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DEIR: SECTION I – PUBLIC HEALTH AND SAFETY

SUMMARY:
DEIR issues of concern are: the routine use, transport and disposal of hazardous materials including the short-term potential impact of petroleum products for equipment fueling and maintenance to long-term use of methanol (project 1), sodium hydroxide and sodium hydrochlorite (projects 2,3,4). Also listed as potentially significant are ag pesticide and chemical residues at the treatment site, release of raw wastewater from broken pipes and pump stations, as well as local water loss for fire fighting.

Issues of concern that are not addressed are:

1. Calculation of total air pollution from diesel powered equipment and vehicles
2. Mitigation for potential trench wall and roadway collapse
3. Discussion of earthquake potential, impact and repair
4. Anticipation of upgraded health standard regulations for secondary treated water
5. Discussion of prevention measures for overflow/spill of contaminated raw sewage
6. Identification of alternatives to methanol
7. Emergency response plan for residents in construction zones
8. Safety measures for pedestrian traffic on unlit streets at night

DISCUSSION:

1. Calculation of total air pollution from diesel powered equipment and vehicles:
    - Determine health impacts of predicted air pollution

Diesel exhaust emissions have serious health consequences, particularly among children, the elderly, those suffering from emphysema and asthma and other impaired respiratory systems.
In fact, chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the U.S. Although mitigation for impaired air quality, specifically for particulate matter and NOx, which exceeds allowable thresholds during the construction phase for all four projects are listed in Air Quality, DEIR Section (5.9-27, 5.9-28) this information should be cross referenced with Public Health and Safety, Section I.

> "Diesel exhaust also contains over 40 cancer-causing substances, most of which are readily adsorbed on the soot particles. In 1998, California identified diesel PM as a toxic air contaminant based on its potential to cause cancer, premature death, and many other health problems....The estimates of the magnitude of the contribution of diesel PM to air pollution related deaths are based on health studies involving ambient particulate matter pollution in general. The method used to quantify diesel PM's effect likely underestimates its contribution because

this method assumes the diesel Pm, per unit of concentration, has the same health impact as general ambient particulate matter. However, the combination of several factors strongly suggests that diesel emissions pose a significantly greater health threat than non-combustion particle pollution." (EPA, Air Quality Resources Board, "Summary of Adverse Impacts of Diesel Particulate Matter", December, 2008)

"NOx react with ammonia, moisture, and other compounds to form nitric acid vapor and related particles. Human health concerns include effect on breathing and the respiratory system, damage to lung tissue, and premature death. Small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and aggravate existing heart disease...Children, the elderly, people with lung diseases such as asthma, and people who work or exercise outside are susceptible to adverse effects such as damage to lung tissue and reduction in lung function. Ozone can be transported by wind currents and cause health impacts far from the original sources. (http://www.epa.gov/air/urbanair/nox/noxfldr.pdf)

NOA (naturally occurring asbestos): "Asbestos is commonly found in ultramafic rock, including serpentine, and near fault zones. The amount of asbestos that is typically present in these rocks range from less than 1% up to about 25%, and sometimes more...Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. All types of asbestos are hazardous and may cause lung disease and cancer." (California EPA, Air Resources Board, "Naturally-Occurring Asbestos General Information, July 2, 2008)

All construction areas for each project are identified as sites with potential risk of NOA. Sensitive receptors include the 'at risk' population of children, the elderly and other people with respiratory illnesses as well as certain population areas such as hospitals, schools, convalescent facilities and residential areas. Of particular concern are the prohibition zone residential areas, schools, and neighborhoods around Broderson. Wind conditions of any magnitude would expand these immediate areas to include others, potentially creating a very significant impact. An Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program will be required, however no mitigations are identified.

"The (20007) study, which used a mathematical model to estimate future costs related to COPD, found that the disease will cost $176.6 billion in the U.S. over the next five years, and $389.2 billion over the next 10 years. The study is part of the Burden of Obstructive Lung Disease (BOLD) initiative, which is designed to examine the prevalence and burden of COPD around the world."
American Thoracic Society
http://www.thoracic.org/sections/publications/press-releases/conference/articles/copd-will-cost-us-800-billion-over-next-20

2. Mitigation for potential trench wall and roadway collapse:
    - Applies to construction personnel, but may also impact the public

It's understood that risk to construction personnel is usually the responsibility of the employer/contractor, but as with any construction activity in a populated area (such as residential streets), involving heavy equipment, deep trench excavation, and potential flooding, there must be public safety consideration in place. The incidence and safety risk of trench wall cave-in, even in relatively shallow trenching, especially in sandy soil conditions is well understood. A quick google search indicates it is a major concern in pipeline construction –it is in fact, one of the top four OSHA safety risks.
To be considered are trenching width and risk of adjacent roadway collapse especially as it affects people moving in and out of their homes during construction.

> Fugro West Geotechnical Report, Los Osos Wastewater Project, March 9, 2004, states: "The potential for caving in the dune sand will generally increase with depth, and length of the trench. It is our opinion that there is a potential for sloughing and caving of the trench sidewalls. Limiting the length of trench or installing temporary trench supports can be used to reduce the potential for caving. Trench shields or jackets shoring with plywood sheeting can be installed to support the trench walls during the placement of the gravel and pipe. (6.7.1.2 pg.6-43)
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> "Relatively deep trenching will be needed to construct the sewer collection system pipeline. Even moderate caving in deep trenches can result in cracking of adjacent pavement to several feet or more beyond the sawcut line." Trench walls lacking adequate support could experience trench wall instability or movements that could damage adjacent pavements, utilities, or structures." (6.1, pg.6-1)
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> A recent New Times article titled "Trench Deaths" about an industrial accident involving pipeline construction states: "(Paul) Satti, (Technical Director) of the council (Construction Safety Council) explained that trenches and other excavation accidents are among the top four Occupational Safety and Health Administration concerns..." (New Times, Vol.24, No.25, January 15-22, 2009, pg.11

3. Discussion of earthquake and soil saturation potential, impact and repair:
    - Contamination of ground water from raw sewage release during an earthquake creating a public health risk
    - Pipeline joint separation during seismic settlement causing extensive repair and repetition of all construction health and safety issues
    - Liquefaction and earth slide during an earthquake creating a public safety risk
    - The Broderson area is subject to earth slides from heavy soil saturation

Ground lurching during an earthquake will cause gravity system piping to disconnect at joints, causing pipes to break releasing raw sewage into ground water thereby establishing a potential health safety risk. The issue of raw wastewater spills at pump stations, disposal sites and in waterways is mitigated under DEIR 5.7.B.1, pg. 5.7-21, however there is no discussion of groundwater contamination from raw wastewater as a result of seismic activity during an earthquake which would become a significant impact on public health and safety. Large gravity pipes are subject to upheaval, breakage and leakage. This is particularly true at the point of joint coupling, where, because of unsealed jointing, leakage is common. Earthquakes initiate land slides and create areas

of liquefaction in wet soils both of which have the potential for severe impact on gravity piping stability. The Central Coast is listed as a significantly active earthquake area and USGS maps indicate frequent seismic activity in the area. In addition, heavy soil saturation from heavy rains or disposal overload may result in earth slides into adjacent neighborhoods as evidenced by events in 1979 and mid 1980's in which homes on Highland Ave. were flooded with earth and water. Soil and water experts disagree about Broderson's ability to absorb and hold the amount of water slated for disposal there – estimated to be 400,000 g/d in the dry season and 800,000 g/d during the rain season. Wet season disposal will be anticipated to be compounded by additional rains and rain runoff from higher elevations above the Broderson site.

Per Al Barrow 1/22/09: A statement from Larry Riao, Earth Systems and soil studies, Cal Poly, SLO:

"The statements given describing the groundwater conditions are very general and do not adequately characterize the complicated and quite variable system that it is. There are numerous perched water tables located throughout the stabilized sand dunes areas of Los Osos. These "perched" water tables in the stabilized sand dunes have edges; the water flows to the edge and travels down to the next one. So there is both vertical and horizontal movement of water through these lenses. These clay lenses were formed in the low lying areas in the middle of the sand dunes when there was no where else for the water to go. The fines in the sand would be washed to the bottom of the dune during rains and form a clay or silt lense. But the layer is limited in size; it has edges. I have drilled hundreds of borings and placed piezometers (perforated pipes installed in borings for measuring depth to groundwater) and have found that the depth to groundwater is quite variable and difficult to predict. I drilled one lot where there was high water at the front of the lot (8-feet) but could not find any on the back of the lot (deeper than 25-feet), and the lot was relatively level. When the dunes would shift during the heavy and constant winds (think of Oceano Dunes) these lenses would be covered. Even an 1/8-inch layer of silt will hold water. Now there could be many thin layers on top of each other with wind blown sand between them. And these layers aren't as solid as you might think. After it rains, the silt layer will dry out and start cracking, and the edges will curl up. You have probably seen this in other low lying areas like after a pond dries up. So if you have many of these types of layers on top of each other, all of them with some wind blown sand between them, they will hold water but not indefinitely. They really just slow the water down to a trickle. That's why the water tables fluctuate so much in Los Osos, because the water is percolating slowly through these lenses. During the summer the water table lowers, and during the rainy season, they rise. But they only raise so much because of the edges. It would be like drilling microscopic holes in the bottom of a pot and putting the pot under the faucet and turning the water on slowly, the pot would eventually fill up and start flowing over the edge, so the water level would only raise to a certain level. Turn off the water, and the water would slowly drain but it may not empty before the water is turned on again.

It was in some of these perched water tables that had test wells placed in for the Brown & Caldwell study. The problem is, that these perched waters are so variable and abundant, that there has not been a adequate study done to date to properly characterize this shallow underground water system. We also don't know changes in groundwater levels during the winter vs. the summer and during wet seasons vs. dry seasons."

Fugro Report, March 9, 2004 addresses the issue of earthquakes, liquefaction and seismic settlement at length:

> "The site is in a seismically active area of California....The site is located near the Los Osos Fault that is considered active, and capable of generating at least a magnitude 6.8 earthquake." (6.1, pg.6-2)

"The manifestation and damage that can be associated with liquefaction is strongly dependent on the duration of the ground motion." (5.8.1, pg.5-8

"The soils encountered within the pipeline network vary from soils having a relatively high potential for liquefaction, to soils having a relatively low potential for liquefaction." (5.8.2, pg.5-8)

"Liquefaction can result in ground mobility that impacts pipeline grades, or results in pipelines floating out of the ground in areas of liquefaction." (5.8.2, pg.5-8)

"The soils encountered within the pipeline network vary from soils having a relatively high potential for liquefaction to soils having a relatively low potential for liquefaction." (5.8.2, pg.5-8)

"The estimated seismic settlement that could occur during the design basis earthquake is estimated to be approximately 1 inch, with a range of negligible settlement to about 1-1/2 inches of settlement. Loose sand blankets the upper 5 to 10 feet of the site over most of the collection system area." (5.8.2, pg. 5-6)

A front page article and photograph in the Tribune, Jan. 18, 2009, shows a flooded downtown SLO street after 10 inches of rainfall on Jan. 18, 1969. The article also mentions a flood in 1973.

Frank Asilio submitted photographs/articles to the Los Osos TAC:

6/9/08: Four photographs of a home in the 400 block of Highland Dr. that was flooded by water, mud and sand sometime in the mid 1980's (exact date not determined), when water and sand ran off the hill above Highland Dr. Other homes on the south side of Highland, from the 300 block east to Bayview Heights, also flooded.

6/30/08: Articles from the Telegraph-Tribune dated Dec. 26, 1979 and from the Sun Bulletin dated Dec. 27, 1979 and Jan. 3, 1980 depicting the results of flooding of homes and property in the Highland Dr. and Bayview Heights area following a severe storm.

4. Anticipation of upgraded health standard regulations for treated/recycled water:

- Emerging contaminants present in some food sources and virtually all natural water sources have been identified as a primary causative factor in many biologic and developmental functions.
- A convergence of environmental factors is forcing a re-evaluation of toxic pollutants and will, without doubt, result in significantly more stringent environmental regulations by DHS and EPA.
- Many toxic contaminants can be almost completely removed from water, but requires intensive multi barrier treatment. Some cannot. In order to preserve an adequate future potable water supply it will become necessary to apply a best means approach.
- Projects 1,2,3,4 do not require effluent treatment beyond secondary treatment

There are strong indications from EPA and DHS (California Department of Health Services) that regulations for water and, most particularly, recycled water will be aggressively expanded as emerging contaminants continue to be studied. With increased public awareness of food, air and water borne health threats in the form of pollutants, evolving virus/bacteria, and unmonitored production practices, selling recycled water to an alert, wary public will become increasingly difficult and will only be accomplished by establishing confidence in regulatory agency diligence. There is much evidence and extrapolation from evidence that emerging contaminants are having a serious, detrimental impact on human and wildlife health, particularly to the endocrine and reproductive systems. It is now understood that hormone mimicking drugs and other chemicals have a bio-cumulative effect and are readily detectable in breast milk. It is also common knowledge that the two main categories of chemicals, mutagens and carcinogens, are creating health and developmental problems in children and wildlife. Young girls are experiencing early endocrine system activation, resulting in very early maturation, while boys are also undergoing discernable physical changes. The incidence of uterine and breast cancers are now common in increasingly younger women and have been linked to hormone-mimicking substances in food and water. Frogs and other aquatic life have lower sperm counts and are producing malformed offspring. Because water is consumed in larger quantities than other foods, it is believed that water quality has the most significant impact. As technology in detecting, identifying and treating for these emerging contaminants continues to advance, it is anticipated that regulations will become increasingly stricter in both contaminant and allowable levels.

There is discussion posing future reuse/recharge in ag exchange yet the DEIR contains no discussion about treatment and infrastructure requirements. Wastewater must be treated to specific standards for direct use on edible crops. New draft regulations setting new guidelines for disposal quality water (level of treatment required before water can be discharged to a disposal site) can be seen in Title 22, Groundwater Recharge Reuse DRAFT Regulation, August 5, 2008 (pg.20-22) which states proposed regulations for the use of RO for TOC's (total organic compounds). The DEIR refers to Broderson as a recharge site for the upper aquifier: Current IPR (indirect potable reuse) regulations indicate that water pumped to Broderson would require at least tertiary level treated water if soil characteristics, hydrology, distance to withdrawal, etc. prove to be inadequate to remove all contaminants to the appropriate level. However, indications are that IPR water will require advanced treatment systems with multi-barrier safeguards in the not too distant future. There is clearly a movement toward the use of advanced treatment systems including reverse osmosis, UV and various levels of sophisticated filtration systems

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A serious potential health risk, rarely discussed, exists as a result of open bodies of water such as ponds (as opposed to wells) exposed to tritium as a result of Los Oso's proximity to Diablo Nuclear Power Plant. There is no known system to remove tritium because it is actually a water molecule, but testing for this and other 'at risk' contaminants should be mandatory

> "Evidence suggests that environmental exposure to some anthropogenic chemicals may result in disruption of endocrine systems in human and wildlife populations. A number of the classes of chemicals suspected of causing endocrine disruption fall within the purview of the U.S. Environmental Protection Agency's (EPA) mandates to protect both public health and the environment. Although

there is a wealth of information regarding endocrine disruptors, many critical scientific uncertainties still remain.
Determining the extent of the impact of endocrine disruptors on humans, wildlife, and the environment. Research includes determining: what effects are occurring in human and wildlife populations, the chemical classes of greatest concern, the ambient levels of exposure, and how unreasonable risks can be mitigated."
EPA: Endocrine Disruptors Research Initiative http://www.epa.gov/edrlupvx/

"The USGS has a major interest in collaborating with other agencies to inform the public and Congress of the issue of endocrine disruption. Over the last 10 years, the USGS has developed research and monitoring programs on the biological response to endocrine disrupting chemicals (EDC's) in the nation's waterways and has identified priorities and opportunities for collaboration with other federal agencies."
Sue Haseltine, Associate Director for Biology, USGS
://es.epa.gov/ncer/publications/workshop/cenr_2202007.pdf

Huffington Post, March 10,2008: Sex Hormones, Mood Stabilizers Found in Drinking Water of 41 Million Americans quotes Mary Buzy, Director of Environmental Technology for drug maker, Merck & Co. "There's no doubt about it, pharmaceuticals are being detected in the environment and there is genuine concern that these compounds, in the small concentrations that they're at, could be causing impacts to human health or to aquatic organisms." (pg.3)

Also: "Recent laboratory research has found that small amounts of medication have affected human embryonic kidney cells, human blood cells and human breast cancer cells. The cancer cells proliferated too quickly; the kidney cells grew too slowly, and the blood cells showed biological activity associated with inflammation." (pg.3)

"There's growing concern in the scientific community, meanwhile, that certain drugs – or combinations of drugs- may harm humans over decades because water, unlike most specific foods, is consumed in sizable amounts every day." (pg.3)

Al Barrow showed a photograph by Dr Tom Rhuer, Soil Science Professor, Cal Poly, SLO at the joint SLO County Public Works/CSD meeting on January12, 2009 showing a substrata image of fine lenses illustrating "clear evidence of these fine lenses that hold or transport water laterally below grade. The point this is that the intended recharge at Broderson of 400,000 GDP will likely move laterally down slope rather than vertically to create a pressure gradient strong enough to force reversal of seawater intrusion in the lower aquifer. On the contrary the most probable destination of these waters will be the brackish wetlands around the Morro Bay shoreline. Where the contaminants will interfere with the reproductive cycles of the biological life in Morro Bay. Steelhead have historically spawned in the bay. Studies by MBNEP have shown alarming damage to species of fish in the MB"

"The DEIR contemplates only secondary treatment of effluent. The evolution of state and federal standards for wastewater treatment has been heading in only one

direction – up – and it is likely that tertiary treatment will be required by law by the time the Los Osos wastewater treatment project is completed. Morro Bay and Cayucos, with significant encouragement from the environmental community, saw that writing on the wall when they decided to upgrade their wastewater treatment plant to bring it into compliance with the Clean Water Act, and went beyond the current minimum of secondary treatment, mandating a tertiary component." Santa Lucian, vol. 46, No.1, January, 2009:

According to Appendix G: Science , Technology, and Regulatory Issues, Water Reuse Study, March 2006"...only disinfected tertiary recycled water (the highest level of treatment for irrigation uses) is allowed for irrigating root crops (food) or schoolyards." (pg.G-15). It's assumed this would be true for field spray for all food crops..

If recharge efforts fail to stop seawater intrusions and injection wells are used, advanced water reclamation treatment will, by regulation, require "...the injected water must be of higher quality than that used for surface spreading. Some states require treatment to drinking water standards prior to injection." Appendix G, (pg. G-19)

Title 22, California Code of Regulations, Groundwater Recharge Reuse, Draft Regulation, August 5, 2008, (pg. 20)

Section 60320.045 Total Organic Carbon Requirements
(a) For each surface or subsurface application facility used for replenishing a groundwater basin, the GRRP shall monitor TOC as follows:
2) For recycled municipal wastewater, at least one 24-hour composite sample each week prior to recharge, or
(3) For surface application, at least one sample each week in a manner yielding TOC values representative of the recycled municipal wastewater TOC after infiltration and percolation, and not influenced by diluent water, native groundwater, or other source of dilution as determined by:
(A) measuring undiluted percolating recycled municipal wastewater,
(B) measuring diluted percolating recycled municipal wastewater and adjusting the value for the diluent water effect, or
(C) using recharge demonstration studies to develop a soil treatment factor that can be applied weekly to recycled municipal wastewater measurements leaving the treatment plant.
(b) Grab samples may be taken in lieu of the 24-hour composite samples required in subsection (a) if:
(1) the GRRP demonstrates that a grab sample is representative of the water quality throughout a 24-hour period, or

There are many sites explaining tritium, but the Greenpeace website explains it more efficiently and economically of space than others.

http://www.greenpeace.org/canada/en/campaigns/end-the-nuclear threat/threats/waste/questions-and-answers-about-tr

Q. What is tritium?

A. Radioactive water or water vapour. It's not something in the water, but the water molecules themselves that are radioactive.

Tritium is the radioactive isotope of hydrogen. That means tritium is unstable and gives off radiation when it disintegrates. In the environment, the most common kind of tritium is tritiated water - that is, water molecules in which one (or both) of their hydrogen atoms is radioactive.

Q. Is it dangerous?

A. Yes, tritium is hazardous when you drink it, eat it, breathe it in or you absorb it through your skin.

Tritium is not considered an external hazard, but is an internal one. It has a radioactive half life of about 12 years which means it stays around in the environment for a long time. It has the unusual properties of extremely rapid transport in the environment, quick uptake by humans, fast exchange mechanisms with other hydrogen atoms, and the ability to bind with organic molecules during cell formation and cell metabolism.

Q. What are the effects of exposure to tritium?

A. Radiation causes cancers, congenital malformations and genetic effects

Tritium is a radionuclide and all radionuclides when ingested or inhaled give off radiation. Radiation is known to be a carcinogen, teratogen and mutagen, and these effects are thought to occur down to the lowest possible exposures.

Q. Why is Greenpeace concerned about tritium in Canada?

A. Huge amounts are pumped into Lake Huron and Lake Ontario every day from Canada's nuclear power stations. Huge amounts are released to the air, as well.

Tritium discharges from Canadian reactors are by far the largest in the world from civil nuclear power stations. They are 100s to 1000s times greater than tritium discharges from other kinds of nuclear reactors.

Q. Should I be concerned?

A. The closer you live to a nuclear power station, the more you should inform yourself about tritium. Near them, all rivers, wells, vegetation and animals, including humans, have raised levels of tritium inside them.

Tritium emissions to air result in all downwind matter containing hydrogen becoming tritiated to ambient levels. This results in people drinking, breathing and absorbing tritium-contaminated water, and eating tritium-contaminated food.

5. Discussion of prevention measures for overflow/spill of contaminated raw sewage:

The issue of raw wastewater spills at pump stations, disposal sites and in waterways is mitigated under DEIR 5.7.B.1, pg. 5.7-21by the use of containment and other measures, however there is no discussion of prevention protocols for overflow, spill and leakage of raw wastewater. Power outages and heavy storm overload can cause backup, overflow, spills and leakage at pump stations and manholes releasing sewage onto surface areas where it becomes a public health risk. In all matters, involving measurable risk, it is in

the interest of all concerned to employ the precautionary principle. To that end, adequate storage capacity, back-up generators and routine maintenance measures would potentially prevent the mentioned health risks as well as clean-up costs, hazardous disposal and RWQCB fines.

> "The panel also concurs...the collection system for the Los Osos Wastewater Project should: Provide the greatest possible protection against overflows and other releases of partially treated or untreated wastewater from the system, which could pollute Morro Bay and other sensitive coastal ecosystems." NWRI, Final Report, San Luis Obispo County Los Osos Wastewater Project, October 23, 2008
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> "...fail-safe systems must be required, including back-up generators and sufficient storage capacity to deal with electrical outages and protracted storm conditions." Testimony of Ellen Stern Harris, Executive Director of the Fund of the Environment, Submitted for the 2/26/03 Public Workshop of the DWR/SWRCB/DHS 2002
> Recycled Water Task Force and The Environmental Justice Coalition for Water
>
> In a document titled: Regional Board Analysis Of Enforcement Criteria Established section d.6 of Order No. 2006-0003-DWQ, Item 16, Attachment 6. (December 12, 2007)
> The RWQCB ruled to prosecute the City of Oceanside for negligence for anticipating an illegal discharge due to pipeline failure citing, among other remedies, "Preventative maintenance (including cleaning and fats, oils and grease (FOG) control: Installation of adequate backup equipment: and Inflow and infiltration prevention and control to the extent practicable." (pg.3)
>
> In addition the City of North Bend, Final Comprehensive Sewer Plan, July 2001 recommends a root cutting program, grease trap inspection program, video inspection program to monitor the overall structural condition of the system, a lift station maintenance program and an inflow and infiltration analysis program to ensure that the necessary overloading of the wastewater treatment plant is avoided.

6. Identification of alternatives to methanol:

Methanol is added to wastewater to provide a carbon food source for the denitrifying bacteria which convert nitrates to nitrogen gas in sensitive aquifiers. The EPA began a study of the carcinogenic effects of methanol in 2002 to be completed in 2010. Although an Italian study has identified methanol as a human carcinogen, more study will be necessary to be conclusive. (Canadian C+2 Petrochemical Report, Vol.25. Issue 2, Feb. 2008). Since methanol would be an ongoing issue with the Step treatment system and is listed as having a potential significant health and safety impact, it appears it would be possible to mitigate for this risk by recalculating the GHG impact from more recent data, by employing one of several alternatives to methanol or re-evaluating the necessity for methanol in Step effluent treatment. The Methanol Institute states "Through the implementation of efficiency improvements, and through replacing of older facilities with newer plants that use more efficient technologies, over the last decade methanol plants have been able to significantly reduce CO2 emissions by up to 40%: some facilities

report emissions as low as 0.54 tonnes of CO2/tonne of methanol produced. This is equivalent to emitting 3.8 lbs. of CO2 per gallon of methanol." (reference attached).

Methanol is partly dependent on crude oil prices, and although petroleum prices have come down in the past few months, it is still a finite, politically driven commodity, subject to potentially volatile pricing. The study below lists high fructose corn syrup as the most cost effective alternative.

> "Methanol is commonly used as a substrate in teritary denitrification systems. The addition of methanol for denitrifiction is based on its biodegradability and availability, but methanol also has some disadvantages, including its potential for evaporative loss, a resulting danger of spark ignition, and the effect of evaporative losses on the surrounding air quality. These concerns have resulted in increasingly strict legislation in Southern California regarding the storage and use of methanol...An alternative substrate to methanol was sought for tertiary detrification. High fructose corn syrup (HFCS) was identified as the most cost effective alternative, which would also be much safer to handle. This should also render HFCS subject to less legislation at all levels of government." (pg. 3479)
> Water Environment Foundation, 2006: Give Your Denitrification Bugs a Sugar High, Coenraad Pretorius, Rudy Kilian, John Jannone
> Carollo Engineers, P.C., 10540 Talbert Avenue, Suite 200 East, Fountain Valley, CA 92708, USA, Eastern Municipal Water District, 2270 Trumble Road Perris, CA 92572-8300, USA

Another consideration is: "Facultative ponds will always require an add-on treatment process for denitrification, regardless of the wastewater collection method ...STEP can also be fed into an oxidation ditch prior to an anoxic zone. STEP raw effluent does have carbon for denitrification and the quantity is constant. Additionally, if required, supplemental carbon source could be added at this point." (Mike Saunders, Orenco)
The methanol issue could be eliminated by combining STEP with oxidation ditch treatment.

7. . Emergency response to residents in construction zones:

Construction contractors appear to have an emergency response plan for construction workers in place, but there doesn't appear to be a plan for emergency access for residents who reside in the construction area.

8. . Safety measures for pedestrian traffic on unlit streets at night

Pedestrian traffic often continues until very late evening as people walk to the bay from their homes. Los Osos streets are unlit and, on moonless evenings, it can be very dark with severe visual limitations. This can be easily mitigated but the issue isn't addressed.

QUESTIONS

1. Why was air quality not addressed in DEIR Health and Safety since diesel exhaust emissions and NOA levels exceed allowable standards in all four projects during the construction phase and takes place in school and residential areas, some with heavy pedestrian and bike traffic as well as other outdoor activities?

Wouldn't reduced trenching (using small flexible pipe and directional boring substantially mitigate for these issues? If no, please explain why and if yes, please recalculate emission and NOA levels for an accurate comparison.

How many truckloads for soil and contaminated water removal will be required for each project?

2. How will trench walls be secured?

How will public safety be ensured?

Directional boring would eliminate the risks of collapse, worker injury, insurance costs, most soil disposal including much of the effluent contaminated soils (a result of the disturbance of effluent encased within soil lenses). Please explain how the projects under consideration offset these issues.

3. The 1994 Northridge earthquake gravity system repair took about 14 years to make the system operational and some repairs continue to the present. By contrast, most small pipe water lines were functional within about 24 hours. Los Osos is in a seismically active zone. With the always present risk of earthquakes, the separation/breakage/leakage of large pipes and subsequent health risk, the cost of reconnecting/rebuilding the system how, incorporating these points, please explain the advantage of large pipe rather than sealed, flexible small pipe?

4. How does the County plan to upgrade water as regulations expand?

Cost is cited for the County's reason not to clean water to tertiary standards, but it is clear that this will become a future requirement (Morro Bay elected to include tertiary ahead of regulations). How will this be paid for at some future date?

It is understood that the County intends to refer water quality issues to RWQCB and local purveyors, but as overseer of County health and environmental issues and, the increasing imperative to plan, test, monitor and address for emerging contaminants all analytical testing, toxicological testing and epidemiological research must become a priority in which all parties are held to a higher health and environmental standard. Because the project that is chosen can have a significant impact in many quality-of-life facets for Los Osos residents, please discuss the issues of tritium, and endocrine disruptors along with other frequently prescribed pharmaceutical's that are showing up in water supplies and how the County plans to meet stricter water quality regulations.

5. What are the prevention protocols for raw sewage/effluent surfacing at manholes and pump stations due to power outages, heavy storm overload/runoff, and earthquakes and why were they not included in the analysis?

If there is no prevention plan, why not? Again, small pipe would eliminate raw sewage spills and flexible pipe would significantly reduce joint separation/breakage/leakage greatly reducing health risks additional costs from contamination

Land slides can and are life threatening events. Storm incidence and earthquake probability make this a probable eventuality. How will homeowners be protected physically and financially (homeowners may find themselves ineligible for flood insurance because insurance companies are reluctant to insure in problematic locations)?

6. What is the methanol GHG calculation for Project 1 based on recent manufacturing plant reductions of about 40% or 3.8 lbs of CO2 per gallon of methanol?

What alternatives to methanol were discussed? Why were they rejected?

Why did the County chose to pair STEP with facultative ponds rather than oxidation ditch as in Projects 2,3 and 4?

How was methanol weighted and how did it effect the selection outcome for the preferred project?

7. Is there an emergency response plan for residents in construction zones? How/when will the public be notified?

8. Safety measures for pedestrian traffic on unlit streets at night are easily mitigated such as continuous barriers with flashing lights. What is the plan?