following "With the data available today and with not having any meaningful communication with the County concerning this project, NCTC has determined after meeting with local environmental group members that if the STEP system and Gravity System were to be compared for soil disturbance and if both systems disturb the same amount of cubic soil, the surface 100 centimeters disturbance that the Gravity system would displace would be much more than the STEP system, therefore NCTC is supporting the STEP system. When you add the advantage of boring which is very accurate and with proper Archaeological planning and research using every means known (which includes Test Pits, Core Drilling, Ground Penetration Radar, Knowledge of the Chumash Elders, Geomorphology, Geology, Paleontology and Ground Disturbance Chumash/Archaeological Monitoring), the STEP system will be much more efficient and protect California Native American Chumash Cultural Resources in an effective way that will be the future for project planning." [xxxvi]

If culturally significant sites are encountered in the installation of STEP tanks, greater flexibility and time is afforded to provide for proper care of the sites in accordance with cultural traditions. Furthermore, STEP pipe can be directed around preexisting buried utility lines and archeological sites.[xxxvii]

Conventional Gravity Collection System:

The LOWWP *Fine Screen* states in Section 3.3.1 that "Archaeological resources are located throughout the community and will require pipeline route relocation, or possible reburials" if conventional gravity is implemented, resulting in additional delays, costs and need for Change Orders.

For the NCTC, their greatest concern is the 45+ miles of gravity collection trenching as was confirmed by the LOWWP Technical Advisory Committee's *Pro/Con Analysis* which states that gravity collection poses a "higher risk of impacts on archeological resources." [xxxviii] With deep and wide trenching, sites and burials could be uncovered within the entire 45+ miles of trenched roads for gravity collection pipe because of Los Osos being a district with multiple Chumash village sites for thousands of years.[xxxix] With gravity systems, downhill slopes must be maintained at all times, therefore, an encountered site must be excavated and burials moved. Collins stated that with gravity collection, "this could be one mass grave relocation

project." [xl] This also means the project would be stopped in those places where cultural resources are found delaying the project and increasing the cost.[xli]

Summary:

Collins concluded, "NCTC is working on the Nacimiento Water Pipeline as Chumash Consultants and observing the accuracy of boring technologies and it is amazing, it is truly the way of the future. The Chumash Community has always stood on the principle of Chumash Site avoidance, always keep our sites in-place, undisturbed, because for us our Ancestors Energies are still present, as this is our truth. So for us that write words and make appearances for the protection of our ancient civilization, we who are the Guardians, would be very happy if this project would be conducted with our Spiritual Understanding in consideration, which will help with the destruction that we will have to face and endure. STEP System Boring allows for the least amount of soil displacement and is the best way to go." [xlii]

The information provided above substantiates that the STEP collection system construction would create the least amount of soil disturbance and minimize impacts as they pertain to the California Native American Chumash cultural resources in Los Osos.

4. Energy Usage

Energy usage is important to consider within the LOWWP collection system because 20% of energy used in California is for the moving and treatment of water.[xliii] Section 30253(4) of the Coastal Act requires that new development minimize energy consumption. The goal of AB 32 is to meet 1990 levels of energy usage by 2020 and an additional 80% reduction below that by 2050. The present septic tanks in Los Osos require zero energy, and this means any sewer project will *increase* energy use in Los Osos unless it is also designed to *generate* energy. Smart design, such as incorporating solar energy via photovoltaics and capturing methane, can reduce carbon emissions associated with other forms of energy.

STEP/STEG Collection System:

Dana Ripley, CEO of Ripley Pacific Company, estimates the overall power consumption would be 68% less with STEP collection and trickling filter secondary treatment than

with the gravity collection/MBR design concept.[xliv] 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." [xlv] In a meeting on August 3, 2007, Greg Nishi, Account Representative for PG&E in San Luis Obispo, expressed to Dr. Mary Fullwood, Chuck Cesena and Dana Ripley that when comparing the STEP design of 2006 to the conventional gravity midtown project, STEP was significantly less demanding in energy usage and would qualify for a rebate to reward the project for its low-energy usage as well as adaptability in utilizing solar power, photo voltaics, for the ½ horsepower (hp) effluent pumps required for 95% of the residences. These low-energy pumps only run approximately 20 minutes/day.[xlvi] It is easier to install solar with STEP collection than with gravity's larger municipal collection system pumps (5 hp and above) at the pump stations. The NWRI Independent Advisory Review stated December 4, 2006, "The economic benefits of septic treatment [i.e., STEP tank treatment] should be considered in the cost estimates for alternative treatment technologies. Such an analysis should also include the economic benefit of reduced biosolids production." [xlvii] Because a STEP system allows natural processing (primary treatment) of solids on site in the STEP tanks, it reduces the total septage in the system by 75%, thus reducing the energy needed to treat and/or dispose of solids.[xlviii] Lastly, the energy-free STEG component, a STEP tank that relies on gravity instead of pressure, has not been calculated into the STEP collection system design estimates because, as described by Dana Ripley, "We wanted to begin with a conservative starting point on energy consumption and defer the whole STEG issue to the detailed design stage. This is when we will have the resources to do the hydraulic grade profile based on final pipeline routing." [xlix]

Conventional Gravity Collection System:

As stated in the LOWWP *Fine Screening Analysis*, the energy usage of the gravity collection system is estimated at 500,000 kwh/year based of energy required to convey 1.4 mgd to an out-of-town treatment facility. STEP is estimated at 425,000 kwh/year based on energy required to convey 1.2 mgd to an out-of-town treatment facility.[l] If the Low Pressure alternative is utilized in the high groundwater areas it will add approximately 400 2 hp grinder pumps to the gravity system.

Summary:

Since our findings regarding energy usage - which are reflective of industry-based comparative reporting - conflict with the information in the *Fine Screening Analysis* - which concluded that the energy usage of STEP and gravity collection systems would be equivalent - further evaluation of the energy usage information on both collection systems is needed. However, even if after further scrutiny and analysis, energy usage is found to be equivalent, the fact that STEP can easily utilize solar makes it favorable and likely to be rewarded by rebates and/or grants in this time of transition to renewable, low-carbon energy sources by the State of California.

5. Water Conservation

Since water conservation is becoming a necessity for the State of California, and a key focus of the Morro Bay National Estuary Program (MBNEP), the Central Coast Regional Water Quality Control Board (CCRWQCB), San Luis Obispo County, and, the Los Osos Community Services District (LOCSD) – to name only a few entities developing water conservation programs and Low-Impact Development (LID) practices, manuals and policy clearinghouses – it is only prudent to select the wastewater treatment option that facilitates the implementation of these measures.

STEP/STEG Collection System:

For STEP, the average wet weather flows are estimated at 1.2 million gallons per day (mgpd) with average peak storm flows estimated at 1.7 mgpd. According to wastewater systems experts, the STEP collection system enables greater water conservation and related energy-savings from reduced water and wastewater pumping.[li]

There may be places where installation of STEP tanks will be in high groundwater areas and will require dewatering. However, dewatering would be limited to an 8 foot single spot compared to an 18 foot extended trench in highly permeable sandy soils with gravity sewers.[lii]

Conventional Gravity Collection System:

For gravity, the average wet weather flows are estimated to be 200,000 gallons per day (gpd) greater than for STEP at 1.4 mgpd. The average peak storm flows are 800,000 gpd greater than for STEP at 2.5 mgpd.[liii]

The high levels of I/I associated with gravity reduce beneficial recharge of the basin's ground water by diverting rainwater into the collection system. I/I represents a substantial source of recharge (200,000 to 800,000 gpd during wet weather).

Gravity collection systems require greater volumes of water than STEP collection systems to function properly (to flush solids through the system), therefore, they set limits on the levels of conservation achievable by individuals and the community.[liv]

The LOWWP *Fine Screening Analysis* states, "a viable project could not result in an increase of the groundwater balance deficit, maintaining the existing basin balance

(i.e. level 1) was considered the minimum viable project." Dewatering the trenches to lay gravity pipelines will use a considerable amount of water depleting the aquifer. This water will be polluted in the process and will need to be disposed of elsewhere (thus also a carbon footprint/GHG concern). The dewatering of a Sewer Line Project in Salinas, California, for example, required pumps running around the clock for three weeks before the crew could work on the drained area. The number of pumps used for that specific project pumped a combined 12,000 gallons per minute in order to dewater the trenches. Because of the impact this would have on Los Osos' groundwater basin and the potential for drawing in seawater intrusion, we ask that the matters of dewatering be fully evaluated.[lv]

Summary:

Because of its ability to operate with reduced flows, the STEP collection system stands out as the superior collection system to facilitate increased water conservation measures.[lvi] As Ronald Crites and Dr. Tchobanogrous state,

> Although the use of conventional gravity-flow sewers for the collection of wastewater continues to be the accepted norm for sewerage practice in the United State, alternative collection systems…are becoming increasingly popular. In some areas the use of conventional gravity sewers is becoming counterproductive because the use of water conservation devices continues to increase. The minimum flows required for gravity-flow sewers to operate make them problematic where development occurs slowly in a large development or where water conservation reduces the wastewater flows significantly. In many cases, the water used to flush conventional gravity-flow collection systems for the removal of accumulated solids far exceeds the water saved through water conservation measures.[lvii]

6. Green House Gas Emissions

Greenhouse gas emissions are found to contribute to the rate of global climate change. The Intergovernmental Panel on Climate Change (IPCC) asserts that "most of the observed increase in globally averaged temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." [lviii]

The California Global Warming Solutions Act of 2006 (AB 32) requires reduction of greenhouse gas emissions to 1990 levels by the target year of 2020.

The complexity and depth of the issue of Greenhouse Gas Emissions as they pertain to collection systems construction, and, operation and maintenance is beyond the scope of this document and will be addressed more fully upon the release of the Draft EIR and the analytical report by the NWRI Independent Peer Review. Below, we have provided a brief overview of greenhouse gas issues generally pertaining to the collection systems, regardless of size, etc.

STEP/STEG Collection System:

The LOWWP Tech Memo on Green House Gas Emissions raised significant concern for the emissions of methane by the STEP collection system. We acknowledge their concern as methane is released at the high points within the collection system; however, with innovation the gas could be captured and turned into an asset. This is already being done in 20% of all conventional wastewater treatment plants in the U.S. and typically supplies 30-50% of the plants' energy needs. For instance, Dana Ripley of Ripley Pacific Company recently shared the following:

> Anaerobic pretreatment followed by aerobic polishing can be a potential net energy producer, compared to conventional systems. Even with anaerobic solids digestion, conventional systems are net energy consumers. This is an intriguing concept since the STEP interceptor tanks are in fact already the "anaerobic pretreatment." The only missing element is collection of the biogas (50-75% methane) for energy production. I am currently working on a biogas collection system (from STEP tanks) for a project in the Central Valley and the concept just may have application in Los Osos. I discussed this concept with Dr. Tchobanoglous last Saturday, and we both feel that it is technically and economically doable. We would simply mimic the biogas collection systems used for about three decades in landfills, and apply it to the interceptor tanks. This is still on the drawing boards, but we hope to have it far enough along later this year that we include it in our team's response to the County's RFP. We know there is no (known) precedent for this for STEP tanks, however there is plenty of precedent for collection of similar biogas from dispersed landfill gas wells. Theoretically, if it works, the whole tertiary wastewater system could power itself and

potentially produce an excess for sale to the grid.[lix]

Regarding greenhouse gas emissions associated with operation of the collection system, we note that the advantage of primary treatment and holding at the STEP tank utilizes natural organisms to digest raw sewage, reducing demand and volume on treatment process and solids disposal, thus reducing pumping.

Because the collection system is integral to the treatment system, we must address the issue of methanol which is being recognized by the LOWWP as the only carbon source treatment solution for treating the high nitrate levels of effluent for a STEP treatment plant. As Bill Cagle, National Accounts, Orenco Systems Inc. stated, "Other sources used for de-nitrification include acetic acid, glucose, benzoic acid, and micro-C." without as great an impact on the environment.[lx] Micro C, for instance, is derived from renewable agricultural products that are abundant in the United States while methanol (the current industry standard) is derived from non-renewable natural gas.[lxi] With an Agricultural Exchange/Reuse program, denitrification is unnecessary because the treated water containing nitrates could be used on selected crops eliminating the need for nitrate fertilizers. Lastly, after reviewing the County's figures for methanol, Greg Dolan, Vice President of the Methanol Institute, stated, "Based on actual operating experience, we show that methanol manufacturing plants emit 3.8 lbs of CO2 per gallon of methanol, versus the 15.6 lbs quoted in the County report." [lxii]

Conventional Gravity Collection System:

The LOWWP Technical Memorandum, "Project Alternatives Greenhouse Gas Emissions Inventory" does not address the GHG emissions of the gravity collection system but focuses on treatment. However, it does address GHG emissions as they pertain to construction. Gravity's GHG emission levels are approximately 20-25% higher than the GHG emissions estimated for the construction of a STEP system.[lxiii]

Like STEP, Gravity treatment also requires denitrification and this can be eliminated through the use of Ag Exchange.

Summary:

STEP systems have associated methane emission issues; however, with the implementation of a methane capturing solution, this problem could be mitigated and provide further benefits in the form of an energy source for the wastewater project. Conventional gravity collection systems also contribute greenhouse gas emissions because the systems employ pumping, which is one of the greatest producers of GHG. To better understand the amount of greenhouse gasses that each collection system would

contribute, we believe that GHG Emissions issues warrant further analysis than that provided in the LOWWP Technical Memorandum, "Project Alternatives Greenhouse Gas Emissions Inventory."

7. Biosolids

Biosolids are a key environmental issue because the quantity and quality of biosolids dictate the likelihood of creating a small community composting facility, thereby allowing the liability of biosolids to become an asset.

STEP/STEG Collection System:

The primary treated biosolid from a STEP system yields itself more effectively to the future development of a small community biosolids composting facility that can transform the biosolids liability into a compost matter asset. At present, the new tertiary conventional gravity wastewater treatment plant at the California Men's Colony (CMC), one the same size as that proposed for Los Osos, 1.2mgd, produces 600 tons of biosolids per year which are hauled to Kern County twice/year. The expense for Kern County to receive the biosolids is $24,000/year and this does not include the cost of fuel/trucking or GHG emissions. Kern County is then turning the biosolids into compost and selling the CMC liability as their asset.[lxiv]

STEP tank pretreatment reduces biosolids mass by 75% creating a more suitable matter and quantity to compost.[lxv]

Additionally, STEP collection systems provide short-term emergency storage in the STEP tank in the event of a major storm or if there is an on-lot system failure, thereby minimizing the risk of spills to the bay.

Conventional Gravity Collection System:

A conventional gravity collection system pumps the biosolid as well as effluent through 45+ miles of pipe, and, as stated in the I/I and Exfiltration section, places the bay at greater risk during a major storm event or system/power failure (at the 20 pump stations).[lxvi] We have seen only too recently the damage caused by a gravity system failure with the CMC spill of 20,000 gallons of sewage going into the bay in 10 minutes.[lxvii]

The gravity collection system estimated solids volume is averaged at 4,000 lbs/day dry weight, meaning 730 tons/yr dry weight compared to STEP's 1,000 lbs/day dry weight, or, 182.5 tons/yr dry weight. Gravity biosolids, therefore, are 75% greater in mass with associated impacts for hauling, GHG emissions, and land impacts.[lxviii]

Summary:

The STEP collection system estimated solids volume is 75% less than that of gravity and therefore we believe that the pumping of primary treated biosolids every 5-10 years from a STEP system will be less in volume than the biosolids removed from a gravity system.[lxix] Presently, the new CMC tertiary gravity sewer system, one the size planned for the LOWWP (1.2mgd), hauls 1,200 tons of solids annually to Kern County.[lxx] Depending on whether the LOWWP biosolids would need to be trucked out of the county or whether they are composted locally, the increased frequency of biosolid removal from STEP tanks could be viewed negatively or positively. However, the ***Pro/Con Analysis*** states that the STEP collection system "provides primary treatment in septic tanks, thereby reducing down-line costs for treatment system and solids treatment and disposal." [lxxi] We believe a STEP system yields itself more effectively to the future development of a small community biosolids composting facility for the above-stated reasons.

8. Odors

Odors are an environmental-cultural-aesthetic issue. To live, play and work in a community, one hopes not to engage foul odors coming from a sewer system.

STEP/STEG Collection System:

The LOWWP Fine Screen Analysis states, "Odor control measures will be required at high points throughout the system where air within the piping is released to prevent air bubbles from forming. Odor control will consist of carbon media canisters that remove the odorous compounds such as hydrogen sulfide from the air as it passes through the media. The canisters and air release valves on the pressurized main lines would be enclosed in a small (approx. 3 by 4 by 4 feet) buried vault. STEP tanks would be vented to roof level, similar to existing septic tanks." [lxxii]

Conventional Gravity Collection System:

For gravity, the potential collection system odors would occur at the 807 manholes and 20 pump stations located throughout the community, however, the LOWWP ***Fine Screen Analysis*** has inadequately addressed gravity collection system odor issues and we request there be further analysis.[lxxiii]

Summary:

Rob Miller, Principal Engineer, Wallace Group, and, Vice Chair on the LOWWP Technical Advisory Committee, has noted that both collection systems have potential odor sources: for STEP they are slightly higher, but both can be managed.[lxxiv]

9. Economic Sustainability

The collection system's economic sustainability is integral with balanced metrics of Environmental, Social, and Financial Sustainability." [lxxv] The LOWWP collection system should be as affordable as possible to promote its sustainability. Ultimately, a project's environmental sustainability is tied to its social and economic sustainability.

STEP/STEG Collection System:

The LOWWP *Fine Screening Analysis* found that the STEP/STEG collection system would be the least costly.[lxxvi] Further refinement in costs, with further review and actual project bids, we believe, will reveal greater costs savings a STEP/STEG collection system. As Jonathan Todd stated,

> I do feel that any sewering is better then none. The fate of the bay depends on it. That said, conventional gravity sewers are not the most cost effective or environmental solution for Los Osos. I believe that a small diameter pressure system will suit the community best.[lxxvii]

Determining the number of STEG units (without pumps) needed for the STEP/STEG collection system will further reduce the cost of the collection system and its energy usage impact. STEP tanks placed in the 25% of backyards which already have their septic tanks located there would also decrease energy demands as well as the expense of the collection system (eliminating the need for 2 hp grinder pumps).[lxxviii] Reevaluating the notion that STEP tanks must be pumped every five years will also reduce the cost and GHG emissions from pumping. STEP tank primary treatment reduces biosolids by 75% that of conventional gravity (182.5 dry weight tons/year instead of 730 dry weight tons/year) and the health and effectiveness of the STEP tank is dependent upon the biosolids ecosystem where an average pumping of every 10 years is adequate.[lxxix] Furthermore, because of the significant reduction in biosolids, hauling costs are reduced and creating a small community composting facility more viable.

The cost of the entire STEP/STEG system can be further reduced during treatment through Ag-Exchange, wherein certain crops could utilize the treated water containing nitrates (thus eliminating the need for fertilizer). Cost reductions, reduced energy usage, and reduced GHG emissions would occur by replacing methanol with a less toxic and dangerous carbon source denitrification solution. MicroC, for instance, is derived from renewable resources that are abundant in the United State. Every gallon of MicroC used (instead of methanol) saves the energy equivalent of heating 0.5 US households per day or providing electricity for 0.7 US households per day. MicroC requires only one third percent of the overall energy input as methanol. The manufacturing and distribution of MicroC is far less energy-intensive than methanol and results in an overall energy savings of 72,000 BTU for each gallon of methanol replaced by MicroC.[lxxx]

Conventional Gravity Collection System:

The potential need to seal (fuse weld) bell-and-spigot joints in significant portions of a gravity collection system to achieve minimum environmental safeguards (e.g., against earthquakes, I/I and exfiltration, to meet CCRWQCB Prohibition Zone zero discharge requirements, and future sea level rises with predicted increases in storm and tidal energy) have yet to be factored in to the cost of a gravity system. However, the LOWWP *Fine Screening Analysis* does address the cost of loosening bell-and-spigot joints: "Properly installed bell-and-spigot sewers will be watertight at first, and then slowly lose their integrity as the surrounding soils shift, compressing the pipes, and compromising their seals at the joints. The water-tightness of a bell-and-spigot sewer can be preserved if a maintenance program is conducted on an ongoing basis to detect and repair leaks. This program would add to the cost of a gravity sewer compared to a STEP/STEG sewer with similar levels of I/I." [lxxxi]

The gravity collection system estimated solids volume is averaged at 4,000 lbs/day dry weight, meaning 730 tons/yr dry weight compared to STEP's 1,000 lbs/day dry weight, or, 182.5 tons/yr dry weight. Gravity, therefore, has a 75% greater impact on hauling fees and associated GHG emissions.[lxxxii]

The costs of the gravity system can be reduced through Ag-Exchange, wherein certain crops could utilize the treated water containing nitrates (thus eliminating the need for fertilizer).

Summary:

At present, the LOWWP ***Fine Screening Analysis*** has determined that the STEP system is the least expensive without factoring in the above-stated environmentally enhancing solutions that would reduce the cost of the STEP system even further. In contrast, the LOWWP ***Fine Screening Analysis*** has not factored in the cost of fuse welding gravity collection system pipes in the high groundwater areas or factored in fuse welding gravity collection system pipes in the areas that will be impacted by an 8 inches to 2 feet sea level rise prediction within the lifespan of the LOWWP.[lxxxiii] Based on the economic benefits, that the LOWWP ***Fine Screening Analysis*** shows STEP as potentially $25 million less expensive than gravity in construction costs, it further substantiates that it is the environmentally sustainable preferred solution.[lxxxiv]

CONCLUSION

Morro Bay is the only major California estuary south of San Francisco that is not significantly altered by human activities and, based on the factors outlined above, we believe that a STEP collection system will best assist the bay's protection and stands out as the environmentally appropriate collection system for Los Osos.

We are very pleased to have had the opportunity to make this assessment upon Chairman Patterson's request and are pleased to know these issues will be addressed within the scope of the upcoming NWRI Independent Peer Review. We look forward to participating in the future stages of the LOWWP and the soon-to-be-released Draft EIR. We close with a statement by Chumash Elder, Fred Collins,

> It is time for the community of Los Osos to come together and get this job done. As we go into the future, we want our great-grandchildren to be able to enjoy the Back Bay as it once was, and they will possibly study this challenge as one where all people came together to accomplish a great task.[lxxxv]

Submitted by:

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Surfrider Foundation is a non-profit environmental organization dedicated to the protection and enjoyment of the world's waves, oceans, and beaches for all people, through conservation, activism, research and education.

The Santa Lucia Chapter of the Sierra Club

http://santalucia.sierraclub.org/

Explore, enjoy and protect the planet.

SLO Green Build

SLO Green Build is a non-profit group of architects, builders, community planners and area residents dedicated to increasing the use of green building on the Central Coast. We help local governments, building professionals and homeowners design, construct and remodel homes and facilities using sustainable building practices and materials.

http://www.slogreenbuild.org/

Los Osos Sustainability Group

The Terra Foundation

www.terrafoundation.org (under construction)

The Terra Foundation works toward creating and enhancing connection with the earth through community education and stewardship of the land.

Northern Chumash Tribal Council

http://northernchumash.org/

NCTC mission is to offer a foundation for the Chumash people of San Luis Obispo County to bring our culture and heritage back to life, create dignity with

the people, educate the public that the Chumash have always been here we have not gone anywhere and we will always be here, one continuum. We are the Chumash of over 20,000 years of habitation in San Luis Obispo County.

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[i] Jonathan Todd wrote, "As you know, I do feel that any sewering is better then none. The fate of the bay depends on it. That said conventional gravity sewers are not the most cost effective or environmental solution for Los Osos. I believe that a small diameter pressure system will suit the community best." Jonathan Todd, CEO, John Todd Ecological Design, Inc. Email correspondence with Dr. Mary Fullwood, August 7, 2008. Also see http://www.toddecological.com/

[ii] For further elaboration on the tri-metrics of Sustainability see, for example, Assemblyman Sam Blakeslee, "Redefining the Rules and Roles of Environmental Politics", *Santa Lucian*, July/Aug. 2008 (p. 9). http://santalucia.sierraclub.org/lucian/lucian.html.

[iii] California Department of Fish and Game. *Master Plan for Marine Protected Areas,* April 13, 2007 (p. 52).

[iv] Alex Hinds, former SLO County Director of Planning and Building. *Resolution Supporting the Proposal of the Central Coast National Marine Sanctuary Designation*. Submitted to Joseph Uravitch, Chief, Marine and Estuarine Management Division, Office of Ocean and Coastal Resource Management, National Ocean Service/NOAA on December 24, 1990.

[v] The United States Environmental Protection Agency (USEPA) estimates that there are at least 40,000 sewage overflows each year. (State of California Regional Water Quality Control Board Central Coast Region Staff Report for Special Meeting of November 19, 2004.)

[vi] Larry Allen, Executive Director, SLO County Air Pollution Control District. Panel presentation, *Faith, the Environment and You* hosted by Congesswoman Lois Capps at First Presbyterian Church, San Luis Obisop, CA, August 6, 2008.

[vii] Dana Ripley, Ripley Pacific Company. Personal communication with Dr. Mary Fullwood, August 29, 2008.

[viii] We would like the NWRI Independent Peer Review panel to address this issue and clarify the actual vulnerability of STEP systems at the point of connection and the tank.

[ix] SLO County LOWWP Development. *Technical Memorandum: Flows and Loads*. Final Draft, February 2008, pp. 7 and 10.

[x] http://www.slocounty.ca.gov/Assets/PW/LOWWP/document%2Blibrary/Dr.%2BT%24!27s%2Bcomments.pdf

[xi] SLO County LOWWP Development. *Technical Memorandum: Flows and Loads*. Final Draft, February 2008, pp. 7 and 10.

[xii] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 1-9. For instance, the Rocky Mountain Institute stated that in 2004 the maintenance cost of hydroflush cleaning services averaged $512 per mile hydroflushed per year and television inspection services averaged $4,600 per mile TV-inspected per year. See *Valuing Decentralized*

Wastewater Technologies: A Catalogue of Benefits, Costs, and Economic Analysis Techniques, 2004, p. 107.

[xiii] Section 3.3, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007 states "over 45 miles of pipelines" will be required for the LOWWP.

[xiv] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4. The Rocky Mountain Institute stated that in 2004 the maintenance cost of television inspection services averaged $4,600 per mile TV-inspected per year. See *Valuing Decentralized Wastewater Technologies: A Catalogue of Benefits, Costs, and Economic Analysis Techniques*, 2004, p. 107.

[xv] Exfiltration pollutes ground water and surface water (e.g., seeps to bay), and is assumed to be a major cause of pollution and beach closures (see EPA Exfiltration and Beach Closure reports).

[xvi] See Table 3.1, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007.

[xvii] National Water Research Institute (NWRI) *Final Report of the Independent Advisory Panel on Reviewing the Los Osos Wastewater Management Plan Update*, December 4, 2006, Section 3.2.8, p. 5.

[xviii] State Water Resources Control Board Order No. 2006-0003, *State General Waste Discharge Requirements for Sanitary Sewer Systems*, May 2, 2006, p. 1.

[xix] Ibid.

[xx] See, for instance, Seacoast Utility Authority, Palm Beach County, Section IV – Sanitary Sewer System.

[xxi] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, 1-11; and, SLO County LOWWP Development, *Technical Memorandum: Flows and Loads.* Final Draft, February 2008, p. 11.

[xxii] California Regional Water Quality Control Board Central Coast Region, *Staff Report for Special Meeting of November 19, 2004*, p. 1. SLB Surfrider's "Statement of Key Environmental Issues: LOWWP 7/17/07."

[xxiii] Dana Ripley, Ripley Pacific Company. Personal communication with Dr. Mary Fullwood, August 17 and 19, 2008.

[xxiv] See Table 3.4, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007. This figure can be 100% if STEP tanks also go in the 25% of septic locations in backyards.

[xxv] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.

[xxvi] Rob Miller noted, "Where very deep trenching is required, the width depends heavily on the method of construction. There are costly ways to keep the trench impact narrow, but it requires specialized shoring equipment." Rob Miller, Principal Engineer, Wallace Group and Vice Chair, LOWWP Technical Advisory Committee. Personal communication with Dr. Mary Fullwood, August 11, 2008.

[xxvii] See Table 3.1, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007.

[xxviii] This estimate is based on the contract estimate for the previously proposed conventional gravity midtown project which is now being considered in relation to alternative systems and locations.

[xxix] See Table 3.4, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007. This figure can be 100% if STEP tanks also go in the 25% of septic locations in backyards.

[xxx] Dana Ripley, Ripley Pacific Company. Personal communication with Dr. Mary Fullwood, September 1, 2008.
[xxxi] Fred Collins, Administrator, Northern Chumash Tribal Council. Direct communication with Dr. Mary Fullwood, August 9, 2008.
[xxxii] Alex Hinds, former SLO County Director of Planning and Building. *Resolution Supporting the Proposal of the Central Coast National Marine Sanctuary Designation*. Submitted to Joseph Uravitch, Chief, Marine and Estuarine Management Division, Office of Ocean and Coastal Resource Management, National Ocean Service/NOAA on December 24, 1990.
[xxxiii] Fred Collins, Administrator, Northern Chumash Tribal Council. Direct communication with Dr. Mary Fullwood, August 9, 2008.
[xxxiv] Northern Chumash Tribal Council statement submitted to the SLO County Board of Supervisors and LOWWP Project Team, June 19, 2007.
[xxxv] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.
[xxxvi] Additional notes: Core drilling – do core drilling every 100ft to see at which depth is it safe to bore without encountering a site. When near a site, core every 20-50ft to be cautious. If four feet shows evidence of a site but at five feet hitting nothing than bore that section at 5', 10'. Gravity V-trenching, 8ft deep in sandy soil can easily be 25ft wide. Fred Collins, Administrator, Northern Chumash Tribal Council. Direct communication with Dr. Mary Fullwood, August 9, 2008.
[xxxvii] Ronald Crites and George Tchobanogrous, *Small and Decentralized Management Systems.* New York: McGraw-Hill, 1998, p. 348; and, LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.
[xxxviii] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4. Section 3.3, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007 states "over 45 miles of pipelines" will be required for the LOWWP.
[xxxix] Fred Collins, Administrator, Northern Chumash Tribal Council. Direct communication with Dr. Mary Fullwood, August 9, 2008.
[xl] Ibid.
[xli] Ronald Crites and George Tchobanogrous, *Small and Decentralized Management Systems.* New York: McGraw-Hill, 1998, p. 348; and, LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.
[xlii] Fred Collins, Administrator, Northern Chumash Tribal Council. Direct communication with Dr. Mary Fullwood, August 9, 2008.
[xliii] Larry Allen, Executive Director, SLO County Air Pollution Control District. Panel presentation, *Faith, the Environment and You* hosted by Congesswoman Lois Capps at First Presbyterian Church, San Luis Obisop, CA, August 6, 2008.
[xliv] Dana Ripley, *Tech Memo #8: Energy Intensity of Collection and Treatment Alternatives*, Los Osos Wastewater Management Plan Update, July 24, 2006, p. 5.
[xlv] Ibid.
[xlvi] Dana Ripley stated, "I am now assuming that 95% of effluent pumps will be ½ hp. There may be a few isolated instances where a ¾ hp or 1 hp pump may be needed for larger STEP tanks. Email correspondence with Dr. Mary Fullwood, August 19, 2008.
[xlvii] National Water Research Institute (NWRI) *Final Report of the Independent Advisory Panel on Reviewing the Los Osos Wastewater Management Plan Update*, December 4, 2006, Section 3.2.7, p. 5.

[xlviii] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 5-4, Table 5.1; and, LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.
[xlix] Dana Ripley, CEO, Ripley Pacific Company. Email correspondence with Dr. Mary Fullwood, August 26, 2008.
[l] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, pp., 3-25 & 3-26.
[li] Ronald Crites and George Tchobanogrous, *Small and Decentralized Management Systems.* New York: McGraw-Hill, 1998, p. 8.
[lii] Dana Ripley, CEO, Ripley Pacific Company. Email correspondence with Dr. Mary Fullwood, August 29, 2008.
[liii] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007,1-9.
[liv] Ronald Crites and George Tchobanogrous, *Small and Decentralized Management Systems.* New York: McGraw-Hill, 1998, p. 8.
[lv] See http://www.wwdmag.com/Self-performed-Dewatering-Enhances-California-Sewer-Line-Project-article2339
[lvi] Larry Allen has stated, "20% of energy use in California is water pumping. Water conservation reduces pumping." Larry Allen, Executive Director, SLO County Air Pollution Control District. Panel presentation, *Faith, the Environment and You* hosted by Congesswoman Lois Capps at First Presbyterian Church, San Luis Obisop, CA, August 6, 2008.
[lvii] Ronald Crites and George Tchobanogrous, *Small and Decentralized Management Systems.* New York: McGraw-Hill, 1998, p. 8.
[lviii] "Summary for Policymakers." *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.* Intergovernmental Panel on Climate Change (2007-02-05).
[lix] Dana Ripley, Ripley Pacific Company. Email correspondence with Dr. Mary Fullwood, August 7, 2008.
[lx] Bill Cagle, National Accounts, Orenco Systems Inc. Personal email correspondence, August 15, 2008.
[lxi] See www.eosenvironmental.com
[lxii] Greg Dolan, Vice President, Methanol Institute. Exchange with Bill Cagle, National Accounts, Orenco Systems, Inc., July 7, 2008. See www.methanol.org
[lxiii] LOWWP Technical Memorandum, "Projects Alternatives Greenhouse Gas Emissions Inventory, June 2008, p. 14.
[lxiv] John Kellerman, Plant Manager, California Men's Colony Wastewater Treatment Plant. Scheduled tour for SLB Surfrider and SL Sierra Club, March 7, 2008.
[lxv] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 5-4, Table 5.1.
[lxvi] See Table 3.1, SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007.
[lxvii] http://www.sanluisobispo.com/news/local/story/260066.html
[lxviii] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 5-4, Table 5.1.
[lxix] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 3. Note: if conventional gravity is selected, we favor treatment Ponds over the other treatment options, e.g., Oxidation Ditch, MBR.
[lxx] SLB Surfrider and SL Sierra Club CMC Sewer Tour lead by John Kellerman, Plant Manager, March 7, 2008.

[lxxi] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4.
[lxxii] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, pp. 3-8 and 3-9.
[lxxiii] LOWWP Technical Advisory Committee *Pro/Con Analysis on Project Component Alternatives*, August 6, 2007, p. 4. SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 3-27.
[lxxiv] Rob Miller, Principal Engineer, Wallace Group and Vice Chair, LOWWP Technical Advisory Committee. Personal communication with Dr. Mary Fullwood, August 8, 2008.
[lxxv] For further elaboration on the tri-metrics of Sustainability see, for example, Assemblyman Sam Blakeslee, "Redefining the Rules and Roles of Environmental Politics", *Santa Lucian*, July/Aug. 2008 (p. 9). http://santalucia.sierraclub.org/lucian/lucian.html.
[lxxvi] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, pp. 3-23 and 3-24, Tables 3.17 and 3.18, and, p. 7-8, Table 7.4.
[lxxvii] Jonathan Todd, CEO, John Todd Ecological Design, Inc. Email correspondence with Dr. Mary Fullwood, August 7, 2008.
[lxxviii] For single family units, the grinder pumps would be 2 hp, for larger commercial properties, grinder pumps would be 5 hp and up. Dana Ripley, Ripley Pacific Company. Email correspondence with Dr. Mary Fullwood, August 25, 2008.
[lxxix] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 5-4, Table 5.1.
[lxxx] See www.eosenvirnmental.com
[lxxxi] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, p. 1-9.
[lxxxii] Ibid., p. 5-4, Table 5.1.
[lxxxiii] Larry Allen, Executive Director, SLO County Air Pollution Control District. Panel presentation, *Faith, the Environment and You* hosted by Congesswoman Lois Capps at First Presbyterian Church, San Luis Obisop, CA, August 6, 2008.
[lxxxiv] SLO County LOWWP *Viable Project Alternatives Fine Screening Analysis* August 2007, pp. 3-23 and 3-24, Tables 3.17 and 3.18. Dana Ripley noted the STEP design for the LOWWP is 15-20% complete and believes the costs of a STEP/STEG system remain comparable to those listed in the 2006 LOCSD *Los Osos Wastewater Management Plan Update*, p. 9. Dana Ripley, Ripley Pacific Company. Email correspondence with Dr. Mary Fullwood, August 25, 2008.
[lxxxv] Fred Collins, Administrator, Northern Chumash Tribal Council statement submitted to the SLO County Board of Supervisors and LOWWP Project Team, June 19, 2007.

SUMMARY OF COASTAL COMMISSION'S COMMENTS ON LOWWP DEIR

Opening summary:

- "It is our firm opinion that an approvable project differs from all these (4 alternatives) projects as currently envisioned, and in fact is *more likely to be a permutation of the*

best components of these alternatives and other concepts identified to date." (italics mine)

Indicates to me that the CC believes the county hasn't come up with the best proposed project; it leaves the door open to "**other concepts"** – STEP? Vacuum? Ag reuse, rather than Broderson?

- It is "clear to us" that **tertiary treatment** should be built in from the start. The driving reasons include: 1) that prime ag land should not be destroyed for future use by secondarily-treated water on spray fields; 2) potential impact on groundwater (e.g. secondary treated water leaching from Broderson); 3) tertiary is required for other beneficial uses of effluent.

- "It seems clear that if the project is a tertiary project, many of the effluent disposal options will be completely different from those that have been evaluated, and could significantly change the scope of the project, including the availability of effluent for a range of beneficial uses (including .. injection wells, urban/ ag exchange or "purple pipe" programs, etc.)." p. 2, para. 4

Indicates to me that the CC recognizes the importance of **effluent reuse** which will help to balance the basin and stop seawater intrusion. And Broderson is not their idea of a good solution.

- **Sizing and easements should prevent growth-inducement**. "All existing habitat areas (i.e. wetlands, streams, terrestrial habitat, ESHA, etc.) and ag land in and around the project area must be excluded from potential service."

DETAIL ON ISSUES

1. Agriculture – CC is concerned that the Tonini site takes 192 acres (175 for sprayfields), mostly prime ag land, out of production. If effluent is treated to **tertiary** levels, this concern will be reduced.

Due to this concern, the CC recommends reconsideration of the Mid-town site or other sites previously screened out. The risk of building it out of town: we may be required to buy urban land and convert it to agricultural to mitigate the loss of existing ag land – called "necessary replacement/ protection acreage".

2. Urban-Rural Boundary; Growth Inducement

"..service area boundary (not the same as the PZ) needs to be made coterminous with the existing developed area (including LCP appropriate infill), and should be drawn to exclude all other (i.e. non-fill) ESHA, wetland, related habitat areas, and ag lands." "**Build out numbers appear to be inflated**." **Sizing** should be based on what the LCP allows.

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3. ESHA's, Wetlands, Other Habitats, and Biological Resources:

- CC shares concerns about using effluent not treated to **tertiary** levels on spray fields, also expressed in letters from U.S. Fish & Wildlife (1/29/09) and CA Dept. of Fish & Game (1/30/09).

- **Broderson leach fields** will have significant impacts, both initially and in long term maintenance. They **should be avoided if feasible**. If necessary, then effluent should be treated to tertiary levels.

- Treatment plant and stormwater drainage should utilize Low Impact Development **(LID)** methods, and should be located away from ESHA, including ESHA buffer zones.

- Habitat Restoration of Broderson and (Tri-W) Mid-town sites: "**Broderson restoration** is required whether this (Tri-W) project moves forward or not." Another reason that Broderson leach fields should not be used.

- **HCP**: "We recommend that the project include a commitment to the completion of a HCP process."

4. Public Views – concern about **viewshed** impacts

Los Osos Sustainability Group (LOSG) Project Recommendations

These refine and modify the "Centralized System" and "Decentralized System (with all septic systems eliminated) recommendations submitted to the Board of Supervisors on January 6, 2009. Please see the posted Draft EIR comments for the option entitled "Decentralized System with upgraded septic systems." The benefits of these systems over the "environmentally preferred" project are shown in italics.

Centralized system

Collection System: Best value, small-pipe, sealed system as determined through the design build process. A small-pipe system is likely to be the least costly for Los Osos and the most environmentally sound, due to the extensive high groundwater within the Prohibition Zone and proximity to seawater. This assessment is based on *Fine Screening Report* and several other sources—see attached. Any system in Los Osos will require being sealed to an elevation of five feet above sea level to ensure seawater does not contaminate the wastewater and destroy it for recycling. Dr. Tchobanoglous recommended sealing the system to predicted sea level rises in a phone conversation with Keith Wimer on September 19, 2007—see Draft EIR comments. (Note that he recommended 2 feet above sea level at that time, but we have adjusted that height to match the latest predictions of the Pacific Institute and Scripps Oceanographic Institute. *Summary of Benefits: Less costly and disruptive to install; greatly reduces serious overflows; reduces expensive on-going maintenance and repairs, upgrades, and life-cycle costs).*

Treatment and site: Facultative pond treatment system to a tertiary level on the Giacomazzi site, and possibly parts of the Cemetery and Branin sites. These sites are closer to town, so less energy will be consumed pumping water and wastewater. They're not on prime farmland, nor easily visible from the Los Osos Valley Road. Further, the proximity to cropland means recycled water can be easily pumped or distributed via gravity feed to receiving sites within the basin, while recycled water storage on the site will contribute to basin recharge. *Summary of Benefits: Reduces energy use; maximizes ag and other reuse options; uses minimal, if any; prime farmland; places reasonable limits on facility size due to pond size in relation to parcel size (so facility is less likely to be oversized and/or encourage excessive growth); greatly reduces sludge handling and disposal i.e., sludge is removed about once every 20 years or so.*

Reuse/Disposal: The LOSG management plan framework, Phase I, with ample storage facilities for recycled water for the rainy months (January through April), plus a community crop. The storage ponds and community crop might be by lease arrangements or other agreements with farmers desiring recycled water (e.g., agreements to trade water for storage). The level of conservation called for in the LOSG plan, along with aggressive efforts to negotiate agreements with farmers and ample winter storage, will eliminate Tonini Spray fields and Broderson leach fields. This will produce a savings of at least $10 million in estimated project costs that can be redirected to Phase I of the LOSG plan (e.g., conservation and ag exchange). There is no need to have wasteful spray fields when farmers are in need of water. Provisions in the LOSG plan, will maintain the water budget when the project starts up, while providing recycled water to farmers will allow it to be used productively from the start. *Summary of Benefits: Safely mitigates for project impacts on water balance; reduces energy use; maximizes water quality improvements and beneficial uses of water sources; controls run off; avoids duplicated costs; creates jobs, community open spaces and other co-benefits; enables basin balance at buildout without imported water.*

Decentralized Project (not using on-site systems)

Collection: Best value small-pipe sealed system *(same as for "Collection" above)*
Reuse/Disposal: The LOSG management plan framework, with ample pond storage, either in and out of town, and possibly a community crop *(same as for "Reuse/Disposal above)*
Treatment and Site: Two underground constructed wetlands (e.g., at the Midtown site and site north-west of Pismo and South Bay Blvd.) *(No impacts to farmland; least growth inducing; helps control buildout/population within the urban reserve line; lowest energy use for pumping and treating wastewater; provides recharge and stormwater control (if ponds take in run off), maximizes community open space, trails, and aesthetics.)* (Note: The LOWWP technical memorandum (TM) on decentralized treatment, available on the LOWWP website, reviews this option. (See picture of landscaped underground wetlands included.)

Minimum requirements for a Los Osos hybrid gravity collection system to avoid seawater contamination, and serious overflows and pollution of the bay.

As determined through the best-value design-build process, a gravity system for Los Osos should be a "hybrid" gravity system, with all sections in high groundwater areas and along the bay comprised of sealed components (low-pressure and/or vacuum). This will avoid very high levels of inflow and infiltration (I/I), which are sure to cause flows to exceed system capacity in the relatively near future, especially during storms. If capacity is exceeded, and overflows occur, pollution of the bay certain. Excessive I/I will also lead to high system energy use, high treatment costs, and expensive system maintenance and upgrades.

All sections near the shoreline must also have sealed components to elevations at least 5 feet above sea level (i.e., predicted sea level rises by the year 2100 per Pacific Institute and Scripps Oceanographic Institute) to avoid seawater contamination of the wastewater. This will destroy the wastewater for recycling. Recycled wastewater is vital for efforts to balance the basin and stop seawater intrusion.

Sealed components (low pressure and/or vacuum components), rather than sealed gravity pipes, are recommended because they avoid the costs and problems associated with sealing and installing gravity pipelines in high groundwater. They also alleviate the need to locate manholes and pump stations—both vulnerable to overflows—in low lying locations near the bay. A low-pressure or vacuum component installed along the bay could pump wastewater to higher elevations where the wastewater would flow by gravity to more safely-located pump stations and eventually to the treatment facility. A vacuum system may be preferable because it can operate during power outages.

Note: All design-build bids should be firm bids, without "change order" provisions. Companies should also provide bids for on-going maintenance for the life of the system that comply with Water Board Storm Water Management Plan requirements, and also include a guarantee the systems will operative with low levels of I/I and not overflow or leak causing harm to ecosystems.

Plan Overview (Draft)

Achieving a Sustainable Los Osos Valley Water Basin

Phase I (Safely avoids impacts from the LOWWP, focuses on Prohibition Zone, assumes about 850 AFY of wastewater flows with conservation, and assumes tertiary treatment)

Method/target	***Strategies***	***Implementation***	***Timeframe***
Indoor conservation 25% (250-350 AFY)	Water auditors, leak detection/repair, retrofits, recirculators	BOS crafts ordinances and coordinates with purveyors in ISJ to implement ordinances, apply for grants, hire water auditors, contract with providers, farmers, etc.	A.S.A.P.
Outdoor conservation 50% (250-300 AFY)	Water auditors, leak detection/repair, xeriscape	(above)	A.S.A.P.
LID recharge 100-200 AFY	Onsite LID, graywater, and integrated systems; Community infiltration systems	(above) Coordinate with LID Center for grant assistance, leverage with LOWWP	A.S.A.P.
Ag Exchange 100-200 AFY		(above) Contracts reward early participants	A.S.A.P.
Ag In lieu/Urban Reuse 100-700 AFY		(above) Contracts have sunset clauses/time when ag exchange begins and include on-site storage	A.S.A.P. (Make contacts, begin negotiations)
Storage 300-400 AFY (flow for winter months)		Lease land/exchange water for storage facility/pond, use numerous ponds	A.S.A.P. (Make contacts, begin negotiations)
Community Crop		Lease/cooperative arrangement with farmers to grow crop	A.S.A.P. (Make contacts, begin negotiations)

Phase II (Stops seawater intrusion with some buildout, begins to build system capacity for sea level rises, assumes about 900 AFY of wastewater flows with conservation—can be concurrent with Phase I)

Method/target	***Strategies***	***Implementation***	***Timeframe***
Ag Exchange 700-800	(same as above)	Maximize	Within 7 years
Ag In Lieu/Urban Reuse 100-200 AFY	(same as above)	Maximize urban reuse, reduce in lieu	Within 7 years
Storage 300-400 AFY	(same as above)	Adjust/shift to farmers as needed/possible	Within 7 years
Community Crop	(same as above)	Adjust/phase out as needed	Within 7 years

Phase III (Builds system capacity/resiliency with full buildout, prepares for uncertainties and sea level rises, focuses outside Prohibition Zone, may produce surplus water—Conservation can be concurrent with Phases I & II)

Method/target	***Strategies***	***Implementation***	***Timeframe***
Conservation indoor & outdoor (100-500 AFY)	(same as above)	(same as above)	Within 7 years
Develop interbasin agreements, if surplus water		Under strict restrictions to maintain a budget surplus (reserve capacity) within the basin	

COSTS & FUNDING (Generalized estimates based on plan, assumes responsibility will be apportioned by water use/SWI mitigation. See plan for further detail, e.g., p. 17)

Components	***Approximate Costs***	***Funding Sources***	***Who pays***
Phase I	$13-18 million (Adds a contingency of about $5 million to plan estimates)	Grants $5-10 m, rebates $1-2 m, Project $10-12 m (in lieu of Project 2b costs—spray fields, added land costs, Broderson leach fields, etc.), 218 for undeveloped properties/impact fees, rates and charges.	PZ residential $7-9 m, PZ Class II $2-5 m, outside PZ $2-4 m
Phases II & III	$4-5 million	(same)	Future development $4-5 m

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MAJOR CONCLUSIONS FROM PLAN RESEARCH—AND HOW THE PLAN ADDRESSES WATER SUPPLY/SEAWATER INTRUSION ISSUES WITH WIN-WIN-WIN SOLUTIONS

- **Seawater intrusion is a more immediate threat to the freshwater supply in the Los Osos Valley Water Basin than nitrates.** The largest and purest sources of drinking water, the two lower aquifers, are being replace by seawater at a rate of about 60 linear feet per year. To stop seawater intrusion in one of them requires raising levels 9 feet and in the other 17 feet. Seawater intrusion will be tough to stop—we cannot wait for the project to go in or the ISJ to solve the problems. If we don't address seawater intrusion along with nitrates in an integrated LOWWP plan, $200 million could be spent to improve water quality and the freshwater basin is lost to seawater water to seawater intrusion.

- **The project will bring major changes to the basin's equilibrium exacerbating seawater intrusion and threatening flows to ecosystems. T**he removal of 1150 AFY of septic return flows, now recharging the aquifers and supporting flows to aquatic ecosystems, including the estuary will be negatively affected—possibly severely.

- **Project 2b does not safely mitigate for the wastewater project**. Recharge at one location, will not replace diffuse recharge. No studies support that Broderson will produce a direct benefit on seawater intrusion and it clearly won't provide the benefits claimed for the aquifers, while also providing the benefits to ecosystems. The basin is in an overall deficit now of at least 100 AFY, and spray fields will send 500-900 AFY out of the basin. Currently, the estimate safe yield for the upper aquifer is 1150 AFY per year with from 600-900 AFY going into it from septic return flows, and 800 AFY being pumped out. When septic return flows are removed from the system, the upper aquifer will most likely be in overdraft.

- **Recharge, especially at one location, is less effective at stopping seawater intrusion than methods which reduce pumping of the lower aquifer: conservation, urban reuse, and ag exchange.** This is confirmed by the *Fine Screening Report* and EIR, which give these strategies more than double the seawater intrusion mitigation value of Broderson recharge (.55 vs. .22).

- **Conservation is the most cost-effective of seawater intrusion mitigation (SWI) strategies and it can begin now.** This is confirmed by many sources. It also affords needed flexibility to shift and/or reduce pumping as needed, extends the use of the purest water source (2000-7000 year old water with no traces of modern contaminants), and has the greatest number of co-benefits: reduces energy use, infrastructure costs, creates jobs, provides new appliances to residents. THE COUNTY SHOULD IMPLEMENT IT <u>NOW</u> TO BEGIN TO ENSURE A SAFE LEVEL OF MITIGATION BY PROJECT START UP TO AVOID IMPACTS.

- **Ag exchange is the second most cost-effective of the best SWI mitigation strategies.** This is supported by the calculations provided in the study. It should be developed beginning a.s.a.p., so some level of exchange is occurring by project start up. This may require generous introductory offers to farmers. Early participants should be rewarded. THE COUNTY IS IN THE BEST POSITION TO INITIATE THESE CONTRACTS SINCE IT WILL OWN THE RECYCLED WATER AND OPERATE THE FACILITY. CONTRACTS SHOULD INCLUDE PROVISIONS FOR ON-SITE STORAGE TO REDUCE THESE CAPITAL AND O&M COSTS FOR THE COMMUNITY.

- **Low Impact Development (LID) recharge should be pursued for basin recharge.** Several opportunities exist to capture considerable water in LO that now pollutes the bay. These would be the community projects. On-site LID will capture much more. Strategic placement of these features will support subsurface flows to ecosystems, avoiding project impacts. (The plan provides conservative estimates of amounts.) LID recharge is recommended in the most recent recycling regulations, and it provides many co-benefits: stormwater and pollution control, proactive regulatory compliance, avoidance of duplicated costs. (Why spend the money at Broderson if LID will do the job? The plan recommends that Broderson is used as a bioretention system for hillside run off. THE COUNTY, IN COOPERATION WITH WATER PURVEYORS, SHOULD PURSUE THESE OPPORTUNITIES NOW TO PREPARE FOR PROJECT IMPLEMENTATION.

- **An integrated plan—as part of the LOWWP process—with a combination of the strategies above, in a well-designed program, will provide the greatest overall benefits to all stakeholders and major systems at the lowest costs—i.e., the best value.** It will eliminate the need for both Tonini spray fields and Broderson leach fields, for a savings of well over $10-15 million, and provide the best opportunities for grants. This

means it has the potential to be cost neutral or even lower project costs because some of the costs will be borne by people outside the Prohibition Zone. It provides direct and immediate beneficial effects on seawater intrusion, supports the health of sensitive ecosystems, and maximizes the beneficial uses of the water sources (lower aquifer for drinking, clean rainwater for recharge, and recycled, tertiary, water for ag reuse. It also provides the most co-benefits: homeowner benefits (new fixtures, landscaping enhancements), community amenities (landscaping, open space, and passive recreation), farmer benefits (reduced cost of nitrates, reduce energy for pumping—90% of energy costs), watershed benefits (reduced nitrate fertilizer use), and the greatest number of local job opportunities (water auditors, retrofit installation and maintenance, etc.) WHY NOT IMPLEMENT A WIN-WIN-WIN SOLUTION AS PART OF THE PROJECT?

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Costs for a gravity system that have not been included

- **Adequate maintenance to reduce and maintain leaks to a very low level. This will add costs to existing O&M costs for a gravity system, which have not been part of the reviews (see attached EIR requirement for "on-going maintenance" and Fine Screening Report's statement that "on-going maintenance" to reduce leaks to low levels is not included in estimates).** Dr. Tchobanoglous told Keith Wimer on the phone (September 19, 2009) that a maintenance program required to keep leaks to a minimum would cost about 1% of system costs. This could add $1 million or more to estimated O&M costs, i.e., about $1.5 million per year, rather than the $ .5 million per year estimate.
- **Adding sealed components to a gravity system (i.e., low pressure and/or vacuum) are necessary to control leaks (i.e., keep water I/I to a manageable level even with on-going maintenance). The system must be sealed along the bay to an elevation that safely prevents seawater contamination. Seawater contamination will destroy the water for reuse and for balancing the basin—a disaster for a critically overdrafted basin. This could raise costs, rather than lower them.** Dr. Tchobanoglous told Keith Wimer on the phone (September 19, 2009) that adding these components have comparable costs to sealing the system, and they still would not lower leaks to the levels of STEP/STEG. They will definitely raise on-lot costs.
- **Sealing a gravity system by fusion welding, as an option to sealed components in high-groundwater areas and near the bay.** This will undoubtedly raise costs. The TM Flow and Loadings estimated sealing gravity pipes will add 12% to the costs.

Why conventional gravity collection is not environmentally sound for Los Osos.

It will have negative effects on groundwater water quality and supply in at least 6 ways:

- **Conventional gravity systems can lower ground water (especially if not sealed in high groundwater areas).** The gravity LOWWP is assumed to take in 100 AFY year more than a STEP/STEG system and this is just during wet weather; it will take in much more if laid in groundwater. This is water not going into the aquifers.
- **Gravity systems are prone to serious overflows and pollution of surface waters because they take in much more water than STEP/STEG and other sealed-pipe systems.** They are particularly vulnerable to overflows at manholes and pump stations. The MHW design has at least 4 pump stations close to the bay in Baywood and Cuesta by the Sea.
- **An unsealed gravity system will also take in seawater along the bay.** This turns a valuable resource into a waste product that requires expensive treatment or special disposal. Salty water cannot be put on crops, so it makes the entire discussion or ag reuse irrelevant—and prevents using the water to help balance the basin—as disaster for the over drafted basin.
- **Gravity leaks more sewage out into groundwater, a process call exfiltration**. Where ever it is laid above groundwater it will leak waste out over a period of time, adding contaminants to the groundwater.
- **Gravity installation in high groundwater area requires dewatering and shoring (stabilizing)**. Both processes add costs to the project and raise the risk of environmental pollution from the project.
- **Gravity systems require more water to function properly**. To the system to transport waste properly, wastewater flows must contain a minimum amount of water. Therefore, gravity systems can prevent an intensive conservation program. This is supported by the attached quote from a textbook by Dr. Tchobanoglous.

Minimum requirements for a gravity system (including a "hybrid" gravity system)

- **It must be sealed in all high groundwater areas (with fusion welding or seal components--low pressure or vacuum).** If this doesn't happen, the system will take in groundwater continuously, due to the hydraulic pressure differential inside and outside the pipes. This will increase flows considerably making the system, very prone to overflows, possibly interfering with treatment, and/or require an expensive upgrade to the collection system or treatment plant in the near future.
- **It must be sealed along the bay at least 5 feet above sea levels (the estimated rises by 2100).** If the second doesn't happen there is an even worse outcome——seawater leaks destroying the water for recycling and preventing its reuse. Recycled water is absolutely essential for balancing the basin.

(Note: It is preferable environmentally to seal the system with low pressure or vacuum components in Los Osos, as this can eliminate the pump stations along the bay, if wastewater is pumped to higher, more safely located stations.)

Reasons for including STEP/STEG in the DB process

- **It is shown to be less expensive.**
- **It provides the best opportunity to reduce system costs significantly, with or without grants and favorable loans.**
- **It is known to leak less and cause fewer serious overflows, also reducing the chance of fines and required system upgrades.**
- **Installation is much less costly, time consuming, and destructive to infrastructure.**
- **Installation causes less disruption (due to side of street installation, horizontal boring that allows flexing pips around infrastructure, and more rapid installation).**
- **Tank installation can be accomplished in high groundwater with less dewatering and shoring than dewatering and shoring for gravity pipes requiring large trenches.**
- **It's on-lot impacts can be reduced by putting tanks in easements and some cluster systems.**
- **System upgrade and replacement is easier and less costly.**
- **It does not require special maintenance program or fusion welding—at added costs.**
- **It requires less treatment capacity (due to less I/I) and is not as likely to require upgrading treatment systems to meet increasing capacity demands.**
- **It requires less sludge disposal since about 70% of the sludge is eliminated in the tanks.**
- **Pump operation can be with solar panels on site. This possibly alleviates electrical hook up costs.**
- **The BOS and community need to see real costs and designs to make the best decisions.**
- **The process has shown a bias, and real costs need to be shown.**

Bottom line for design-build process for best value

1. **Include a variety of sealed-pipe options (STEP/STEG, low pressure, and vacuum), including dedicated systems and hybrid low-pressure-vacuum systems, in addition to hybrid gravity systems using low-pressure and vacuum components. Expedite the preliminary design process for each, if necessary.**
2. **Include placement of tanks in easements and cluster systems as design options for STEP/STEG systems in RFPs.**
3. **Allow the Lyle team to compete. They have experience, can deliver the best value, and said they could come in 20% below gravity system bids.**
4. **<u>Do not include change order provisions in contracts.</u> Have firm bids only. Change orders would mean contractors can bid low, without being fully responsible for their designs, and stakeholders would not really know what they are getting.**
5. **Have RFPs include full maintenance contracts and system guarantees for the life of the project to ensure quality installation and provide true project costs.**

Evidence sealed, small-pipe systems (STEP/STEG, low-pressure, and vacuum)
are more environmentally sound under Los Osos conditions
than the proposed 95% conventional gravity system.

1. The *Rough Screening Report* indicates the communities contacted as case studies—which had STEP/STEG, low pressure, and vacuum systems—chose them to reduce system costs and environmental impacts from high

groundwater, hilly terrain, and proximity to surface waters—conditions found in Los Osos. Further, all but two communities out of 16 were happy with the performance of the systems (see *Rough Screening Report*, pages 6-1 to 6-13).

2. The AIRVAC estimate for Los Osos, dated October 1, 2008, shows costs for a vacuum system to be lower than for gravity. The cost estimate is $32 million. Applying factors in the Carollo Engineers' *Basis of Cost Memorandum* (Appendix C" of the FSR), $18-24 million for "project costs" and a 24.5% escalation to mid-point of construction, the total cost for the system is from $62.5 to $ 69.7 million—equivalent to STEP/STEG and lower than gravity estimates.

3. *Low Pressure Sewer Systems: Proven Performance and Lessons Learned*, presented by Chuck Mayhew, P.E., at the Hawaii Water Environment Association Annual Conference, February 17, 2005, reports that communities near surface water in the state of Washington found the low pressure system to have construction costs about 1/4th of a gravity systems, with O&M costs also substantially lower. The report includes ways to increase low pressure system reliability and reduce O&M costs still further.

4. "Vacuum Sewer System Solves Site Restrictions," in the October 2003 issue of *Public Works*, confirms the cost-effectiveness of vacuum sewers in high groundwater areas, near sensitive habitats (a national estuary), and in urban residential settings. The County of Sarasota, Florida chose the system as an alternative to gravity systems (to avoid septic system pollution of sensitive ecosystems) because it minimized disruption to expensive homes and public infrastructure, and avoided the high costs of installing gravity pipes in high ground water. The vacuum pipes use shallow trenching (3-6 feet) installed at the sides of streets, rather deep trenching down paved lanes as the gravity systems required. The County also chose the system because it functioned during power outages, and because AIRVAC agreed to warranty and operate the system.

5. *Valuing Decentralized Wastewater Technologies* (a study prepared by the Rocky Mountain Institute for the EPA, November 2004) confirms that sealed, small-pipe systems have negligible I/I, so avoid the expensive upgrades needed to increase system capacity as gravity systems age and I/I increases. The study also reinforces a point made in the FSR, that fusing gravity pipes is a new technology without a track record (p. 1-9). The report points out authorities disagree about how well new gravity technologies designed to reduce I/I work (p. 87). It also confirms that small-diameter pipe installation is substantially less expensive than large, gravity pipe installation, a point made by LAI in the Decentralized TM—see #2 above (p. 95).

6. In *Water Reuse*, (Asano, et al., 2007), Dr. Tchobanoglous and other leading authorities in the field of wastewater, confirm the higher costs and negative impacts of gravity systems, along with the benefits of small-pipe sealed collection systems (italics added):

   "In addition to the high installation costs of centralized collection systems *(centralized gravity systems)*, issues with nonwatertight joints and damaged sections result in potentially high volumes of inflow and infiltration, or exfiltration in the collection system. Infiltration can more than double the flowrate and dilute wastewater constituent concentrations arriving at treatment facilities in extreme cases. Long-term infiltration into a collection system can also lower groundwater levels. Exfiltration from collection systems may result in groundwater or surfacewater contamination. While large centralized collection systems are not intended to leak, the nature of large rigid pipes buried in various soils results in more leaks and damage to pipe sections over time. Further, it is costly to identify and repair sections of damaged underground collection system, especially when located below roads and buildings in developed urban areas. Piping used for decentralized facilities *(STEP/STEG, etc.)* is mostly small diameter flexible plastic pipes, typically of polyvinyl chloride (PVC) with solvent welded joints or medium density polyethylene (MDPE) with compression joints which can be designed for high pressures or vacuum where alternative collection systems are used. Flexible plastic piping is much less likely to leak under normal bedding conditions. These pipes can be installed easily in narrow trenches or by directional drilling that results in minimal disturbance to property and roads" (p. 769).

7. In *Small and Decentralized Wastewater Management Systems* (Crites, et al.), Drs. Tchobanoglous and Ron Crites point out gravity sewers can also limit conservation measures:

   "In some areas the use of gravity sewers is becoming counter productive because the use of water conservation devices continues to increase. The minimum flows required for gravity-flow sewers to

operate make them problematic where development occurs slowly in a large development or where water conservation reduces the wastewater flows significantly. In many cases, the water used to flush conventional gravity-flow collection systems for the removal of accumulated solids far exceeds the water saved through water conservation measures" (p. 8).

8. In a phone conversation with Keith Wimer of the Los Osos Sustainability Group on September 19, 2007, Dr. George Tchobanoglous said that gravity pipe systems would only have as few leaks as small pipe systems if they were sealed, and he added that communities are very unlikely to commit the resources needed to reduce leaks to very low levels through an on-going maintenance program.

9. The National Water Research Institute (NRWI) peer review supports the *Key Environmental Issues Statement* (KEIS) submitted by the LOSG and local chapters of the Sierra Club, Surfrider Foundation, and other non-governmental groups on September 9, 2008. These principles included 1) "Provide the greatest possible protection against overflows and other releases of partially treated or untreated wastewater from the system, which could pollute Morro Bay Estuary and other sensitive coastal ecosystems (e.g. Sweet Springs Nature Preserve)," and 2) "Provide the greatest possible protections to the groundwater of the Los Osos water basin"

10. *Exfiltration in Sewer Systems* (prepared by R.S. Amick and E. H. Burgess for the EPA, 2000) states, "SSOs are overflows from sanitary sewer systems usually caused by infiltration and inflow (I/I) leading to surcharged pipe conditions" (p. 1). It also states that exfiltration (the leakage of raw sewage out of pipes) is caused by the same cause as I/I—leaks in the system (p. 3).

11. The *California Beach Closure Report 2000*, published by the State Water Resources Control Board (July 2001), states "The primary causes of beach closures were sewer line overflow, breakage, and blockage" (p. 13) (see LOSB, EIR comment attachment).

12. The State Water Resources Control Board (SWRCB) Waste Discharge Order No. 2006-0003 for collection systems was issued in 2006 due to wide-spread pollution and health risks caused by sewer overflows in California. That WDR clearly responds to problems caused by gravity collections systems, since very few sealed pipe systems are installed in California. The WDR lists "grease blockages…manhole structure failures…pump stations mechanical failures…(and) excessive storm or ground water inflow/infiltration,…" as causes for overflows. These are problems either eliminated or reduced to insignificance with STEP/STEG. The WDR also states "Enrollees shall take all feasible steps to eliminate SSO's) (pp. 1, 7).

13. The Executive Officer's Report, of the California Regional Water Quality Control Board, January, 26, 2006, cites over thirty incidents in one severe period of rain in 2006, in which over 100 million gallons of raw or partially-treated sewage overflowed from gravity septic systems into lakes and stream, one a 15 million-gallon spill from a single manhole in Sacramento, CA, which ran into homes, streets, and the American River (see LOSB, EIR comment attachment).

Evidence the Fine Screening Report (FSR) over-estimated the costs of small pipe system and underestimated those for the "hybrid" gravity system in Los Osos conditions

1. The FSR adds the cost of grinder pumps for some STEP/STEG "back of lot" connections, but does not include "back of lot" grinder pumps for gravity connections (see FSR, p. 3-19 attached) (Note: Grinder pumps are not required per the Ripley plan.)

2. The FSR does not STEP/STEG a credit for the lower costs of small-diameter pipes. (Lombardo Associates, Inc. estimates the savings to be about $10 million (Decentralized TM, Task 3, pp. 12).

3. The FSR does not award STEP/STEG a credit for the cluster systems, which adds $3 million per Lombardo Associates (Decentralized TM, Task 3, pp. 17-20).

4. The FSR adds high-cost electrical service upgrade for STEP/STEG, $1300 to $3000 per connection. Dr. Tchobanoglous called these costs "ridiculous" in a phone conversation with Keith Wimer on September 19, 2007.

5. The FSR assumes high costs for nitrification and denitrification of STEP/STEG effluent ($3-6 million in facility capital costs and $. 25-.35 million per year O&M). This is based partially on the assumption 100% of the effluent needs to be denitrified for application at Broderson, but under no circumstances are Broderson leach fields expected to take all of the effluent. If the Project Team included ag reuse as a project option, STEP/STEG would receive a cost credit relative to gravity systems for having relatively high-nitrate effluent (i.e., reduced treatment costs) since high-nitrate water is desired by farmers. According to Dr. Tchobanoglous the high costs of nitrification and denitrification for STEP/STEG are not justified (per phone conversation with Keith Wimer, September 19, 2007). When told the Project Team stated ag reuse was uncertain and may take many years to develop, he strongly disagreed, stating farmers will be "begging" for recycled water.

6. The FSR did not include "on-going" maintenance for a gravity system (p. 1-9). During the Planning Commission field trip to Los Osos (3/20/09), Mark Hutchinson said on-going maintenance will be essential due to more stringent regulations and increasing concerns over spills. However, Dr. Tchobanoglous indicated communities are usually not willing to pay for the maintenance needed to reduce leaks—which he said would be 1% of system costs (per phone conversation with Keith Wimer, September 19, 2007). One percent of total system costs for an LOWWP gravity-based system would be about $1.5 million per year, or $1 million more per year than the $.5 million estimated.

7. The FSR did not include the cost of sealing the gravity system. Per the TM Flow and Loadings, this would add 12% to gravity pipeline installation. Dr. George Tchobanoglous insisted gravity pipes in Los Osos should be sealed or "butt welded" in high ground water areas and along the bay, where seawater might contaminate wastewater as sea levels rise. He was adamant that saltwater contamination of wastewater had to be avoided, or it would prevent recycling the water for beneficial uses. During the Planning Commission field trip (3/20/09), Mark Hutchinson said sealing gravity pipes with fusion welding was being considered.

When the above adjustments are made in STEP/STEG and gravity estimates, STEP/STEG costs go down by about $25 million ($15-17 million for #3 above, about $7 million for #'s 4 & 5), and gravity system costs go up more than a million (12% added to about 15% of the collection system). O&M triples for gravity systems with on-going maintenance, making it twice the cost of STEP/STEG O&M ($.75 million vs. $1.5 million). This does not include the likelihood more costly system upgrades will be needed in the life of a gravity system, as I/I increases, exceeding system capacity and causing increased numbers of overflows.

Staff's reasons for dropping STEP/STEG from the DB process, with responses & solutions

(Reasons, in italics, are from the staff report, Item F-1, April 7, 2009, Board of Supervisors agenda, available on the SLO County website)

Preparing the phase two "Request for Proposals" and including technical specification for a STEP/STEG system would require additional funds and will cause schedule delays that can potentially eliminate the opportunity to pursue federal stimulus finds for the project.

- $100,000-$300,000 would add about 10 to 30 cents per month on to homeowner costs; whereas true competition could reduce project costs by $20-80 per month. It would be penny wise and dollar foolish not to include it.
- **Fast track the design if necessary**
- **Use a design firm other than Carollo—possibly Lombardo Associates, Inc.**
- **Do not delay grant funding—pursue STEP design on a separate track if necessary.**

The design-build submittals provided in Phase I did not indicate sufficient cost savings with a STEP/STEG system to meet the expectations of two-thirds of the community survey respondents, including the one-half of respondents who are not interested in a STP/STEG system at any cost savings.

- The "two-thirds of …respondents" represents about 25% of the community. Twelve percent of the community wanted STEP/STEG if it reduced costs, 90% said was a major concern, and 65% of the

community did not respond. **The survey shows the overriding concern is cost—and much of the community doesn't know enough or care enough to respond.** It is not a mandate for gravity.

- The survey was always supposed to be only one component for decision making—the review process was never intended to be a "popularity contest."
- Many of the statements and assumptions in the survey show a bias against STEP/STEG, and one key statement related to costs is inaccurate.
- **Send out another survey after the design-build process once specific bids and design elements are known. Require that the survey just state proposals and costs, with no editorializing. This will provide a much more reliable gauge of public opinion.**

The EIR analysis does not establish that STEP/STEG is the environmentally superior alternative and no evidence indicates that a properly maintained gravity hybrid system poses significant risks to the environment.

- The EIR uses virtually all of the same assumptions regarding both systems stated in the Fine Screening Report (FSR), and many of these—as commenters have noted—are bias toward gravity, .e.g., the true costs of on-going maintenance for a gravity system, needed to keep leaks at a low level, are not included in cost estimates (see attached proof—pages from the EIR and FSR).
- If any number of assumptions change during the design-build or permitting process, the scale would be tipped toward STEP/STEG, e.g., a DB team addresses methane/GHG, the Coastal Commission requires ag reuse instead of spray fields, the BOS requires placement of STEP tanks in easements as a design alternative, and/or requires RFPs to include full maintenance contracts and system guarantees.
- **The costs and design of a properly maintained gravity hybrid system, i.e., that is fusion welded or has sealed components in high groundwater areas and near the bay (i.e., a system that does not pose a significant environmental risk) have not been reviewed.** The FSR and EIR reviewed the 95% MWH gravity design and assumed additional components could be added later if they reduced costs. **These components will alter the design, may increase costs, and cause other impacts (especially on lot impacts for grinder pumps, etc.). Dr. Tchobanoglous told Keith Wimer sealed components may not lower costs.**

(over)

The STEP/STEG collection system alternative will require extensive planning and design work to be completed compared to the gravity/hybrid collection system option.

- **An environmentally safe hybrid gravity design has not been completed (see comment directly above).**
- **Expedite the process.** Have a design firm other than Carollo do the design, e.g., Lombardo Associates, Inc. (LAI).
- The DB process is geared to producing results efficiently. **Set a timeframe for Lyle to create a design.**
- **Direct staff to include options that place STEP tanks in public easements and uses cluster systems to avoid on-lot impacts and possible delays in design.**

The STEP/STEG alternative has some significant risks with the uncertainty over how to obtain easements from each private property owner for the installation of new STP septic tanks. Obtaining easements on essentially all of the private lots would be needed so the County can maintain the STEP tanks and pumps. Considering the apparently substantial community opposition, County staff is concerned that the Count's use of eminent domain of Regional Water Board enforcement action against individual property owners would be needed to obtain the easements.

- Paavo Ogren to Keith Wimer in a private conversation that placement of tanks in easements is okay, but property owners may have to give up parking space or sacrifice landscaping in some cases.
- **Direct staff to include options that place STEP tanks in public easements and cluster systems in public easements to avoid the need for easements on private property. The County owns wide, unused portions of the easement in Los Osos. These should be used as needed, and property owners should be part of the decision making. Some property owners might prefer on-lot installation.**
- **Ask DB teams how these issues are traditionally addressed**

The STEP/STEG alternative shifts the major impact of construction excavation from the County's road right-of-way to private properties.

- **Place some STEP/STEG tanks in public rights-of-way. (See responses directly above.)**

The STEP/STEG alternative will create significant additional costs for some property owners relating to upgrading electrical systems, restoring or relocating landscaping, driveways, retaining walls, and other structures.

- **Place some STEP/STEG tanks in public rights-of-way. (See responses directly previous item.)**
- **Per the FSR, the hybrid gravity system will have greater on-lot costs for homeowners than the STEP/STEG system.** Further, there has been no review of the costs or impacts of placing grinder pumps on-site for the properties in high groundwater area and along the bay. Installing a sealed component along the bay to an elevation of five feet above sea level (to address predicted sea level rises) and in high groundwater areas is essential for a hybrid gravity option to limit environmental risks.
- **High costs of a STEP/STEG system result from several arbitrary assumptions, e.g., upgrading electrical systems should be a homeowner cost.**
- **The BOS can, and should, make electrical costs a project cost, and it can shift funds for yard restoration as needed. These costs might need to be paid with a bond or rates and fees if an SRF does not cover them.**

Direct DB teams to address these issue

Fine Screening Report

The environmental and economic consequences of energy consumption will be given special consideration to develop projects where they are minimized. In Addition, options for individual homeowners to help mitigate the environmental and economic impact of the wastewater project include gray water systems, rain water catchment in existing septic tanks, water conserving landscape, and solar power to offset additional energy consumption.

1.3 FLOW PROJECTIONS

Estimates of the projected wastewater flows and loads were outlined in the Rough Screening Report. The load estimates have not changed, but the flows estimates have been further reviewed in this report due to increased estimates of Inflow/Infiltration. The estimate for the dry weather flow at buildout without conservation remains at 1.2 MGD.

Inflow/infiltration (I/I) estimates for the collection system alternatives were the main source of uncertainty in calculating the future treatment facility influent flow volume. If a STEP/STEG collection system is selected it is anticipated that there will be minimal I/I since the system is sealed and under pressure. If a gravity collection system is selected, only a system that was constructed of fusion-welded PVC piping could be operated with as little I/I as a STEP/STEG system. However, fusion welded PVC sewers are a new technology with little long-term operating history, and can be significantly more costly to install than traditional bell-and-spigot gravity sewers.

Clearly, these costs are not evaluated.

Properly installed bell-and-spigot sewers will be watertight at first, and then slowly lose their integrity as the surrounding soils shift, compressing the pipes, and compromising their seals at the joints. The water-tightness of a bell-and-spigot sewer can be preserved if a maintenance program is conducted on an ongoing basis to detect and repair leaks. This program would add to the cost of a gravity sewer compared to a STEP/STEG sewer with similar levels of I/I.

As discussed in the Rough Screening Report, previous studies used standard collection system textbook models[1] to estimate the I/I per mile per inch diameter of pipe of gravity sewer. The total predicted I/I of the system was divided by the estimated population in order to calculate the projected I/I per capita. During wet weather, a conservative estimate for a conventional system I/I of 17 gpcd was given, which corresponded to a total potential wet weather flow of 1.5 MGD for Los Osos. However, it was pointed out that the true value would probably be much lower due to the sandy soils in the region that tend to direct water past a pipe and trench, and due to the presumed water-tightness of a new collection system. Using the textbook models, Montgomery Watson Americas, Inc., anticipated that

[1] From *Wastewater Engineering, Collection and Pumping of Wastewater*, Metcalf and Eddy (1981), and *Gravity Sanitary Sewer Design and Construction*, American Society of Civil Engineers (1982).

3. Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation, and;
4. Perform inspections to verify that all BMPs have been implemented.

The County's standard construction specifications require contractors to retain a copy of the SWPPP and all other permit requirements at the construction site. In addition, contractors are required to promptly notify the County if suspected hazardous materials are encountered during construction, and require that any such materials be disposed of in accordance with the applicable state and federal codes.

Water generated by de-watering activities will be required to comply with the terms and conditions of a permit issued by the Regional Water Quality Control Board (RWQCB). As explained in Draft EIR Section 3, Project Description, Section 3.3.4 Construction Activities, Baker tanks will be moved from one temporary location to another to contain the water pumped during dewatering operations. If construction water requires treatment, that treatment would be tailored to the specific contaminants targeted for removal. If required, portable treatment systems, designed for construction purposes, could be employed on a temporary basis as the project proceeds. Finally, the costs and efforts associated with dewatering and treatment would be compared with the cost and efforts with construction, such as directional drilling, through a value engineering process.

Stormwater flows during LOWWP operations have been estimated for the preliminary design based on a 25 to 100-year design storm as required by the County's Public Improvement Standards. Drainage channels, retention and detention basins have been included in the preliminary design that comply with Low Intensity Development (LID) standards for the various LOWWP facilities and sites as described in Appendix Q.3, Preferred Project Description.

TOPICAL RESPONSE 12: SEWER SYSTEM MANAGEMENT PLAN

The key to maintaining the water tight status of bell and spigot type pipe joints, as described in Topical Response 10, Infiltration, Inflow, and Exfiltration, is implementing an ongoing Sewer System Management Plan (SSMP), which is now a component of California regulations. See http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml#plan and Appendix Q.3 Preferred Project Description, Section Q.3.3, Project Characteristics.

The LOWWP will develop and implement a SSMP with the overall objective of facilitating proper funding and management of the sewer systems. The SSMP will include provisions to provide proper and efficient management, operation, and maintenance of the sewer system, while taking into consideration risk management and cost benefit analysis. Additionally, the Plan will contain a spill response plan that establishes standard procedures for immediate response to a spill in a manner designed to minimize water quality impacts and potential nuisance conditions.

The SSMP will address the elements described below.

EIR

Response to Comment P41-13

This comment expresses a concern regarding impacts on water quality in the basin by reducing nitrates. See Response to Comment P41-12.

Response to Comment P41-14

This comment expresses a concern regarding the amount of recharge required to balance the aquifers and basin. See Response to Comment P41-10 and Topical Response 3, Water Resources and the Project Scope.

Response to Comment P41-15

This comment expresses a concern regarding the feasibility of implementing the proposed project. See Topical Response 6, Alternative Treatment Systems.

Response to Comment P41-16

This comment states that mitigations should be provided where impacts to area ecosystems can be assumed. See Response to Comment P41-7.

Response to Comment P41-17

This comment expresses a desire for the reevaluation of the water use estimates for the Prohibition Zone. As documented in the Rough Screening Report (March 2007) Population Estimates are based on previous reports by Montgomery Watson Americas, Inc. (2001) and Ripley Pacific Company (2006) using population estimates provided by the Los Osos Wastewater Committee. The estimates were based on the 1990 census and knowledge about existing and future development. The build out population to be served by the future wastewater treatment facility was estimated to be 18,428 people. These estimates are consistent with the General Plan projections for Los Osos minus the areas outside the prohibition zone. The resulting wastewater flows are fully described in the Flows and Loads Technical Memorandum (November 2008). These figures are appropriately conservative in that population densities are likely to increase over the life of the project as communities throughout the nation, including San Luis Obispo County, adopt growth policies that focus additional population into existing urbanized areas. The Flows and Loads Technical Memorandum includes a sensitivity analysis to identify cost implications if changes were made to population and flow estimates. According to the sensitivity analysis: "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."

Response to Comment P41-18

This comment expresses a desire for a complete analysis of the significant potential negative impacts associated with the hybrid gravity collection system. See Topical Response 10, Infiltration, Inflow, and Exfiltration. The NWRI report contains the following statement: "The Panel believes that the two collection system options are both viable. Both options have risks and benefits that are unique to themselves and, when viewed as a whole, make them functionally equivalent." Draft EIR Section

Technical Memorandum Name: Flows and Loads, March 2008
Commenter: TAC – Finance Committee
Comments Date: March 21, 2008
Responses Date: April 30, 2008

The following comments were submitted in response to the above listed Technical Memorandum (TM). The TM was developed as part of the EIR process for the project, in order to help facilitate and broaden the discussion of project issues important to the community. The responses should be considered preliminary because the EIR process is not complete, and the information necessary to fully respond has not yet been developed. The project team is grateful to those citizens who took the time to review the TM and provide comments at this early stage in the process. The project team will endeavor to fully address the comments and concerns through the on-going project development process.

	Comment	Response
1	What are the number of connections (vs. population) inside the PZ, outside, and total, both currently and at build-out?	There are an estimated 4,280 and 4,770 connections at existing and buildout conditions, respectively, in the PZ. These connections do not accurately reflect the number of dwelling units because some serve multiple units and some serve non-dwelling units. The Assessment Engineer's report considers dwelling unit equivalents for wastewater service. Inside the PZ, the estimated population is 12,500 and 17,840 at existing and buildout conditions, respectively. For the total urban area the estimates are 14,440 and 19,713 at existing and buildout conditions, respectively.
2	What is the cost comparison between a plant that is over sized by 0.1MGD versus a 100,000 gallon spill, including associated clean up costs and potential fines?	These are not comparable costs. A treatment plant is designed with a number of systems to minimize the risks of spills which are not related average flow. For example, additional storage capacity may be included to handle peak flows, but may not translate to additional capacity for biological treatment.
3	What is the impact to load if the entire LO community is hooked up to the sewer, including change in cost per household?	Loads would go up in relation to dwelling unit equivalents and would likely be a 20% to 50% increase. Costs could go up significantly because there is no mandate to require areas outside the PZ to connect to or pay for the sewer system.
4	What is the production data given to the county, developed by all water purveyors in response to conservation ordinances relative to Level III Severity? (James Caruso)	Water purveyors throughout the County, including Golden State, submit a one page form of general water system production data. While this information is useful for estimating the total demand on the basin, it is not detailed enough to estimate average residential indoor water use.
5	Due to highest concerns regarding drinking water quality and impacts to Bay, exfiltration is an important consideration. What is the historical data on exfiltration for gravity collection systems, comparing bell & spigot versus welded joints? What is the historical data for STEP/ STEG systems? What do current county regulations allow for exfiltration	There is little data or comparison of the potential for exfiltration in sewer collection systems. If a pipeline placed in high groundwater developed leaks, it would be expected to experience infiltration, unless it was under pressure. Regulations expected from the Regional Water Board are expected to include provisions for maintenance and monitoring that will identify and

A truer estimate of pop. than in EIR, but buildout figure seems high. Buildout should add only about 25% - i.e., ~15,600 total.

FIGURE 4-6. SEPTITECH™ SYSTEM

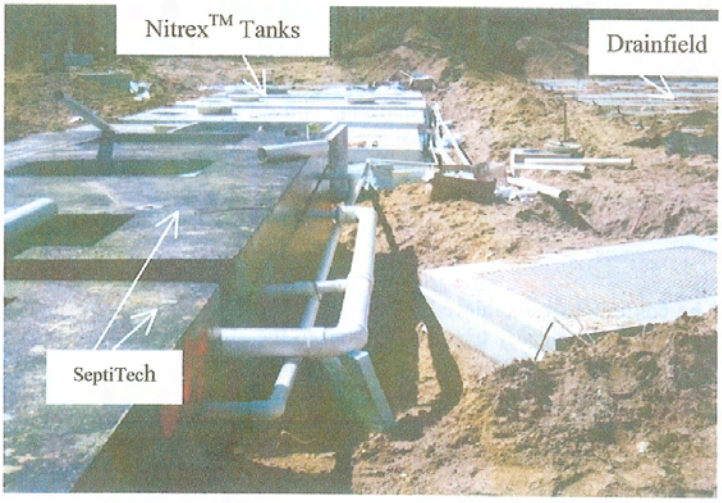

FIGURE 4-7. USE OF NITREX™ FILTERS AS WETLANDS

Elaine Watson
<elaine.watson@charter.net>

04/16/2009 04:38 PM

To rhedges@co.slo.ca.us, eporter@co.slo.ca.us
cc
bcc
Subject Concerns re: Los Osos Wastewater Project

Subject: Concerns over the Los Osos Wastewater Project (LOWWP) "preferred alternative" and recommendations to ensure a more sustainable project

Dear Commissioners,

The Los Osos Sustainability Group has serious concerns over potential negative impacts from the identified "environmentally preferred" alternative of the Los Osos Wastewater Project, not addressed in the EIR.

We believe Morro Bay National Estuary and other valuable resources within Los Osos Valley are likely to be harmed by key components of the project, and we're sure better alternatives exist to achieve project goals.

We're requesting your Commission conditions certification of the EIR on improvements to the LOWWP, which address project deficiencies.

To understand our full range of concerns please see the attached letter and document. Another document will be sent in a follow-up email. Please contact me if you have questions or comments.
Thank you.
Keith Wimer
805-528-2027
kwimer1@charter.net

Planning_Commission let4-1_.doc K. Wimer--Water Mgmt 2-09 Draft4.pdf

To: San Luis Obispo County Planning Commissioners

From: Bear Valley Land Stewardship Alliance

Date: April 20, 2009

Re: Comments on the Los Osos Wastewater Project Final Environmental Impact Report

Dear Planning Commissioners:

We, property owners and residences in Los Osos Valley, support the Los Osos Wastewater Project Final Environmental Impact Report (FEIR). Mainly, we favor the Tonini property as the location to site and operate the Los Osos sewer treatment facility, storage ponds, and spray fields (preferred alternative in the FEIR). Our supporting signatures are attached along with a previous letter to the County supporting the same project that was described in the Draft EIR. We hope that you as Planning Commissioners also agree with the FEIR decisions and rationale.

Our support comes with both grief and relief. We live close to the edge of town where a number of sites nearby were considered for the sewer (cemetery, Giacomazzi, Branin, Gorby, Andre, Robbins, others). For geographic reference, the Tonini site is furthest from us.

For background on our grief, we are the 'new' people having to contend with the Los Osos sewer dilemma. We, outside of town, were never part of the Los Osos sewer and its issues. However, Measure B, a vote by only the people within boundaries of the Los Osos Community Services District (LOCSD), was the mechanism that stopped the mid-town sewer project, and was the catalyst to move the Los Osos sewer out of town somewhere in our area. Measure B passed by only 19 votes. We, outside of town, could not vote on Measure B. Measure B, however, was soon determined to be illegal in two court systems. –But, what is transpiring now is how an illegal measure can accomplish its original goal in moving a sewer out of town and involving another set of people and properties that were not part of the reason for the sewer in the first place.

Our other concern that we have expressed to the LOCSD, Technical Advisory Committee, and County during the process of evaluating out-of-town sites for the sewer is the potential for odor impacts to us edge-of-town home and land owners. We explained that the physical setting where we live at the edge of town (west terminus end of Los Osos Valley) is a unique location where odor impacts could definitely arise and become significant if they are not fully controlled or contained at the sewer facility. While the EIR points out that the prevailing winds are directed onshore (generally away from us), the winds, in fact, reverse nearly every evening as the inland air cools. Consequently, we at the edge of town would be exposed to odor impacts on a frequent basis.

The wind pattern in Los Osos Valley is largely locally driven by the sun. As the inland air cools during the late afternoon/early evening it begins to settle, due to becoming denser. The inland settling air mass pushes air in Los Osos Valley in an offshore westerly direction, resulting in a wind reversal each evening (slight offshore swirling breeze). The increase in land elevation at the terminus west end of Los Osos Valley functions as a wall block and creates a sink trap of the cooler denser air. This air could be laden with sewer odors, particularly from a sewer facility located nearby on the cemetery, Giacomazzi, and Branin properties or other properties close by. Hence, we favor the Tonini site for the sewer, due to its distance from us.

Even though the DEIR describes various methods to reduce odor impacts to levels less than significant (for all of the project options and locations), a sewer facility with storage ponds and disposal proximate to the edge of town would still negatively affect individual properties and neighborhoods over the long-term from the potential for odor impacts and the mere perception of odor impacts.

For background on our relief, the Tonini site is sufficiently east and far from the edge of town, which represents a greater distance for odors to diminish. This distance appears sufficient to eliminate the perception that odors from a facility at the Tonini site could become a significant impact to residences located to the west and closer to the edge of town.

As we look at next steps, on April 23 you will become engaged in many more discussions on the Los Osos wastewater project and FEIR. We wish that you do not open up opportunities to modify the project on where the sewer facility and its disposal components should be located, particularly in Los Osos Valley.

So, please support our position. After all, our position is consistent with the FEIR. We would like the FEIR and final project stand, as is, with respect to the Tonini site being the location for the sewer facility, storage ponds, and spray fields, should the sewer be constructed in Los Osos Valley.

In the Community Survey, we, in fact, indicated the mid-town Tri-W site as our first choice for the sewer location, as that is where the sewer was originally being constructed. Our choices in the Community Survey, however, were not analyzed separately from those inside of town. Our second choice in the Community Survey was the Tonini site. When considering all of the potential sites for a sewer in Los Osos Valley, we support the Tonini site, due to its lack of proximity to neighborhoods, public gathering places (churches, cemetery), and schools.

We are unified on this with the Los Osos Cemetery Corporation and other edge-of-town land owners whose properties were included as potential sites for the sewer. These other potentially affected land owners and businesses in Los Osos Valley, as us, have submitted letters to the County in support of the Tonini site as a Los Osos Valley

location for the sewer project (Keith M. Benit, CHAFFE McCALL, LLP letter code P60, Vivian and Barry Branin letter code P14 in the FEIR).

In closing, the people in the town of Los Osos voted with Measure B to move the sewer out of town, and then voted on AB2701 as the regulatory and political mechanism to accomplish this. In contrast, we were excluded from voting on any of these matters, and therefore we had no mechanism to counter those actions or provide input in planning for a sewer outside of town. Now that it appears the sewer will be constructed outside of town, we feel that those of us outside of town should be given the strongest public voice on where in our area the sewer should go and not go. Again, we support their FEIR in identifying the Tonini site as the preferred location for the sewer treatment facility, ponds, and spray fields should these facilities be built in Los Osos Valley.

Thank you for the opportunity to provide input.

Attachments:

Supporting signatures from Los Osos Valley residences and land owners

Letter response that appears in the FEIR from the Zumbrun Law Firm representing Los Osos Valley residences and land owners with regards to the Los Osos Wastewater Project

cc: County Board of Supervisors
Frank Mecham
Bruce Gibson
Adam Hill
K.H. “Katcho” Achadjian
James Patterson

County Public Works Department
Paavo Ogren
John Waddell
Mark Hutchinson

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
Elizabeth Mckay	Elizabeth Mckay	2170 Lariat Dr. Los Osos, CA. 93402
Linda Wells	Linda Wells	Los Osos 93402 2180 LARIAT DR
Claudia Ferriday	Claudia Ferriday	2101 Lariat Dr. Los Osos CA 93402
Russ Ferriday		"
Attie Loraine Rider	Attie Loraine Rider	1900 Tapidero Ave. Los Osos, CA 93402
JAN HAGAMAN-JERCICH	Jan Hagaman Jercich	2191 LARIAT DR Los Osos, CA 93402
George Jercich	George Jercich	SAME
Jenna Jercich	Jenna Jercich	Same
Michael Gorby	Michael Gorby	1869 Los Osos Valley Rd, Los Osos
Mary Patricia Gorby		
MARY PATRICIA GORBY	Mary Patricia Gorby	1869 Los Osos Valley Rd Los Osos
Michelle Ewing	Michelle Ewing	2979 Clark Valley Rd Los Osos, CA
Tatiana Warner	Tatiana Warner	Same ↑

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
Jeff Williams		1972 Los Osos Valley Rd Los Osos, Ca.
Karen Williams	Karen Williams	1972 Los Osos Valley Rd Los Osos Ca.
JOHN BATTALINO		2000 Los Osos Valley ROAD Los Osos, CA 93402
David Beshears		2120 Sombrero Los Osos CA.
PATRICK SCARPA	Pat Scarpa	2210 CIMARRON WY Los Osos, CA.
TIM HEDGES		1998 LOS OSOS VALLEY Los Osos CA 93402
DEBORAH DEGS		1958 LOUR Los Osos, CA 93402
JIM MAHAFFEY		2260 CIMARRON WAY Los Osos, CA. 93402
Larry McAllister		2072 Los Osos Valley Rd Los Osos, CA. 93402
John Michener		2267 Falcon Ridge Ln Los Osos, CA 93402
Judy MICHENER	Judy Michener	2267 Falcon Ridge Ln Los Osos, Ca 93402
P. Babos		2298 Falcon Ridge Los Osos.
John Babos	John Babos	2296 Falcon Ridge Los Osos CA
DANIEL ARBOGAST		2196 FALCON RIDGE LN Los Osos, CA

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
Judy Beshears	Judith Beshears	2170 Sombrero Dr. Los Osos, Cal 93402
Emma Nieman	Emma Nieman	2098 Tapidero Ave Los Osos, CA 93402
Rod Nieman	R. Nieman	2098 Tapidero Ave Los Osos, CA 93402
Steven A. Adrianse	Steven A. Adrianse	1998 Tapidero Ave. Los Osos, CA. 93402.
Eli Martin	Eli Martin	1940 Tapidero Ave. Los Osos, CA. 93402
Thomas L. Richards	Thomas L. Richards	1901 LARIAT DR LO CA 93402
~~Susan Richards~~		
SUSAN RICHARDS	Susan Richards	1901 LARIAT LOS OSOS, 93402
Leah Bodily	Leah Bodily	1901 Lariat Dr Los Osos CA 93402
Eric Bodily	Eric Bodily	1901 Lariat Dr. Los Osos 93402
Bryan Richards	Bryan Richards	1901 Lariat Dr. Los Osos CA 93402
Jack Kieby		2125 LARIAT DR LOS OSOS CA. 93402
Loida D. Moy	Loida D. Moy	2149 Lariat Dr Los Osos Ca. 93402
KIRK MOKAY		2170 LARIAT DR LOS OSOS CA, 93402

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
Troye Mueller	Troye C. Mueller	2199 Falcon Ridge Lane Los Osos, CA 93402
Wendy Miller	Wendy Miller	2223 Falcon Ridge Los Osos, CA 93402
IRIS ALEXANDRA	[illegible]	2245 Falcon Ridge Los Osos, Ca. 93402
Frank Galicia	Frank Galicia	2289 Falcon Ridge Ln Los Osos CA 93402
Les Goodwin	Les Goodwin	2131 Blue Heron Way Los Osos, Ca 93402
CARLOS GUILLERMO	[illegible]	2245 Clark Valley Rd Los Osos CA 93402
DAVID LILLY	David M Lilly	2225 CLARK VALLEY RD LOS OSOS, CA 93402
Scott Kimura	Scott Kimura	1981 Tapidero Ave. Los Osos, CA
Karen Kimura	Karen I Kimura	1981 Tapidero Ave Los Osos, CA 93402
Jim LESTER	[illegible]	2061 TAPIDERO AVE LOS OSOS CA 93402

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
Sandra G Branch	Sandra G Branch	1961 Tapidero Ave Los Osos, Ca. 93402
Louis H. Branch	Louis H. Branch	1961 Tapidero Ave Los Osos, Ca. 93402
Jim McLaughlin	Jim McLaughlin	1984 Tapidero Ave Los Osos, CA 93402
FLORINE JOHNSTON	Florine Johnston	1960 Tapidero Ave 93402 Los Osos, CA 93402
Connie McLaughlin	Connie McLaughlin	1984 Tapidero Ave
SALLY REGNA	Sally A Regna	1941 TAPIDERO AVE Los Osos 93402
CHARLES B. MOORMAN	CB Moorman	1999 Tapidero Ave., L.O.
Cecile Diane Ley	Cecile Diane Ley	2031 Tapidero Ave L.O.
Merrie Kay Reis	Merrie Kay Reis	2091 Tapidero Ave Los Osos
Ron A Reis	Ron A Reis	2091 Tapidero Ave Los Osos
RANDALL WATERBURY	[illegible]	1680 YAMA LN. Los Osos
CHRIS SALETTA	[illegible]	2171 Sombrero Dr. L.O.
Brenda Saletta	Brenda Saletta	2171 Sombrero Dr. L.O.
ROLANDO NARITO	[illegible]	2190 Sombrero Los Osos CA

Signatures of Bear Valley Land Stewardship Alliance land owners and residences in Los Osos Valley supporting the Tonini site as the location for the Los Osos sewer treatment facility, storage ponds, and spray fields (Project 4), as described in the Los Osos Wastewater Project Final Environmental Impact Report

Submitted for the April 23, 2009 San Luis Obispo County Planning Commission Meeting

Printed Name	Signature	Address
MARK HEDGER	Mark Hedger	2088 LARIAT DR. LAZY Q RANCH
Margaret A. Corelitz	Margaret A. Corelitz	1920 Tapidero Ave Los Osos, Calif.
BRUCE CORELITZ	B Corelitz	1920 TAPIDERO AVE LOS OSOS, CA
Cathy Loveridge	Cathy Loveridge	2011 Tapidero Ave Los Osos, Ca 93402
Craig Loveridge	Craig Loveridge	2011 Tapidero Los Osos, Ca-93402
Patrick Shea	Patrick J Shea	2000 Tapidero Los Osos CA 93402
CAROLYN C. TAYLOR	Carolyn C Taylor	2030 Sombrero Dr Los Osos Ca 93402
H.A. Northington	H Northington	2130 Sombrero Dr. Los Osos, CA 93402

THE ZUMBRUN LAW FIRM
A Professional Corporation

RECEIVED

JAN 30 2009

COUNTY OF SAN LUIS OBISPO
DEPARTMENT OF PUBLIC WORKS

January 29, 2009

Mr. Mark Hutchinson
Environmental Programs Manager
San Luis Obispo County Department of Public Works
County Government Center
1055 Monterey Street, Room 207
San Luis Obispo, CA 93408

VIA OVERNIGHT DELIVERY

Dear Mr. Hutchinson:

Re: Los Osos Wastewater Project Draft Environmental Impact Report

We represent the Bear Valley Land Stewardship Alliance (BVLSA) in Los Osos Valley in regard to the Los Osos Wastewater Project (LOWP) Draft Environmental Impact Report (DEIR). The purpose of this letter is to comment on the DEIR on behalf of BVLSA.

We acknowledge and commend the selection of the Tonini property as the environmentally superior location for the LOWP (identified as Project 4 in the DEIR). This decision is logical in that it consolidates all of the wastewater facilities in Los Osos Valley onto one property. The other project options would have spread the LOWP facilities across Los Osos Valley.

Consolidating the LOWP onto one property follows the same logic of cluster housing on open land, mainly to avoid spreading impacts. Environmental impacts from traffic, roadways, night lighting, noise, and odors in Los Osos Valley would be confined to the best extent practical if the Tonini property is used for the LOWP. The location also makes sense from a maintenance and operations standpoint.

We would also like to comment on issues that may arise in transitioning from the DEIR to the final EIR. In this regard, we understand the County's guidance in several recent public meetings that comments on the DEIR should not be on the particular locations selected for disposal, those being the Broderson and Tonini sites. The disposal locations are fixed. Comments may be

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Sacramento, CA 95821

Tel 916-486-5900
Fax 916-486-5959-479

directed at the treatment facility and storage ponds, including their locations, but relative to environmental impact assessments that may have not been addressed completely or were overlooked. This is not to exclude comments supporting impact descriptions and decisions.

Although we acknowledge the Tonini property as the environmentally superior location for the LOWP, we also recognize that the ultimate locations for the treatment facility and storage ponds could change. How and in what manner these may change (or not change) will, of course, depend on the nature of public comments to the DEIR, results from a "community survey," how your office interprets the comments and survey, and the final decision by the San Luis Obispo County Board of Supervisors.

With that said, we recognize that Project Options 1, 2, and 3 consist of using various combinations of the cemetery, Giacomazzi and Branin properties for the treatment facility and storage ponds. Other sites considered nearby include the Andre and Robbins properties. All five properties, however, should be excluded from consideration should any reevaluation occur concerning the location of the LOWP. In addition to being proximate to existing neighborhoods, these properties drain towards Warden Creek and Lake, which are on the properties. Warden Creek and Lake and the Morro Bay National Estuary would be at close risk to accidental sewage spills. Some of these properties are also classified as being within flood zone hazards identified by the County. Flooding is not compatible with sewage treatment, storage, and spray field disposal. We hope that the unique physical characteristics of these properties were included as important reasons for rejecting Project Options 1, 2, and 3 and selecting Project 4 as the environmentally superior location for the LOWP. P26-1

The DEIR did not appear to strongly highlight the near certainty of odor impacts to neighborhoods in Los Osos Creek Valley if Project Options 1, 2, or 3 is implemented, in comparison to Project 4. There was no apparent distinction made, or the distinction was subtle.

Odor impacts were conveyed in a letter dated September 4, 2007 to the County Board of Supervisors and Public Works Department. The letter includes a signed petition from largely all of the property owners living in close proximity to the cemetery, Giacomazzi, and Branin properties. The petition list includes signatures from 60 property owners and six nonproperty owner residents (of voting age). The letter and the petition oppose any sewer project in these areas. The letter specifically states that odor impacts would occur, and includes a detailed description of how they would occur. The mechanism stems from the low-lying nature of Los Osos Creek Valley functioning as a "sink" of cooler denser air. A slight offshore wind also develops nearly every night. The combination would result in sewage odors being conveyed and retained in Los Osos Creek Valley on a frequent basis if Project Options 1, 2, or 3 is implemented. P26-2

In contrast, sewer odors would have a lower probability of affecting neighborhoods in Los Osos Creek Valley if Project 4 is implemented, depending on the design and operation of the LOWP and because it is more distant from neighborhoods. This may have been considered in selecting

Project 4 as the environmentally superior location for the LOWP over the other project options. If this was the case, it was not clearly apparent in the DEIR. P26-2 CONT

It should be noted that implementing Project Options 1, 2, or 3 would not eliminate the need to still purchase the Tonini property for spray field disposal. Implementing any of these project options would require the purchase of two or more properties (Tonini plus unidentified "others"). Acquisition of "other" properties in Los Osos Valley may not be possible and, at minimum, would significantly delay completion of the LOWP.

If any reevaluation is to occur regarding the location of the LOWP, our position is that the Mid-town site should be the only site reconsidered, with perhaps the original Tri-W treatment facility. In other words, the treatment facility could be built on the Mid-town property with effluent storage and disposal still occurring on the Broderson and Tonini properties.

P26-3

Should a reconsideration of location occur, we strongly believe that the Mid-town site should be considered as the preferred site for the Los Osos sewer, or ranked similarly to the Tonini site. A primary reason is that the Mid-town site was the preferred site for the LOWP based on a prior EIR. Also, the Mid-town property remains undeveloped and is still owned by the Los Osos Community Services District.

Therefore, should the location for the LOWP be reevaluated, only the Mid-town site should be considered and preferably selected as the final site for the treatment facility. Otherwise, the Tonini site represents the next reasonable option used in combination with the Broderson leach field.

Finally, we assume if Project 4 goes through that various pump stations will need to be installed in Los Osos Valley and Los Osos Creek Valley. If this occurs, we would like to see each pump station associated with overflow sewage capture and retention equipment (e.g., overflow tanks). This would minimize the potential of accidental sewage spills reaching Los Osos Creek, Warden Lake, and Warden Creek in the event of pump station failures. P26-4

Thank you for the opportunity to comment on the DEIR.

Respectfully submitted,

Ronald A. Zumbrun

RONALD A. ZUMBRUN
Managing Attorney

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The Zumbrun Law Firm, Ronald A. Zumbrun, January 30, 2009 (Letter P26)

Response to Comment P26-1

This comment states that the Cemetery, Giacomazzi, and Branin properties should be excluded from consideration of further evaluation due to the proximity of the sites to existing neighborhoods, Warden Creek and Lake, and the Morro Bay National Estuary. These three properties are included in one or more of the proposed projects. None of the proposed projects have been rejected; however, as identified in Appendix Q the Preferred Project is to use the Tonini site for the proposed treatment facilities as well as sprayfield disposal.

Response to Comment P26-2

This comment expresses a concern that the Draft EIR did not emphasize odor impacts to neighborhoods from the implementation of Proposed Projects 1, 2 or 3. Section 5.9, Expanded Air Quality Analysis, in Appendix K-1 discusses odor impacts on page 5.9-54 through 5.9-61. This section addresses potential odor impacts associated with the components of the proposed projects as well as the project features that are included as part of the project to reduce potential impacts to less than significant. These project features are critical in reducing potential odor at the treatment plant site.

Response to Comment P26-3

This comment expresses the opinion that should the location for the LOWWP be reevaluated, only the Mid-town site should be considered and preferably selected as the final site for the treatment facility. Because there are no comments on the contents of the Draft EIR, no further response is required.

Response to Comment P26-4

This comment expresses concerns about pump stations and potential spills. All pump stations are designed with the capacity to contain flows in the event that the pumps are not running, typically within the "wet well" that contains the pumps themselves. As described in Section 3 of the EIR, the only pump stations required in the Los Osos Valley or the Los Osos Creek Valley are the pump stations necessary to move treated effluent back to Broderson and to the sprayfields. These stations would be located at the treatment plant and/or wet weather storage sites.

Barry and Vivian Branin
P.O. Box 540
Morro Bay, CA 93442

April 19, 2009

To: San Luis Obispo County Planning Commissioners

Subject: Comments on the Los Osos Wastewater Project Final Environmental Impact Report.

Dear Commissioners:

This difficult subject has had enough said and written about it. I won't add to your reading.

The purpose of the Wastewater project is to eliminate the Pollution that is migrating into the Morro Bay Estuary.

We support the location of the Plant on the Tonini Property for the following reasons.

1. The proposed location of the treatment plant is far from Morro Bay.

2. It is on a site that is large enough to build the entire project and have the least impact on the viewshed.

3. If there are any spills or failures in the operation of the plant all waste will be contained on site and not flow into the tributaries, like Warden Lake, that feed Morro Bay.

4. Mr. Tonini is a willing seller.

5. The project is situated in the best location for the 100 year growth projected in the L.O. Valley.

Thank you for the opportunity to provide input to this very important decision.

Sincerely,

Vivian and Barry Branin

President
Joe Sparks

Vice-President
Marshall Ochylski

Director
Chuck Cesena
Maria Kelly
Steve Senet

General Manager

Utilities Manager
George J. Milanés

Fire Chief
Matt Jenkins

Offices At:
2122 9th Street
Los Osos California 93402

Mailing Address:
P.O. Box 6064
Los Osos, California 93412
Phone 805/528-9370
Fax 805/528-9377
www.losososcsd.org

Hand Delivery

April 16, 2009

Ms. Kerry Brown
Planning Department
San Luis Obispo County
County Government Center, Room 208
San Luis Obispo, CA 93408

Subject: Revised Comments on Los Osos Wastewater Project

Dear Ms. Brown:

The Board of Directors of the Los Osos Community Services District ("District") has authorized the submission of the following comments on the Final Environmental Impact Report ("FEIR") for the proposed Los Osos Wastewater Project as well as the project itself.

Introduction

The District is supportive of a project designed to alleviate the current significant groundwater issues in Los Osos.

The following discussion identifies issues related to the scope of services that the District provides that should be addressed in the project approval process either as mitigation measures or conditions of approval. These comments are in addition to those previously submitted related to the Draft Environmental Impact Report in the letter from the District dated January 30, 2009.

Affordability

All of the conditions of approval attached to the wastewater project must take into account the expense to the property owners within the prohibitions zone. The most cost effective mitigation measures must be identified and implemented to alleviate the strain of the already expensive wastewater project. Any conditions and mitigation measures must be specific to impacts created by the project. The costs of any features above the minimum requirements of the Regional Water Quality Control Board must be borne by all users of the groundwater basin. The wastewater project must not be viewed as an opportunity to attach non-related costs to the wastewater project at the expense of property owners within the prohibition zone.

Sustainability

In terms of the avoidance of adverse groundwater impacts, our primary recommendation is that the wastewater project includes tertiary treatment.

The District is concerned about any potential removal of water from the groundwater basin. Return of treated effluent to the Los Osos groundwater compartment must take priority. After the initial startup period of the wastewater facility, water dedicated to agricultural and environmental mitigation should not exceed ten percent (10%) of the treated effluent for each category.

Tertiary treatment will help the District and the other water purveyors in the community by returning sufficient treated effluent to the basin for a variety of beneficial uses and innovative disposal opportunities such as urban/agricultural exchange, in lieu, or "purple pipe" programs.

Wastewater Treatment Design Flows

The District has a vested interest in the effluent design flows used to determine the capacity of the wastewater treatment facilities. The capacity must be consistent with the most current water usage data available. In order to provide the most current data available, the District is attaching water usage for the properties served by it for Fiscal Year 04-05 until the present. When this information is combined with comparable data from the other water purveyors within the prohibition zone, the design flows for the wastewater project can be calculated. The District supports the use of wet-weather water usage as the basis for determining effluent design flows.

Drainage and Dewatering

Construction may affect a large volume of natural storm water drainage. Although the FEIR concludes that the proposed projects would not substantially alter the existing drainage patterns in the district, any such changes identified during the design and construction process must be addressed and Low Impact Development ("LID") techniques implemented.

The project should include conditions of approval to address construction impacts adequate dewatering measures including the utilization of existing drainage basins throughout the district as well as other LID techniques. This measure must be included to avoid negative impacts to the upper groundwater aquifer and minimize potential impacts on marine resources.

Emergency Services

The District recommends that the County include measures in the project to address impacts on emergency services during and after the construction of the wastewater project.

The District believes that if the following measures are included that response time to emergency incidents will be significantly reduced, vehicle safety for all drivers would be increased, wear and tear on emergency service vehicles would be decreased and, in some cases, defensible space for homes and firefighters would be increased allowing a safe area for firefighters to fight vegetation, vehicle and structural fires.

- All roads in Los Osos that are impacted by the construction of the wastewater project should be made all-weather passable. Even if the road is unpaved but has an all-weather surface, the District believes that the most direct route to any incident can save valuable time during an emergency response, particularly Fairchild between Los Olivos and Santa Ynez.

- Remove all road barricades if traffic engineering considerations allow, particularly on 9th, 10th, 12th, 16th, 17th and 18th Streets.
- Make San Luis Avenue, Pismo Avenue, and Paso Robles Avenue all-weather passable. If these roads were improved, especially west of 11th Street, emergency response time will be significantly decreased into the Baywood District.
- Make Skyline Drive all-weather passable between Fearn Avenue and Nancy Avenue to improve access to residents and eucalyptus groves.
- Make Doris Avenue all-weather passable from Los Osos Valley Road to Skyline Drive. This would result in a more direct route to a portion of the community, significantly reducing emergency response time.
- Make Ramona Avenue all-weather passable between 10th Street and 11th Street. If Ramona Avenue were passable in winter months it would create a more direct route from the east side of Baywood and alleviate the need to circumvent this entire area.
- When all-weather surfaces are provided to address emergency services impacts, the drainage patterns will be affected and should be addressed as discussed above.

The attached list prepared by CAL FIRE further identifies the full extent of road closures, impassable streets, dead end streets and unpaved streets in our service area that impact the provision of emergency services within the District and access by emergency vehicles that should also be addressed in the project approval.

If these measures are implemented as part of the construction of the collection system, there should be no additional cost. To assure that there are no additional costs for the property owners in the prohibition zone, funds should be provided from County road fees, traffic impact fees, road maintenance fees.

Summary

In conclusion, we fully support measures to address the community's wastewater problems. We believe that the issues identified above are appropriate and necessary to be addressed in the County's wastewater project. Although the project will have a profound impact on the community, a comprehensive and responsible approach to conditions placed on the project will be for the betterment of the entire community.

Thank you for your consideration of the above issues in your consideration of the wastewater project. We are available to meet and discuss these matters at your convenience.

Sincerely,

Francis M. Cooney
Interim General Manager

cc: Mr. Paavo Ogren
Mr. John Waddell
Mr. Mark Hutchinson
Mr. Victor Holanda
LOCSD Board of Directors
File

CAL FIRE
San Luis Obispo
County Fire Department

635 N. Santa Rosa • San Luis Obispo, CA 93405
Phone: 805.543.4244 • Fax: 805.543.4248
www.cdfslo.org

Matt Jenkins, Fire Chief

March 23, 2009

Marshall Ochylski
Director-Emergency Services Advisory Committee Liaison
1458 4th Street
Los Osos, CA 93402

RE: ROAD IMPROVEMENT INFORMATION

Director Ochylski:
As requested, I am submitting a list of road closures, impassable streets, dead end streets and unpaved streets in the Los Osos Community. The information provided is by area and not necessarily in priority order.

BAYWOOD

Barrier Streets

10th between Ramona and San Luis
10th between Ramona and Pismo
9th between Pismo and Paso
12th between Pismo and Paso
8th between Santa Maria and Santa Ysabel
9th between Santa Maria and Santa Ysabel
16th between El Morro and Santa Maria
17th between El Morro and Santa Maria
18th between El Morro and Santa Maria

Impassable Streets

San Luis from 6th to 9th
San Luis from 11th to 12th
Pismo from 4th to 7th
Pismo from 15th to 16th
Paso from 3rd to 8th
Santa Maria from 12th to 13th
Santa Maria from 15th to 16th

Passable, but Not Paved

Fairchild from Los Olivos to Santa Ynez
Santa Ynez between 12th and Fairchild

7th from Nipomo to San Luis
San Luis from 12th to 13th
Ramona from 16th to South Bay
Pismo from 11th to 15th
El Morro from 16th to 18th
18th from Pismo to Paso
Santa Maria from 13th to 15th
Santa Maria from 16th to 18th

SWEET SPRINGS

Impassable Streets

Broderson from LOVR to Binscarth
Rosina from Pine to Doris
Skyline from Fearn to Nancy
Sunny Hill from Binscarth to Garden
Donna from Binscarth to Lupine

Passable, but Not Paved

Doris from Rosina to Skyline
Skyline from Fearn to Pine
Skyline from Nancy to Pecho
North Court Street, South Court Street
Aspen from Skyline to Henrietta
Sunny Hill from Henrietta to Binscarth
Nancy from Binscarth to Garden
Doris from Binscarth to Mitchell
Loma from Pine to Broderson
Broderson from Ramona to the Preserve

Add Cul de Sac

Garden at Sunny Hill

BAYVIEW HEIGHTS

Impassable

All of Calle Cordoniz
All of Clelland

Passable, but Not Paved

All of Al Serano
All of Vista del Osos
Covey from BVHD to Vista del Osos
All of Quail
All of Sea Horse

Recommendation

Staff recommends that the LOCSD work with SLO County on the following:

- Pave or make all-weather passable all roads in the Los Osos area. Even if the road is unpaved but has an all-weather surface, staff believes that the most direct route to any incident can

save valuable time during an emergency response, especially Fairchild between Los Olivos and Santa Ynez, and Santa Ynez between 12th and Fairchild.

- Remove all road barricades if safe to do so, especially on 9th, 10th, 12th, 17th and 18th Streets.
- Improve San Luis Avenue, Pismo Avenue, and Paso Robles Avenue to be passable in all types of weather. If these roads were improved, especially west of 11th Street, emergency response time may be decreased into the Baywood District.
- Make Skyline Drive passable between Fearn Avenue and Nancy Avenue to improve access to residents and eucalyptus groves.
- Make Doris Avenue passable from Los Osos Valley Road to Skyline Drive. This would result in a more direct route, thus reducing emergency response time.
- Improve drainage and pave Ramona Avenue between 10th Street and 11th Street. If Ramona Avenue were passable in winter months it would create a more direct route from the east side of Baywood and alleviate the need to circumvent this entire area.

Staff believes that if the above recommendations were completed response time to emergency incidents may be decreased and, in some cases, defensible space for homes and firefighters would be increased allowing a safe area for firefighters to fight vegetation, vehicle and structural fires.

Sincerely,

Phill Veneris

Phill Veneris
North Coast Battalion Chief
CAL FIRE/San Luis Obispo County Fire Department

Cc: Matt Jenkins, Chief
Mitch Cooney, Interim General Manager, LOCSD

LOCSD Water Data

Water Consumption Data in Million Gallons					
	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09
Jul	28.320	40.543	21.604	21.516	20.608
Aug	38.629	33.440	33.093	28.531	30.350
Sep	33.556	24.497	24.622	22.073	27.319
Oct	36.776	32.945	32.184	28.899	29.012
Nov	21.096	20.744	21.331	20.721	25.491
Dec	21.755	25.254	27.316	25.703	30.577
Jan	15.500	14.861	15.744	14.647	20.758
Feb	20.261	21.122	22.016	19.240	20.571
Mar	14.620	15.918	15.093	13.788	12.969
Apr	18.225	17.302	21.507	22.159	
May	17.549	14.583	25.528	19.574	
Jun	31.631	27.704	30.054	27.176	
TOTALS	**297.92**	**288.91**	**290.09**	**264.03**	**217.65**

*Consumption is billed for a two month period - every month. Every month, half of the service area is billed.
Meters are read on or about the 10th of each month.
Revenue is based on gallons billed and unpaid balances forwarded - not cash received.

Michael Shane and Annemarie Stoneman
1572 10th Street
Los Osos, CA 93402
(805) 528-7675

April 3, 2009

Kerry Brown
Project Manager
San Luis Obispo County Department of Planning and Building
County Government Center
976 Osos St. Room 300
San Luis Obispo, CA 93408

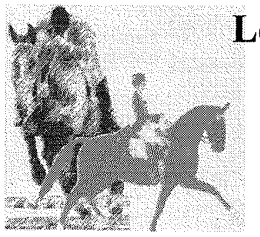
Dear Ms. Brown,

We received the Notice of Planning Commission Hearing to request the permit that will allow construction and operation of the Los Osos sewer project. We would like to request a copy of the Environmental Determination (FEIR) to be sent to our home address. Also, what is the timeline for the project? If there is any change in the hearing location, date, or time, please let us know in advance by mail or phone.

Thank you very much for your time and attention to these matters.

Sincerely,

Michael Shane and Annemarie Stoneman



Los Osos VALLEY Equine FARM
1869 LOS OSOS VALLEY ROAD.
LOS OSOS CA 93402
Office: (805) 528-0559
Fax: (805) 528-0597
E-mail: jupiter91@att.net

Ms. Kerry Brown
976 Osos St, County Government Center
San Luis Obispo, CA 93401

Dear Ms. Kerry Brown,

To begin with, we would like to commend San Luis Obispo County on their efforts to resolve the decades long conflict over the Los Osos Wastewater project in a timely and diligent manner, which will move the community forward in a productive manner. From the project's inception, the use of the portion of Los Osos Creek that flows through our property, Los Osos Valley Equine Farm, has been always rejected by all responsible and reputable entities due to active erosion, and the in-stream and adjacent sensitive environments.

Not only are we unwilling sellers, but we believe our property is unsuitable for this and all other public or quasi-public works projects for the following reasons:

1. The property is located on prime agricultural land
2. The property is developed to its highest use and serves the community and surrounding areas as a private equestrian center offering boarding, lesson, and training. It offers recreational and equestrian sports for youth and adults as well as providing a tack shop. There are a total of three thriving businesses.
3. There are three residences on the property. One owner occupied dwelling, and two residences occupied agricultural laborers and their families.
4. The Los Osos Fault line runs through the property.
5. There is active erosion of the creek banks especially on the north and west sides where there are numerous residences, some as close to the creek bank as three hundred feet.
6. Landslides occur along the hillside during extended periods of heavy rain.
7. There is a variety of ecologically sensitive habitats present on the property.
8. The existing road is not adequate for heavy vehicles and would require procurement of easements across adjacent property to develop a more suitable road.
9. The canyon location reduces access to the premises in case of an emergency
10. The neighbors of the Los Osos Valley Equine Farm cherish their pastoral views as does much of Los Osos.
11. Annexation of the property into Los Osos Community Services District would maximize the increased pressure for development throughout Los Osos and the

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surrounding valley, especially the farmland lying between our property and Los Osos Valley Road.

It is worth noting that Jeff Edwards has continued to insinuate that he has real or vested interest in our property, and to infer that he represents us and our property. This misrepresentation most recently occured in this comments on the Draft Environmental Impact Report (which the County refuted) and the packet he prepared for the Planning Commission, dated March 20, 2009. One of the most obvious misrepresentations is the use of photographs without our consent or permission. Four of these photographs were most likely obtained while trespassing on our property. His outdated Google satellite image consists of approximately fifty percent of land which is not on our property. Nor does the image show the recent residences which have built within 300 feet of our property line on the other side of the creek.

We request that all agencies, and their agents, and contractors continue to respect our rights by only entering our property with prior written permission. Furthermore, we request advanced written notification any time discussion our property is on the agenda of any public meeting.

Finally, to ensure clarification for the record: we are unwillingly sellers and will not willing allow and/or participate in any further studies, reviews, etc. of our property for the Los Osos Wastewater Treatment Project or any other projects for and by any public or quasi-public entities.

Sincerely,

Michael and Patricia Gorby

Michael and Patricia Gorby

April 20, 2009

San Luis Obispo Planning Commission
c/o Ms. Kerry Brown
Planning Department
976 Osos Street, Room 300
San Luis Obispo, CA 93408

Re: Los Osos Wastewater Treatment Project

To begin with, my parents are Michael and Patricia Gorby, the property owners of 1869 Los Osos Valley Road, Los Osos, CA. As you are probably aware, this was one of the sites considered as a possible location for the treatment facility, but was dropped early on in the process due to significant environmental constraints, and the extreme unwillingness of Mr. and Mrs. Gorby to sell their property. Nonetheless, a member of the Los Osos community, Mr. Jeff Edwards, continues to press for further consideration of their property for this project. Furthermore, Mr. Edwards, has insinuated that Mr. and Mrs. Gorby might actually be willing sellers (most recently in his DEIR comments dated January 30, 2009 that were submitted to the Department of Public Works) when in reality nothing could be further from the truth. Mr. and Mrs. Gorby have recently submitted a letter to further substantiate and clarify that they are <u>not</u> willing sellers.

Fortunately, to date, it appears that County staff have only accommodated Mr. Edwards to the extent they required to by law. Nonetheless, since he has submitted information that is misleading and inaccurate into the public record, the main purpose of this letter is to repudiate that information. The most notable of Mr. Edwards recent submissions to the County are:

1. His editorialize version of Technical Memorandum #3", aka the Ripley Report; the original being dated July 10, 2006.
2. DEIR comments dated January 30, 2009; and

He submitted both of these items to the County as part of his packet titled <u>Planning Commission Field Trip of Los Osos Wastewater Project</u>, dated March 20, 2009. Item 2 is also posted on the Department of Public Works website for the project.

First and foremost, a query of the State of California databases (by a geologist registered with the State of California) of registered geologists and registered engineers shows that Mr. Edwards is not listed; therefore, he has no qualifications supporting his "analysis". Additionally, with respect to Item 2 above, he fails to disclose that he has edited several of the report's Figures.

Figure TM3-3 "Locations of Subsurface Geologic Cross Sections" of the Ripley Report is basically an index for the detailed cross sections that follow in said report. According to Figure TM3-3, both cross sections A-A^1 and B-B^1 are north of Los Osos Valley Road and terminate northeast of the cemetery. Cross sections D-D^1, E-E^1 and F-F^1 are all too far west; while C-C^1 is south of LOVR, this cross section is still on the north side of the creek that comprises their northernmost property line. Only the every southerly ends of H-H^1 and G-G^1 are in vicinity of their property. Nonetheless, Mr. Edwards marks up the report's original detailed cross sections (Figures TM3-4, TM3-5 and TM3-6) of A-A^1, B-B^1 and C-C^1 ransom note-style to show that the eastern portion of the cross sections are representational of my parents property, where they are located too far north. However,

it is notable that the two detailed cross sections H-H[1] and G-G[1] have not been included. Not only are his alterations inaccurate, they are deceptive and misleading.

In his DEIR comments he attempts to refute that Strand A of the Los Osos Fault traverses their property (page 3). He attempts to cite some PG&E 1988 Fault Mapping of the area, but no map is provided. Furthermore, as stated above, he is not registered geologist or engineer, and does not possess the qualifications to support such a statement.

He also states that their property was screen out because of insignificant road improvements. While the needed improvements to LOVR may be insignificant, those to the access easement would not. It is uncertain if at this point whether the current roadbed is even within the original easement. Additionally, as a wastewater plant would be a new use of the land, the access road would need to be upgraded to meet current County standards based on use, level of service, and to meet emergency access requirements. The streambank is actively eroding, and is adjacent to fish-bearing stream. Upgrading the road would not only require grading, but would also trigger significant improvements for erosion control while protecting fish habitat, all for the life of the project. Moreover, it reasonable to argue that such a significant road upgrade would not only result in the conversion of the adjacent farmland through which the road would traverse, but would also have growth inducing impacts.

What is perhaps the most galling of Mr. Edwards DEIR comments, is that on page 3 where he infers, implies and insinuates that my parents might actually indeed be willing sellers:

> "Most notable is the statement of unwillingness to sell on the part of the property owners. Other **misplaced** (emphasis added) reasons… ."

Mr. Edwards persists in asking that the County do a co-equal CEQA analysis of their property for the wastewater project. At this point, only a cursory level of review has been conducted of their property, and would not be adequate for CEQA purposes. Obviously conducting a more detailed review of my parents' property, as advocated by Mr. Edwards, would represent a serious back-pedaling on the part of the County because it would require additional time and another significant outlay of taxpayers' money. This would ultimately increase the property tax assessment that will be levied against each parcel, i.e., property owner, in the tax rate area.

One of the main purposes of the CEQA is to provide transparency to the decision-making process especially with respect to environmental issues, but apparently Mr. Edwards does not believe this applies to him: he has no interest in the property yet he continues to insist on further study, i.e., spending taxpayers money, of the Gorby property, but fails to disclose his true intentions. Thank you for your consideration.

Sincerely,
Michelle Nielsen
525 Second Ste. #211
Eureka, CA 95501

Santa Lucia Chapter
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San Luis Obispo, CA 93406
(805) 543-8717
www.santalucia.sierraclub.org

April 20, 2009

San Luis Obispo County Planning Commission
1055 Monterey Street
San Luis Obispo, CA 93408

RE: 4/23/09 meeting, hearing item #1, Development Plan/Coastal Development Permit for Los Osos Wastewater Project

Honorable Chair and Commissioners,

In conditioning the Coastal Development Permit for the Los Osos Wastewater Project, the Sierra Club urges you to heed the directive of the California Coastal Commission, which, in its 3/25/09 letter to County Public Works Director Paavo Ogren from Coastal Program Analyst Jonathan Bishop, points out that the project should "assist in addressing community water supply problems [as] part of a broader discussion of community needs and benefits," and notes that the project represents "a significant public infrastructure investment which is capable, if properly conceived, designed and carried out, of achieving multiple public and community benefits."

In order to achieve this goal, the County must first re-think its approach to the project as conceived and carried forward thus far as a series of "silos" – with the collection system, treatment technology, and effluent disposal/reuse all treated essentially as separate components with little effect on each other. This philosophy was manifested in the statement, reiterated several times from the dais at the County Board of Supervisors meeting of April 7, that the collection system "has nothing to do with" treatment, disposal and reclamation options.

The collection system chosen determines the treatment technology and type of treatment plant, and the potential for re-use of effluent. At every step, the choices made incur or avoid a host of environmental impacts.

Many of the impacts the FEIR presents as mitigated or unavoidable can in fact be significantly reduced further or avoided by means that have been inadequately reviewed. The FEIR also overlooks or understates project impacts that require mitigation.

Green House Gas

The "silo" problem in the analysis of the project components in the EIR is most evident in this impact category. The EIR assigns a higher level of GHG impacts to a STEP system as compared to a gravity system due to the necessity of adding methanol, a carbon source, to STEP effluent to achieve mandated levels of denitrification. But there is no necessity for the removal of nitrates, or the addition of methanol, or an increase in GHG emissions, if the ultimate destination of the effluent is tertiary treatment and disinfection for use on crops, rather than disposal. The County's original decision to treat effluent to a secondary level and dispose of it, rather than designing and siting the project for tertiary treatment, storage ponds and reclamation, drove its assessment of denitrification requriments, and hence GHG impacts.

Impacts of gravity

The County maintains that the common problem of inflow/infiltration of groundwater into the unsealed pipes of a standard gravity collection system can be mitigated with a promised repair & maintenance program – the costs of which are likely to increase dramatically in the latter half of the system's lifespan – and that the fact that a sealed, pressurized STEP/STEG system has far fewer I/I issues and far easier detection and repair methodology does not qualify it as a project alternative with a reduced environmental impact. But the County's Fine Screening Analysis estimates an average wet weather flow for a gravity system 200,000gpd in excess of the wet weather flow for a STEP system due to I/I. The LOWWP "Loads and Flows" Technical Memorandum notes that a gravity system would have a peak storm flow 800,000gpd greater than that of a STEP system. High peak flows equate to an increased susceptibility to the uncontrolled release of raw or partially treated sewage at the treatment plant.

The DEIR inadequately assesses impacts on cultural resources of a gravity collection system:

Appendix H: Cultural Resources
"The gravity collection systems allow some flexibility in the placement of the lateral across private property. In areas of high archaeological sensitivity (e.g., within site boundaries or in the vicinity of known human burials) it may be possible to bore beneath the deposit for placement of the lateral."

Stating what "may be possible" does not constitute avoidance or mitigation of impacts under CEQA. Directional boring/trenchless technology is commonly used with STEP/STEG effluent sewers; its use with gravity collection systems is problematic due to significantly higher cost with larger diameter pipes and the need to maintain grade. A STEP/STEG system uses flexible, small-bore pipe, not dependent on grade, laid by directional boring, and can easily avoid sensitive locations. The drilling head can be deflected by changes in soil composition, rocks, etc. Directional boring is not practical for a gravity sewer because it is virtually impossible to maintain line and grade. A gravity system uses a large, rigid pipe, laid in a deep trench and is required to maintain grade. While it may be possible to utilize boring on service laterals, the EIR needs to state how this can be done with sewer mains installed at minimum grades, include a cost analysis, and assess the likelihood of this procedure being used in avoidance of impacts to sensitive archaeological locations in view of its cost.

Broderson

The proposed Broderson leachfield is calculated as having an effluent disposal capacity of 448 AFY, of which some 22 percent is estimated as percolating to the lower aquifer, equating to about 100 AFY of recharge to the lower aquifer and a corresponding reduction in seawater intrusion. But the proposed application rate of effluent for disposal at Broderson has declined from an original calculation of 30 gallons per day per square foot to 3.1 gpd/sf – 2 percent of the leachfield's observed infiltration rate and 12 percent of the maximum design application rate. The FEIR is silent in response to the question of how 100 AFY will reach the deep aquifer, achieving a .22 value of seawater intrusion mitigation based on 448 AFY of effluent, in light of this the greatly reduced application rate. (3-7)

Sludge

The FEIR states that that the volume difference in sludge production between a gravity and STEP/STEG system (75 percent less volume than gravity) presents "no substantial differences in the risk to human health or the environment" (3-904). See the Center for Sludge Information brief "Heavy Metals in Composted Sewage Sludge & Agricultural Soil," attached, for a discussion of the comparable content of the sludge produced by the Morro Bay/Cayucos Wastewater Treatment Plant. As the brief states, "The continued unregulated land application of this material will result in the accumulation of these, and other contaminants concentrated in sewage sludge, in local soils." The County's argument that there is no environmental advantage to be had in an alternative collection or treatment system for Los Osos that produces significantly less of this toxic byproduct than does the

collection and treatment system in the County's "environmentally preferred alternative" is not compelling.

Treatment

To the extent that the County's assessment that Proposed Project 4 represents the Environmentally Superior Alternative is correct, we agree insofar as it includes facultative ponds as the treatment technology. AIPS-type ponds would mean even less sludge production and hauling achieved at the treatment stage, with the added advantages of low cost and low energy input, and with community and environmental benefits inherent in the demonstration of reuse potential for horticulture, agriculture and aquaculture, and the habitat value afforded wildlife in nesting and foraging. The ecological value of a freshwater pond and riparian vegetation would provide benefit to both residents and migratory wildfowl.

The County has revised its assessment of facultative ponds as part of the environmentally superior alternative subsequent to the DEIR due to its revised estimate of GHG emissions, scoring facultative ponds for high GHG emissions due to off-site chemical production. The County now states that Biolac or oxidation ditch treatment may be environmentally superior. If the county's assessment of increased GHG emissions for off-site chemical production is a reference to denitrification, see our comment under "Greenhouse Gas."

Conservation

From the Draft EIR, 5.2-19: Project-Specific Impact Analysis:
"Implementation of the proposed project would reduce septic effluent discharge into the perched aquifer (Zone A). Therefore, the project would reduce the quantity of groundwater within the perched aquifer. However, the exact quantity of reduction within the perched aquifer is unknown, and the potential impact on groundwater flow to surrounding surface water features is speculative given that the amount of perched groundwater currently flowing to surface water features is not known."

In response to our comment pointing out the need for additional mitigation measures due to the obvious uncertainty of impacts to groundwater, the FEIR stated that this was not a comment "on the contents of the Draft EIR" and therefore "no further response is required."

In response to the question of the necessity of regular flushing of the pipes of a gravity system (3-905), what volume of water would be required for this operation, and how that water volume would compare to the amount of water conservation and seawater intrusion mitigation projected to be achieved by a 10 percent reduction in residential water use, the FEIR states that the level of development in Los Osos assures the minimum flows necessary to operate a gravity sewer even with the projects' water conservation component. The FEIR is silent on the question of how high a ceiling the minimum flow requirement may place on conservation beyond the project's proposed 10 percent reduction, an especially pertinent question in light of the much higher conservation levels now being urged by state agencies. Crites and Tchobanoglous note that gravity sewer operation is "problematic…where water conservation reduces the wastewater flows significantly" ("Small and Decentralized Management Systems," Crites, Tchobanoglous, 1998).

Dewatering

In response to the concern of the Regional Water Quality Control Board over the DEIR's failure to adequately characterize the impacts of deep trenching (gravity) vs. shallow trenches (STEP), the FEIR responded by comparing the average 8-foot depth of a STEP tank excavation with the 8-foot depth of "75 percent of a gravity collection system." On this basis, the FEIR concluded that "the construction dewatering requirements of the two systems, and consequently their associated environmental effects, appear to be similar in nature" (3-47).

Aside from the inadequacy under CEQA of presuming to compare and analyze alternatives and their impacts by way of the statement that they "appear to be similar in nature," there is no comparison between the dewatering requirement for a STEP tank excavation and the dewatering required for laying a gravity pipe in a trench. If in high groundwater, a STEP tank site need only be pumped briefly,

sufficiently for the tank to be placed without floating on water. A gravity pipe trench must be completely pumped out, for its full length, for as long as necessary – which can take several days -- until it is dry and water is no longer entering the trench.

Gravity pipes not included in the "75 percent" of the system excavated at a depth of 8 feet can range down to 23 feet deep.

Disposal/Reuse

The Coastal Commission has commented that tertiary treated wastewater would minimize the significant impact on prime ag land that this option presents if carried out with secondary treated effluent on the Tonini site. They did not, however, address the ongoing impact of exporting treated water out of the basin. This is the fundamental problem with the Tonini/sprayfields option. The cure for this impact is relocation of the treatment plant and storage ponds to a location over the basin, in proximity to likely ag reuse sites. This will also facilitate ag exchange and a higher level of mitigation for seawater intrusion, allowing for year-round use and winter storage, with no sprayfields or the necessity of disposal at Broderson.

By heeding the Coastal Commission's recommendation to bring forward a project with multiple public and community benefits, the Planning Commission could assist the greening of this project's infrastructure via permit conditions facilitating water reuse, ponding/habitat, LID water quality mitigation measures, etc. This would also assist in cost reduction of the project through the acquisition of grant funding. To the extent eligible applications are received, federal law requires that not less than 20% of the $280 million in federal stimulus money allocated to the State Water Board go for "green infrastructure, water or energy efficiency improvements or other environmentally innovative activities."

Thank you for your consideration of these concerns.

Andrew Christie
Chapter Director

Attached: "The Los Osos Sewer Needs Work," Santa Lucian, April 2009
"Statement of Key Environmental Issues for the Collection System of the Los Osos Wastewater Treatment Project," Sept. 9, 2008
"Heavy Metals in Composted Sewage Sludge & Agricultural Soil," Center for Sludge Information, 2009

Statement of Key Environmental Issues
Los Osos Wastewater Treatment Project: Collection System

EXECUTIVE SUMMARY

Central to the missions of our groups is sustainability – protecting, preserving, and restoring for future generations the environmental, social, and economic gifts and opportunities we enjoy. Integral to this larger mission is protecting the past, the cultural resources of the California Native American Chumash, and, preserving and enhancing local watersheds, on which other vital systems depend, including coastal ecosystems. We agree that selecting the appropriate collection alternative for the LOWWP, a major component of the project, is key to the project's sustainability.

To achieve sustainability the collection system for the LOWWP should:

- Provide the greatest possible protection against overflows and other releases of partially treated or untreated wastewater from the system, which could pollute Morro Bay Estuary and other sensitive coastal ecosystems (e.g. Sweet Springs Nature Preserve).
- Provide the greatest possible protections to the groundwater of the Los Osos water basin.
- Avoid environmental impacts related to construction and installation of the system to the greatest extent possible, including the impacts of open trenching, e.g., dewatering, soil stabilization, and street reconstruction.
- Avoid impacts to Native American Chumash sites to the greatest extent possible.
- Provide the most energy-efficient solution and enable the use of clean, renewable energy sources, avoiding environmental impacts related to non-renewable energy production (e.g., GHG emissions).

The project's environmental sustainability is ultimately tied to its social and economic sustainability. Therefore, we believe that the project should be as affordable as possible to promote the project's sustainability.

Considering the site-specific characteristics of Los Osos – proximity to Morro Bay National Estuary (a State Marine Reserve), a Prohibition Zone, hilly terrain, sandy soil prone to shifting and liquefaction, high ground water, and sites of cultural significance to the California Native American Chumash – we agree that a STEP/STEG collection system is the most environmentally appropriate alternative. Based on our review of the LOWWP project reports and our own research, a STEP/STEG collection system affords significantly greater protections to the groundwater, sensitive ecosystems, and culturally significant sites in the area than either a conventional gravity collection system or a low pressure-conventional gravity combined system (LPCS) – while also providing other benefits important to a sustainable project.

We thank Chairman Patterson for the opportunity to provide input on this important matter, and the Board for its support for sustainability as stated in the LOWWP *Mission Statement*. This report contains our analysis of STEP and gravity collection systems, and conclusion regarding the collection system we see as the environmentally appropriate solution to meet the complex needs of Los Osos.

INTRODUCTION

After the August 5, 2008, San Luis Obispo County Board of Supervisors Los Osos Wastewater Treatment Project (LOWWP) Update, Chairman Patterson requested that local environmental groups prepare an informational document that analyzes the environmental benefits and impacts of the collection systems under consideration for Los Osos and include a recommendation for an environmentally preferred system. The following is the work product of the San Luis Bay Chapter of the Surfrider Foundation, Santa Lucia Chapter of the Sierra Club, SLO Green Build, Los Osos Sustainability Group, The Terra Foundation, and Northern Chumash Tribal Council.

The collective mission of our organizations is to preserve, enhance, and protect the biological health of our coastal environment and its contributing watersheds as well as the cultural resources of the California Native American Chumash. We are aligned with the statement of Jonathan Todd, CEO of the natural resources planning firm Todd Ecological, Inc., that the fate of the bay is dependent upon the town's having a managed wastewater system.[i] Los Osos' proximity to the least tidal area of the bay makes a sewer system a necessity. The consideration of the type of collection system and the treatment plant's location is also vital to the protection of the coastal environment and watershed.

We appreciate Chairman Patterson's request that we *differentiate* between the two primary collection systems being considered, STEP/STEG and conventional gravity combined with low pressure. We recognize that the Draft EIR has not yet been released nor has the NWRI Independent Peer Review occurred. We are specifically responding to Chairman Patterson's request for input at this time and hope that the following will raise issues that will receive further evaluation in the environmental review process.

BACKGROUND

Los Osos is located on the "Back Bay" of the Morro Bay National Estuary. A portion of the community, about 5,000 residences, has been designated a "Prohibition Zone" by the Central Coast State Regional Water Quality Control Board. This portion of the community, much of it adjacent to the bay, is the site of the LOWWP. The terrain in the Prohibition Zone is hilly with sandy soil, so the area is prone to ground movement

and liquefaction with earthquakes or severe weather conditions. Due to the hydrogeology of the basin, many areas have high groundwater, even in the higher elevations, while the Prohibition Zone's location makes the groundwater basin (and collection system) prone to the effects of seawater intrusion – a factor particularly relevant with predicted sea level rises due to global warming trends. Having been a district of Chumash villages for thousands of years, Los Osos is situated on top of land that is of great sacred and cultural significance to the California Native American Chumash. Further, socio-economic factors come into play. A significant percentage of residents are retired, on fixed incomes, with most of the community middle and lower income. For these reasons, constructing a wastewater project in Los Osos requires a balance of environmental, cultural, social, and economic considerations in order to decide the most appropriate collection system solution. The solution must be in accord with the balanced metrics of Environmental, Social, and Financial Sustainability.[ii]

A key consideration is the fact that the portion of the Morro Bay Estuary adjacent to Los Osos and the Prohibition Zone was recently designated a State Marine Reserve. The Department of Fish and Game has stated Marine Reserves "shall be maintained to the extent practicable in an undisturbed and unpolluted state," and that "Take is not limited to fishing activities…. The high level of protection created by an SMR [State Marine Reserve] is based on the assumption that no other appreciable level of take or alteration of the ecosystem is allowed (e.g., sewage discharge…)." [iii]

Alex Hinds, former SLO County Director of Planning and Building, noted, "As wetlands continue to disappear, Morro Bay's international significance continues to grow. Morro Bay supports many birds protected by international treaty and provides a secure harbor for offshore marine fisheries." [iv] Unlike the recent CMC 20,000 gallon raw sewage spill into Morro Bay, a spill from Los Osos would not have 6 miles or 10 minutes of dilution provided by creek waters before impacting the bay. The impact would be to the part of the bay with the least tidal flux. Therefore, it is imperative to build a collection system that offers the greatest protection to the bay.

DISCUSSION

In our analysis of the two collection systems, we have identified several key issues relating to wastewater collection and have examined each collection system within the context of these issues:

1. I/I (Inflow/Infiltration) and Exfiltration

In line with our mission to preserve, enhance, and protect the biological health of our coastal environment and its contributing watersheds, one of our primary concerns is I/I (Inflow/Infiltration) and exfiltration. I/I is water leaking

into a collection system; exfiltration is sewage or effluent leaking out. Both occur where a system is not sealed (water tight). Some main sources of I/I are rainwater (during storms), seawater (in locations near a bay or open ocean), and groundwater (in high groundwater areas). A system prone to I/I is also prone to exfiltration because both originate from leaks in a system. Peaks in I/I can lead to SSOs (Sanitary System Overflows), while significant exfiltration can pollute ground water and surface waters (through subsurface percolation and seeps). SSOs and exfiltration are leading causes of ground and surface water pollution in the United States.[v]

Contamination from raw sewage leaks would violate protection measures afforded by the bay's designation as an SMR and would be detrimental to the health of the bay, local wildlife, and the fishing industry. Prevention of sewage spills and unregulated discharges that would degrade coastal water quality or harm marine resources is consistent with Sections 30230 and 30231 of the Coastal Act, as well as Section 2852(d) of the California Fish and Game Code.

By demarcating part of Los Osos a "Prohibition Zone", it appears that the CCRWQCB identified what they see as the "low-lying area." As such, the structural integrity of the collection system, be it STEP or conventional gravity, is key to preventing I/I and exfiltration into the groundwater basin and SMR. Furthermore, future sea level rise could cause additional I/I and exfiltration issues that need to be considered. Conservative global warming predictions estimate sea level rise to be between 8 inches to two feet by 2050.[vi] This will only be 35 years into the LOWWP's lifespan. It has also been predicted that the rise in tides will bring larger coastal storm events, which further affirms the need for a sealed pipe solution that minimizes I/I and exfiltration and avoids capacity stressors to the system.

STEP/STEG Collection System:

The STEP/STEG collection system (hereafter referred to as STEP) by design is a sealed pipe solution, with pipes laid (on average) at 4 feet deep following the natural topography. Because of the shallowness of the pipe (compared to gravity pipe being between 7'-23' deep) there is ease in leak detection, clean up and repairs. The matter transported through the pipes is effluent, not biosolids sewage as with gravity, thus reducing the impacts of leaks polluting the groundwater. Furthermore, there is a greater soil interface with STEP, which creates a barrier to pathogen transport. Any excessive pumping due to leaks would be known immediately through the nearly real-time feedback information of STEP pump activity; if there were a pipe rupture or pinhole leak, it would be detected early on.[vii] STEP systems do not require manholes, further reducing potential I/I that would result from runoff or storm events.

The most likely place for I/I issues in a STEP collection system is between the STEP tank and connection to the house. Prevention of I/I at this location can occur with maintenance and monitoring just as with on-lot monitoring of I/I with a gravity collection system.[viii] As noted in the Technical

Memorandum, "Flows and Loads", I/I within a STEP collection system "presumably would be much lower than that estimated for a gravity collection system." [ix] Per Dr. Tchobanoglous' comments in the ***Release of Draft Fine Screening Report***: all existing septic tanks must be replaced if a STEP system is used. This is to assure a watertight system from the beginning.[x]

Conventional Gravity Collection System:

A conventional gravity (combined with low pressure) collection system (hereafter referred to as gravity) can also be fusion welded, but the LOWWP Project Team has not indicated a firm position on the scope and extent of sealing. This is best summarized by an excerpt from the Technical Memorandum, "Flows and Loads", which states, "If a gravity collection system is selected, only a system that was constructed of fusion-welded PVC piping could be operated with as little I/I as the other types of systems." [xi] The LOWWP ***Fine Screening Analysis*** points out that an active maintenance program can reduce I/I in a gravity collection system, but the maintenance would be more expensive than for STEP.[xii] More detailed concerns include the following:

- A conventional gravity system means 45+ miles of pipe laid will have approximately 12,000 unfused joints (this figure does not include the additional 5,000 connections to homes nor the lateral joints every 20 feet from the main to the residences).[xiii] Even with the newer PVC pipe, gravity bell and spigot joints are known for loosening over time and will be laid at a ***minimum*** of 7 feet in depth (pipes will be laid 7'-9' deep in 63% of the roads, 10'-14' deep in 34% of the roads, 14'-18' deep in 2% of the roads and 18'-23' deep in 1% of the roads - compared to 4 feet for STEP), making leaks more difficult to detect and expensive to repair.[xiv] According to the LOWWP ***Fine Screening Analysis***, Section 1.3, there is a higher risk of ground water pollution with gravity than with STEP because of the bell and spigot joints loosening over time. Exfiltration from the loosened joints would further pollute Los Osos' drinking water as well as have damaging impacts to the bay.[xv]
- The sandy soils of Los Osos make conventional gravity bell and spigot pipes particularly vulnerable to earthquakes, increasing the chances of I/I and exfiltration.
- 807 manholes (each with 2-4 unfused manhole penetrations) are proposed for the gravity collection system, where STEP has none.[xvi] Here, too, is an opportunity for I/I and exfiltration: rainwater that would have recharged the aquifer is taken to the treatment plant for treatment instead, and, in a major storm event, this load on the collection system can cause sewage to be pushed up through these openings. Again, STEP is a sealed system so these

issues are negligible. Furthermore, the STEP tank is designed with a 1-2 day emergency holding capacity for a storm event.

- For Los Osos, a conventional gravity collection system requires 20 pump stations, which also makes the system more susceptible to I/I and exfiltration due to surges and/or system failures (pumps and valves). Larger conventional gravity pipe (8" diameter) allows for greater I/I, whereas STEP's 3-4" diameter pipe is more restrictive simply because of the size. As the NWRI Independent Advisory Review stated December 4, 2006, "The economic benefits to reduced inflow and infiltration (I/I) achieved by the use of small-diameter effluent pressure collection should be considered in the cost estimate for alternative treatment technologies." [xvii]
- It is our understanding that at present 5% of the gravity collection pipe will be laid in groundwater thus requiring dewatering to install it. This will also make the pipe more susceptible to causing groundwater pollution from exfiltration.
- Unlike a STEP tank, which settles out greases through pretreatment, gravity collection pipes carry greases to the treatment plant. As stated by the State Water Sources Control Board, grease blockages (along with manhole structure failures, pump station mechanical failures and excessive storm or ground water I/I) are a major cause of SSOs.[xviii] SSOs may pollute surface and ground waters, threaten pubic health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.[xix]
- The newer PVC gravity pipe has a maximum allowable exfiltration rate, which indicates that exfiltration is assumed and already calculated into the system's design.[xx]

Summary:

The LOWWP *Fine Screening Analysis* estimates the average wet weather flow for a LOWWP conventional gravity system will be 200,000 gallons/day more than for a STEP system due to I/I. The LOWWP Technical Memorandum "Loads and Flows" estimates a gravity system's peak storm flows will be 800,000 gallons/day more than STEP (2.5 million gallons/day versus 1.7 million gallons/day). These peak flows make a gravity system more susceptible to controlled or uncontrolled releases of partially treated or untreated sewage.[xxi] The Regional Water Quality Control Board notes, "Communities need to address overflows during sewer system master planning and facilities planning," and, based upon these findings, a collection system that uses sealed pipes would be environmentally preferable to minimize I/I, exfiltration, and associated releases of sewage as well as to allow for diagnosis and repair of breaks or leaks in the system as they develop.[xxii] Therefore, we see STEP as the environmentally preferred collection system technology as regards this key issue.

2. Soil Disturbance - General

Soil disturbance is a key issue with two separate components: General, and, California Native American Chumash Sites. This section addresses the general issues of soil disturbance, runoff pollution, road and traffic disruption and personal property disruption. The size and depth of soil displaced for gravity pump stations and for the 45+ miles of deep trenches for gravity pipe to be laid or for placing STEP tanks into the ground on properties will be analyzed.

STEP/STEG Collection System:

STEP tanks require soil displacement approximately 8'W x 14'L x 8'D (approximately 23 cubic yards) to accommodate the 1,500 gallon tank measuring 6'W x 11'L x 6.25'D.[xxiii] To reduce disturbance of personal property in the case of a STEP collection system, boring (as opposed to trenching) can be used to connect the lateral pipe to the STEP tank. There is very little road/traffic disturbance for boring the 4-inch diameter opening for inserting STEP pipe in roads, and it can be laid within 12-18 months. To further reduce soil disturbance, with 75% of the septic systems in front yards, STEP tanks can go where septic tanks are now with site enlargement. STEP tanks are approximately 50% larger than the preexisting septic tanks.[xxiv] Boring avoids the significant impacts and mitigations associated with excavation, runoff pollution, and dewatering open trenches in high groundwater areas (e.g., disposing of the polluted water).

On-lot disturbance for monitoring and maintenance is equivalent to other utilities' on-lot disturbance (e.g. electricity, water, and gas) though usually only once/year instead of once/month.

Conventional Gravity Collection System:

For gravity, pipes will be laid 7'-9' deep in 63% of the roads, 10'-14' deep in 34% of the roads, 14'-18' deep in 2% of the roads and 18'-23' deep in 1% of the roads.[xxv] It is estimated that the width of the 7'-8' feet deep trenches will be a minimum of 6 feet for the trenches spanning 45+ miles.[xxvi] A gravity collection system will also require disturbance of personal property in the form of trenching the lateral connection to the house and the decommissioning of the septic tanks.

There will be additional gravity collection soil disturbance for building 12 Pocket pump stations (10'L x 10'W x 10'D), 6 Duplex pump stations (10'L x 10'W x 10'D), and 2 Triplex pump stations (12'L x 12'W x 12'D). Additionally, Duplex and Triplex stations require a standby power station that will also add to soil disturbance.[xxvii]

Open trenching requires shoring, restabalizing soils, and reconstructing streets for the 45+ miles of trenching as well as for the 20 pump stations. Unlike STEP, the soils removed are hauled away and new material brought in that can be

compacted and stabilized to allow maintenance of the required pipe grades. The trenches must be dug deeper than the actual pipe level to allow room for the new compactable material.

On-going monitoring and maintenance will be an on-lot disturbance to prevent on-lot gravity I/I and exfiltration.

Summary:

Conventional gravity trenching will greatly impact roads/traffic for a minimum estimated time of two years.[xxviii] The reduced time to bore for STEP pipe means lower construction costs and fewer impacts to roads and traffic. Based on the similarity of width and depth, the calculations of mileage length required to install 5,000 STEP tanks (compared to the 45+ miles of gravity pipe trenching) is less than 14 miles and is only 7 miles if STEP tanks are placed where the septic tanks are now.[xxix] The cubic yard soil disturbance estimates are 440,000cy for gravity versus 260,000cy for STEP.[xxx] We understand that the County is considering trenching the STEP lateral pipe with 4-feet deep trenches (but bore the 45+ miles for STEP mains). This trenching of the laterals appears unnecessary when horizontal boring can be utilized and displaces significantly less soil. Based on our analysis, we disagree with the statement on soil disturbance made by TAC member David Dubink during a meeting of the LOWWP Technical Advisory Committee estimating that STEP and conventional gravity collection systems will displace an approximately equal amount of soil, and instead find that STEP/STEG will displace less soil.

3. Soil Disturbance – Native American Chumash Sacred Sites

The town of Los Osos, the Valley of the Bears, was built on an ancient Chumash district, multiple villages occupied for thousands of years.[xxxi] In 1990, over 60 new Chumash archaeological sites were recorded in the area of Los Osos.[xxxii] Because of this, the aforementioned environmental groups support the Northern Chumash Tribal Council (NCTC) in their position that "the least amount of ground disturbance in Los Osos is the best." [xxxiii] Ancient Chumash sites are to "remain avoided whenever possible and complete data recovery when we have to disturb or destroy a site. Ancestral burials need to be avoided at all cost, and a plan in place for unavoidable encounters." [xxxiv]

Section 30244 of the Coastal Act also provides protections to archaeological and paleontological resources as identified by the State Historic Preservation Office requiring reasonable mitigation. Development would not likely be prohibited based on the presence of these resources, but steps to minimize impacts to these resources should be part of the development plan.

STEP/STEG Collection System:

The LOWWP *Fine Screen* Section 3.3.2 addresses the impacts of STEP/STEG stating, "Archeological impacts will occur, but determination of extent will be made complicated by subsurface installation (horizontal boring)," meaning damage to a site could occur for approximately 50' before evidence of damage is revealed.

As stated in the previous section, a minimum of 75% of the STEP tanks should be able to be located where there are currently septic tanks, creating less soil disturbance on properties and reducing the risk to California Native American Chumash cultural resources. For roadways, STEP is seen as preferred because the planned depth is 4' for horizontal boring that follows the natural topography. The LOWWP Technical Advisory Committee (TAC) in the *Pro-Con Analysis* showed that STEP is believed to pose less risk.[xxxv]

When discussing the complexity of these issues, Fred Collins, Tribal Administrator for the Northern Chumash Tribal Council (NCTC), said, "With the data available today and with not having any meaningful communication with the County concerning this project, NCTC has determined after meeting with local environmental group members that if the STEP system and Gravity System were to be compared for soil disturbance and if both systems disturb the same amount of cubic soil, the surface 100 centimeters disturbance that the Gravity system would displace would be much more than the STEP system, therefore NCTC is supporting the STEP system. When you add the advantage of boring which is very accurate and with proper Archaeological planning and research using every means known (which includes Test Pits, Core Drilling, Ground Penetration Radar, Knowledge of the Chumash Elders, Geomorphology, Geology, Paleontology and Ground Disturbance Chumash/Archaeological Monitoring), the STEP system will be much more efficient and protect California Native American Chumash Cultural Resources in an effective way that will be the future for project planning." [xxxvi]

If culturally significant sites are encountered in the installation of STEP tanks, greater flexibility and time is afforded to provide for proper care of the sites in accordance with cultural traditions. Furthermore, STEP pipe can be directed around preexisting buried utility lines and archeological sites.[xxxvii]

Conventional Gravity Collection System:

The LOWWP *Fine Screening Analysis* states in Section 3.3.1, "Archaeological resources are located throughout the community and will require pipeline route relocation, or possible reburials" if conventional gravity is implemented, resulting in additional delays, costs and need for Change Orders.

For the NCTC, their greatest concern is the 45+ miles of gravity collection trenching as was confirmed by the LOWWP Technical Advisory Committee's *Pro/Con Analysis* which states that gravity collection poses a "higher risk of impacts on archeological resources." [xxxviii] With deep and wide trenching, sites and burials could be uncovered within the entire 45+ miles of trenched roads for gravity collection pipe because of

Los Osos being a district with multiple Chumash village sites for thousands of years.[xxxix] With gravity systems, downhill slopes must be maintained at all times, therefore, an encountered site must be excavated and burials moved. Collins stated that with gravity collection, "this could be one mass grave relocation project." [xl] This also means the project would be stopped in those places where cultural resources are found delaying the project and increasing the cost.[xli]

Summary:

The information provided above substantiates that the STEP collection system construction would create the least amount of soil disturbance and minimize impacts as they pertain to the California Native American Chumash cultural resources in Los Osos.[xlii]

4. Energy Usage

Energy usage is important to consider within the LOWWP collection system because 20% of energy used in California is for the movement and treatment of water.[xliii] Section 30253(4) of the Coastal Act requires that new development minimize energy consumption. The goal of AB 32 is to meet 1990 levels of energy usage by 2020 and an additional 80% reduction below that by 2050. The present septic tanks in Los Osos require zero energy, and this means any sewer project will *increase* energy use in Los Osos unless it is also designed to *generate* energy. Smart design, such as incorporating solar energy via photovoltaics and capturing methane, can reduce carbon emissions associated with other forms of energy.

STEP/STEG Collection System:

Dana Ripley, CEO of Ripley Pacific Company, estimates the overall power consumption would be 68% less with STEP collection and trickling filter secondary treatment than with the gravity collection/MBR design concept.[xliv] 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." [xlv] In a meeting on August 3, 2007, Greg Nishi, Account Representative for PG&E in San Luis Obispo, expressed to Dr. Mary Fullwood, Chuck Cesena and Dana Ripley that when comparing the STEP design of 2006 to the conventional gravity midtown project, STEP was significantly less demanding in energy usage and would qualify for a rebate to reward the project for its low-energy usage as well as adaptability in utilizing solar power, photo voltaics, for the ½ horsepower (hp) effluent pumps required for 95% of the residences. These low-energy pumps only run approximately 20 minutes/day.[xlvi] It is easier to install solar with STEP collection than with gravity's larger municipal collection system pumps (5 hp and above) at the pump stations. The NWRI

Independent Advisory Review stated December 4, 2006, "The economic benefits of septic treatment [i.e., STEP tank treatment] should be considered in the cost estimates for alternative treatment technologies. Such an analysis should also include the economic benefit of reduced biosolids production." [xlvii] Because a STEP system allows natural processing (primary treatment) of solids on site in the STEP tanks, it reduces the total septage in the system by 75%, thus reducing the energy needed to treat and/or dispose of solids.[xlviii] Lastly, the energy-free STEG component, a STEP tank that relies on gravity instead of pressure, has not been calculated into the STEP collection system design estimates because, as described by Dana Ripley, "We wanted to begin with a conservative starting point on energy consumption and defer the whole STEG issue to the detailed design stage. This is when we will have the resources to do the hydraulic grade profile based on final pipeline routing." [xlix]

Conventional Gravity Collection System:

As stated in the LOWWP *Fine Screening Analysis*, the energy usage of the gravity collection system is estimated at 500,000 kwh/year based on energy required to convey 1.4 mgd to an out-of-town treatment facility. STEP is estimated at 425,000 kwh/year based on energy required to convey 1.2 mgd to an out-of-town treatment facility.[l] If the Low Pressure alternative is utilized in the high groundwater areas it will add approximately 400 2 hp grinder pumps to the gravity system.

Summary:

Since our findings regarding energy usage - which are reflective of industry-based comparative reporting - conflict with the information in the *Fine Screening Analysis* - which concluded that the energy usage of STEP and gravity collection systems would be equivalent - further evaluation of the energy usage information on both collection systems is needed. However, even if after further scrutiny and analysis, energy usage is found to be equivalent, the fact that STEP can easily utilize solar makes it favorable and likely to be rewarded by rebates and/or grants in this time of transition to renewable, low-carbon energy sources by the State of California.

5. Water Conservation

Since water conservation is becoming a necessity for the State of California, and a key focus of the Morro Bay National Estuary Program (MBNEP), the Central Coast Regional Water Quality Control Board (CCRWQCB), San Luis Obispo County, and, the Los Osos Community Services District (LOCSD) - to name a few entities developing water conservation programs and Low-Impact Development (LID) practices, manuals and policy clearinghouses - it is only prudent to select the wastewater treatment option that facilitates the implementation of these measures.

STEP/STEG Collection System:

For STEP, the average wet weather flows are estimated at 1.2 million gallons per day (mgpd) with average peak storm flows estimated at 1.7 mgpd. According to wastewater systems experts, the STEP collection system enables greater water conservation and related energy-savings from reduced water and wastewater pumping.[li]

There may be places where installation of STEP tanks will be in high groundwater areas and will require dewatering. However, dewatering would be limited to an 8 foot single spot compared to an 18 foot extended trench in highly permeable sandy soils with gravity sewers.[lii]

Conventional Gravity Collection System:

For gravity, the average wet weather flows are estimated to be 1.4 mgpd, 200,000 gallons per day (gpd) greater than for STEP.. The average peak storm flows are 800,000 gpd greater than STEP at 2.5 mgpd.[liii]

The high levels of I/I associated with gravity reduce beneficial recharge of the basin's ground water by diverting rainwater into the collection system. I/I represents a substantial source of recharge (200,000 to 800,000 gpd during wet weather).

Gravity collection systems require greater volumes of water than STEP collection systems to function properly (to flush solids through the system), therefore, they set limits on the levels of conservation achievable by individuals and the community.[liv]

The LOWWP *Fine Screening Analysis* states, "a viable project could not result in an increase of the groundwater balance deficit, maintaining the existing basin balance (i.e. level 1) was considered the minimum viable project." Dewatering the trenches to lay gravity pipelines will use a considerable amount of water depleting the aquifer. This water will be polluted in the process and will need to be disposed of elsewhere (thus also a carbon footprint/GHG concern). The dewatering of a Sewer Line Project in Salinas, California, for example, required pumps running around the clock for three weeks before the crew could work on the drained area. The pumps used for that specific project pumped a combined 12,000 gallons per minute in order to dewater the trenches. Because of the impact this would have on Los Osos' groundwater basin and the potential for drawing in seawater intrusion, we ask that the matter of dewatering be fully evaluated.[lv]

Summary:

Because of its ability to operate with reduced flows, the STEP collection system stands out as the superior collection system to facilitate increased water conservation measures.[lvi] As Ronald Crites and Dr. Tchobanogrous state,

> Although the use of conventional gravity-flow sewers for the collection of wastewater continues to be the accepted norm for sewerage practice in the United State, alternative collection systems…are becoming

> increasingly popular. In some areas the use of conventional gravity sewers is becoming counterproductive because the use of water conservation devices continues to increase. The minimum flows required for gravity-flow sewers to operate make them problematic where development occurs slowly in a large development or where water conservation reduces the wastewater flows significantly. In many cases, the water used to flush conventional gravity-flow collection systems for the removal of accumulated solids far exceeds the water saved through water conservation measures.[lvii]

6. Greenhouse Gas Emissions

Greenhouse gas emissions contribute to the rate of global climate change. The Intergovernmental Panel on Climate Change (IPCC) asserts that "most of the observed increase in globally averaged temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." [lviii] The California Global Warming Solutions Act of 2006 (AB 32) requires reduction of greenhouse gas emissions below 1990 levels by the target year of 2020.

The complexity and depth of the issue of Greenhouse Gas Emissions as they pertain to collection systems construction, operation and maintenance is beyond the scope of this document and will be addressed more fully upon the release of the Draft EIR and the analytical report by the NWRI Independent Peer Review. Below, we have provided a brief overview of greenhouse gas issues generally pertaining to the collection systems, regardless of size, etc.

STEP/STEG Collection System:

The LOWWP Tech Memo on Green House Gas Emissions raised significant concern for the emissions of methane by the STEP collection system. We acknowledge their concern as methane is released at the high points within the collection system; however, with innovation the gas could be captured and turned into an asset. This is already being done in 20% of all conventional wastewater treatment plants in the U.S. and typically supplies 30-50% of the plants' energy needs. For instance, Dana Ripley of Ripley Pacific Company recently shared the following:

> Anaerobic pretreatment followed by aerobic polishing can be a potential net energy producer, compared to conventional systems. Even with anaerobic solids digestion, conventional systems are net energy consumers. This is an intriguing concept since the STEP interceptor tanks are in fact already the "anaerobic pretreatment." The only missing element is collection of the biogas (50-75% methane) for energy production. I am currently working on a biogas collection system (from STEP tanks) for a project in the Central Valley and the concept just may have application in Los Osos. I discussed this