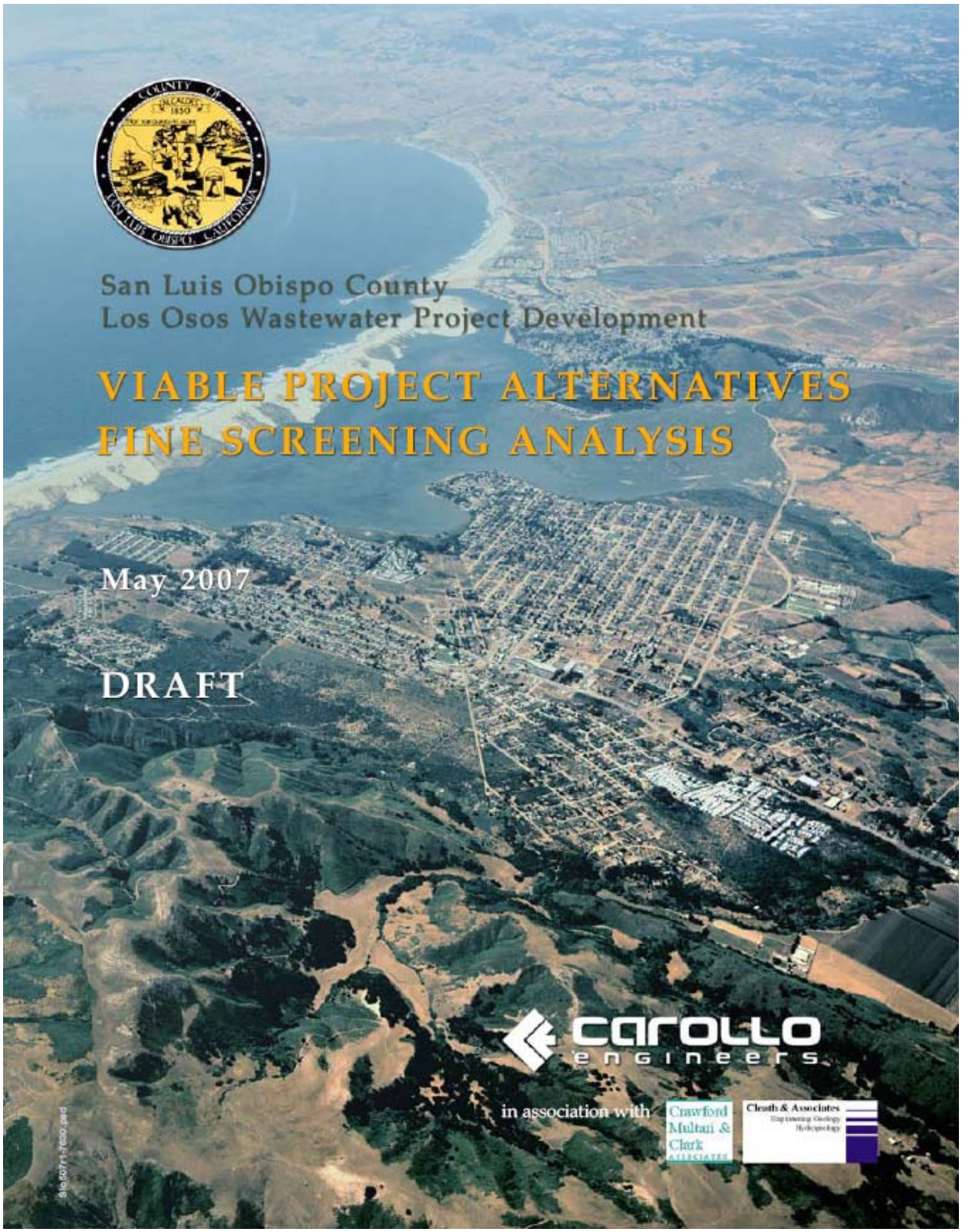
Public Comments and Questions
On the
Draft Fine Screening Report
August, 2007



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Section 1: TAC and Public Questions and Comments

Chapter	Question Date	Question	Answer	Notes
Ch 1	7-11-07	On Table 1.2 Note 1: Does the number of linear feet include piping out of town? What does the 8" diameter pipe refer to? Is this an average size or maybe the most common size?	Force mains to out-of-town treatment would not be included in I & I calculations because they are under pressure. An 8" diameter is the average sewer size.	Answered
Ch 1	7-11-07	On Table 1.2 Note 2: What are the current pumping rates for all three of the water purveyors in Los Osos?	Table 1.2 is referring to infiltration and inflow estimates. The 2005 Sea Water Intrusion Report by Cleath and Assoc. estimates 2320 AFY total purveyor production.	Answered
Ch 2	6-7-07	I cannot find a table to pump effluent back to town (Broderson site) for either a gravity or STEP system. Will this table be created?	Effluent disposal/reuse costs for Broderson are listed in the O&M costs in Chapter 2, with calculations in Appendix A.	Answered
Ch 2	6-7-07	Pumping effluent: Is there a table that includes the cost of pumping effluent back to town (Broderson site) from the treatment plant for either STEP or gravity?	Effluent pump station costs from the treatment facilities are presented in Table 4.9 and 4.10. Associated O&M costs are included in Table 4.13 and 4.14. Appendix A has cost estimates for any additional pumping required for specific Effluent Reuse/Disposal facilities, including capital and O&M costs.	Answered
Ch 2	6-9-07	Page 2.9: One of the major purveyors was obviously Cal Cities, now Golden State, but I am at a loss as to the timing of rejection by the only other "major purveyor", the CSD. If the old board, pre-recall, rejected harvest water from it's own project, that would be significant, but	The statement refers to the potential for nitrate contamination to remain in the upper aquifer harvest water until several years after the implementation of a disposal facility at the Broderson site. The potential use of upper aquifer harvest water	Answered

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		difficult to understand. If it was the new board, post-recall, it would be understandable, but the timing is difficult as they stopped the project almost immediately upon taking office. Can you clarify which CSD board was not willing to accept the harvest water from the Tri-W project? It will help my understanding of purveyor cooperation which is a major consideration in identifying viable alternatives in Chapter 2.	would be phased in, over time.	
Ch 2	6-11-07	In regard to the Broderson site, wouldn't it make sense to keep the properties west of Bayview Heights and up the hill from LOVR on some sort of a cluster system or individual on-sight system so that the water does not have to get piped East to the sewer plant, then get pumped back again to where it came from, only to be put back in the ground to a leach field to go under the homes from which it came. This way it would help save from having excessive water that the Broderson site may not be able to handle at some time. We are really worried about slippage on the hillside. We live on Highland Dr. and have at least 100 ft of sand beneath us.	The sewage from the areas of Highland Drive and Bayridge Estates would still require treatment before it could be disposed of in any leachfields at the Broderson site. A community treatment plant is the most efficient option. After treatment, the effluent would be available for several reuse or disposal options. This would allow for the conservative use of leachfields at the Broderson site, combined with other reuse and disposal option.	Answered
Ch 2	6-14-07	Regarding: Tonini and Turri: how much water can we draw from Tonini? Turri? What is the size of their aquifer? What is the quality of that water? What would be	See Cleath and Assoc. memo. The feasibility of exporting water from those aquifers has not been studied. These questions, as well as	Answered

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		the rough cost of importing water from Tonini and/or Turri?	water rights issues would need to be addressed.	
Ch 2	6-19-07	Suggest amortize cost of Ac ft benefit for each level 1, 2, & 3.	Comment noted.	Comment
Ch 2	6-19-07	Would a re-created wetland at Warden Lake have disposal capacity as well as make the water preferable for re-use?	Constructed terminal wetlands are feasible as a storage or disposal option, if they do not impact existing surface water, such as Warden Lake.	Answered
Ch 2	6-19-07	If this community has already attained level 1 mitigation before project construction begins, how would that fact effect the mitigation cost estimates for other levels?	If the community has completed a retrofit program for conservation, a cost of about $1 million would be avoided. The other mitigation and disposal measures would still be necessary.	Answered
Ch 2	6-19-07	What's the salt-water intrusion mitigation of pumping what's outflowing to the bay/ocean from the upper aquifer and treating for drinking standard or for potable high nitrated irrigation water	Pumping upper aquifer groundwater, in-lieu of lower aquifer groundwater (where the sea water intrusion is occurring) would have a mitigation factor around 0.5.	Answered
Ch 2	6-19-07	How did you determine / calculate "capacity" at Broderson? There is professional disagreement about "capacity" at Broderson. Did you do any of your own analysis? Did you consult soil science engineers too?	The capacity of Broderson has been calculated in numerous studies by engineers and hydrogeologists from several companies. We are continuing to consult with experts on this subject.	Answered
Ch 2	6-19-07	The toilet retrofitting to mitigate seawater	Toilet retrofits conserve water,	Answered

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		intrusion would be exclusive of the retrofitting scams developers are asking for so they can build, right?	regardless of the funding source.	
Ch 2	6-19-07	Have you considered the mitigation cost for Tri-W?	Yes, it is included in the Tri-W project costs.	Answered
Ch 2	7-12-07	Injection wells: What is the cost of using injection wells to mitigated seawater intrusion? Would it be possible to use an existing well to do this?	According to Cleath and Assoc., using a limited number of existing water supply wells as direct injection wells would not be an effective measure to mitigate seawater intrusion. A seawater intrusion barrier system of direct injection wells would need to be specifically design for the horizontal and vertical features of the GW basin, with wells every 500 to 1000 feet. This would require from 30 to 40 injection wells, plus upgraded wastewater treatment processes, blend water wells, distribution system piping and storage.	Answered
Ch 2	7-12-07	Tri-W: Are the leachfields around town proposed in the Tri-W project fully designed?	In-town leachfields, other than Broderson, have been screened out due to their limited mitigation of seawater intrusion.	Answered
Ch 2	7-12-07	Imported water: What is the cost of imported water that would be needed for Los Osos?	The costs and feasibility of imported water have not been carefully analyzed, but would likely be approx. $1200 per acre-foot/year, plus buy-in and capital costs, if excess water is available. A certain amount of	Answered

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			analysis will be necessary during the CEQA review process in 2008. The actually quantity of water that may be needed, if any, depends on the water resources management in the community.	
Ch 2	7-12-07	Clarification: On page 2-2 the Side box says the East side leachfields were not included in Draft Fine Screening Report due to lack of seawater intrusion mitigation. Tonini sprayfields also have no mitigation factor but are included. Please provide more info regarding other potential leachfield sites on the east side.	The east-side leachfields are considered a disposal option. They were not included in the draft Fine Screening Report because other disposal options are more cost effective.	Answered
Ch 3	5/10/2007	Roughly, what is the purchase cost of the STEP/STEG tank, pump and power supply and other necessary eqmt that I as the homeowner will be responsible to pay for?	It is likely the cost of the STEP tank, and pump will be part of the project cost as they are considered part of the system. The homeowners will be responsible for the power supply costs which are estimated in the upcoming Fine Screening Report.	Answered
Ch 3	5/10/2007	The community is going to have a treatment plant and will need a collection system anyway, what is the advantage of having STEP/STEG? I guess what I am asking is, what is the advantage of STEP/STEG over gravity flow? Why not just send the home's effluent directly to the sewer thru laterals to the sewer lines that will eventually be in the street anyway? What is the purpose of having a	The purpose of the STEP tank is to hold the bio-solids that leave the house. There will still be sewer laterals regardless of the type of collection system. The only thing traveling thru the pipes is liquid, which requires smaller pipes than gravity which will contain bio-solids. This also means that the treatment facility will also be smaller than one	Answered

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		STEP/STEG tank?	connected to a gravity sewer.	
Ch 3	5/10/2007	My property is 50 by 110 lot with a 4 bdr 2 ba house. Roughly, what would be the dimensions (length, width, height) of the new tank that I would be required to have installed?	The STEP tanks that will likely be used in the collection system are about 1500 gallons. They are cylindrical in shape with a 5 foot diameter and about 10 feet long.	Answered
Ch 3	5/10/2007	Currently, my septic tank is located in the backyard and presumably my tank will require replacement with the STEP/STEG tank. Will the new tank have to be installed in the front yard nearer to the street or can it be installed into the backyard? Again tank dimensions are a factor here.	You are right in your assumption that your current septic tank will likely be replaced with a new STEP tank. As far as location of the new tank, we are assuming the CCRWQCB will require all the new tanks to be placed in the front yard. However, we understand that it may be difficult to install a tank there and we will try to work around that problem	Answered
Ch 3	6-5-07	My question is are the figures in table 7.4 comparing gravity (Tri-W) to STEP including the "future project" costs for Tri-W project disposal at full build out? If the costs of the Tri-W project are reflected here without full build out costs, but STEP is, then is this a fair comparison?	Table 7.4 compares costs of project options developed for this report (not Tri-W). There are options with both gravity and STEP collection systems. Disposal and reuse components are equally developed for all options.	Answered
Ch 3	6-7-07	Pumping out of town: Table 3.9 lists associated costs for pumping raw sewage to an out of town site with a gravity system. Will a similar table be developed to show the cost of pumping STEP out of town, or is that included in the costs already?	No pump stations would be required for a STEP collection system. The costs to pump sewage from a STEP system to the treatment plant site are included in Table 3.20 (see Note 3).	Answered
Ch 3	6-7-07	Table 3.9 lists associated costs for	The pumps in the STEP tanks have	Answered

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		pumping raw sewage to an out of town site. I can not find a similar table for pumping raw sewage from a STEP system to an out of town site. Will one be developed or am I overlooking something?	the capacity to pump the sewage to an out-of-town site, so a central pump station is not needed with STEP collection.	
Ch 3	6-18-07	Could you please inform Los Osos of what kind of pipes for our streets, are being scrutinized by the TAC. The small flexible Directional Boring pipes will be millions cheaper. Directional boring is shallow and can easily be monitored. Large deep trenched pipes are dangerous for our environment. And all the streets will be deeply trenched. And maintenance is very difficult and expensive. This must be a consideration in the design and choice of project.	Comment noted. TAC pro/con related comment.	Comment
Ch 3	6-19-07	Cost for gravity and the actual constructability are missing and risks need to be valuated and put into the pro/con. Also O&M is incomplete.	Comment noted. TAC pro/con related comment.	Comment
Ch 3	6-19-07	STEP collection uses a 1/3 of the energy compared to gravity collection. Why was that not identified in key points on collection?	Energy costs for gravity and STEP collection systems are noted in Tables 3.19 and 3.20, respectively.	Answered
Ch 3	6-19-07	Dewatering for STEP: What kind of dewatering will be required for the installation of the STEP tanks?	Groundwater in the excavations would have to be pumped out so the tank can be placed on solid ground. Tanks in areas with high groundwater would need straps and	Answered

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			anchors to keep them from floating out of the ground.	
Ch 3	6-19-07	Control box: Where is the control box for the STEP tank located? How big is it and will it get in the way of anything else in the yard?	Orenco's website shows a small control box that looks similar to a controller for a lawn sprinkler system. It could probably be located on a wall of the house.	Answered
Ch 3	6-19-07	Will you be looking at the Orenco project as well? It's a STEP/STEG project estimated to cost Los Osos approximately $50 million. Also, will you look into the Nelson Ponds which offer private low interest funding?	Project selection process related comment. Nelson ponds are evaluated in the Fine Screening Report.	Comment
Ch 3	6-19-07	Alarm system: What kind of system will be in place? Will this be an alarm that goes only to the home or will there be a more central alarm?	STEP systems can be outfitted with a warning light or alarm at the house, with the homeowner responsible to call for service. Or, a telemetry system can be installed to notify a central service center. The Draft Fine Screening Report assumes remote telemetry to a central maintenance operator.	Answered
Ch 3	6-19-07	Back up power: What type of generators are needed for the STEP tanks? Would every property be required to have one? Would this be a homeowner cost or project cost? There is some discussion on page 3-6 of report for back up power for buildings but not really the homes.	STEP tanks have sufficient storage for most power outages, less than a few days. It is not anticipated that any agency would require individual generators for each home. It is typical for lift stations that serve neighborhoods to have back-up power.	Answered

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Ch 3	6-19-07	Odor control: for STEP, how does it work? What kind of control measures will be put in place?	STEP tanks would be vented to roof level, similar to existing septic tanks. Air release valves on the pressurized main lines would be inside of an enclosure similar to a water distribution system, but with a carbon or other type of filter.	Answered
Ch 3	6-19-07	STEP tank excavation: How big is the excavation hole needed for a new STEP tank?	The 1500 gallon STEP tanks are 5 ft diameter by 10 ft long. The temporary excavations should be able to have vertical walls with 1 ft to 2 ft of clearance around the tanks (say 18 inches). The tanks would be buried from about 2 ft to 5 ft deep. So the length, width, and depth would be around 13 ft x 8 ft x 8 ft.	Answered
Ch 3	6-19-07	STEP costs are in a range based on factors that should be better defined costs nailed down. Discuss the factors that require more info to get a more accurate estimate of costs.	The accuracy of cost estimates is discussed in Appendix C—Basis of Costs Evaluation.	Answered
Ch 3	6-19-07	STEP tank retrofit: Is it possible to use a bladder to line the inside of the current septic tank to make it compatible for a STEP system? If not we need to make it clear to the public this is not an option.	The Project Team is not aware of this type of product on the market.	Answered
Ch 3	6-19-07	Will HPDE pipe be used no matter what collection system is selected?	To be determined during the design phase and value engineering.	Answered
Ch 3	6-20-07	Footnote (2) on Page 3-23 says the calculations were based on 4769 connections. Is this counting buildout or	At this stage, the cost estimate is for the Prohibition Zone only.	Answered

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		current numbers? Is Buildout for just the PZ or all of Los Osos?		
Ch 3	6-20-07	Contingency: There appears to only be a 15% contingency on the STEP collection system. Why contingency on collection but not other components?	Both collection systems have contingencies in the estimates. Some aspect of the gravity system have lower contingencies, due to the 100% design and contractor's bids.	Answered
Ch 3	6-20-07	O&M: What are the additional costs for bell and spigot maintenance program? Are they already included in cost estimates?	Costs are included in Equipment Maintenance/Replacement in Table 3.19.	Answered
Ch 3	6-20-07	Easements: Are land easements included in the costs for STEP? Will they be required? What are the costs associated with obtaining easements?	Easements would be required, but could be a condition of hook-up. There would probably not be real estate costs for placing STEP tanks.	Answered
Ch 3	6-20-07	Manholes: Will the manholes be placed 1,000' apart in the gravity system?	Manholes would likely be spaced approximately 500 ft apart.	Answered
Ch 3	6-20-07	Pump stations for gravity: How many pump stations may be required for the gravity system. How big will they be? What is the footprint?	See Table 3.1. The duplex pump stations will be approximately 15 feet deep and 10 feet in diameter. The triplex pump stations will be approximately 15 feet deep and 12 feet in diameter. The pocket pump stations will be approximately 10 feet deep and 10 feet in diameter. All of the pump stations will be constructed below grade. The duplex and triplex pump stations will have a concrete pad that is visible from the street. The largest pad appears to be 48' x 64' with a 65' x	Answered

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			12' driveway. The pump stations will also have an above ground power supply. This can be as simple as an electrical panel or as large as a 14' x 24' structure standing 15' tall.	
Ch 3	6-20-07	Road restoration: Is a road restoration cost included in the conveyance out of town costs in Tbl 3.9?	Since a final location for the treatment plant has yet to be decided, it is difficult to determine how much street would have to be open cut to arrive at that treatment site. Therefore, no road restoration costs were included. Pipeline costs generally include pavement patching as part of the unit cost. Depending on the quality of the road and the impact of pipe installation this may be sufficient. Complete road restoration was not assumed and therefore not included in the costs.	Answered
Ch 3	6-20-07	STEP design: How long will it take to design a STEP collection system?	Six to nine months. This does not include permitting.	Answered
Ch 3	6-20-07	STEP: What about the 25’ lots with concrete in front? Will they still be required to have the STEP tank in the front yard? Are cluster STEP tanks an option?	Some properties will have more difficulty and expense to install STEP tanks than others. Most STEP proposals envision one tank per house.	Answered
Ch 3	6-20-07	Alarm system: Discussion of monitoring. What kind of alarm system was assumed? Is it possible to have a centralized one? Relying on the homeowner to report an alarm is not	STEP systems can be outfitted with a warning light or alarm at the house, with the homeowner responsible to call for service. Or, a telemetry system can be installed to	Answered

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		always reliable. It is possible to break into the lock box where the alarm is to shut it off manually. Suggest perhaps a silent alarm that goes straight to the treatment plant.	notify a central service center. The Fine Screening Report assumes remote telemetry to a central maintenance operator.	
Ch 3	6-20-07	Back up power: What kind of back up power would be needed for the STEP tanks? A back-up generator? Does the project require or suggest any sort of back up power the homeowners will be responsible for?	STEP tanks have sufficient storage for most power outages, less than a few days. It is not anticipated that any agency would require individual generators for each home. It is typical for lift stations that serve neighborhoods to have back-up power.	Answered
Ch 3	6-20-07	Clarify: The additional cost for electrical service in Table 3.15 only applies if SRF money is used.	Table 3.15 would apply under any scenario. Table 3.16 may apply if SRF funds are used.	Answered
Ch 3	6-20-07	Figure 3.7 and Table 3.13: Please clarify the costs the homeowner is responsible for verses the project costs for the scenario with the grinder pump in back.	The Draft Fine Screening Report estimates the homeowner costs include the pipe connecting the home to the new STEP tank, yard restoration, cost to abandon the existing septic tank, and a grinder pump, if needed. The estimated project costs include the new STEP tank, the STEP tank pump and controls, and the pipe connecting the STEP tank to the collection system. (Note that the grinder pump cost and limited access to backyard cost need to be moved to the "Homeowner Responsibility" section in Tables	Answered

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			3.12 and 3.13.) These estimates of homeowner vs. project costs are for comparison of all project related costs. The exact division would be a policy decision of the Board of Supervisors.	
Ch 3	6-20-07	Table 3.18 / 3.17 for overhead and profit: Why is the 15% contingency not applied to conveyance to out of town and on lot from Tri W project?	The high and low range reflects the contingency.	Answered
Ch 3	6-25-07	In reading the Fine Screen Report, we are thankful for the presence of the two tables on page 75, Tables 3.15 and 3.16. From our perspective, it seems that, like so many items at this posting, the estimates may turn out to be considerably lower than the materialized reality of this collection system would be at the time of the hypothetical project completion. Recent experience with partial driveway excavation and restoration to replace a sluggish leach-field with an alternate new leach-bed at our home in Baywood Park suggests to me that the estimates presented in the two tables cited above are in need of a reality check. Two items not mentioned that would add substantial extra dollars to these tables are: A. Finish carpentry, trim and paint at the required new Electrical Sub-Panel. B. "Greenscape" restoration of	Comment noted. TAC pro/con related comment.	Comment

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		disturbed landscaping, landscape irrigation lines, etc. I believe it to be extremely important to flesh out all the costs relevant to the total on-site Electrical Connection expenses so that a truly valid "pro/con" evaluation can take place.		
Ch 3	6-26-07	Table 3.19 Gravity O&M Using 500,000 KWH/YR for gravity power the same as STEP is not technically correct. STEP is pumping clear liquid (water) whereas gravity is pumping raw sewage which is slurry having greater viscosity and specific gravity than water and will have larger line loses (more HP). Power consumption 20-30% is possible. The labor cost for gravity is not enough considering the continuous cleaning of the piping required. Pigging ports are suggested as there will be plugging of the TRIW to treatment line. Considering determination of the manholes experienced in the industry, an annual cost should be included in this table for replacement and repair. Considering a 50 year life and a total cost of $5.8 million for the 807 manholes indicated, you will need an annual allowance of $120,000 added to the $250,000 in this table.	Operation and Maintenance estimates for a gravity collection system are based on engineering analysis and experience from operation of similar collection systems.	Answered
Ch 3	6-28-07	The Gravity system. You have stated that this system rates a “PRO” because it	Comment noted. County process and design phase related comment.	Comment

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		has been designed. This should be examined again for these reasons: The design and drawings of this system are part of the contract that the LOCSD has with MWH. This contract is now in bankruptcy and the ownership of the drawings is not known at this time and may not be determined until the bankruptcy is settled. Not being available, this issue should not be looked at so casually as to say "this system has been designed" The design of a system that terminated in Tri-W being used for a termination at some point east of town may have some portions that can be useful but, in general, it will have to be redesigned. The flow patterns that increase when more connections come on line determine the pipe sizing of the mains and they would be determined by the end terminal of the system.		
Ch 3	6-29-07	Green houses gases: The STEP system releases methane at the tank and air release valves in system, would there still be enough methane for cogeneration at the end?	Cogeneration would be possible. However, it is generally not cost effective for small plants. In addition, the solids treatment process would need to employ anaerobic digestion for methane generation and capture. This process has high capital and operating costs which contributes to the high entry costs for	Answered

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			cogeneration.	
Ch 3	6-29-07	STEP tank replacement: What is the life span of the STEP tanks? How often would they need to be replaced? –if ever? Is this cost accounted for in the cost estimates?	STEP tanks should last a long time, similar to the plastic pipes. Routine maintenance and occasional replacements should be within the O&M estimates.	Answered
Ch 3	6-29-07	Cypress Trees: How much excavation would be needed for the STEP system? Would all the trees be lost? There are some in the Right of Way and some in the front yards. (between 4th and elementary school, Santa Ysabel and Romona)	Trenching for a STEP system would likely be able to avoid major impacts to large trees, directional drilling would have even less of an impact. In many locations, the placement of the collection lines can be adjusted to avoid trees and other features.	Answered
Ch 3	6-30-07	Telemetry for STEP: Has anyone priced a telemetry system installed in each home owners STEP tank and directed to a central control system? If not, could someone take a guess at such a system including hardware, installation, and monthly monitoring costs.	The cost estimates in the Draft Fine Screening Report assume remote telemetry to a central maintenance operator. The system would be through existing phone lines and monitored by the system operators.	Answered
Ch 3	7-5-07	Telemetry for STEP: Are the costs for a telemetry system included in the cost estimates in report? Will the system be wireless? How will it be monitored?	The cost estimates in the Draft Fine Screening Report assume remote telemetry to a central maintenance operator. The system would be through existing phone lines and monitored by the system operators. The estimated cost of $400 for the telemetry system is included in the $2,200 estimate for "pump and controls."	Answered
Ch 3	7-15-07	The Draft Fine Screening Report	The 230,000 LF for gravity is from	Answered

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		indicates different numbers for the linear feet for the collection systems: it shows 230,000 for Gravity to Tri-W; 254,000 for STEP - a difference of 24,000 linear feet. (page 3-3 and 3-6) However, Table 3.9 only shows a difference of 12,500 linear feet for an out-of-town plant. It appears that either the number of linear feet for STEP should be reduced to 242,500, or Gravity should be increased to 254,000. That would add another $1.5M - $2M to the cost of mains for Gravity on Table 3.9; or the cost of STEP mains should be reduced.	the MWH final design for the Tri-W project. It does not include laterals in the right-of-way, which are accounted for separately. (See pages 3-2 and 3-3 and Tables 3.1 and 3.17 of Fine Screening Report) The 254,000 LF for STEP is from the Ripley Report. This quantity includes the laterals to the right-of-way line. (See pages 3-5 and 3-6 and Tables 3.3 and 3.18 of Fine Screening Report)	
Ch 4	6-14-07	How much acreage is required for tertiary treatment?	Additional acreage for tertiary treatment would not be significant.	Answered
Ch 4	6-14-07	Request: Information should be added to each table in chapter 4 showing how MBR technology compares, so a fair comparison to Tri-w can be made.	Comment noted. More information on aspects of the Tri-W project is being added to the final report.	Comment
Ch 4	6-14-07	Is nitrification required for any technology if we do not use Broderson as a leachfield?	Some nitrification/denitrification would probably be required for all of the disposal options. If effluent is applied to crops or grass, the total nitrogen would have to be reduced to a level that would be used by the plants. For Broderson, the total nitrogen would have to be much lower, at 7 mg/L.	Answered
Ch 4	6-18-07	What are the energy requirements for the MBR?	Recent data from MBR manufacturers indicate that the	Answered

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			energy usage assuming a 1.4 mgd gravity collection system would be approximately 1.3 million kWh/yr.	
Ch 4	6-18-07	Why did the report list 0.4, 0.8, and 1.2/4 MGD Denitrification costs, yet later it seems that the whole flow has to be treated? We assumed the denitrification had to be sized for the peak Broderson flow and used 0.8MGD for that calculation, but for O&M we assumed the 0.4 MGD which would represent the average daily flow since it would essentially be shut down during summer months.	Table 4.16 and 4.17 provides estimates for treating a side-stream of the effluent, Table 4.19 assumes treatment of full flow to meet seasonal requirements.	Answered
Ch 4	6-19-07	Which treatment system best addresses removal of endocrine disruptions and other chemical constituents? Membrane Filer technology doesn't / can't remove these…	Biological wastewater treatment process are not designed for removal of these chemicals. Comment noted.	Answered Comment
Ch 4	6-19-07	Will MBR be included in the Fine Screening?	Yes, information on MBR treatment process, as it relates to the Tri-W project will be included in the final report.	Answered
Ch 5	6-19-07	Bio Solids – 80% moisture? Hauling Cheapest? Permit for Hauler (& spreader) Cannot spread until 2 days after rain and not if 30% (or more) chance of rain and have no place or permit to store it.	Comment noted. TAC pro/con related comment.	Comment
Ch 5	6-19-07	Health impact of plant operation and trucking – septage/sludge , CDC, OSHA,	Comment noted. TAC pro/con related comment.	Comment

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Section 1: TAC and Public Questions and Comments

Chapter	Question Date	Question	Answer	Notes
		spores, old/young people.		
Ch 5	6-19-07	How often does sludge have to be removed from the Tri-W site? How is this done?	There would likely be less than one truck load of sludge per working day to be removed from the site. Sludge from the treatment process is pumped into trucks, after the excess water is mechanically removed.	Answered
Ch 5	6-29-07	Energy: Can you list ability for cogeneration for each alternative in Tbl. 5-17?	Cogeneration may not be feasible, due to the small size of the treatment plant.	Answered
Ch 5	6-29-07	Energy: What is the cost estimates for energy for each of the alternatives? Are these included in the O&M costs?	The power costs are included in Tables 4.13 and 4.14.	Answered
Ch 5	6-29-07	STEP tank septage: For the volumes calculated in Table 5.13, do these numbers assume the septage from the STEP tanks will be received at the plant?	The septage from STEP tanks would go to the plant for treatment, including a pond treatment system.	Answered
Ch 5	7-5-07	There are some inconsistent numbers between tables in this chapter. Specifically Tables: 5.7, 5.8, 5.9, 5.11, 5.12, and 5.13.	Comment noted. Typographical and calculations errors will be addressed in the final report.	Comment
Ch 5	7-5-07	What is the difference between digested and non-digested Class A compost? Is there a significant reason to digest? Are the end products about the same?	Digesters reduce volume by removing volatile solids, and they remove pathogens. The end product of composting is similar with and without digestion. Digesters stabilize the sludge and reduce the volume in a very efficient (small) footprint. For certain facilities, available land for composting is limited, making volume reduction	Answered

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			prior to composting critical.	
Ch 5	7-5-07	Buildout numbers: Why is this report using the buildout number of 18,428 people instead of the most recent buildout number of 16,688 people (in the Ripley Report)?	Estimated buildout population is one of several variables in estimating the required capacity of the treatment facilities. The buildout population estimate is consistent with past project reports (including the Ripley Report, page 46).	Answered
Ch 5	7-9-07	Green waste: How much green waste is currently being hauled out of Los Osos annually? Would it be possible to use it for composting of bio-solids? How much green waste would the composting process require?	Approximately 5,200 tons per year of green waste is hauled from Los Osos. This value is fairly constant over the years. It is likely that this amount could be available for composting in Los Osos. Based on a 5:1 blend, this could be mixed with approx. 1,000 tons/year of biosolids.	Answered
Ch 6	6-8-07	Do we have information regarding the type and degree of risk of spillage in the event of flood or earthquake, relative to each site? How do we quantify this?	Geotechnical reports would be completed prior to design of the facilities so structures will be properly reinforced, based on soil conditions and proximity to faults. Sites also need to have an overflow capacity in the event of a system failure at the plant. The top tier sites are all well above the flood plain, so there will be minimal risk of flooding impacts. All sites are vulnerable to a violent earthquake.	Answered
Ch 6	6-8-07	There are some people who are going to get a general benefit from the sewer system going in but will not be assessed.	If water purveyors participate in developing water reclamation facilities, or other water supply	Answered

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		Where do they fit in this whole mess? They should still have to pay, will they get charged somehow?	benefits, their rate-payers would be charged for that portion of the project.	
Ch 6	6-8-07	Is it possible to redesign the Tri-W project to make other treatment technologies feasible there? Perhaps in conjunction with a STEP collection system?	Other treatment technologies could fit on the Tri-W site, but covering or enclosing these technologies for odor control or aesthetics would be more difficult because of the larger footprint.	Answered
Ch 6	6-8-07	What are the costs associated with the pumping station site(s), piping from Tri-W to out-of-town treatment site, and purple-piping back to town (Broderson)?	Pump stations and piping sewage to a treatment plant are calculated in Chapter 3, with an approximate total construction cost of $12M. Piping effluent back to Broderson is in Chapter 2, with an approximate total construction cost of $4.5M.	Answered
Ch 6	6-8-07	What are the options considered for containment in a treatment facility?	Significant odors would be contained and treated. Liquid streams are generally contained in concrete basins or lined ponds with overflows to secondary containment facilities. Chemicals facilities include primary and secondary containment to meet regulations.	Answered
Ch 6	6-8-07	What would be the cost to put sprayfields on Tonin (purchase? Simple agreement with no compensation?)	The conservative assumption is that the land would have to be purchased.	Answered
Ch 6	6-8-07	Do we know what it will cost to build/improve the roads to an out-of-town site, including an intersection with LOVR?	The costs for these improvements were not specifically estimated for the conceptual design alternative analysis. The treatment plant facility	Answered

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Chapter	Question Date	Question	Answer	Notes
			estimates include costs for site facilities with a 30% contingency (See Table 4.9 and 4.10). These site facilities are intended to encompass roadway improvements to the treatment site assuming basic road improvements.	
Ch 6	6-8-07	Creek crossing: what are the risks to spillage? Will recent earthquake construction technology be employed? How much will the permitting process impact the project schedule?	There is always a risk with a creek crossing. However, this is a common undertaking and the technology exists to minimize the risks. Understand that many creeks are crossed with sewer lines elsewhere. Permitting will be more difficult because of the crossing, but there is no way to estimate the potential for delays.	Answered
Ch 6	6-8-07	What is the Tri-W site current market value? (It should be included in the comparison for a true apples-to-apples cost comparison.)	Tri-W is owned by the LOCSD.	Answered
Ch 6	6-14-07	Would ponds (20 acres) require buying two sites, e.g. Giacomazzi AND cemetery or Branin?	Those sites each have about 20 acres of useable land. A portion of an adjacent site could be purchased, if needed.	Answered
Ch 6	6-19-07	Have you considered rising sea levels in the site selection?	The flood potential of each site was evaluated in the Rough Screening Report.	Answered
Ch 7	7-20-07	Why have Purveyor production shifts part of the 3b option and not the rest. Why exclude Broderson from 3b. Add	Level 3b recognizes that there is a certain amount of opposition in the community to leachfields at	Answered

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		Broderson at half capacity (initially) to 3b, you reduce spray fields and storage dramatically, and get more recharge than 3a. (depending on mitigation factor for production shifts)	Broderson. Both Level 3a and 3b achieve similar results, but one does not utilize Broderson. Combining Broderson with other significant water purveyor participation would reach a higher level of mitigation. These options largely depend on the water purveyors and could be implemented to meet water demand at build-out (Level 4). The costs of going from Level 3 to Level 4 are not estimated because they are entirely dependent on the water purveyors.	
Ch 7	7-20-07	Table 2.7 under 3b it shows 'Shift in Production' at 400 ac-ft. Table 7.3 shows 'Shift in Production' at 540 Ac-ft	There are some typographical and calculation errors that will be corrected for the final report, including shift in production for level 2b. However, the actual amount of production shift needed will vary, depending on the alternative source that the water purveyors identify. Shifting to the upper aquifer or east side of town would not have as much benefit to the basin as replacing groundwater pumping with imported water.	Answered
Ch 7	7-20-07	Table 7.5 introduces different numbers for level 3 Sea Water Intrusion mitigation than are presented in Chapter 2 and Table 7.4. 7.5 shows 590 AFY and 620 AFY.	This looks like a typo. For consistency in the report, the estimates for Level 3 should likely be 550 AFY to 600 AFY. However, a Level 3a range of 590 AFY to 620	Answered

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		Elsewhere it is 550 and 590.	AFY is within the accuracy of this conceptual level report.	
Gen	6-18-07	Tri-W: The Tri-W project should be in every table.	Comment noted. More information on aspects of the Tri-W project is being added to the final report.	Comment
Gen	6-19-07	What if a property owner has archeological artifacts – 40 archeological sites in Los Osos who pays for archeological survey/preservation? Couldn't this cost an unlucky property owner $25 – 50,000? Can't you build this into the budget?	Homeowner cost estimates do include contingencies for changes in circumstances.	Answered
Gen	6-19-07	Will an analysis use models and what other types of tools will you and the TAC use to assure they are getting to the core issues and not making errors in the results?	Several engineering process modeling tools, as well as the extensive amount of previously developed information, have been used in the preparation of the report.	Answered
Gen	6-19-07	Are you factoring into alternative projects the $26 million already invested in Tri-W?	The community will have incurred these previous expenses, regardless of which project is ultimately constructed.	Answered
Gen	7-11-07	Buildout: What are the areas that are still undeveloped? Would these possibly lend themselves to a cluster system that can hook up to the treatment facility in the future?	Regulatory agencies would likely determine whether undeveloped properties in the Prohibition Zone must connect to the wastewater system at the time of development. The 500 or so parcels within the prohibition zone are scattered fairly uniformly throughout the community, and thus would not lend themselves to clustered collection and treatment.	Answered

Exhibit “D”

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Chapter	Question Date	Question	Answer	Notes
Gen	7-17-07	Surfrider Foundation San Luis Bay Chapter comments on draft Fine Screening Report and general project comments	See attached document.	Comment
Gen	7-23-07	SLO Green Build comments on draft Fine Screening Report and general project comments	See attached document.	Comment
Gen	7-30-07	Santa Lucia Chapter of the Sierra Club comments on draft Fine Screening Report and general project comments	See attached document.	Comment

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Section 2: Orenco Systems Questions and Comments

Chapter	Question Date	Question	Answer	Notes
Ch 3	7-20-07	Orenco comment: Also in the O&M estimates, Orenco indicated that a staff of 2 full time personnel would be sufficient for the STEP collection system. The report recommends a staffing level of 2.5 people.	2.5 full-time equivalent employees is a conservative estimate, similar to Orenco's estimates, and is based on research of existing STEP collection systems.	Answered
Ch 3	7-20-07	Orenco comment: In the STEP system O&M estimates, the report indicated an average pump life of 7 years. Pump life expectancy is 20 years. 15 years for a replacement interval is conservative.	A pump replacement schedule of 7 years is a conservative estimate, and is based on research of existing STEP collection systems.	Answered
Ch 3	7-20-07	Orenco comment: Provide evidence where the I and I for a gravity sewer is at the levels predicted in the Fine Screening Analysis in a salt water high groundwater environment that is near the end of its life cycle (not the beginning). The reason "new materials will produce less I and I is not valid" nor does it invoke confidence. Materials only contribute to a percentage of probable I and I, poor construction methodologies contributes to a large percentage of I and I also, regardless of the materials of construction. Butt fused pipe takes some of the construction error out but it comes with higher capital costs.	Comment noted. Infiltration and Inflow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Answered
Ch 3	7-20-07	Orenco comment: We do agree that the Fine Screening	Comment noted.	Comment

Chapter	Question Date	Question	Answer	Notes
		report is one of the more fair analyses we have seen with STEP. However there are some areas of the report that gives the perception that numbers are rounded down for gravity sewer and rounded up for STEP.		
Ch 3	7-20-07	Orenco comment: Orenco recommends a longer duration between tank pump out events. The report estimates 5 years.	Five year pumping frequency is a reasonably conservative estimate, based on potential Regional Water Board requirements and pending State regulations	Answered
Ch 3	7-20-07	Orenco comment: The costs of Gravity Sewer Infiltration and Inflow needs to be increased for bell and spigot pipe or the cost range for butt fused pipe needs to be included.	Infiltration and Inflow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Answered
Ch 3	7-20-07	Orenco discusses I/I calculations for the collection system See Attached Report.	Infiltration and Inflow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Answered
Ch 3	7-20-07	Orenco comment: Apply the Sales Tax, Contractor profit and overhead on both STEP and gravity sewer or remove it.	Mark-ups for sales tax on materials and for contractor overhead and profit were included for most items in estimates for both STEP and gravity	Answered

Chapter	Question Date	Question	Answer	Notes
			collection system in Tables 3.17 and 3.18. Cost estimates for items from Bid Tab values include these mark-ups.	
Ch 3	7-20-07	Orenco comment: Orenco noticed that the STEP cost analysis had line items for sales tax, contractor profit, and overhead. These were not included on gravity sewer. For the pressure main, bid tabs typically include these three line items. STEP on-lot costs appear to be conservative enough that sales tax, contractor profit and overhead are accounted for. This is a $10 - $13 million dollar adjustment.	Mark-ups for sales tax on materials and for contractor overhead and profit were included for most items in estimates for both STEP and gravity collection system in Tables 3.17 and 3.18. Cost estimates for items from Bid Tab values include these mark-ups.	Answered
Ch 3	7-20-07	Orenco comment: Seperate Power drops. The Fine Screening Report provides no explanation that this will be challenged and it is reported in Table 3.18 as range of probable costs.	The costs for “electrical connection premium” are not included in the total project cost estimates in Chapter 7. Table 7.4 and Appendix B discuss the issue of separate power drops.	Answered

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Section 3: LOCSD Wastewater Advisory Committee Questions and Comments

Chapter	Question Date	Question	Answer	Notes
Cover Memo	7/25/07	Cost is first priority in list of community concerns. Costs are explained as ranges, with ± 30-70 % costs, which generally do not correlate throughout the report, or are had to verify. The impression remains a major concern for tossing out viable options	Cost ranges are explained in Appendix C—Basis of Cost Evaluation	Cost
Cover Memo	7/25/07	"will remain a viable community option throughout the process of selecting a WW project" Is this a commitment to TRI W as a matter of CEQA, or a required by the Co. as an option, or for fear of lawsuits by Hensley's group?	Comment noted. CEQA and project selection question.	Tri W & STEP
Cover Memo	7/25/07	Tri W was not rough screened out, but was to undergo fine screening. It does not appear to be screened here. What is the exact status of TRI W –rpt. says was funded and permitted. Status has changed but not explained. Insufficient justification for retaining TRI W. (consider a pre 218 survey to remove Tri W) Issues with community trust noted, as well as the amenities which are no longer an overriding goal-A successful assessment with Tri W on the table may be impossible. The Co. should recognize the risk vs. benefits in retaining TRI W. If the County fails-- TRI W is still just as alive for the State to pick up and build. Otherwise it should be eliminated from the analysis to save time and money, and	Comment noted. CEQA and project selection comment.	Tri W

Chapter	Question Date	Question	Answer	Notes
		eliminate risk of No Co. project.		
Cover Memo	7/25/07	Project flexibility for expansion for water management is vital to assure, and salt water intrusion is one of many issues to address in conjunction with the wastewater treatment levels and reuse options.	Comment noted. TAC pro/con related comment.	Water
Cover Memo	7/25/07	The report has provided its own pro/con analysis throughout, and the role of the TAC to review and add to or refute this is not well defined. It is not entirely clear if the report QA/QC is dependent on any other oversight, or merely the TAC, the community. Recommend a 3rd party of experts (NWRI or equiv.) in each area formally review it.	A key role of the project team is to evaluate options and identify those that are feasible (Viable Project Alternatives). The role of the TAC is to do a pro/con analysis of the Viable Project Alternatives.	TAC role
Cover Memo	7/25/07	The controversy continues for assessment for the unknown. The more exact the choices and cost the greater chance for a successful assessment. The first and last bullets cause concern "sound engineering principles and proven technology" "Musters approval of the Regional Board" Both have been misused to promote the consultants preferred technology. A 3rd party should assist to assure community is protected against business relationships that promote one technology over another.	Comment noted. Prop 218 and TAC pro/con related comment.	Community Survey
Cover	7/25/07	Use of CMC and Cleath must have a 3rd	Comment noted. County process	TRI W

Chapter	Question Date	Question	Answer	Notes
Memo		party review for credibility. The covering of past work, MWH lawsuits, self preservation, and/or professional standards in place, errors/omissions and fatal flaws will remain undisclosed.	related comment.	Consultants
Cover Memo	7/25/07	The first sentence deals with property owners wish to partner with the County as expressed by a 218 favorable vote. Including expensive technology and an unpopular project in that vote puts Tri-w on the table. Seems risky to the 218. They mention options not on the table that could be viable.	Comment noted. Prop 218 related comment.	Options not on the Table and 218 risk
Cover Memo	7/25/07	The range of costs, $134 million to $207 million are totally unaffordable and numbers justified by assumptions other industry analyst have disagreed with. Another FATAL FLAW.I have two contractor estimates that refute these numbers. Both Daleo and Tidwell have estimated septic tank to Andre with potholing and paving do not exceed $12.5 million local contractors at prevailing wage scale.	Comment noted. Project funding and affordability comment.	Range of costs
Cover Memo	7/25/07	Pio was explaining how on the east coast (and the rest of the nation), we would be voting for the project we supported, not a blank check. (Though he said it more diplomatically.) But the rest of the country does not have 218 – which sets it up this peculiar way. Pio said something about a	Comment noted. Prop 218 related comment.	218 vote

Chapter	Question Date	Question	Answer	Notes
		'split' approach that – if I heard it correctly – has worked elsewhere in California. And, again if I heard it correctly, it would allow voters to select a specific project as part of the 218 vote. Pio was obviously trying not to put Paavo on the spot, and Paavo was obviously not wanting to 'go there,' at least not at that moment, so the topic was quickly changed. Do you know what they were referring to?		
Cover Memo	7/25/07	The rough screening process is set up upon the presumption that one, and only one, management model is available to be evaluated, and ALL of the activities in that effort will be dedicated--WITHIN THAT LIMIT--"to develop a 'short-list' of component alternatives and eliminate components that have fatal flaws or significantly problematic challenges that make permitting, funding and/or construction of the alternative unlikely." By what process do other management models get "entered" into the evaluation, how do their capabilities, their opportunities and their liabilities get elucidated? How does it get determined, for example, if advanced secondary treatment with nitrogen reduction and shallow drip irrigation dispersal is "good enough" to meet the groundwater	As a starting point for evaluation, the Project Team considered the technologies that have been presented in past reports related to the Los Osos Wastewater Project. Each of the examples in this question—secondary treatment, nitrogen reduction, and irrigation reuse options have been considered in this screening process.	SWOT analysis and process models

Chapter	Question Date	Question	Answer	Notes
		protection requirements?		
Cover Memo	7/25/07	The WERF study on "Promoting Equitable Consideration of Decentralized Wastewater Options" highlighted that engineers will actually sit there and say with a straight face that they don't WANT to entertain other infrastructure models, not because they have evidence that they would not serve society--or even their immediate client's needs--rather because they fear it would negatively impact on their revenue streams in the short term.	Project Team consultants are working under the direction and policy of the County.	Decentralized not considered. How to assure consultants are doing the best for Los Osos
Cover Memo	7/25/07	I calculated what $160/house/month would imply in capital cost. At 5% interest over 20 years, it's $23,927 When affordability is applied. Tri W is 54 K!!! isn't that a fatal flaw?	Comment noted. Project funding and affordability comment. TAC pro/con analysis comment.	Costs
Cover Memo	7/25/07	I should like to investigate this issue further and become more informed. With so many traditional and innovative decentralized options available to solve almost any wastewater problem, this community, should not be forced into accepting an expensive big pipe solution. The big pipe project is most likely being driven by economic development considerations that are conveniently wrapped up in public health or environmental camouflage.	Comment noted. Project selection comment.	Choices
Executive Summary	7/25/07	At what point is the determination made to actually tie the project to options and	Comment noted. Project selection comment.	Water Resource

Chapter	Question Date	Question	Answer	Notes
		approaches for "water resource solutions". As cost drivers there is not a purely linear escalation in costs, and the ideas presented are not complete. Opening this to a request for proposal process would possibly provide the best options. (Would a private water co. given access to the effluent have some good ideas?)		Mgmt E-S-2
Executive Summary	7/25/07	The process is flawed in a number of ways and the cost numbers unjustified by data. The order of events makes it impossible for the ratepayer/voter to know what they are committing themselves to. The document needs to be divided into to portions of private and public financed elements which each has their own constraints not covered here. There is a lot of speculation as to constraints assumptions on STEP, like separate power service to the property, replacing all tanks etc.	Comment noted. Project funding and TAC pro/con related comment.	Document organization & data justification
Executive Summary	7/25/07	Several FATAL FLAWS are listed in my comments. Some omissions were addressed for the Counties benefit. It is distressing that they will not meet Orenco's request to have an LOCSD rep at the meetings with Carollo. We need Orenco's cost values and technical in this fine screening. That inflexibility may cost them the 218 vote.	The County's Project Team has met with Orenco to discuss project options and cost estimates in the Fine Screening Report.	Verification of Data with industry

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Section 3: LOCSD Wastewater Advisory Committee Questions and Comments

Chapter	Question Date	Question	Answer	Notes
Executive Summary	7/25/07	This makes some serious assumptions: federal funding is available, no HCP or EIR delays and competitive bidding at present there is no guarantee for these assumptions That isn't going to happen. Another reason for a turnkey approach.	Comment noted. Project selection and funding related comment.	ES-6 Federal Funding Assumptions
Executive Summary	7/25/07	The attached Checklist is useful to see that you have covered all the bases in anything wastewater or water in California. A study found that 56% of wastewater projects were in non-compliance in at least one Regulation. This is a good checklist	Comment noted. Checklist not submitted with comments.	Regulatory considerations
Chapter 1	7/25/07	Fatal flaw masking does not appear to be based on sustainability criteria, or developed as a basic measure of VPA. This needs to be supplied, or at minimum constraints analysis defined as apart of the pro/con discussion. Tools should be defined and available. Tri W should be removed based on the most basic definition of Fatal flaws. MBR not considered (Ch 4) and recent industry publication indicates constraints to technology. Removal of equivalents: Nelson ponds Vs Parkson/ biolac? The bias need to be explored further in Ch4.	Several treatment options have been evaluated, including MBR and pond treatment.	Criteria
Chapter 1	7/25/07	It states that the collection system will	The differences in inflow quality from	Page 1-3,

Chapter	Question Date	Question	Answer	Notes
		have "some" impact on the treatment technology. There is a big difference between having to process solids as required with conventional collection as contrasted with not having to with STEP/STEG	gravity and STEP collection systems are documented in Table 4.4.	Section 1.1.2, 3rd paragraph
Chapter 1	7/25/07	Septage disposal listed under the column "solids disposal" to address this aspect of the STEP/STEG collection option?	Septage handling is addressed in Chapters 3, 4, and 5.	Page 1-4, Table 1-1 Sludge generation
Chapter 1	7/25/07	The 1.2 MGD dry weather flow has been questioned as an overstatement of flow. This estimate affects all other aspects of the entire project. Raw calculations or assumptions on how this figure was estimated need to be detailed.	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Page 1-9, Section 1.3, 1st paragraph Flow
Chapter 1	7/25/07	1.2 MGD wastewater flow for STEP/STEG seems too high. Please provide calculation details.	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards	Page 1.1, 2nd paragraph Flow
Chapter 1	7/25/07	This seems to have been written by the County and is a wrap-up of the report. Of interest are the comments on flows.	Chapter 1 is the introduction and provides an overview of the report	Purpose
Chapter 1	7/25/07	First of all, in the MWH 2001 Project Report (Table 2-5 Wastewater Flow Estimates, pg 2-8), they show 1.3 MGD as Average Dry Weather Flow for both Gravity and Step collection systems. They also show 1.6 MGD for Peak Wet	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering	Accuracy of numbers

Chapter	Question Date	Question	Answer	Notes
		Weather Flow for both kinds of systems. The Step system I&I was suggested by Bowne for zero replacement of septic tanks. In Carollo's plan there would be 100% replacement of residential septic tanks, so there would be negligible I&I. I don't believe there is a single case where these numbers have been cited accurately in the current reports	work may refine these estimates.	
Chapter 1	7/25/07	The Rough Screening Report recommended 1.2 million gallons per day for the gravity dry weather flow, and 1.3 MGD for the wet weather flow. I am not sure of their thinking. The Fine Screening Report changes the wet weather flow to 1.5 MGD. As I have stated before, this seems to be a reasonable figure. It is still high - maybe 20%. But this is not necessarily bad. There are 2 basic reasons for the overstatement	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Capacity/ Rough Screening
Chapter 1	7/25/07	1. The flows were based on billed water usage in the winter months and assumed to be indoor water usage. Maybe in Colorado. But in Los Osos? I would guess that a minimum of 20% of use is for outdoor irrigation, regardless of weather conditions.	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Flows basis
Chapter 1	7/25/07	2. A build out population of 18,428 is used. The 2001 Assessment Engineer's Report identified 6725 Dwelling Unit Equivalents in the Prohibition Zone. After	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted	Build out Population

Chapter	Question Date	Question	Answer	Notes
		the protest period, this was reduced to something like 6675. Multiplied by 2.5 people per DUE (the same figure the County used in coming up with 18,428), you come up with 16,700 for the build-out population. The County's number is a little more than 10% higher	engineering standards Future design phase and value engineering work may refine these estimates.	
Chapter 1	7/25/07	So, when you multiply the build-out population (10% overstated) by the indoor water usage per person per day (20% overstated) you come up with a more than 30% overstatement. Yes, this is way too high. But, there has to be a safety factor. And, sometimes, the Coastal Commission acts as though any overstatement is a "high crime and misdemeanor".	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	Build out Pop. Cont.
Chapter 1	7/25/07	It is stated that the purpose of this report was for the purpose of identifying VPA's for the sole purpose of pinning down an accurate cost for the upcoming 218 vote. Although it is likely that results from this report and the subsequent PRO/CON analysis could be the basis for ultimate project selection.	Comment noted. Project selection comment.	Purpose
Chapter 1	7/25/07	I have no problems with the Flow Projections. For the purpose of design of the wastewater project further refinements are unlikely to have much impact on the ultimate VPA project designs	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering	Flow impacts

Chapter	Question Date	Question	Answer	Notes
			work may refine these estimates.	
Chapter 1	7/25/07	I ask for consensus on the STEP collection as preferred method. I also would ask that you all support the Pond/Wetland treatment which complements the reuse by removing the human carbon (that will cause carcinogens when mixed with chlorine in water delivery systems) assuming reuse as drinking water. Anyway here is a page plus of comments:	Comment noted. TAC pro/con analysis and project selection comment.	Step best option
Chapter 1	7/25/07	Table needs to name the facultative ponds still in after fine screening. Is ADS, AIPS or Nelson in?	Pond treatment types are listed in Chapter 4.	Table 1.1 Clarify where Nelson Env. Ponds fit
Chapter 1	7/25/07	Seawater intrusion reversal can be accomplished outside of the project by reducing the lower aquifer draft in lieu of upper aquifer water with nitrate for residential landscape application. These expenses can be paid by new development starting with the schools and park. Purple pipe is encouraged and funded by DWR. See the 2003 white paper on reuse. (Our upper aquifer is replenished by septic effluent and classed as partial wastewater or we would not need a sewer.)	Comment noted. Water resources related comment.	1.2.1 Recycled water options
Chapter 1	7/25/07	1.2.2 Golden State has applied to	Comment noted. Water resources	1.2.2

Chapter	Question Date	Question	Answer	Notes
		CAPUC for rate increase to pay for infrastructure and treatment that will utilize the upper aquifer. How many ACY will that reduce the lower draft? This is an omission that needs attention.	related comment.	Utilizing upper zone to balance basin
Chapter 1	7/25/07	Flow projections will not change constituent treatment requirements, with ponds it is not a big factor as with 24 hour in 24 out treatment train but that will effect disposal numbers.	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	1.3 Flow Projections
Chapter 1	7/25/07	FATAL FLAW "Properly installed bell-and-spigot…" will leak raw sewage into our drinking water aquifer which will soon be the upper aquifer as the lower aquifer is not recharging.	Infiltration and Inflow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards	Protect GWR
Chapter 1	7/25/07	Report states the Groundwater is contaminated from septic tanks. - Statement should be “allegedly” “contributed to ground water problems for nitrates-all other constitutes are within limits…	Comment noted. Regulatory agency related comment.	1.1.1 Correct statement
Chapter 1	7/25/07	Order incomplete for CEQA, 5 step is out of order for a 218 vote. Seems misleading and deceptive. How does alt a/b/c/ fit with the timing of CEQA. Cost is the purpose of the report-to get to a 218.	Comment noted. CEQA process related comment.	Pg 1-2 Fig 1.1 Incomplete information
Chapter 1	7/25/07	Add issues question concerning gravity. Need to add NEPA Paragraph 2, need to	Nelson ponds are discussed in Chapter 4.	1-4

Chapter	Question Date	Question	Answer	Notes
		add Nelson Ponds back in . It is not the same as the facultative ponds. Are all of the alternatives and value added issues that benefit the County on our dime going to be credited back to the district?	Comment noted. Project funding comment.	
Chapter 1	7/25/07	Date correction –should be Mar. 27, 2007	Item to be corrected in final report.	1.2.1
Chapter 1	7/25/07	Special benefits costs needs to be known and defined (chart to chow the proportional costs.	Comment noted. Prop 218 process related comment.	1-6
Chapter 1	7/25/07	Flow discussion: Ac-ft mitigation-add sentence to last paragraph (inconsistent with the annual flows in MGD.) Assure consistency in report. Barrow noted the doc from Golden West Water with the capital improvements plans needs to be reviewed, as well as the projected water use and conservation numbers for updating the flow projections for the project. and	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	1.2.2
Chapter 1	7/25/07	Add new requirements and analysis for EJ.	Comment noted. CEQA process related comment.	Environmental. justice
Chapter 1	7/25/07	Add energy and review all assumptions. Require water retrofit costs in all options within the wastewater program to reduce sizing.	Additional energy data to be included in final report. Report assumes conservation retrofit for all options.	Criteria
Chapter 1	7/25/07	Is it 16,700 from last assessment, LO urban mgmt plan 14768- PZ 13560-1200 difference. 17,268 build out. Outside PZ	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level	Build out projections

Chapter	Question Date	Question	Answer	Notes
		issues in sizing?	report, and within industry accepted engineering standards.	
Chapter 1	7/25/07	Define community survey-last paragraph.	Comment noted. County process and project selection comment.	1-11
Chapter 2	7/25/07	Agriculture exchange relies on farmer cooperation and will provide minimal mitigation of seawater intrusion. (0.1 AF) It is unlikely that anyone would just give up their groundwater rights for free. This would require monetary compensation or strongarm techniques.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	Conservation must be a part of any solution	Comment noted. Water resource issue comment.	
Chapter 2	7/25/07	Spray fields and/or storage are likely to be part of any solution. This could require huge tracts of land (from 10 to 300 acres)	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	“Purple pipe” will increase costs significantly even for school sites and athletic fields. It is significantly cheaper to construct a well and draw water from the upper aquifer for landscape use.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	?Could residents tap the upper aquifer where the groundwater is close to the surface and use this water for landscape use? It would be rather simple to drive a shallow well point and install a pump for landscape irrigation.	Comment noted. Water resource issue comment.	
Chapter 2	7/25/07	Level 3 mitigation requires purveyor cooperation. The CSD is a purveyor as well if the board was functioning rather	Comment noted. Other agency related comment.	

Chapter	Question Date	Question	Answer	Notes
		than spending time on litigation cooperation could be achieved with the Water Department		
Chapter 2	7/25/07	There will be significant community opposition to percolation ponds at the Broderson site as there was when the County had it as part of their plan	Comment noted. TAC pro/con related comment.	Institutional barriers Page 2-2, Table 2.1
Chapter 2	7/25/07	Note 7 indicates current salt water intrusion is 550 AFY but page 2-3 second paragraph says current salt water intrusion is 460 AFY	Formatting error to be corrected in final report.	inconsistent Page 2-6, Table 2.3
Chapter 2	7/25/07	last bullet – See comment for Table 2.1		Page 2-10
Chapter 2	7/25/07	Page 2-11, 2nd paragraph – The price for the ponds is stated. The price for the leachfields needs to be stated also so the cost savings can been seen here rather than having to try and search to see what the cost savings will be.	Cost difference is stated on page 2-11.	
Chapter 2	7/25/07	The costs for options 2a and 2b seem very high	Comment noted. TAC pro/con related comment.	Page 2-12, Table 2.6
Chapter 2	7/25/07	The cost for option 3a seems very high.	Comment noted. TAC pro/con related comment.	Page 2-13, Table 2.7
Chapter 2	7/25/07	For me to come to grips with this, I have to break it into 2 parts. One is the “Salt Water Mitigation” numbers upon which the plans are based. The other is the projects that come from the first part. On the first part, I am just lost. I don’t	Comment noted. TAC pro/con related comment.	

Chapter	Question Date	Question	Answer	Notes
		understand the results of the model (and no explanation was offered by Spencer, other than ,"That's what the model says.").On the other hand, I think the projects are reasonable – and, probably, a major improvement on the Tri-W project.		
Chapter 2	7/25/07	What this is about, it seems to me, is that any future use of treated groundwater – whether harvest wells from the Broderson site or water resources from the Creek alluvial plain - almost has to be developed by the water purveyors. I think the FSR is absolutely correct on that.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	There are a couple of facts that seem to have passed under the public radar. In the 2005 Water Master Plan, Harris/Cleath concluded that even with completion of the Tri-W project and increased production from the upper basin, something more than 200 acre feet per year of imported water would be required . This number has been adjusted downward, I believe. Everyone thinks of State or Nacimiento water when "imported' is used. But their first recommendation was to investigate the possibility of acquiring rights for riparian wells in the upper part of Los Osos Creek. I have the impression that it would take a study of quality and the quantity	Recent analysis, done for this report by Cleath and Assoc. indicates that imported water could be avoided by careful management and reuse of wastewater effluent and groundwater resources.	

Chapter	Question Date	Question	Answer	Notes
		that could be pumped without creating a problem for other Creek users before this "importation" could be pursued.		
Chapter 2	7/25/07	Next, in the Ripley project, Mike Huck wrote a technical memo about dealing with the farmers. He recognized that Ripley had a big problem in the alluvial plain. Mr Eto, who has the biggest stake in the plain, would take harvest well water, but not treated effluent (according to Bruce Buel). So, in Technical Memo #6 (I think) Huck outlined a 9 point program. It started with various subsidies and inducements. The last few points involved condemnation by the CSD, leasing it back to Eto (or another farmer), but without the water. The farmer would have to use treated effluent and his "on-site rights" would be available to the CSD and might be exercised upstream near the headwaters. I hassled Ripley a little one night , and asked him why Huck hadn't featured the water rights, which could be "pure gold" as far as Los Osos is concerned. He, finally, responded, "Because I told him not to". That did not, exactly, answer the question. There is, it seems to me, real promise in pursuing this approach. And the County and Cleath/Carollo seem to recognize it.	Comment noted. TAC pro/con related comment.	

Chapter	Question Date	Question	Answer	Notes
Chapter 2	7/25/07	The idea of "spray fields" is not new. MWH comparative analysis of ag irrigation "morphed" into a 600 acre "spray field" and was rejected. This is a tricky time. No one wants to announce, publicly, that the CSD is interested in a specific parcel unless the way has been cleared. Otherwise, the price goes up. But, it appears, when Chapter 2 and Appendix A are combined, that each of the disposal options has a specific piece of land in mind for the spray fields:	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	Disposal Option Acres Cost ($M) ($M)/Acre 1a 170 5.1 30K 1b 280 7.0 25K 2a 70 2.1 30K 2b 180 5.4 30K 3b 680 9.2 13.5K I believe 3b is the Tonini Ranch (mentioned in the report by Spencer and verbally by Julie and Rob Miller during the meeting). I believe this is all, or mostly, outside the alluvial plain but has wells in the plain. So, I guess, in summary, that I would, personally, be in favor of something like	Comment noted. TAC pro/con related comment.	

Chapter	Question Date	Question	Answer	Notes
		2a (maybe without the Ag reuse) as an opening investment in the future.		
Chapter 2	7/25/07	KEEP THE WATERS IN THE BASIN unless the water is not needed then it can be sprayed and disposed.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	Lower aquifer is intruded and that portion is lost That is not necessarily so.	Comment noted. Water resources issue comment.	
Chapter 2	7/25/07	Upper aquifer water must be harvested to the point it does not leak into the bay.	Comment noted. Water resources issue comment.	
Chapter 2	7/25/07	Recharge must not have Phosphorus, which will clog soil pores. All treatments so far do not address this.] impact on reuse. Calcium treatment that is affordable can be used in combination with wetlands to remove phosphorus this so the treated effluent waters are safe.	Comment noted. Project design phase comment.	
Chapter 2	7/25/07	2.3.2 Bullet 4 describes the cost per acre of grade II-III farmland as $40, 000.00 I think $10,000.00 is a more responsible number. Giacomozzi was $323,000.00 for 35 acres at one point. More inflated costs!	Real estate cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report.	
Chapter 2	7/25/07	The case is correctly made that pumping the upper aquifer as landscape water is cheaper than piping effluent back to town and much safer.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	Table 2.1 page 33		
Chapter 2	7/25/07	PERCOLATION PONDS AT BRODERSON: This was a project FATAL FLAW in 1997 SLO County plan	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	Urban wastewater reuse is a poor	Comment noted. TAC pro/con	

Chapter	Question Date	Question	Answer	Notes
		concept compared to upper zone nitrogen water for irrigation instead of drinking water. Less piping and much lower health risk on school and community center.	related comment.	
Chapter 2	7/25/07	They represent over 40ACF reduction in saltwater intrusion on the school/park sites.	Comment noted. TAC pro/con related comment.	
Chapter 2	7/25/07	2.1.2 Sea water intrusion is not irreversible. Early-indicator signals of groundwater contamination: the case of seawater encroachment	Comment noted. Water resources issue comment.	
Chapter 2	7/25/07	I recommend a cost benefit analysis for purple pipe in the reuse.	Small lot urban reuse was screened out, due to high costs.	
Chapter 2	7/25/07	FCGMA documents reversal of saltwater intrusion in Ventura County. http://publicworks.countyofventura.org/fcgma/GMA%20Management%20Plan-Final%20051506x%20electronic%20v2.pdf see page 25 for reversal of saltwater intrusion. Grants from 319 USA were used, see page 75 reduction in seawater intrusion.	Comment noted. Water resources issue comment.	
Chapter 2	7/25/07	Here is my offering on Fine screening to the end of collection chapter. I included the entro letter to the BOS and exec summary as they impact the process. In general: The process is flawed in a number of ways and the cost numbers unjustified by data. The order of events makes it impossible for the ratepayer/voter to know	Repeated comments. Noted elsewhere in document.	

Chapter	Question Date	Question	Answer	Notes
		what they are committing themselves to. The document needs to be divided into to portions of private and public financed elements which each has their own constraints not covered here. There is a lot of speculation as to constraint assumptions on STEP, like separate power service to the property, replacing all tanks etc. Several FATAL FLAWS are listed in my comments. Some omissions were addressed for the Counties benefit. It is distressing that they will not meet Orenco's request to have an LOCSD rep at the meetings with Carrollo. We need Orenco's cost values and technical in this fine screening. That inflexibility may cost them the 218 vote. I ask for consensus on the STEP collection as preferred method. I also would ask that you all support the Pond/Wetland treatment which complements the reuse by removing the human carbon (that will cause carcinogens when mixed with chlorine in water delivery systems) assuming reuse as drinking water. Anyway here is a page plus of comments: Here are some points on the Fine Screening by Carrollo Engineering. The first sentence deals with property		

Chapter	Question Date	Question	Answer	Notes
		owners wish to partner with the County as expressed by a 218 favorable vote. Including expensive technology and an unpopular project in that vote puts Tri-w on the table. Seems risky to the 218. They mention options not on the table that could be viable. Since this is a cost document the assumed values must be justified. STEP industry show cost 1/3 of Corollo's values they need to be included here as BOOT financed privately does not have the engineering and contingency costs added to these costs. $50 million is the project estimate given by Orenco. By owning the treatment project and billing the ratepayers the private investment is secured by the infrastructure. 50% of all public projects do not use SRF loan as the saving in low interest is eaten by the strings and red tape. An example is Golden State who goes to the private sector to finance new infrastructure. They mention Regional Water Solutions, which opens another can of worms that the AB2701 included possibly obligating us to Nacamiento water that has some mercury. They are confident that STEP/STEG will remain on the table. The range of costs, $134 million to $207 million are totally unaffordable and		

Chapter	Question Date	Question	Answer	Notes
		numbers justified by assumptions other industry analyst have disagreed with. Another FATAL FLAW.I have two contractor estimates that refute these numbers. Both Daleo and Tidwell have estimated septic tank to Andre with potholing and paving do not exceed $12.5 million local contractors at prevailing wage scale. Page ES-6 makes some serious assumptions: federal funding is available, no HCP or EIR delays and competitive bidding at present there is no guarantee for these assumptions That isn't going to happen. This is another reason for a turnkey approach. Table 1.1 needs to name the facultative ponds still in after fine screening. Is ADS, AIPS or Nelson in? 1.2.1 Seawater intrusion reversal can be accomplished outside of the project by reducing the lower aquifer draft in lieu of upper aquifer water with nitrate for residential landscape application. These expenses can be paid by new development starting with the schools and park. Purple pipe is encouraged and funded by DWR. See the 2003 white paper on reuse. (Our upper aquifer is replenished by septic effluent and classed as partial wastewater or we would not		

Chapter	Question Date	Question	Answer	Notes
		need a sewer.) 1.2.2 Golden State has applied to CAPUC for rate increase to pay for infrastructure and treatment that will utilize the upper aquifer. How many ACY will that reduce the lower draft? This is an omission that needs attention. 1.3 Flow projections will not change constituent treatment requirements, with ponds it is not a big factor as with 24 hour in 24 out treatment train but that will effect disposal numbers. FATAL FLAW "Properly installed bell-and-spigot…" will leak raw sewage into our drinking water aquifer which will soon be the upper aquifer as the lower aquifer is not recharging. 2.1 KEEP THE WATERS IN THE BASIN unless the water is not needed then it can be sprayed and disposed. 2.1.2 Lower aquifer is intruded and that portion is lost That is not necessarily so. Upper aquifer water must be harvested to the point it does not leak into the bay. Recharge must not have Phosphorus, which will clog soil pores. All treatments so far do not address this impact on reuse. Calcium treatment that is affordable can be used in combination with wetlands to remove phosphorus this so the treated effluent waters are safe.		

Chapter	Question Date	Question	Answer	Notes
		2.3.2 Bullet 4 describes the cost per acre of grade II-III farmland as $40, 000.00 I think $10,000.00 is a more responsible number. Giacomozzi was $323,000.00 for 35 acres at one point. More inflated costs! The case is correctly made that pumping the upper aquifer as landscape water is cheaper than piping effluent back to town and much safer. Table 2.1 page 33 PERCOLATION PONDS AT BRODERSON: This was a project FATAL FLAW in 1997 SLO County plan Urban wastewater reuse is a poor concept compared to upper zone nitrogen water for irrigation instead of drinking water. Less piping and much lower health risk on school and community center. They represent over 40ACF reduction in saltwater intrusion on the school/park sites. 2.1.2 Seawater intrusion is not irreversible. Early-indicator signals of groundwater contamination: the case of seawater encroachment FCGMA documents reversal of saltwater intrusion in Ventura County. http://publicworks.countyofventura.org/fcgma/GMA%20Management%20Plan-Final%20051506x%20electronic%20v2.pdf see page 25 for reversal of saltwater		

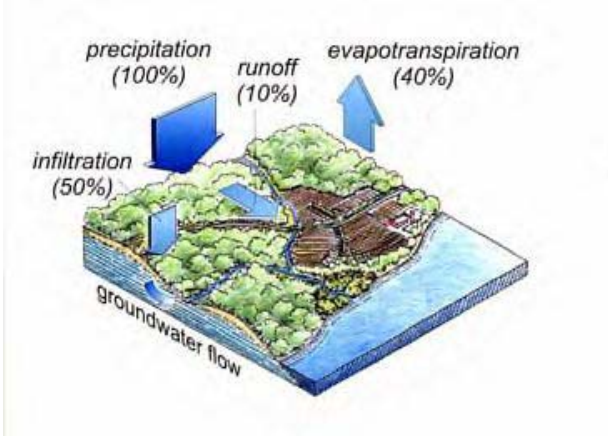
Chapter	Question Date	Question	Answer	Notes
		intrusion. Grants from 319 USA were used, see page 75 reduction in seawater intrusion. I recommend a cost benefit analysis for purple pipe in the reuse portion. And a note on septic INI if a tank can be retrofitted in ground with sprayed epoxy, like manhole restoration it would only cost $700.00 per tank. Saving replacement and removal and retirement costs Replacements could take place at the point of resale so as not to have the community dug up at once. Charlotte County did not replace any tanks. For Gordon's benefit they used a Tariff document to gain access to private property I have a copy if you would like me to send it along. Tanks need certification as per RWQCB3 requirements. If a tank is abandoned it could be used to capture rainwater and recharge through existing leech fields. (No waste) The STEP collection works well with pond treatment with low biosolids production and lowest energy demand making the combination the most sustainable as the project goals state Many constraints and costs have been added to STEP by this document that are <u>not supported by the STEP Industry data.</u> I have screened out gravity due to the		

Chapter	Question Date	Question	Answer	Notes
		eventual leakage into the drinking water aquifer as they have admitted. One other FATAL FLAW is the seawater intrusion around the Bay where the deepest pipes will be trenched in. When saltwater enters the collection system then the treatment plant will require reverse osmosis and brine trucking to Ventura County will ensue as many as 60 trucks a day. The expense of these impacts was not added to the gravity cost as I recall $60,000.00 a day or an additional. Less hydrostatic pressure in the upper aquifer and less water volume may bring in saltwater into the upper aquifer. Please remember that sea water levels are predicted to rise making STEP low pressure safer. Consensus: Pond treatment/STEP collection and wetland reuse spray irrigation on grazing land moving to AG exchange as it is more widely accepted.		
Chapter 2	7/25/07	Water reuse options have too large an energy footprint, especially Broderson. Billing credits should be given for Conservation improvements and onsite greywater recycling using the existing leachfields. Arboreal nitrogen fixing with GHG credits have a smaller energy footprint for nitrogen removal. All are well studied. All mitigate GHG and will meet	Comment noted. TAC pro/con related comment.	Water Reuse Table 2.3

Chapter	Question Date	Question	Answer	Notes
		future caps on GHG gasses.(AB 32 2006) Greywater systems are already State Approved. Estimated recharge would be energy free and be about 100 AC FT per year dispersed evenly throughout the community with an aggressive greywater credit program.		
Chapter 2	7/25/07	Urban water management: Group consensus for need to maximize the beneficial use of the upper aquifer and assure project flexibility for this CSD as a major water purveyor to lead in the cooperative action in the water resource project required to achieve a balanced basin.	Comment noted. Water resource issue and TAC pro/con related comment.	Consensus point
Chapter 2	7/25/07	Broderson ponds are not acceptable. Leach fields for emergency storage may be acceptable; however the energy requirement is a con. and better alternative should be sought. Provide revised calc for costs from reference data from CSD & GT.-Flow numbers will be defined prior to the +200 acre ft (1350 ac-ft/yr=1.3 MGD?	Comment noted. TAC pro/con related comment.	Consensus point
Chapter 2	7/25/07	Look into leasing the spray field instead of a purchase to reduce stranded costs and capital investments.	Estimates for land purchase are conservative, high end estimate.	Consensus point
Chapter 2	7/25/07	Explore terminal wetlands for polishing and nitrogen removal.	Constructed terminal wetlands remains as a storage option.	
Chapter 2	7/25/07	Discussion on regulatory requirements for Green house gases.	Comment noted. Regulatory agency and TAC pro/con related comment.	

Chapter	Question Date	Question	Answer	Notes
Chapter 2	7/25/07	Residual wastewater contaminants--see http://pubs.usgs.gov/wri/2003/4129/nt Residual wastewater contaminants can have a profound effect in arid regions due to high evaporation and evapotranspiration rates, which can reduce dilution and assimilation capacity by native stream water. Human, wildlife, and environmental health concerns may exist due to prolonged exposure to trace levels of chemicals in wastewater-dominated systems. Aquatic organisms living in treatment wetlands potentially can accumulate anthropogenic compounds through successive food pathways resulting in acute toxic effects and long-term ecosystem disruption. The potential for hydrophobic organic compounds (HOC) and trace elements to bioaccumulate is an important consideration in design and policy decisions related to constructed wetlands supplied by wastewater effluents. These accumulations occur also in groundwater and aquifers. I found the Phoenix Tres Rios Wetland study relevant to the crisis in West Palm beach where human induced trace elements were the greatest concern to	Comment noted. Regulatory agency issue comment.	Emerging contaminates Environmental issues to consider

Chapter	Question Date	Question	Answer	Notes
		human health, and yet the water treatment -both fresh and waste, were not treating them. Even Caffeine, which perhaps is semi-anthropogenic is accumulating as a trace contaminant. It is a witches brew with small amounts of some of these being extremely harmful, particularly in concert with others. It is irresponsible not to include elements of water treatment which excludes anthropogenic components. The technology exists and is being used, but not often enough.		
Chapter 2	7/25/07	We need to re-engineer and better maintain our sewer systems. Existing infrastructure often transports wastewater and stormwater away from where it is generated instead of letting it infiltrate. Transporting dirty water far from its source made sense historically, but today, with significant improvements in wastewater and stormwater treatment techniques and standards, treatment levels often make the water available for reuse or recharge. This eliminates eliminating the need for costly sewer conveyance infrastructure and replenishes the natural stream flows and aquifers in the basin or sub-basin. We also need to make improvements to our aging and often leaky water supply,	Comment noted. TAC pro/con related comment.	To consider

Chapter	Question Date	Question	Answer	Notes
		sewer, and stormwater infrastructure. Water supply infrastructure can leak potable water into the ground via cracks in the pipes, wasting water that would otherwise be sent to users. Leaking sewer infrastructure takes in groundwater and conveys it to wastewater treatment plants resulting in increased treatment flow and associated costs, as well as a loss of baseflow to rivers and streams. 		
Chapter 2	7/25/07	DETECT= water crisis predicted DIAGNOSE=Grow out of Hunter/Gatherer technology and "grow" water. CONTROL=Rewrite old agreements, contracts and obligations and get on the path to being sustainable. Don't even think about "disposal" or "discharge/recharge". We are already past "waste." Cheap, cost effective	Comment noted. TAC pro/con related comment.	Sustainability

Chapter	Question Date	Question	Answer	Notes
		technology exists. Take the Detour---The Bridge is Out. *It's Science but not Rocket Science*		
Chapter 3	7/25/07	• 100% replacement with installation in the right of way in front of houses seems the only reasonable alternative. • Electrical costs for individual hookup will be expensive and intrusive to the homeowner. • I did not see any monitoring system costs in Chapter 3 for STEP STEG. • STEP STEG will require more attention and maintenance costs for the homeowner/ and or renter.	Comment noted. TAC pro/con related comment.	STEP-STEG
Chapter 3	7/25/07	Sustainability issues- GLOBAL WARMING STEP STEG will increase greenhouse gas production CO2 and CH4 (Methane) is released into the atmosphere with the anaerobic conditions in the septic tank. As a result of the decreased solids production vs traditional. With a gravity system more sludge is produced and more of the carbon is "trapped" in the sludge as organic matter. Significantly more methane is produced in the anaerobic environment of a septic tank. Methane is 30 TIMES more potent than CO2 as a greenhouse gas.	Comment noted. TAC pro/con related comment.	
Chapter 3	7/25/07	Pumping costs for STEP STEG – When	Comment noted. TAC pro/con	

Chapter	Question Date	Question	Answer	Notes
		considering the pumping costs from the home to the plant for STEP STEG versus Gravity system. I am quite sure that pumping costs for STEP will be greater than gravity. Power is directly proportional to pressure times volume. The volume of effluent pumped is roughly the same (within 10%), but the increased pressure of a STEP system (maybe 3 to 5 times more) with increased friction losses and 5000+ less efficient pumps will cost more	related comment.	
Chapter 3	7/25/07	15 or so larger pumps at several lift stations will run more efficiently at lower pressures. VFD variable frequency drive) technology installed at pump stations can keep these larger pumps operating at peak efficiencies regardless of the pumping load.	Comment noted. TAC pro/con related comment.	
Chapter 3	7/25/07	In my opinion, gravity will give us the best operating, most sustainable and cheapest collection system in the long run. (I can hear the gasps of disagreement already, but that is my opinion.)	Comment noted. TAC pro/con related comment.	
Chapter 3	7/25/07	It states the cost for repairing the roads is assumed to be included in other lines items. Since Corollo is working with MWH, can't it be determined by a simple phone call where these costs were included rather than having to assume?	Road restoration costs are estimated in Table. 3.17.	Page 3-3, last paragraph
Chapter 3	7/25/07	Force Mains paragraph – HDD assumed	These are similar assumptions to	Page 3-6,

Chapter	Question Date	Question	Answer	Notes
		to be the installation method, pipes assumed to be 4 feet deep, laterals assumed to be 1 ½". Wouldn't it be easy to call Dana Ripley and ask him what they had intended rather than having to assume?	those in the Ripley report. They are assumptions due to the conceptual level of these reports.	
Chapter 3	7/25/07	Text Box – Why is a separate electrical service required for the STEP collection system? Do you mean another line drop from the power pole to each property? If so, explain why this is needed.	A separate electrical service and meter may be required by the State Water Board, if SRF funding is used.	Page 3-6,
Chapter 3	7/25/07	–What would prevent removal of a front septic tank? It would seem that the majority of these could be removed rather than abandoned in place.	The majority of existing septic tanks are made of concrete. It is assumed to be cheaper to abandon them in place.	Page 3-8, Table 3.4
Chapter 3	7/25/07	Electrical Connection paragraph – Provide more detail why the SRF process requires a separate electrical service for STEP collection. This does not make sense	This is a potential requirement of the State Water Board. The County will seek further details during the due-diligence phase.	Page 3-8
Chapter 3	7/25/07	Table 3.9 – Why are the costs shown in table 3.9 $300K less than the costs referred to in the paragraph preceding the table that references these same costs?	This is an error that will be addressed in the final report.	
Chapter 3	7/25/07	Why is sales tax detailed for only these project features? Explain.	Sales tax on materials and contractor overhead and profit are included for all items, except for estimates based on bid tab values.	Page 3-15, Tble 3.9 Note 5
Chapter 3	7/25/07	There is no Total Base Cost per Connection listed in table 3.14. If table 3.15 was meant, then the cost is still	This is a formatting error that will be addressed in the final report.	Page 3-20, Table 3.16 Note

Chapter	Question Date	Question	Answer	Notes
		wrong for the Low cost estimate.		6
Chapter 3	7/25/07	It is very difficult to believe that O&M on a step collection system would be over 60% more expensive than gravity collection. What about pump replacement costs for the gravity lift stations? Pumping of septic tanks every 5 years has been documented to be detrimental to the biology of a septic tank. Please show the cost for the pumping interval recommended by Orenco or Ripley for comparison purposes. Use an average of these estimates and what the Water Board is assumed to require, unless of course using the Water Board estimated requirement is done to show the absolute most conservative cost possible	Comment noted. Collection system operation and maintenance estimates are documented in Tables 3.19 and 3.20. Pump replacement costs for lift stations are included in the $250,000 per year equipment maintenance/replacement estimate. Pumping of STEP tanks every 5 years is an anticipated requirement, so it is not an overly conservative estimate.	Page 3-25, Table 3.20
Chapter 3	7/25/07	Ck Ripley on escalation costs to April 2007. Review MWH escalation table on file. Ck regulatory issues, and costs for each component. Review who the local contractor is and get second opinion.	Comment noted. Cost tables will be checked for accuracy and consistency in final report.	Cost escalations and cost estimates
Chapter 3	7/25/07	Agree bracketing costs, but assure against layering safety factors that decrease reliability of costs over all. The object it to have the best possible assumption that lead to informed decision for the best VPA.	Comment noted. Cost tables will be checked for accuracy and consistency in final report.	Costs factors
Chapter 3	7/25/07	Showing costs visually for alternatives is required. Set up simple charting models	Comment noted. See Chapter 7.	General costs

Chapter	Question Date	Question	Answer	Notes
		to achieve this,		charts
Chapter 3	7/25/07	Table 3.9-review against MWH costs report for CC de Novo hearing. Assuring the costs are complete for all components needs to be reviewed, pulled apart from the bid and reassembled.	Comment noted. Gravity collection system cost estimates are based on a combination of bid tab values and updated engineering estimates.	Pipeline to Ag.
Chapter 3	7/25/07	Environmental issues differ between systems and must be addressed as a cost, and benefit and carry over to the Pro/ Con. Because 45 miles of sewer are the same in length, does not mean they are “equal” in any stretch of the imagination. This is described in 3.32 (pg 3-26) but should be checked for completeness.	Comment noted. TAC pro/con analysis related comment.	Environmental
Chapter 3	7/25/07	Costs need to be audited for both systems. The risk in maintaining a gravity system and differing conditions affects costs. Numbers of employees is one example. Confined space regs. Generally requires a crew of 3 trained employees. Staffing considerations with a small system often results in over staffing to meet safety requirements. The estimates shown miss this. Energy does not reflect the current rates and proposed increases for 2007. Overall energy costs needs to be viewed both incrementally and globally. Often the sum is not equal to the parts.	Comment noted. Cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	O&M
Chapter 3	7/25/07	3.3.1 SSMP & CMOM discourages	Comment noted. TAC pro/con	Regulator

Chapter	Question Date	Question	Answer	Notes
		conventional gravity systems. This is especially true when an alternative system that is more environmentally protective can be installed within the marine preserve of the MBNE. Conditions such as pipeline installation high GWR areas, limited applicability for coastal communities, lacking storm water drainage systems, archeological resources disruption. The known intolerance to systems spills are all reason for considering the gravity either obsolete or at a minimum inferior and inappropriate based on site specific conditions. Add costs for each added risk factor and review and include all regulations such as CMOM requirements.	analysis related comment.	y Risks
Chapter 3	7/25/07	Step should note lower costs, smaller pipe and effluent only as pros.	Comment noted. TAC pro/con analysis related comment.	Creek crossing
Chapter 3	7/25/07	Is under appreciated and is a larger cost than presented.	Comment noted. TAC pro/con analysis related comment.	Roadway impacts
Chapter 3	7/25/07	Overall cost range for the STEP is too broad and needs to be evaluated further to bring it into the engineering ranges for predesign.	Comment noted. Cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	
Chapter 3	7/25/07	Design time and cost -Must include	Comment noted. Project selection	

Chapter	Question Date	Question	Answer	Notes
Potential considerations		design/ build options for all VPA. Tossing out potential savings tidbits on already designed pieces requires a full back up. Example: MWH had a collection system already designed by the County, and charges for redesign. The re-bid may not be the same cost. In fact a review of industry projects shows the "change order" rates and claims increase for a fully designed systems that sat on the shelf.	and design phase comment.	
Chapter 3	7/25/07	The pro/con seems sprinkled through out the commentary and the data. The report is not as cohesive as it could be. The number of contributors and patch work requires cross referencing and double checking chapters without reference to details in the appendix. Pro/Con in general is not metric based, and the TAC can either agree/ support, or expand on the pro or con analysis, or challenge the pro or con assumptions-and/ or question the data. A table for the process of listing the pro and con into categories of questions, challenges, and concurrence should track the TAC "discussion, decisions and conclusions"	Comment noted. TAC pro/con analysis related comment.	Pro/Con
Chapter 3	7/25/07	Collection systems are, to put it mildly, controversial. I am singularly impressed by the work Carollo has done. MWH assumed trenching for both systems.	Comment noted. TAC pro/con analysis related comment.	Calculations

Chapter	Question Date	Question	Answer	Notes
		Ripley did not do a thorough job of addressing the on-site costs of STEP, and simply used the bid prices for gravity (which are way high). Carollo seems to have done a more thorough job. We are used to looking at a single estimated cost for each item. Their use of ranges is a little different. Also, both earlier reports treated fees as a mark-up on the estimated bid cost plus contingency (MWH @ 27.5%, Ripley @ 26.0%). Carollo has not included any fees in Chapter 3, they are in the last chapter.		
Chapter 3	7/25/07	I tend to like “simple”, and, for this reason favor the gravity system. However, while there are offsets that have to be recognized, STEP is enough cheaper than Gravity, in Carollo’s estimate, that it has to be favored. In considering disposal, I have to add “enhancement of water resources” to cost as a yardstick in evaluating alternatives. For collection and treatment, I feel cost should be the dominant factor. So there are a few points that I would comment on for STEP	Comment noted. TAC pro/con analysis related comment.	Cost priority
Chapter 3	7/25/07	This is a comparative “zoo”. It is, obviously, more of a legal than an engineering problem. There is no discussion of it at all in the Fine Screening Report, and, it seems to me there should be. Early on, Ripley said he	Comment noted. TAC pro/con analysis and design phase related comment.	Legality of On-Site Work

Chapter	Question Date	Question	Answer	Notes
		was going to make an in-depth study of how Charlotte County did it, and include that in his report. He didn't. He simply stated, in the report, that there are 3 options – easements, installing tanks in the right-of-way, or a "utility option". When I asked for an explanation of the 3rd, the only answer I ever got was, "You know, it's like the power company can put a meter on your house.". Not much help. I believe there is a valid 3rd alternative – I just don't know what it is.		
Chapter 3	7/25/07	First of all, with new construction there isn't a problem. On old, developed land, with trees and shrubs, etc., it can be a huge problem. The septic tank involved (I think it is a 1500 gal Orenco tank) is 6 feet in diameter, and 14 feet long (I think). Unless shoring is used, the walls of the hole will collapse into the hole as it is dug. This continues so that the hole would be 7 feet deep and 14x6 at the bottom. If the hole were on level ground, it would measure 20x28 at the surface. There are a lot of lots in our community that could not handle this without major problems with driveways, trees, etc, even without shoring, street paving collapse. Obviously, this problem could be resolved by working out almost 5,000 easement	Comment noted. TAC pro/con analysis and design phase related comment.	Construct ability

Chapter	Question Date	Question	Answer	Notes
		agreements with the property owners. Since this would be an uncompensated (or $1 and other valuable considerations) easement, I doubt that all sites could be negotiated, and the costs (which are not included in any report) would be huge. To say nothing of the fact that the whole project would be delayed.		
Chapter 3	7/25/07	Vacuum System - I know nothing about these, other than what was written in the Rough Screening Report. NWRI recommended that vacuum systems be considered for STEP or gravity systems to serve the low lying portions of town. In the Rough Screening Report, they were mentioned as a gravity system option only (which seems to me to make sense). In this report, consideration is deferred until the Value Engineering phase. This also seems to make sense.	Comment noted. Project selection and design phase comment.	
Chapter 3	7/25/07	Rear Lot STEP Tanks - A fairly minor point, but in footnote 3 of Table 3.4, it states that replacement tanks can be installed at a maximum depth of 10 feet without a grinder pump. This may mean that they are talking about a 5' diameter tank. In which case my comments about 1500 gallon replacement tanks is wrong (although Orenco's 1000 gallon tank is shorter but still the same diameter). So, I guess I am just confused	Comment noted. TAC pro/con analysis related comment.	

Chapter	Question Date	Question	Answer	Notes
Chapter 3	7/25/07	Electrical Connection, STEP Tanks - This deserves separate consideration. Ripley's report may have considered this, but it was just included in their tank replacement costs Then again, they may not. I would love to hear the SRF argument for a separate service drop. It does not seem to make sense. During the Ripley consideration, an SRF requirement for grinder pumps on the effluent side was also mentioned, but is not here. Hopefully, this means it is not an SRF requirement	Comment noted. TAC pro/con analysis and project funding related comment.	
Chapter 3	7/25/07	O&M STEP Costs - At the last WWAC meeting, the added $300,000/year cost for STEP was questioned. Rather than being too high, I think it might be a tad low. The 2.5 FTE Inspectors/Technicians are represented only by a salary and fringe cost. It seems to me there would be trucks, gas, repairs, required as well. This entire budget seems to be on-site costs, isn't there maintenance of collection system cost? The rest of the costs seem reasonable. I might have been inclined to use Big Al for pumping, but if the $150/tank is realistic, it is unlikely that he could compete.	Comment noted. Cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	
Chapter 3	7/25/07	So, my bottom line on the whole thing is that we go with the STEP system. But, make darn sure that the potential pitfalls	Comment noted. TAC pro/con analysis and project selection related comment.	

Chapter	Question Date	Question	Answer	Notes
		above are completely accounted for. It really doesn't make any difference for the 218 vote. But more consideration should be given before the design goes further.		
Chapter 3	7/25/07	The STEP collection works well with pond treatment with low biosolids production and lowest energy demand making the combination the most sustainable as the project goals state. Many constraints and costs have been added to STEP by this document that are not supported by the STEP Industry data. I have screened out gravity due to the eventual leakage into the drinking water aquifer as they have admitted. One other FATAL FLAW is the seawater intrusion around the Bay where the deepest pipes will be trenched in. When saltwater enters the collection system then the treatment plant will require reverse osmosis and brine trucking to Ventura County will ensue as many as 60 trucks a day. The expense of these impacts was not added to the gravity cost as I recall $60,000.00 a day or an additional . Less hydrostatic pressure in the upper aquifer and less water volume may bring in saltwater into the upper aquifer. Please remember that sea water levels are predicted to rise making STEP low pressure safer	Comment noted. TAC pro/con analysis related comment.	
Chapter 3	7/25/07	Pond treatment/STEP collection and	Comment noted. TAC pro/con	

Chapter	Question Date	Question	Answer	Notes
		wetland reuse spray irrigation on grazing land moving to AG exchange as it is more widely accepted	analysis related comment.	
Chapter 3	7/25/07	Since this is a cost document the assumed values must be justified. STEP industry show cost 1/3 of Carollo's values they need to be included here as BOOT financed privately does not have the engineering and contingency costs added to these costs. $50 million is the project estimate given by Orenco. By owning the treatment project and billing the ratepayers the private investment is secured by the infrastructure. 50% of all public projects do not use SRF loan as the saving in low interest is eaten by the strings and red tape. An example is Golden State who goes to the private sector to finance new infrastructure. They mention Regional Water Solutions, which opens another can of worms that the AB2701 included possibly obligating us to Nacamiento water that has some mercury. They are confident that STEP/STEG will remain on the table.	Comment noted. Project funding and related comment.	Financing Options
Chapter 3	7/25/07	And a note on septic INI if a tank can be retrofitted in ground with sprayed epoxy, like manhole restoration it would only cost $700.00 per tank. Saving replacement and removal and retirement costs. Replacements could take place at the	Comment noted. 100% tank replacement is assumed as a conservative estimate. Costs for inspection, restoration, retrofit, and testing of existing septic tanks are not expected to be significantly less	

Chapter	Question Date	Question	Answer	Notes
		point of resale so as not to have the community dug up at once. Charlotte County did not replace any tanks. For Gordon's benefit they used a Tariff document to gain access to private property I have a copy if you would like me to send it along. Tank needs certification as per RWQCB3 requirements. If a tank is abandoned it could be used to capture rain water and recharge through existing leech fields. (No waste)	than new tank installation.	
Chapter 3	7/25/07	Here is a STEP bid, opened last week in Charlotte County, Florida. The project is completely directional bored and is in an areas that is completely built-out. If we remove the lift station, the cost per lineal foot is $37.26 inclusive of valves, laterals and all other incidental work. Based on the take-off quantity in the Ripley Report, the cost would be $11,734,739.92 for the collection mains (inclusive of mobilization) based on 314,942 lineal feet of pipe. This cost works out to $2,278.15 per lot based on 5151 lots. However, the fine screening report looks like it utilized 230,000 lineal feet of pipe for the gravity sewer (????). If this number is correct, than the cost would be closer to $8,600,000 inclusive of	Comment noted. STEP collection system cost estimates are based on estimates from the Ripley report for 254,000 linear feet of mains and laterals. See Table 3.18.	

Chapter	Question Date	Question	Answer	Notes
		mobilization. At 4,769 lots, the cost works out to $1803.31 per lot. The fine screening report states a cost range of $15.4 million to $20.9 million for STEP for 4769 lots. This equates to $3329 - $4382 per lot. Michael L. Saunders National Accounts Leader Orenco Systems, Inc. msaunders@orenco.com Office 1-800-348-9843 (Extension 443) Cell 941-276-8586 Fax 941-764-6069 Visit our web site at www.orenco.com		
Chapter 3	7/25/07	We are at $12 million more! That is padding or constructive fraud! • 3.3 Wet Weather flows 1.9 to 2.6 Dr Tchobanoglous comment on SLO County web site • Table 3.5 $2.2 mobilization is included in Orenco's numbers not Ripley's • P3.6 800 Manholes, pumps and power stations not in STEP collection what costs reductions is that? 300 grinder pumps need to be credited to STEP that is about $1.2 Million to add to gravity. • P3.8 Power drops from poles (not needed remove $50 million) from STEP or at least $25 million conservative	Comment noted. Flow and cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	

Chapter	Question Date	Question	Answer	Notes
		when looking at $64M to $106 Million • P3-14 Fig.3.5 5 Do not backfill tanks if replaced, save it as runoff storage we have a big water shortage. • P3-16 Table 3-10 owner should not have to run pipe from house to tank and on lot cost of $5,700.00 to high by Orenco. • P3-20 Table 3-15 3-16 The cost are way over. Usual is a breaker and conduit in attic to exterior walls wall or underground to septic. Not more than $1,500.00 with blanket permit, bulk purchase and in house crew labor. • P3-23 Table 3-23 $72 to $106 million for STEP collection alone, are you serious when Orenco can do collection/treatment/disposal all under $50 million it is preposterous! • P3-24 Table 3-19 .12 cents a kWh is inadequate for 30 year lifecycle cost maybe 3 times that for gravity collection electrical cost. $60,000.00 versus $180,000.00. The labor cost does not include the extra vacuum truck activity that Wallace Group assigned to the underestimated slopes 2/3 less than 1/16 inch slope see SLO County manuals in the MWH collection system and with less water from conservation the 2 foot per second flow		

Chapter	Question Date	Question	Answer	Notes
		rate to move solids is more problematic and maintenance costly. Needs checking! May require extra maintenance and vacuum crew operations. • P3-25 Table 3-20 Wrong assumptions for pump replacement every seven years more likely 25 years used 20 minutes a day. Labor 4,400 hours of $40.00 an hour and labor hours at least half from STEP records at existing facilities. Pumping tanks every five years is ridiculous, 10-12 years is more accurate. See Orenco website. • P3-28 3.3.2 Tank can be used for storm water drainage. There is no alternate pumps or power buildings, that needs correcting. • Directional drilling equipment has heads and sensors for underground objects that it can avoid minimizing archeo disruption. • P3-27 3.4.3 The statement that STEP has not been designed is not accurate, and further the design cost is included in the Orenco cost estimates see LOCSD web site wastewater, Orenco PPT presentation October 2006. We have design with pressure curves by Pentair pumps as well January 11, 2005 A Hydraulic Design and Review		

Chapter	Question Date	Question	Answer	Notes
		Analysis, Submitted to C.A.S.E. 700 El Moro Los Osos Ca. 93402 Mr. Al Barrow for the "Los Osos Low Pressure Sewer System" submitted by Pentair Water LPS Division Ashland Ohio 44805. Steve Etzel Systems Designer Pressure Sewer Division Pentair Water sedzel@pentairwater.com 419 281-9963 contact. • P 1-9 A fatal flaw: It leaks as admitted: • "Properly installed bell-and-spigot sewers will be watertight at first, then slowly lose their integrity (noted by Lacey Cooper and myself earlier). The risks are huge when the raw sewage leaks into the aquifer we will have pollution cleanup cost that will soar and unknown damage to our drinking water aquifer. This is a fatal flaw as time passes millions of gallons a raw sewage will dump into our limited drinking water. Replacement cost are around $1,400.00 to $2,000.00 an acre-feet if available. An acre-foot serves three residences a year. 2,000 acf costs equals 4 million a year over 30 years is $120 million dollars. Please add that to the cost of gravity assuming 1/3 is more conservative with no clean up excavations and fines add $40 million to gravity. A big risks that is		

Chapter	Question Date	Question	Answer	Notes
		hard to quantify, also the root invasion of laterals usually represent more than 50% of INI. Most sewer collections are not built in a drinking water aquifer. Remember most of our recharge comes from rain 65% perc of average 16 inches over 3500 acres equals the total water supply for buildout. Please look at historical small pipe industry data on all the STEP cost and requirements.		
Chapter 3	7/25/07	To compare both systems fairly, on lot costs for gravity need to be included in the cost for gravity systems	Comment noted. Gravity collection system on-lot costs estimated in Table 3.8 and 3.17.	On lot costs 3.17
Chapter 3	7/25/07	Land and easement acquisition in Gravity systems must be added to cost for comparing STEP with gravity.	Comment noted. Easement costs are not expected to be significant with either type of collection system.	Easements 3.17
Chapter 3	7/25/07	Power costs are underestimated. Power may be unavailable for extended periods of time. Energy depletion is ignored. Pumping systems not energy crisis hardened by use of renewables or co-generation for pumping power.	Comment noted. TAC pro/con analysis related comment.	Power 3.19
Chapter 3	7/25/07	The energy footprint of clustered gravity systems hasn't been studied.	Comment noted. Several elements necessary for decentralized collection and treatment were eliminated in the rough screening process.	Omissions
Chapter 3	7/25/07	Fatal flaws- 1) Rising seawater levels. 2) Energy depletion. 3) Greenhouse gas mitigation.(AB-32 2006) No planning	Comment noted. TAC pro/con analysis related comment.	Omissions

Chapter	Question Date	Question	Answer	Notes
		here creates an Environmental Justice issue		
Chapter 3	7/25/07	Using 500,000 KWH/YR for gravity power the same as STEP is not technically correct. STEP is pumping clear liguid (water) whereas gravity is pumping raw sewage which is a slurry having greater viscosity and specific gravity than water and will have larger line loses (more HP). Power consumption 20-30% is possible. The labor cost for gravity is not enough considering the continuous cleaning of the piping required. Pigging ports are suggested as there will be plugging of the TRIW to treatment line. Considering deteriation of the manholes experienced in the industry, an annual cost should be included in this table for replacement and repair.	Comment noted. Operation and maintenance cost estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards. Future design phase and value engineering work may refine these estimates.	Gravity O&M Table 3.19
Chapter 3	7/25/07	How much goes to Engineering when there are pre-engineered systems out there? Why are we hauling sludge to an out of state dumpsite? **The Emperor has no clothes.** Why didn't that job go to Bid? Politicians have nightmares about things like this. You want a Smart Growth Brochure?	Comment noted. Project selection related comment.	Gravity systems

Chapter	Question Date	Question	Answer	Notes
		Find out what it costs for a mile of collection costs. That's a start. How much land does it use up and add that value. Why pump garbage miles and then pump it back for beneficial use for miles? Tell the Taxpayer--let the Developer put in his own system, don't throw it on the Taxpayer--people get hot about this more than anything. They oppose new development anyway, so throw some more fuel on the fire--want to grow, then grow Smart.  Cut and Fill for the sewage Line--cutting into your morning commute time and filling some contractor's pockets. All this for the New Development when the Developer could put in his own package		

Chapter	Question Date	Question	Answer	Notes
		plant and save water for irrigation as well. Does this make sense? Only if you are a Smart Contractor with connections. Where does it end? When will enough be enough? Don't tax the Community so you can build those new houses. Elect Smart Growth and put an end to all this waste and pocket lining		
Chapter 3	7/25/07	You have stated that this system rates a "PRO" because it has been designed. This should be examined again for these reasons: The design and drawings of this system are part of the contract that the LOCSD has with MWH. This contract is now in bankruptcy and the ownership of the drawings is not known at this time and may not be determined until the bankruptcy is settled. Not being available, this issue should not be looked at so casually as to say "this system has been designed" The design of a system that terminated in TRW being used for a termination at some point east of town may have some portions that can be useful but, in general, it will have to redesigned. The flow patterns that increase when more connections come on line determine the pipe sizing of the mains and they would	Comment noted. Project design phase related comment.	Gravity Collection System

Chapter	Question Date	Question	Answer	Notes
		be determined by the end terminal of the system.		
Chapter 4	7/25/07	As a general remark, there is no mention of septage handling anywhere in this chapter. I guess they are leaving it to the value engineering stage, or? It would add some organic carbon to all of the systems, which would change all of the BioTran figures for STEP systems, I would think. There would also be some input costs associated.	Comment noted. Septage handling is addressed in Chapters 3 and 5.	Septage
Chapter 4	7/25/07	Their BioTran modeling shows insufficient nitrate reduction for ponds handling a gravity input, there is no comment on why this is so.. For STEP input, none of the processes meet the nitrate requirements without additional treatment. This seems reasonable, since the carbon is trapped in the septic tanks, and the bugs who turn nitrates into nitrogen gas must have carbon to survive.	Comment noted. Nitrification capacity of facultative ponds is discussed in Section 4.6.	Bio Tran Modeling 4.3.3 -
Chapter 4	7/25/07	- In the paragraph under Table 4.15, they say that “Certain facultative pond case studies indicate nitrification even in low temperatures”. But they assume nitrification will not take place. They defer investigation until value engineering. In the rough screening report, this evaluation was indicated as the “next step”. They could very well be right. I can remember, in the final Oswald report, a	Comment noted. Nitrification capacity of facultative ponds is discussed in Section 4.6. Biosolids removal from facultative ponds is discussed in Chapter 5.	Facultative Ponds 4.6 Table 4.15 Para 1

Chapter	Question Date	Question	Answer	Notes
		new pond showed up. Its purpose was defined as “final polishing of the effluent”. After repeated questions, Oswald said that all of the nitrates had been removed at that point (hah!) And this pond would allow a special kind of algae to break down the ammonia by extracting the nitrogen. So Oswald acknowledged that less than complete nitrification would take place. This is obviously critical to the continued survival of the Nelson ponds in the evaluation. If nitrification, denitrification, and tertiary filtering of effluent with STEP input are all required the costs are significantly higher than Biolac. And with the compartmental approach taken, the possible savings in not having to handle pond sludge except every 10 to 20 years is not given any weight.		
Chapter 4	7/25/07	In Table 4.17, they anticipate the processes being divided into 2 trains, one for spray field use, the second for leach fields, urban reuse. Methanol cost is quite high on an ongoing basis, and I have no clue what kind of an inflation escalator would apply to methanol.	Comment noted. TAC pro/con analysis related comment.	Disposal trains Table 4.17
Chapter 4	7/25/07	Their computer modeling system, BioTran, was used for all of the work. It is possible that the Nelson ponds don’t fit the program’s template for “partially	Comment noted. Nelson ponds and other facultative ponds are similar systems, but can have slightly different configurations.	Nelson Ponds

Chapter	Question Date	Question	Answer	Notes
		mixed facultative ponds". The flow schematic shown in 4.1.7 for the partially mixed facultative ponds does not look at all like the physical flow in the Nelson system (the only one I know anything at all about). It could be a functional equivalent. To defer investigation until the value engineering phase seems a touch cavalier.		
Chapter 4	7/25/07	Expand potential treatment processes beyond biological systems and add eco machines, decentralized and decentralized options to reflect recent successes with denitritifying biofilters. Besides information from Ripley, the Advantex-Nitrix and other modular systems may be both remote and urban compatible.	Comment noted. Several treatment processes were eliminated in the rough screening process.	4-1
Chapter 4	7/25/07	Aprox. Energy intensity for MBR 3,200 kWh/af; Bio Lac 800 kWh/af; SBR 1,200 kWh/af;Same as Oxidation Ditch. Trickling Filters is 700kWh/af;, packed bed pods(Advantex type-800kWh/af; Nelson Ponds 800/kWh/af; the high of $50.16 per gallon per day to low of $13.00-$16.90 for all others.	Comment noted. TAC pro/con analysis related comment.	Fatal Flaw for MBR
Chapter 4	7/25/07	Trickling filters or fixed media bioreactors were not considered in any of the past projects reports. It is well known the suspended growth systems are not a good fit with STEP. Therefore, and	Comment noted. Trickling filters are evaluated in the Fine Screening Report. TAC pro/con analysis related comment.	Attached growth systems

Chapter	Question Date	Question	Answer	Notes
		based on advances TF should be considered as more compatible with a STEP collections system, lower use of energy, less manpower intensive, and reliable. The small footprint of 3 acres can be achieved and this should be part of the options compared in the pro/con. Suspended Fabric Packed Bed filters are a variation that has the advantage of being pre-manufactured in fiberglass pods and can be quickly installed in a centralized or decentralized configuration. In a JIT mode the piping can be installed and connected in cost effective phases. The passive low energy, and low maintenance benefits are obvious but the option not included in the fine screening. 410 pods would be required, and the cost is $10/gpd for all the pods. So the cost for such a system would be in the range of $25/gpd decentralized options can employ low profile systems..		
Chapter 4	7/25/07	MBR is unsustainable and incompatible technology for the size, place and regulatory requirements. Most recent cost/benefit reviews and conference papers should be available to the TAC for the pro/Con evaluation.	Comment noted. TAC pro/con analysis related comment.	4-1 MBR
Chapter 4	7/25/07	Nelson ponds are closer to Bio Lac than to facultative pond systems. Contact	Comment noted. Nelson pond systems are a type of partially mixed	

Chapter	Question Date	Question	Answer	Notes
		Martin Hildebrand for accurate information on the "recall" proposal. See table 61 in Ripley Report	facultative pond treatment process.	
Chapter 4	7/25/07	Important to note that Sec effluent levels are the basis for cost. Costs increase dramatically with tertiary treatment and BNR added.	Comment noted. TAC pro/con analysis related comment.	4.3 Secondary treatment levels.
Chapter 4	7/25/07	The total construction costs of 14.7 in table 4.10 and ranges favoring a oxidation ditch needs to be reviewed. The preliminary assumption of bias should be challenged throughout the process.	Comment noted. Oxidation ditches are one of several technologies evaluated.	4.8 Capital costs
Chapter 4	7/25/07	All options should provide flexibility for meeting title 22 and DHS emerging contaminates issues.	Comment noted. TAC pro/con analysis related comment.	Title 22
Chapter 4	7/25/07	The energy and carbon footprint must be provided for each system to maximize the accuracy of any pro/con and meet regulations not considered for the past projects, such as the green house emissions legislation.	Comment noted. TAC pro/con analysis related comment.	Quantify Sustainability issues
Chapter 4	7/25/07	Oxidation ditches provide the highest profit margin to the already selected designers, therefore there is a greater bias at the onset, however, if intended for purely cost comparisons then presenting the information is appropriate. This 1960's technology was largely abandoned for a time in favor of other sophisticated activated sludge configurations. BNR drove technology	Comment noted. Oxidation ditches are one of several technologies evaluated. TAC pro/con analysis related comment.	Oxidation ditches

Chapter	Question Date	Question	Answer	Notes
		back to retrofit installations in place.		
Chapter 4	7/25/07	Only TF treatment train includes primary treatment. Is this appropriate if STEP is used?	The different inflow characteristics from gravity and STEP collection systems are reflected in the reduced cost estimates for preliminary and primary treatment of STEP influent.	Primary clarification
Chapter 4	7/25/07	Please present two treatment layout options based on the selected collection system for accurate comparisons of the components, and full costs	Comment noted. Project selection related comment.	Flow schematics
Chapter 4	7/25/07	Headworks sized for raw influent should be drawn larger and highlighted in schematics. Presentation of accurate side by side comparisons of treatment trains should include the reduction or elimination of solids thickening, digestion, dewatering and benefits of further handling in deep ponds. I can provide examples for the TAC.	Comment noted. The different inflow characteristics from gravity and STEP collection systems are reflected in the reduced cost estimates for preliminary and primary treatment and biosolids handling of STEP influent. TAC pro/con analysis related comment.	Representative Sizing of components
Chapter 4	7/25/07	Are the highest cost and impractical. They should NOT have made it past the rough screening. Replace this with another technology passed over such as	Comment noted. TAC pro/con analysis related comment.	SBR
Chapter 4	7/25/07	Appears a bias against propriety systems my limit options. Consultants /industry issues must be resolved to allow the best options for Los Osos to compete. Example:“process technology is adaptable to treat low or high strength influents including such as that from STEP/STEG. We would make the plant	Comment noted. TAC pro/con analysis related comment.	Propriety systems

Chapter	Question Date	Question	Answer	Notes
		"smaller" to accommodate STEP/STEG influent while treating to Title 22 standards. This treatment is accomplished by design and without adding poisonous Methanol. Attached is a Drawing for a 1 MGD layout and a Smart Growth Brochure depicting the expected cost of construction and energy use for our system why ECOfluid was not considered as a Viable Alternative		
Chapter 4	7/25/07	Extended Aeration MLE w/ Upflow Sludge Blanket Filtration Secondary Clarifier/Clarification continuous-all in one basin. Economical, Efficient and Reliable for Smart Growth. High level secondary treatment and BNR capability enable economical Chemical Free Class A/Title 22 Reclaimed Water. Adapts to High and Low Flows and Loads via SCADA. Accommodates high peak flows, effortlessly by design. Phasing-Buy and Operate only what you need-Just in Time. Requirements for treatment of; 1 MGD municipal strength influent to Class A effluent. Energy: 500 kWh per Acre Foot (Biology only).	Comment noted. Extended Aeration MLE is one of several suspended growth, activated sludge technologies evaluated. TAC pro/con analysis related comment.	Extended aeration MLE

Chapter	Question Date	Question	Answer	Notes
		Area for Bioreactor Works: 10,200 sq. ft. No Odor prevention necessary as the process is virtually odor free. UV Light Disinfection as Turbidity (after micro-filtration) is consistently within range. Reduction in number of moving parts, pumps and motors. Reduction in tankage due in part to an elevated MLSS. Reduced O & M costs. Reduced Capital cost; Budget $9.25-$11.50 for turn key. Preserves Land Value, Viewshed. New Construction or Underperforming Existing Plant Retrofit.		
Chapter 4	7/25/07	“For 5 years CH2MHill tried to prove in Centralization in the Keys. I lived those years. They tried everything, vacuum collection, a pump in every OSTS, it was a comedy of errors trying to fit a square peg into a round hole. Then the DEP refused to let them point-source discharge into the Marine Sanctuary Waters, as they were "grandfathered" to do in Key West (don't use the beaches). So, undaunted, they proposed "Deep Well Injection" and did a test drill. A Plume came out right on the Coral Reef and they had to pay millions for "restoration". Now, as you know---there	Comment noted. Regulatory agency related comment.	Outside remarks on USBF

Chapter	Question Date	Question	Answer	Notes
		are about a dozen USBF's in the Keys and everyone is happy but CH2MHill, who wasted 5 years delaying Smart Growth Options. “		
Chapter 4	7/25/07	USBF can be designed to acommodate low strentgh influent or very high influent (from a slaughter house, etc.) so it really doesn't matter what collection system gets chosen.	Comment noted. USBF is another, proprietary type of suspended growth, activated sludge treatment process. Several of these processes are evaluated.	USBF Systems not included
Chapter 4	7/25/07	I reread the Los Osos Engineering Report and refer you to Table TM6-4 which compared 13 systems on a cost/efficiency matrix. BioLac did not shine on this comparison, but the Subscript notes *"From a purely operational perspective, it is recognized in the on-site wastewater industry that intensive activated sludge plants are not well suited to low-strength influent generated by STEP collection systems. Anecdotal evidence is available that very low BOD/SS concentrations do not provide a sufficient food source for suspended growth biomass--the biomass has a very low density and does not clarify readily."* Again a decision to go with Step should open up the technology for the best fit, and consider level 5 water resource planning in a decentralized model, using energy efficient, and sustainable technology**.**.	Comment noted. TAC pro/con analysis related comment.	Limits of Bio Lac

Chapter	Question Date	Question	Answer	Notes
Chapter 4	7/25/07	Will attach the information of Nelson ponds to separate them from the PMFP…as many of the assumptions in the report are false. Acreage is 8 acres. Some propriety systems have a much smaller footprint.	Comment noted. TAC pro/con analysis related comment.	4-20
Chapter 4	7/25/07	Inadequate coverage of the permitting and environments considerations.	Comment noted. TAC pro/con analysis related comment.	4-21
Chapter 4	7/25/07	1.5 MGD assumes build out where Article 13D prohibits inclusion of capacity for vacant lots in the original assessment of existing homeowners. Design should be for only the existing homes. If the capacity remains at 1.5 MGD then it may force growth by being before CEQA analysis. No plan should include build out until environmental impacts are known for that build out. The county would be within article 13D amd CEQA constraints by designing for existing residents only. Special benefits to a particular property are determined as follows: A. Identify all parcels which will have a special benefit conferred upon them, including property owned by federal, state or local governmental agencies. (1) “Special benefit” means a “particular and distinct benefit over and above general benefits conferred on real	Comment noted. Prop 218 and CEQA process related comment.	Fraudulent Capacity Estimate

Chapter	Question Date	Question	Answer	Notes
		property located in the district or to the public at large." (2) General enhancement of property value is not a "special benefit." The key word is "general." A special and particular enhancement of property value is a traditional measure of special benefit.[11] B. Determine the "proportionate special benefit" to each property in relationship to the entirety of cost of acquiring or constructing an improvement or of "maintaining and operating" such an improvement. The assessment on a parcel may not exceed the reasonable cost of the "proportional special benefit" conferred on such parcel. Apportioning special benefit does not require mathematical precision. So long as the apportionment is reasonable and is justified by the engineer's report, it should be upheld. *The special benefit for properties within the PZ are being taxed unreasonably supplying infrastructure for vacant lots and commercial capacity beyond the "proportional special benefit" described above. The lots may not be usable in their present configuration because of salt*		

Chapter	Question Date	Question	Answer	Notes
		water intrusion on the basin and CEQA adjudication. The plant capacity is therefore fraudlent		
Chapter 4	7/25/07	Six treatment technologies are considered here all of which can be modified in a number of ways. Five of the six are treatment trains that are short treatment trains that produce large quantities of sludge and use high energy demand. Ponds are criticized for poor Nitrogen removal. Ponds in conjunction with wetland polishing accomplish much more by removing human carbon that causes carcinogen byproduct of chlorine use, and remove phosphorus and heavy metals at very low O&M and capital cost with low carbon footprint. . But the wetlands and ponds are long residence time and require large footprints that only work well in an AG environment. However ponds are more sustainable as the Los Osos septage can be blended into the treatment stream.	Comment noted. TAC pro/con analysis related comment.	
Chapter 4	7/25/07	The other five have a small footprint, that matters less on grade II or III AG land that will be used as a water reuse destination for AG uses. So high quality effluent can be achieved at lowest environmental cost that meets Tittle 22. Natural wetlands are adjacent to the Branin site where it can be captured for storage for reuse after	Comment noted. TAC pro/con analysis related comment.	

Chapter	Question Date	Question	Answer	Notes
		filtering through a mile of wetlands		
Chapter 4	7/25/07	The well documented high cost of steel, concrete and the moving parts in mechanical plants over earthmoving for ponds makes mechanical treatment when combined with higher energy much less attractive. While treatment train control is a factor less so when applying to AG which utilizes TKN well.	Comment noted. TAC pro/con analysis related comment.	
Chapter 4	7/25/07	Golden States is recovering 240 ACY of upper aquifer, soil and sod may take 200 acf and with 160 acf in conservation we are at level III SWI reversal.	Comment noted. Water resources related comment.	
Chapter 4	7/25/07	P4-11 Table 4-5 gives a cost of $14 million to the facultative ponds. In Templeton those similar sized ponds with raw sewage were $3.5 million 2004 Wallace Group. That needs a break out of the aeration, land, O&M other components. Hydraulic retention time is more like 30-40 days according to ADS and Nelson. Treatment trains with smaller footprints will be handling more concentrated influent due to water conservation implementation. Less water more solids. Septic Tank pumping should be ten year cycles. See graph attached.	Flow estimates in the Fine Screening Report are within the accuracy of this, conceptual, level report, and within industry accepted engineering standards Future design phase and value engineering work may refine these estimates.	
Chapter 5	7/25/07	I could not agree more. As long as Engel	Comment noted. TAC pro/con	5.16

Chapter	Question Date	Question	Answer	Notes
		and Gray remain in business, it seems to me that the cheapest alternative, by far, is hauling. This ultimately produces Class A-EQ sludge which should please the environmentalists. If, for whatever reason, Engel and Gray were not available, I would guess that Cold Canyon Landfill might go into the business. They have a mountain of chopped up green waste, which is the only other input to the composting process, other than the sludge. The costs of doing the whole job in-house are relatively great. It is money we don't have to raise and spend now, so why do it? We all know the situation, legally, is very fluid. It makes sense to wait until the final laws are passed, to see what requirements actually are. Besides, at that time, we should be able to use revenue bonds for an expansion. To spend a bundle to be able to produce Class B sludge may be largely wasted, if Class B sludge can not be applied to the ground.	analysis related comment.	Sludge Hauling
Chapter 5	7/25/07	The alternative must clearly lay out the sludge generation for each process. For instance SBR generates 1,830 pounds per day (dry weight basis) of biosolids.(LOCSD MWH 2001 facility report pg 4-7) Further energy is required,	Comment noted. TAC pro/con analysis related comment.	503 regulations and minimizing long term cost

Chapter	Question Date	Question	Answer	Notes
		when options that maximize the STEP system benefits, low sludge production are clearly better options for long term planning.		impacts.
Chapter 5	7/25/07	Any project that includes generation of biosolids and treatment onsite of the waste magnifies the problems with siting. "Numerous other Lively people came forth to express their extreme disgust for the fecal-like smell that often forces them to close their windows and stay indoors".(quote from just one article) NPDES permits includes stringent (CFR 503) controls for the processing, and added risk in permit violations has to be considered.	Comment noted. TAC pro/con analysis related comment.	Odors
Chapter 5	7/25/07	Possible uses should be explored by the County, and biosolids solution paid for by the County ---the LO could participate…not provide the Co solution. Examples from articles: 1. The ethanol companies each claim they will pump at least $70 million into the county to build and operate plants designed to process thousands of tons of garbage daily, creating jobs with minimal air or water pollution. Genahol would crush and shred carbon-based solid waste such as paper, cardboard, wood and food waste, heating the mixture to 1,400	Comment noted. Several options for biosolids handling, including recycling are evaluated.	Regional Facilities:

Chapter	Question Date	Question	Answer	Notes
		degrees in a low oxygen atmosphere, company officials said. The resulting gas would be distilled into ethanol. Indiana Ethanol's approach is to ferment cellulosic materials -- including sludge from municipal treatment plants or large animal farms. The thorny question of where to build such a plant is yet to be answered. 2. It may sound a little crude or unreal, but the city of Flagstaff, AZ could be the first U.S. city to power its cars from a fuel derived from what residents flush down their toilets. City officials are evaluating whether to spend nearly $500,000 next year to test a machine that is supposed to turn sewage sludge into heat, liquid fertilizer and a hydrogen-based fuel to power government vehicles.		
Chapter 6	7/25/07	It is hard for me to fault the selection of the 3 high priority sites. It is way too soon to reach a conclusion on which site is best. The footprint of the treatment process hasn't been determined. Costs of the 3 sites are unknown (at least to us). Price would (or should) be lowest on the Branin site because it has the least usable land - either for agriculture or sewer plant. It also has the advantage of	Comment noted. TAC pro/con analysis related comment.	Site selection costs

Chapter	Question Date	Question	Answer	Notes
		being furthest from LOVR. Very little odor suppression would be required, and I doubt there would be much of a view of anything from LOVR.		
Chapter 6	7/25/07	Once again, the Tonini property is mentioned. Since the spray field costs vary in Chapter 2, maybe a partial purchase is anticipated. Winter storage pond would have to go on the treatment site, or the spray field site, but neither mentions this use.	Comment noted. Purchase of the entire property is given as a conservative estimate. Storage ponds are discussed in Chapter 2.	Tonini Property Purpose
Chapter 7	7/25/07	It seems a little odd that we have had the all the complaints that the Tri-W site has not been included when here it is. Carollo has not included the costs of land or any other pre-construction costs because these have already been paid for. They did include the on-lot costs to allow comparison with other VPA's. They make the point, which is true, that no provision was made in the original project for disposing of the harvest well water. So they have added a cost to move the harvest well water to the Tonini property. As far as I know, this could go to Eto, but the dollars end up being essentially the same.	Comment noted. TAC pro/con analysis related comment.	Tri W
Chapter 7	7/25/07	Tri-W might benefit by being based on actual bid cost plus escalator (except for on-lot costs and the line to the spray fields) so there is very little contingency -	Comment noted. TAC pro/con analysis related comment.	

Chapter	Question Date	Question	Answer	Notes
		compared to 30% on other VPA's. They might have a big advantage by being spotted $20 million or so for land and pre-construction costs and, maybe the contingency allowance. This puts Tri-W on an even (or better) footing than the alternatives from a purely cost standpoint So, I guess you could say there is only one thing worse than not including Tri-W in the process – and that is including it.		
Chapter 7	7/25/07	In Table 7.3 there is an overall picture of how the components would be put together to make a project. There is not much that anyone can do, but some of these options would provide zero benefit to the people who have been assessed for the 2001 bond issue. It is basic that there must be a benefit returned to each of the homeowners that is more or less equal to the value of the assessment, or the assessment is illegal. So, class action litigation seems almost inevitable. There already has been one suit filed in small claims court (by a single pre-payer), which was (properly) turned down by the judge because the benefit had not yet been determined. They also sought refunds from the Bankruptcy Court for the prepayments. The bonds are insured. So the bondholders are protected. Inevitably this	Comment noted. Other agency related comment.	2110 assessment illegal? Lawsuits?

Chapter	Question Date	Question	Answer	Notes
		will mean that the lawsuit would be filed against the CSD, but the insurer would play a dominant role. It could be a long drawn out suit. Appeals would almost be guaranteed, because $20 plus million dollars is worth a lot of lawyers' fees. In theory, this should not be a part of the selection process, but in reality, it can't be ignored.		
Chapter 7	7/25/07	This is the culmination of the entire report. All options are expensive, and essentially in the same range. Even if you added the $20 million pre-construction cost to the Tri-W figure, it would come out under the maximum for any of the alternatives. The overwhelming lesson in these numbers (to me at least) is that construction inflation is a huge factor. The greater the delay, the greater the costs. Those who talk about $30 million or $50 million projects are simply not living in the real world. This report represents the real world. There have been many projects worked on in the last 20 years. Each one has been more expensive than its predecessor. And this is still going on.	Comment noted. TAC pro/con analysis related comment.	
Chapter 7	7/25/07	Through out the report the authors claim Tri W to be "viable". However, by basic industry and AB 2701 process criteria, measures such as sustainability, community acceptance, cost	Comment noted. TAC pro/con analysis related comment.	TRI W

Chapter	Question Date	Question	Answer	Notes
		effectiveness ($/gpd), energy footprint (S/kWh), environmental impacts, risks, regulatory compliance, and short and long term costs, TRI W is NOT Viable. To claim this in the incomplete and casual analysis is disingenuous, and makes any conclusions in the report suspect.		
Chapter 7	7/25/07	The "unclassified sludge" at Tri W is a result of deferred cost. To present a factual picture of treatment processes for the pro/con the costs for solids stabilization, dewatering, and hauling must be added. In the solids section the issue of the solids production in unit costs for each systems $/ ton must be presented, along with realistic costs for hauling processing and disposal, along with risks (expressed as probable costs) of cradle to grave tracking of the waste.	Comment noted. TAC pro/con analysis related comment.	Components (Sludge) Costs not accurate.
Chapter 7	7/25/07	On lot costs added (10-11 $M), but the O&M is zero. Reflect costs accurately. Grinder pumps are on-lot costs, and must be maintained, sewer laterals are long term maintenance issues for homeowners, and the source spills, & personnel costs for response to ID blockages. Grease roots, roaches and rats are all O&M related costs of maintaining on lot sewer laterals connected to conventional gravity systems, these costs/nuisances are NOT	Comment noted. TAC pro/con analysis related comment.	Tri W Construction Costs. Not accurate

Chapter	Question Date	Question	Answer	Notes
		currently issues for homeowners, or included in district costs.---for pro/con..		
Chapter 7	7/25/07	The project alternatives should consider probable land costs, as the ratepayer has to know the full impacts in comparing TRI W to alternatives. Note 6 is not accurate. The expenses for TRI W are NOT paid. If the statement is retained, then this is an appreciated asset that would offset all other costs, and that should be calculated in the pro of choosing any other alternative..	Comment noted. TAC pro/con analysis related comment.	Land Costs- Not accurate.
Chapter 7	7/25/07	*"The previous chapters in this Fine Screening Analysis each considered various alternative components and summarized the viable options to carry forward for development of additional viable project alternatives, as illustrated in Figure 7.1. Disposal and reuse alternatives were developed for meeting seawater intrusion mitigations at Level 1 and 2 using various combinations of spray disposal, agricultural reuse, leachfields at Broderson and conservation."* *"Future phasing to a Level 3 project requires other groundwater management techniques to be implemented, which requires purveyor participation."* Minimum of level 3 was determined to be required in all alternatives. Why is TRI W	Comment noted. The water supply benefit level achieved is a community decision. TAC pro/con analysis related comment.	Reference to salt water intrusion level 1-2 Figure 7.1

Chapter	Question Date	Question	Answer	Notes
		retained? This alone makes Tri W configuration incomplete, and requires either added costs evaluations, or taking the project off the table.		
Chapter 7	7/25/07	*"Both Gravity and STEP/STEG collection are assumed to be viable for each alternative; however, effluent nitrogen levels may require additional treatment (nitrification and/or denitrification)for reuse/disposal alternatives requiring low nitrogen Oxidation Ditches, Biolac and partially mixed facultative ponds are all carried forward as viable treatment technologies.".* Does this mean Nelson Ponds are considered in the alternatives?	Nelson ponds are a type of facultative pond treatment system and are considered a viable alternative in the report.	
Chapter 7	7/25/07	*"Other treatment alternatives, such as extended aeration MLE, are feasible but were estimated to cost more than the best apparent alternatives and do not appear to offer any significant advantages"* I understand this option is in fact a possibly lower cost option than the oxidation ditch, due to recent innovations and package systems.	Comment noted. Project design phase and value engineering related comment.	
Chapter 7	7/25/07	*"Sub-Class B solids treatment and hauling appears to be the low cost alternative and allows the community to develop composting/local recycling in the future"*	Comment noted. TAC pro/con analysis related comment.	

Chapter	Question Date	Question	Answer	Notes
		This statement is highly misleading and inaccurate. The strong value of minimizing production of sludge, the high cost, and ecological issues surrounding hauling unstabilized or liquid, as opposed to dewatered waste and that Los Osos values not becoming a destination for financing or developing a County Waste facility seems totally ignored.		
Chapter 7	7/25/07	The discussion assumes certain denitrification requirements. When the SWI mitigation of the two main water purveyors is taken into account around 980 acre feet per year can be achieved without 7 m/l denitrification. Golden States Water Co 420 ACFY Ionization of upper aquifer. LOCSD Water company 200 ACFY blending upper and lower aquifer, reduced lower draw. 160 ACFY conservation. San Luis Soil and sod possible 200 ACFY of effluent. All of this reduces the energy draw for denitrification and high level of treatment as AG spray can be used for most disposal as safe basin yield is already met. Also, with pond designed for build out so much free board or storage exists that INI is not a problem so septic tanks do not	Comment noted. Several combinations of disposal options, with different levels of denitrification, are evaluated in Chapter 2. Nitrogen treatment in a side-stream of effluent, based an specific disposal needs, is discussed.	P 7-5 Table 7-3

Chapter	Question Date	Question	Answer	Notes
		need replacement as precaution. The flow will be much less than capacity until buildout, which could be decades away. This gives a lot of flexibility in management and treatment requirements as in zero discharge in the basin.		
Chapter 7	7/25/07	On the way to work this morning you most likely owe your safe arrival to PreCast Concrete Bridge Elements which replaced old ReBar poured in place bridge elements to comply with new California Earthquake Requirements Not only are PreCast elements standing up to Earthquakes---look at how many under road drainage ducts survived--all of them, or cable manholes--all of them, or tanks---all of them to make any argument that they are not approved for Earthquake prone uses senseless. The Federal Highway Administration has a new Philosophy Get in, get out and stay out. Using PreCast Bridge elements not only is stronger under compression loads than steel elements, they are assembled quickly and last longer, so traffic is effected less while field poured means waiting many months for "curing" to give strength to the bridge. PreCast elements are extruded, not poured and no "voids" are in them, An example is the USBF	Comment noted. Project design phase and value engineering related comment.	Pre cast to lower constructi on costs

Chapter	Question Date	Question	Answer	Notes
		panels, and they are cured under controlled conditions before being load stressed. Pardon me if I roll my eyes when I hear that PreCast Basin elements are less "survivable" than vinyl films. Fluids "rock" back and forth in Earthquakes---I studied this. They cause hydraulic pressures under your films that lift it and allow it to actually burst. Fluids need to move as a unit---oh well, some things get entrenched and are difficult to dislodge, so buy steel if you like----it's not as suitable, but if it makes you feel better. OR, look for systems that survived landslides, earthquakes, fire, floods--all the nasties and still kept going, like the Pink Bunny.		

Orenco Comments

COMMENTS SUBMITTED BY ORENCO SYSTEMS, INC.
July 20, 2007

I&I (Infiltration and Inflow) in Gravity Sewer Collection Systems

Introduction to I&I

Carollo's Engineering May 2007 report, "Viable Project Alternative Fine Screening Analysis" for the Los Osos Wastewater Project includes an evaluation of I&I. I&I is an acronym for Infiltration and Inflow. Essentially, I&I is a quantitative measurement of extraneous water that enters a wastewater collection system. This is a significant issue because I&I entering the wastewater collection system must be treated as wastewater. Accordingly, the community incurs a higher capital cost for over sizing the collection system and treatment plant to convey and treat the water and I&I. The utility incurs an O&M (operation and maintenance) and R&R (repair and replacement) cost for conveyance and treatment of I&I. Additionally, collection, conveyance and treatment capacity taken-up by I&I cannot be utilized for the collection, conveyance and treatment of wastewater.

Estimating I&I

So how much I&I will there be? The recently completed analysis of wastewater collection methods stated that I&I flow for a conventional gravity sewer system will be 17 gpcd (gallons per capita per day). Furthermore, it is stated that wet weather flow for Los Osos is estimated at 1.5 MGD (million gallons per day) while the dry weather flow will be 1.2 MGD. The justification goes on to state that the actual I&I will likely be much lower than 17 gpcd due to sandy soils in the area and due to the water tightness of a new collection system. The report references a more realistic estimate of wet weather I&I to be 7 gpcd based on textbook models.

In the report table 1.2 gravity sewer infiltration ranges based on various referenced text books. The table is shown at the end of this document. The table states that Infiltration for gravity sewer in Los Osos will range between 9,600 gallons per day and 318,000 gpd depending on what text book you choose to utilize. Based on this table, 1.5 MGD does appear to be a reasonable estimate. However this table does not reveal the whole picture regarding I&I.

The values stated in Table 1.2 actually represent the **allowable leakage for newly installed gravity sewer pipe**. Essentially, it is the **allowable leakage when testing *newly* installed gravity sewer**. The typical practice for infiltration testing of gravity sewer is as follows:

1) Plug the downstream manhole
2) Plug the inlet side of the upstream manhole

3) Fill the upstream manhole to an elevation that causes a positive displacement head (typically 2' to 5' above the pipe or water table, whichever is greater)
4) After a testing period, typically less than 4 hrs, add make-up water to the upstream manhole to restore the water level to the staring elevation
5) Measure the quantity of water added and compare against the allowable leakage

The leakage test is a measure of pipe integrity only. It typically does not measure I&I into manholes or laterals that are connected after construction of the main. Additionally, this testing does not quantify Inflow that can occur through manhole covers, clean-outs, vents, etc.

SLO County Standards

Interestingly, while not mentioned in the study, the Section 7.2.4 of the San Luis Obispo Public Improvements Standards allows a leakage for newly installed pipe of 500 gpd/in-mi of pipe installed. The same standard has an allowable leakage of 1 gallon for a 2 hour manhole test.

The San Luis Obispo Public Improvements Standards states that force mains are pressure tested at 150 psi and shall have an allowable leakage of 100 gallons per mile for 24 hours. By comparison, this standard would allow approximately 12,000 gpd leakage on STEP pressure main pipe of the same length as the gravity sewer. Additionally, the allowable leakage for the STEP main is at a pressure of 150 psi, while the test pressure in the gravity main is going to be less than 2 psi.

The SLO County Standards would permit infiltration into gravity sewer, when newly installed, up to 192,000 gpd for the mains and approximately 10,000 gpd for the manholes.

I&I Text Book References

If we review text books for the true definition of I&I, we will find that long term I&I is highly variable and that the possible ranges for long term I&I are somewhat startling. "Wastewater Engineering, Treatment and Reuse", Metcalf & Eddy, 2003, states that, "The presence of high groundwater results in leakage into the collection systems and in an increase in the quantity of wastewater and the expense of disposing of it. The amount of water that can enter collection systems from groundwater, or infiltration, may range from 100 to 10,000 gal/d·in-mi or more". It also goes on to state that in terms of service area the range can be 20 to 3000 gal/ac·d on average and can be as high as 50,000 gal/ac·d during heavy rains. The same book also states that collection systems exhibiting infiltration also may exhibit exfiltration.

The text book entitled "Water Supply and Sewerage", published by McGraw Hill in 1991 states that infiltration rates in old sewer systems has been measured to be from 15,000 to 50,0000 gal/(mi-day) and that sewer size has little effect. This text book states that "since sewers deteriorate with age, estimates of infiltration, even for new systems, should be reasonably generous.

I&I Conclusion

Is 300,000 gallons per day a reasonably generous estimate? Perhaps it is, for a new collection system where butt fused pipe is used in the high groundwater areas of the collection system. This being the case the gravity sewer capital costs for butt fused pipe in the high ground water areas should be reflected in cost range. If bell and spigot is used, I&I of 300,000 gpd may be on the low side over the life cycle of the collection system. However, more explanation of life cycle analysis and examples of gravity sewer installs documenting this level or better of Infiltration and Inflow need to be provided. Without this information a thorough comprehension of I&I for gravity sewer cannot be garnered.

When we consider the testing protocol for new pipe, we should understand that a gravity sewer pipe can leak and still pass for acceptance. If we consider a standard sewer length of 400' between manholes, the allowable leakage will be approximately 300 gpd for the 400' run of pipe. This leakage can occur as a single leak anywhere within the 400' laying length and still be accepted for service. This leak exceeds the total flow of a typical single family home.

Exfiltration and it's relation to I&I

The fine screening analysis focuses on infiltration, and does not discuss exfiltration. Simply put a 300 gpd infiltration leak can also be a 300 gallon exfiltration leak. This exfiltration leak would equate to 10,950 gallons annually of untreated domestic wastewater being discharged at a single point. This single discharge could discharge more than 60 lbs of Nitrogen annually into the groundwater.

If we look at the total potential for exfiltration from a new gravity sewer system, we are now talking more than 40,000 lbs of Nitrogen annually being discharged into the groundwater. This Nitrogen loading is more than a centralized treatment plant treating the Los Osos flow to 10 mg/L would discharge.

While it can be argued that exfiltration may never equate to infiltration, the potential risk is evident.

COMMENTS SUBMITTED BY ORENCO SYSTEMS, INC.
July 20, 2007

Long Term I&I

In the context of long term I&I, the study reflects little discussion or analysis. While Los Osos does not receive a large amount of annual rainfall, it does receive some fairly large rain events. Could the plant handle a 50,000 gal/ac.day infiltration event (almost 30,000,000 gpd)? Will the long term degradation of the gravity sewer induce expensive plant expansions or repairs to the main? Long-term, could exfiltration eventually discharge Nitrogen into the environment at a magnitude that is detrimental to the environment. It is extremely important to note that all conclusions stated in this report are based on newly installed pipe. Gravity sewer, regardless of material, will degrade and I&I will increase.

Risk Associated With Gravity Sewer

Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from a present process or future event. In everyday usage, "risk" is often used synonymously with the probability of a known loss.

When considering gravity sewer, RISK is the most important factor to consider. Unfortunately, current wastewater planners have largely ignored long term impacts of gravity sewer with the statement that materials are better today. In reality the risk is still huge with regards to I&I, SSO's (Sanitary Sewer Overflow's) and Exfiltration. Two risk factors not discussed are 1) Sea water I&I may accelerate corrosion in the sewer mains therefore shortening component life expectancies, and 2) Sea water I&I can also impact the treatment process by loading the plant with high chloride concentrations thereby putting the treatment plant at risk of violating TMDL's.

Aging sewer pipes in the United States may be one of the largest economic and environmental challenges ahead and quantifying and planning for these future impacts is as important today as it ever was. Utilities throughout the Country are expending huge amounts of resources and funding towards the restoration of existing gravity sewers.

COMMENTS SUBMITTED BY ORENCO SYSTEMS, INC.
July 20, 2007

Table 1.2 Gravity Sewer Infiltration References
Los Osos Wastewater Project Development
San Luis Obispo County

Source	Recommendation	Corresponding Infiltration for Los Osos
"Recommended Standards for Wastewater Facilities," Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997.	200 gpd/in-mi	77,000 gpd
"Installation Guide for PVC Sewer Pipe" PWPipe, March 2000.	50 gpd/in-mi	19,000 gpd
"Gravity Sanitary Sewer Design and Construction," American Society of Civil Engineers, 1982.	500 gpd/in-mi	190,000 gpd
"Wastewater Engineering; Collection and Pumping of Wastewater," Metcalf & Eddy, 1981.	530 gpd/acre(3)	318,000
"Civil Engineering Reference Manual", Michael R. Lindeburg, 2001.	200 gpd/in-mi or 10% of average flow	77,000 gpd or 120,000 gpd
Unibell - http://www.uni-bell.org/pubs/sample_sanitary_spec.pdf	<25 gpd/in-mi	<9,600 gpd
Infiltration Allowance for Viable Project Alternatives in Fine Screening Report (Gravity)		300,000 gpd

Notes:

1. Total of sewer = 254,000 linear feet; 8 in diameter.
2. Predominant value reported - many communities had much less.
3. Los Osos service area = 595 acres

Surfrider Foundation Comments

Surfrider Foundation®

San Luis Bay Chapter

Statement of Key Environmental Issues:
Los Osos Wastewater Treatment Project 7/17/07

The mission of the San Luis Bay (SLB) Chapter of the Surfrider Foundation is to preserve, enhance, and protect the biological health of our coastal environment and its contributing watersheds. The complex water supply and treatment challenges of the Central Coast require creative solutions, and specifically, the Los Osos Wastewater Treatment Project is an opportunity to implement best available sustainable water management and sewage treatment techniques.

SLB Surfrider appreciates SLO County Staff's bottom line goal of developing the "most cost effective, sustainable, environmentally preferred project" and we submit the following Statement of Key Environmental Issues into the public record:

1. Sustainable water management – practices involving tertiary treatment including water recycling through reclamation, water polishing, and recycling capacities with minimal reliance on chemical inputs during treatment to reduce the impacts of the project on the Morro Bay State Marine Reserve and extended marine ecosystem. We support high-level seawater intrusion (SWI) mitigation measures, reduced pumping of the lower aquifer, and the overall goal of a balanced ground water basin.

The project should promote community self-sufficiency, therefore, we recommend an incentive based conservation program with appropriate building code adjustments to encourage the implementation of certified and effective "Appropriate Technologies" such as greywater systems, dual flush and composting toilets, dual plumbing requirements, rainwater catchment, cisterns, pervious concrete, etc., and a demand based rate structure to reach the goal of a balanced ground water basin.

2. Water Monitoring – to develop and implement a strong wastewater, ambient water, emerging contaminants, and biosolids quality-monitoring program, and to maintain clear information and tracking of data to assist water quality enhancement. We promote the inclusion of an educational component partnering with local schools, community groups, and non-profits.

3. Affordability – regional co-operation amongst neighboring communities would enhance grant-funding opportunities and maximize physical, technical and fiscal resources.

4. Energy use & long term affordability – to minimize dependency on non-renewable energy sources through the use of smart design, cogeneration of energy, and other renewable energy sources. For example, a certified sewage sludge composting operation has the potential to reduce the overall volume and toxicity of the resulting biosolids, thereby increasing their quality and thus reducing the community's hauling costs, associated air quality impacts, and vehicular traffic. We promote use of the precautionary principle and do not support the land application of these biosolids within the Morro Bay Estuary watershed. We promote consideration of a ponding system, STEP/STEG and Decentralized options because of their ability to reduce handling of sludge.

5. Green design and building techniques – we support a project that qualifies for the U.S. Green Building Council's "Leadership in Energy & Environmental Design" (LEED) certification and incorporation of techniques that account for the "life cycle" of resources and waste, thus reducing environmental impacts of the project. Green Build techniques include: use of pervious concrete, building orientation that utilizes passive solar lighting, and CA native landscaping. We promote the work of the SLO Green Build (www.slogreenbuild.org) and encourage their input in the project.

6. Cultural impact – actively involving the Los Osos Community Services District and citizens throughout the project development process, selection of a treatment system reflective of the community priorities and locating treatment facilities with respect to the community's sensitive cultural and environmental resources. Additionally, we support the request of the Northern Chumash Tribal Council to utilize collection technologies that do not require deep trenching (ie., STEP/STEG) to avoid disturbing archeological sites of significance.

7. Collection system – pressurized design that reduces Infiltration and Inflow (I&I) and allows for diagnosis and repair of breaks or leaks in the system as they develop, in part, to prevent sea water intrusion/contamination of reclaimed water sources. With collection system costs estimated at up to 65% of the project we promote examination of STEP/STEG and "Decentralized" Wastewater Management options.

Submitted by the San Luis Bay Chapter of the Surfrider Foundation

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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.

SLO Greenbuild Comments

SLO Green Build

Board of director's Sustainability and Energy Self Reliance Recommendations:

For

County of San Luis Obispo Technical Advisory Committee
Los Osos Wastewater project and water reclamation projects.

Introduction

The County of San Luis Obispo has an excellent opportunity to design into the LOWWP project methods of water conservation, re-use and wastewater treatment that are based on the balanced metrics of Environmental, Social, and Financial Sustainability[1]. The State Water Resources Control Board has indicated, because of fossil fuel depletion, Greenhouse Gas mitigation, and global warming, that water and wastewater projects cannot continue assuming it is "business as usual" disregarding future energy costs and global environmental issues . With this in mind the SLOGB board makes the following recommendations to the technical advisory committee after our review of the fine screening report.

Recommendations

1. **Prioritizing Sustainable Design** The application of smart growth principals need to recognize sustainable design is a core value effecting future urban planning. If sustainability is better represented throughout the planning process using the specific implications of the trimetrics mentioned above such as Energy consumption, Social impacts, and Financial Planning for future environmental challenges, then the needs of all socioeconomic groups in Los Osos can be treated equally.

   SLOGB recommends continuous tri-metric sustainable design analysis throughout the wastewater implementation program. It would benefit homeowners and the County to know the real cost of various treatment and reclamation plans as they relate to escalating costs of energy due to fossil fuel depletion, and required green house gas mitigation in 2012 under AB 32-2006. (By Jan 1, 2012, Green House Gas rules and market mechanisms adopted by Air Resources Board take effect and are legally enforceable.)

If the County chooses as its core value project choices on energy self sufficiency, energy conservation and tiered implementation to economize energy consumption by economy of scale (cluster or staged sewer development), then it will have prepared partially for fossil fuel depletion and its ancillary economic shocks. Many recent studies expect these shocks by 2011 to 2015.

Energy modeling requirements are part of an accurate and complete sustainability assessment. Life cycle cost analysis, embedded energy analysis, greenhouse gas analysis and integrated sustainability analysis should accompany any project of this magnitude in today's changing environmental and energetic reality. With operations and maintenance ultimately accounting for 75% of the life cycle cost of any design, the water reclamation and wastewater systems energy footprint will impact lesser income groups in the community. The result would be pressures for displacement of lower income people. Potential displacement of up to 40% of the community to implement water goals does not meet sustainable design standards.

Social impacts are weighed equally with energy and environmental impacts in sustainability analysis. People are a resource. Behavioral participation is part of sustainability design management. Behavior is viewed as an energy offset and resource. It is well known that Los Osos has a high level of low income families. Thirty percent of the families with children going to Baywood Elementary are using the school free lunch program. To qualify these famlies, they have to be proven low income by federal standards. Seniors on low or fixed income amount to another 20 percent of the residents of the prohibition zone.

With this in mind, SLOGB submits to the County in electronic format a sample sustainability assessment titled: Assessment of the Environmental Sustainability Of Urban Water Systems by MARGARETA LUNDIN. [2]. This document will help the TAC and public works deal with sustainable design and its implementation. Also submitted is , Energy Baseline Study For Municipal Wastewater Treatment Plants complied for PG&E by Base Energy Inc. to help in efficient wastewater systems design [3].

2. **Energy use & Sustainiblity** – Consistent with Surfrider Foundation's position on this issue SLOGB emphasizes also minimizing dependency on non-renewable energy sources through the use of smart design, cogeneration of energy, and other renewable energy sources. The present fine screening design assumes the cost of electricity at 12 cents a KWH for the life of the plant without interruption.

   In actuality future energy prices and availability are better represented by cost curves related to past increases in energy costs which place power prices well above the 12 cent a KWH rate by 2015. With tight natural gas supplies, reductions in hydroelectric power due to reduced snow pack from global warming, and higher summer energy peaks for air conditioning, PG&E expects safety margins to reduce substantially

unless renewables are aggressively utilized. Fuel purchase costs could escalate dramatically for PG&E and will be passed on to the consumer. Energy depletion and resource scarcity, and price shocks are real issues directly related to operations and management of Los Osos wastewater and reclamation from 2012 to 2050 and beyond.

For the cost to produce energy, SLOGB submits to the County CEC data on the levelized cost to produce power. Wind energy is by far the winner at 4.93 cents a KWH. The price of natural gas will be impacted by resource shortages by 2015. Present peak loading costs for natural gas power of 15 cents a KWH reflect new added capacity constraints that the wastewater plant represents. (See electronic attachment CEC Cost Analysis- Power [4]). Spray fields and grid connected wind power dual use sites could cut 'net' energy consumption for wastewater operations to near zero with a capital recovery of 4.93 cents a KWH.

Table 1
Levelized Costs by Technology

Technology	Energy Source Fuel	Operating Mode	Economic Lifetime (years)	Gross Capacity (MW)	Direct Cost Levelized (cents/kWh)
Combined Cycle	Natural Gas	Baseload	20	500	5.18
Simple Cycle	Natural Gas	Peaking	20	100	15.71
Wind	Wind; Resource Limited	Intermittent	30	100	4.93
Hydropower	Water; Resource Limited	Load-Following, Peaking	30	100	6.04
Solar Thermal					
Parabolic Trough	Sun; Resource Limited	Load-Following	30	110	21.53
Parabolic Trough-TES	Sun; Resource Limited	Load-Following	30	110	17.36
Parabolic Trough-Gas	Sun/Natural Gas; Partially resource limited	Load-Following; Peaking	30	110	13.52
Geothermal					
Flash	Water	Baseload	30	50	4.52
Binary	Water	Baseload	30	35	7.37

Table courtesy Calif. Energy Commission

Added Sustainability for STEP /STEG Systems.

After reviewing the LOCSD 's STEP collection and treatment energy consumption estimates in Los Osos and comparing them to the Counties estimate of STEP collection, SLOGB anticipates that the County will revise its energy consumption figures and energy infrastructure costs for STEP collection to reflect the more realistic industry based comparative reporting. The Counties on site costs for power interface, I&I estimates, and assumptions of 20 percent reduction in solids from STEP collection appear understated.

SLOGB recommends that lower cost Photovoltaic power be used to operate the STEP pressure interface instead of a separate extra power service at 5000 dollars cost to each home (County estimate). This could be done for a cost considerably less than the projected cost of an additional service drop. Photovoltaic's with battery backup could

harden individual STEP systems from power outages as PG&E margins for peak loading diminish from 7% in 2007 to 0.8% in 2008 and beyond. (PG&E estimate)

Another method, presented by the Pacific Energy Company, offers a submersible pump to be installed in a pump vault after the existing septic system with a direct drive pump using only photovoltaic power eliminating the battery backup entirely at an estimated cost of 2200 dollars per parcel, well below the fine screening estimate of 5000 dollars.

SLOGB recommends that instead of replacing every septic tank that wherever possible a 250 to 350 gallon surge pump vault be installed after an existing certified septic tank. This would cut air pollution construction impacts to a minimum and reduce homeowner lifestyle and yard disturbances. In sand, tanks of this size could be hand dug in problematical locations with minimum OSHA shoring.

SLOGB agrees with Surfrider foundation that STEP/STEG pressurized design allows for diagnosis and repair of breaks or leaks in the system and allows control, redundancy and monitoring not available in gravity systems. Gravity systems do not allow the scale of monitoring and Bay protection that STEP/STEG does. Therefore we agree with the Surfrider Foundations support of the STEP/STEG approach.

Directional boring of STEP/STEG piping systems is preferred by the Chumash Council, reduces PM10 emissions, reduces road repair, reduces dewatering and dewatering dumping costs, eliminates shoring costs 95%, eliminates disposal of contaminated soil, reduces pipe footage exposed to groundwater in low lying areas, and trenching re-compaction. Cost analysis for STEP/STEG should include these sustainability comparisons in a realistic evaluation.

Added Sustainability for Gravity Based WW infrastructure.

SLOGB submits to public works a key document from PG&E that outlines incremental energy savings in wastewater plant design. Energy Baseline Study For Municipal Wastewater Treatment Plants complied for PG&E by Base Energy Inc. [5] to help in efficient wastewater systems design.

Facultative ponds used for solids digestion may offer more sustainability and optimized energy footprint when coupled with photovoltaic aerators. Submitted is evaluation for the City of Planada as part of the California Wastewater Process Optimization Program funded by the PUC outlining the use of Solar Bee photovoltaic pond aerators. (DETAILED PROCESS AUDIT SUMMARY & RECOMMENDATIONS FACILITY Planada WWTP" [6].The payback for Solar aeration was studied and estimated to be 2.2 years. Solar Bees can reasonably be estimated to provide 300 lbs of dissolved oxygen (DO) per surface acre per day, or more per unit. Solar Bee website is: http://www.solarbee.com/ww.shtml

Secondary use of existing septic systems. SOLGB recommends that the existing septic tanks not be abandoned but that they are used for greywater and impervious runoff recharge into the upper aquifer. Greywater reuse is certified under California law.

Watering stations for landscaping could be established with the final overflow returning to the old septic system. The saved water is applied to subsurface landscape watering and upper aquifer recharge. Diffuse discharge of greywater and drainage in Los Osos represents zero energy consumption to recharge up to 200 AF per year. No proposed County recycling system matches this efficiency.

Improved sustainability for water reclamation.

All proposed water recycling systems need energetic evaluation in terms of water reclaimed per KWH. Using the Broderson site for water reclamation is unsustainable due to the physical principal of lifting 4 million pounds (500,000 Gal. X 7.4 Lbs per gallon) of water every day to a height of 200 feet. The work (KWH per gallon delivered) required to implement the 10% potential recharge of the deep aquifer would in our opinion eliminate the process as an option.

3. Environmental Sustainability

Sea Level Rise related to global warming.

While other costal communities are undergoing extensive planning to mitigate sea level rise and its effect on Costal aquifers there is no modeling in the groundwater assessment here. Sea level rise due to global warming will have the following impacts:

A) Adverse impacts on the collection of sewage especially gravity sewers including excessive levels of salt water intrusion into the waste stream. Gravity systems are vulnerable to sea level rise impacts.

B) Condemnation of homes and or rolling easements and service contracts related to water levels may be necessary and are unplanned here. Legal ramifications of having to supply waste disposal in or at water level situations may be problematical. Zones of impact should be identified and legally accounted for.

C) Salt water intrusion has not been modeled in varying scenarios for sea level rise in the WWTP life cycle. No impact on water resources has been evaluated. The range of study should include assumed sea level rises from a minimum of 1.5 feet to 23 feet within the life cycle of the sewer plant. Existing water resources and plans for water balance in the basin should be modeled for varying sea level impacts.

An international project of the Arctic Council and the International Arctic Science Committee (IASC), has evaluated knowledge on climate variability, climate change, and increased ultraviolet radiation and their consequences. The results of the assessment were released at the ACIA International Scientific Symposium held in Reykjavik, Iceland in November 2004. I that report, Sea level rise during the life of the LOWWP life cycle will be from 1.5 feet to 23 Feet. Greenland ice melt has accelerated rapidly since the year 2000. With no planning for mitigation, there

would be large added costs, legal ramifications and environmental failures of system components related to sea level rise that could be planned for now.

Sustainability and Greenhouse Gas Emissions

50% energy reduction goals by 2020 required by AB 32-2006.
By Jan 1, 2012 GHG rules and market mechanisms adopted by ARB take effect and are legally enforceable. These constraints would then need to be reviewed as part of any CEQA evaluation. No planning presently exists for the LOWWP relative to Green house gas emissions. The emissions are directly contributing to estimated habitat collapse from sea level rise.

Carbon dioxide accounts (by weight) for almost all of the human produced greenhouse gases emissions (although it is important to remember that total CO2 emissions account for 60% of the warming potential. In 1991 the human activities that contribute to global warming were: fossil fuel combustion 85%, land use clearing 13% and cement production 2%. Since carbon dioxide is the major human-produced greenhouse gas, it is important to note that the average American releases about 20 tons of carbon dioxide into the atmosphere each year . This figure is an estimate and includes transportation and home electricity usage and industrial and governmental production.
Human Activities Contributing to CO2 in the Atmosphere in Metric Tons and as a percent:
Fossil Fuel Combustion : 22,079,264,000 - 85%
Land Use and Clearing : 3,400,000,000 - 13%
Cement Production : 593,568,000 - 2%
TOTAL : 26,100,000,000 - 100%
Amounts of CO2 produced from different sources used to produce 1 kwh (kilowatt hour) electricity are:

- 2 lbs. CO2 if coal-generated
- 0 lbs. CO2 if hydropower
- 0 lbs. CO2 if nuclear power
- 1.25 lbs. CO2 if natural gas
- 1.7 lbs. CO2 if oil

Amount of CO2 produced from combusting 1 gallon of gasoline is 19 lbs. (about 5.3 lbs. of carbon which combines with atmospheric oxygen in combustion to yield this larger amount) which goes directly into the atmosphere. In other words, for every 15-gallon fill-up at the service station, about 300 pounds of carbon dioxide are eventually released into the atmosphere. 600 to 1200 Tons of Greenhouse Gasses per year for electricity and transportation are required to operate the most efficient proposed Sewer Plant. Existing primary treatment in Septic Systems creates “0” Tons of greenhouse gasses. “All studied systems do not meet State of California goals for 20% Carbon reduction by 2020 and 80 % carbon reduction by 2050. No alternative studies of pollution management have been done to assess other methods of mitigation that do not involve vast amounts

of greenhouse gas increases. SLOGB recommends limiting Greenhouse gas emissions by using sustainable design principals as outlined. Without this evaluation at the present time the County risks added cost to plant operations related to GHG mitigation at a later date.

Thank you for considering our recommendations concerning this very important project.

SLO GREENBUILD BOARD OF DIRECTORS

Submitted to John Waddell on 7/23/7

References [1]-[6] will be emailed to your office Wednesday morning 1/25/7

Sierra Club Comments

"Santa Lucia Chapter of the Sierra Club"
<sierraclub8@gmail.com>
07/30/2007 07:43 PM

To <pogren@co.slo.ca.us>
cc <jwaddell@co.slo.ca.us>, <bgibson@co.slo.ca.us>
bcc
Subject comments of the Sierra Club on the Los Osos Wastewater Treatment Project

July 30, 2007

Santa Lucia Chapter of the Sierra Club
P.O. Box 15755
San Luis Obispo, CA 93406
(805) 543-8717

TO: Paavo Ogren, Los Osos Wastewater Treatment Project

Dear Mr. Ogren,

Please forward these comments to the Technical Advisory Committee and the members of the County's Project Team.

The Santa Lucia Chapter of the Sierra Club represents 2,500 members in San Luis Obispo County. We consider construction of wastewater treatment facilities to have been an imperative in Los Osos for the last 30 years in order to protect the Morro Bay Estuary from pollution and the continued degradation of wildlife habitat. We also note that:

- the Los Osos area is threatened with saltwater intrusion due to overdraft of its aquifer in excess of maximum sustainable levels

- a Level of Severity III has been declared for Los Osos' water supply

- local growers have stated their willingness and desire to use recycled nitrogen-rich recycled wastewater on their crops

- the use of nitrogen-rich water on crops results in nitrogen content being wholly taken up by plant roots rather than the leaching of nitrates into water bodies, and the use of such waters on crops reduces the need for and use of nitrogen fertilizers, whose excess application results in the leaching of nitrates into water bodies.

In consideration of the above, we urge the County to hold foremost in its project selection criteria the imperative that treated wastewater is a resource to be utilized, not a pollutant to be disposed of. At the conclusion of screening potential technologies and sites for the treatment of Los Osos' wastewater, the treatment and disposal option selected should provide for the recharge of the aquifer and protection against saltwater intrusion, minimal sludge disposal and the recycling and re-use of treated water, thereby the reducing of water demand and use.

We concur with the remarks of the San Luis Bay Chapter of the Surfrider Foundation on the use of appropriate technologies, and with the remarks of SLO Green Build on sustainable design principles and considerations for the impact of sea level rise and other potential impacts of global warming.

For the Santa Lucia Chapter Executive Committee,

Andrew Christie