

From: "mongoboo" <mongoboo@charter.net>
To: <rbriggs@waterboards.ca.gov>
Date: 4/4/2006 12:00:13 PM
Subject: Fw: 58% Nitrate Reduction

----- Original Message -----

From: mongoboo
To: lokun@waterboards.ca.gov
Sent: Tuesday, April 04, 2006 11:51 AM
Subject: 58% Nitrate Reduction

Lori Okun and Philip G. Wyels

Senior Staff Counsel and Assistant Chief Counsel

State Water Resources Control Board

Office of Chief Counsel

RE: Steven Paige- Comments for April 28, 2006, Central Coast RWQCB Hearing

Dear Honorable Board Members and Council,

I have made a voluntary proposal to cut the Nitrogen emissions on my property by 58%. On March 23 I turned over to your office an alternative measure to septic pumping. The site plan and validation of the design are attached to this letter. It follows the logic of the approved order for segregation and transfer of Nitrogen laden waste from the septic tanks. Septic pumping by your estimation will reduce Total Nitrogen by 22%.

The solution I propose is a copy of a well studied Swedish solution to 'smart pump' source separate urine waste by behavior modification. You install a urine only toilet (Bidet) and isolated storage tank, then pump the segregated contents causing the following positive effects:

- 1) It prevents the unprecedented withdrawal from the water basin of 22 to 36 Million Gallons a year caused by septic pumping if required Community wide.
- 2) It cuts Estuary Airshed NOx to Water Borne Nitrogen emissions from diesel truck effluvia hauling by 90% by reducing the hauled liquid volume.
- 3) Using EPA data, it reduces Total Nitrogen from the waste stream by 58% compared to 22% described

in your pumping order.

4) It cost me 1/10 the amount of money per year for compliance.

5) With the additional removal of my garbage disposal, it would allow immediate improvement of waste discharge for Nitrogen in an order of magnitude that matches your approved waste discharge permit for the Broderon reclamation leachfields. The resultant Nitrogen release from the balance of my septic effluvium is approximately the same for my family as the amount allowed by your previous discharge permit but includes additional water conservation, not basin withdrawal.

My intension is to install the equipment so I can be given a section §13269 PCA Waiver by your office. I would expect a small processing fee to be appropriate based on my ability to pay. I think it would like you to consider an individual 'Minor Violation Notice' Section §13399 PCA because it is more fitting to the level of pollution. I'm not a major sewer plant or big industrial polluter. My methodology of Nitrate removal, because its environmental impact is less than yours, is my personal choice of compliance subject to § 13360 PCA:

"Manner of compliance

(a) No waste discharge requirement or other order of a regional board or the state board or decree of a court issued under this division shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be

permitted to comply with the order in any lawful manner."

Myself and other residents with limited economic resources have reservations about the boards choice to issue a 'zero' discharge order after 2010 because one standard is allowed by the Los Osos Community Service District outlined in their discharge permit and another standard is imposed on homeowner's to cease individual discharges after 2010.

If the LOCSD wastewater discharge permit meets federal standards that by law they had to, then the individual discharge standards of the People's CDO's exceeds federal standards and it's cost to homeowners should be legally contested. The zero emission requirements are unnecessarily expensive and restrictive for homeowners.

Also, the dual standards clearly are inconsistent with Sec. 304 FEDERAL WATER POLLUTION CONTROL ACT encouraging sustainable, scaled, and economic water treatment. Simply put, the action eliminates altogether the use of sustainable, alternative, energy efficient, small scale waste treatment. Section '304' encourages "promulgating" those systems as required and directed by Federal Law.

Further, With perceptions like the ones expressed in the Administrative Civil Liability Complaint No. R3-

2005-0137 Pg. 430 lines 18,19,20 against the LOCSO where Chairman Young Stated:

"It's quite clear to me that the folks of Los Osos, in my opinion, are really not capable of addressing these issues with their wastewater disposal in a rational way."

It's hard not to assume that prejudice against small scale compliance led to the two different rulings being imposed. The zero emissions requirement conflicts with federal law directing States to 'promulgate' alternative systems and consider them as secondary treatment.

In a broader sense for all Californians, the 'Zero' emissions order also seems to be in conflict with extensive Federal studies encouraging sustainable on site solutions, small scale cluster systems, or community wide systems that use energy and economics as a critical path.

EPA smart growth policies and objectives of minimizing infrastructure while increasing urban population density cannot be consistent with the zero emissions requirement. If Porter Cologne enforcement is to have positive public participation, flexible 'smart growth' enforcement that uses a menu of solutions would give the PCA more 'contemporary' environmental creditability and quicker results. It is the only way we are going to get 'smart growth' density in Los Osos and still meet CEQA regulations and watershed criteria. Public participation is the key. So to assuming the public are a bunch of idiots is the real tragedy. Like myself, they are the key to the solution.

I think we have all suffered from the 'cognitive dissonance' of the Los Osos sewer issue, myself included. Tensions and misconceptions of Board members have made the CDO orders for individual home owners way out of the ordinary. Again, I think Minor Violation Notice' Section §13399 PCA is a more appropriate to the level of pollution on my property and gives you more flexibility to encourage things like water conservation or integrate on site impervious drainage recharge (roof runoff) as a 'blending requirement' for septic tank outfall. Many older homes in Los Osos do not have on site drainage reclamation. Using kinder more flexible enforcement would give you immediate results and raise environmental awareness. Punitive pumping measures that withdraw 36 Million gallons of water from the basin without a CEQA study could be replaced with MVN's and smarter effluent management like I have suggested.

My second concern would be that the studies of the water contamination of the Morro Bay Estuary seem faulted. When a major pollution source has been entirely omitted from the Basin Plan and Morro Bay National Monitoring Program there is no possibility of scientific validity. That source is the Morro Bay Power Plant and the interrelationship of Air Shed NOx emissions and TN found in Bay waters.

Federal Studies of similar watersheds found in the cited references below disclose the fact that an average of 25% of the Power Plant NOx emissions return to the waters of Morro Bay. The recent License for the Duke Power NOx emissions allows 260 tons of NOx per year. If Federal studies are correct, then for the last 50 years 25% of over 260 tons/yr (conservative estimate) or 3250 tons of Nitrogen has been recaptured into the Bay Hydrologic cycle from the Morro Bay Power Plant without having been included in Watershed planning and measurements. Any premise drawn from a plan without this Nitrogen input is without scientific merit.

Here are some simple math calculations that exemplify my concern:

The Broderson discharge permit allows:

If we compute the grams per household per day:

$280 \text{ gal/Household} \times 3.78 \text{ L/gal} \times .007 \text{ g/L} =$

7.4 grams per household / day of TN.

Looking at the unstudied Power Plant Pollution:

$260 \text{ tons (conservative)} \times 2200 \text{ lbs} \times 1/5000 \text{ Households} \times 1/365 \text{ per day} =$

0.31 lbs/day/household

From the referenced air shed studies below 25 % of

Air NOx returns to the Estuary so:

$.31 \text{ lbs.} \times 25\% (\text{ Air NOx to Waterborne N ratio}) \times 448 \text{ grams/lb} =$

34 Grams Total Nitrogen/day/household for forty years!

The allowed Nitrogen per household per day is 7.4 grams in the TRI-W Permit seems incidental to the allowed unstudied Power plant NOx to waterborne Nitrogen of 34 grams per household per day from the Power Plant Emissions. If these figures are even partly right, how could the Cease and Desist Orders be related to sound science. The Morro Bay Power Plant has been operating for 40 years and easily could be a major contributor to ground water TN in the aquifer. Its contribution has never been included in the Basin Plan. To substantiate my claim at a later time if need be I incorporate by reference all the following documents:

Alliance for the Chesapeake Bay. 1997. Air Pollution and the Chesapeake Bay. WhitePaper of the Alliance for the Chesapeake Bay. 16 pp
 Boubel, R.W., D. L. Fox, D.B. Turner, and A.C. Stern. 1994. Fundamentals of Air Pollution. Academic Press: San Diego, CA.
 Ecological Society of America. 1999. Acid Deposition: the Ecological Response. Paper presented at "Acid Rain Revisited: a Congressional Briefing Co-Sponsored by the Ecological Society of America and the Hubbard Brook Research Foundation."
 Mason, R.P., W.F. Fitzgerald, and F.M.M. Morel. 1994. The Biogeochemical Cycling of Elemental

Mercury: anthropogenic Influences. *Geochim. et Cosmochim. Acta* 58(15): 3191-3198.

Mason, R.P., N.M. Lawson and K.A. Sullivan. 1997a. Atmospheric deposition to the Chesapeake Bay Watershed--Regional and Local Sources. *Atmospheric Environment* 31(21):3531-3540.

Paerl, H.W. 1993. Emerging Role of Atmospheric Nitrogen Deposition in Coastal Eutrophication: Biogeochemical and Trophic Perspectives. *Canadian Journal of Fisheries and Aquatic Sciences*, 50:2254-2269.

Perry, J. and E. Vanderklein. 1996. *Water Quality: Management of a Natural Resource*. Blackwell Science, Inc: Cambridge, MA.

Puckett, L.J. 1994. Nonpoint and point sources of nitrogen i major watersheds of the United States. USGS Water Investigations Report 94-4001. U.S. Geological survey, Reston, Virginia.

Schlesinger, W.H. 1997. *Biogeochemistry: An Analysis of Global Change*, Academic Press, San Diego, CA.

Seitzinger, S.P. and R.W. Sanders. 1999. Atmospheric inputs of dissolved organic nitrogen stimulate estuarine bacteria and phytoplankton. *Limnology and Oceanography* 44: 721-730.

Shannon, J.D., and E.C. Voldner. 1995. Modeling Atmospheric Concentrations of Mercury and Deposition to the Great Lakes. *Atmospheric Environment* 29(14):1649-1661

US Environmental Protection Agency, Office of Air Quality Planning and Standards. 1997. Deposition of air pollutants to the Great Waters: Second Report to Congress. USEPA: Washington, DC.

US Environmental Protection Agency. 1997. Mercury Study Report to Congress. 181 pp.

Vitousek, P.M., J. Aber, R.W. Howarth, G.E. Likens, P.A. Matson, D.W. Schindler, W.H. Schlesinger, and G.D. Tillman. 1997. Human Alteration of the Global Nitrogen Cycle: Causes and Consequences. *Issues in Ecology*, Number 1, Spring 1997. Ecological Society of America, 15 pp.

In considering my idea, I would like to also raise another issue. I am a disabled individual as determined by Court decree. I have an independent doctor's analysis that states my earning capacity is reduced by 50% due to my disability. It seems that multiple CDO's with one hearing are discriminatory against me and others in a like situation and violate the Federal Fair Housing Act.

Block or random CDO's add up to discriminatory zoning actions against people with disabilities by a public agency. The CDO's are applied to a zoned population of people, the prohibition zone, with no individual hearings. Public accommodation is limited to one hearing for all parties or blocks of parties in the prohibition zone. One size fits all.

The Federal Fair Housing Act makes it unlawful to utilize land use policies or actions that treat groups of persons with disabilities less favorably than groups of non-disabled persons. Blanket hearings and fines are discriminatory to disabled persons in public assisted housing, on assistance, group homes and persons receiving public assisted elder care because they cause economic hardship, traveling expenses and public facility accommodation hardships without consideration by your office. All these hardships are occurring PRIOR to enforcement hearings. It would be horrible to have the order put disabled people out on the street as an unintended consequence. Don't you agree?

What I feel would constitute a reasonable accommodation for me would be a case-by-case review of myself and all property owners to be able to identify the personal needs of the handicapped or assisted income homeowners. Each disabled person, like me, living in Los Osos, should be entitled to a individual hearing by your RWQCB board if you use economically crippling CDO's.

In my case of limited earning capacity, I have figured the cost of making the improvements on my property related to my assessed valuation. They exceed 0.5% of my property evaluation and hence I am

requesting any information you may have about financial assistance per Section § 13291.5. PCA. My initial expense will be about \$1800.00.

I think by me redefining a better 'smart pumping' solution and you redefining a more appropriate order (MVN's) towards myself and others, we could mutually encourage immediate improvements in Los Osos water quality while conserving water, educating the public, and preserving air quality.

Steve Paige, 1554 Ninth St. Los Osos Ca.

Alternative Compliance Improvement Validation

Author: Steven Paige

Date: 3/21/2006

Property Location:

1554 Ninth Street, Los Osos, California

Owner of Record:

Steven Paige

Alternative System Designer:

Steven Paige

Installer:

Steven Paige, Owner/Installer Contractors License, CI 385994

Subject to:

Alternative compliance to Order R3-2006 Central Coast Regional Quality Control Board INTERIM COMPLIANCE REQUIREMENTS set forth in paragraph B-3 "Other Methods" of Compliance.

As per the CRWQCB Staff report dated March 13, 2006 the benchmark reduction of nitrates was investigated by the RWQCB and a standard of 22 percent nitrate reduction was assumed by the six bi-monthly pumpings per year, per household (Pg. 2 Paragraph 2).

Project description:

This project describes an alternative storage, pumping, and disposal plan for a reduction of Water borne Nitrogen loading on the subject's property to reduce the loading by 22% or more on a yearly average.

Urine is proposed to be removed from the waste stream before entering the septic tank by direct source separation of the urine and feces utilizing human behavior as a separation mechanism. The urine is then stored separately and then pumped by a Class 42 hauling contractor to Santa Maria and disposed of as is the total septic effluvium plan.

This project is based on the following assumptions:

1. Federal Data from the EPA ONSITE WASTEWATER TREATMENT SYSTEMS MANUAL EPA/625/ROO/008
2. The physical principal that matter cannot either be created or destroyed ad hoc.
3. Normal laws of mathematics i.e. multiplication and percentage calculations are the rule.
4. Data on TN (Total Nitrogen) differences between urine and feces where urine contains 75% TN and feces 25% TN¹²³ in the toilet waste stream.
5. Federal mandate in Section 503 of the Federal Clean Waters Act that Agency's 'promulgate' sustainable and alternative on site sewage disposal systems, that State Agencies are bound to be consistent with Federal Law, and that Federal law supersedes State law in this respect.

Project Design Standards:

1. Bidet installed is approved for disposal of liquid human byproducts and water as per ASME/ANSI A12.19.2M Bidets have a 1 ½ inch drain and are considered .5 fixture units simplifying installation. Bidets can be plumbed out an exterior wall(See Plan).
2. ABS plumbing to UPC 2000 as adopted by the County of San Luis Obispo.
3. Waste Storage tank is non-corrosive meeting PCO standards for liquid corrosives and liquid

fertilizer handling. Storage is in a portable above ground tank.

4. Septic tank improvements described meet NSF Section 46 testing and standards.
5. Charcoal filter, Float Alarm and Remote Alarm are NSF Section 46 compliant and approved.
6. Before final inspection there will be an initial Septic Tank Pumping and monitoring quarterly thereafter with re-pumping required after "sludge level is within eight inches of the outlet device" (as per RWQCB resolution 83-12). This is consistent with previous water board rulings.
7. The owner will verify with receipts the haulage of sequestered urine for verification by the RWQCB if desired. Haulage shall continue quarterly or as the alarm system so warns until the subject property complies with water quality standards equivalent to WASTE DISCHARGE/RECYCLED WATER REQUIREMENTS ORDER NO. R3-2002-0108 onsite or is connected to a community sewer approved by the RWQCB.
8. A deed restriction should contain all requirements and manuals as per this Alternative Plan so as to become part of a home sale title report if home is sold. The transferee will be disclosed in the disclosure report the nature and design of the system and it's operation, including human behavioral inputs. A copy of the restriction and manual should be necessary for final inspection.

Description of household pollutant reduction:

Urine containing 58% of the household nitrate production is separated from all other wastes unilaterally before going into the septic tank. 78% of TN comes from toilet wastes¹. 75% TN is held in urine content.¹²³ $78\% \times 75\% = 58\%$. Also $58\% > 22\%$ therefore urine separation exceeds the criteria set by the RWQCB mandatory pumping program.

Removal of Garbage disposal will render the pollutant reduction further to 5% more reduction in TN, 28% reduction in BOD(5), and 37% reduction in solids⁵. Hence the total reduction is 73% reduction in TN, 28% reduction in BOD, and 37% reduction in solids entirely by behavioral source separation.

Source separation of trash products is an example of successful behavioral modification to augment sustainability and logic would assume that human waste source separation would have the same results. Persons not desiring to this option could continue with dictated pumping.

Offsite Airshed Pollutant Reduction

The estimated amount of waste haulage per household per year is 9000 gallons. 6 haulings x 5000 households x 120 roundtrip miles to Santa Maria (not including pump out pollution and idle time) = 3.6 Million diesel truck miles per year added to the San Luis Obispo Airshed.

NO_x is produced by diesel truck effluvia shipping and is equal to $12.8 \text{ gm/mi}^6 \times 3,600,000 \text{ miles} \times 1/2.8 \text{ gm/oz} \times 1/16 \text{ oz/lbs} \times 1/2200 \text{ lbs/ton} = 467 \text{ Tons of Atmospheric Nitrogen released}$. With 116 tons of Nitrogen settling out of the air and going back into the watershed! What this really means is that for every pound of Nitrogen you are hauling you are dumping five pounds back into the bay because there is only 78 grams of N per truck load and 384 grams are going into the Bay from the diesel exhaust. Contrarily, source separation cuts haulage per household by a factor of 400 gal/9000 gal. or 96% Then- $467 \text{ Tons} \times 4\% = 18 \text{ Tons of NO}_x \text{ air pollution from hauling urine separate}$. That's a big difference not even considering the traffic congestion.

Of the air NOx in the airshed it has been shown by the lengthily and encompassing study of Chesapeake Bay that 22 to 25 percent of the NOx returns to the watershed mechanically when air NOx is released in the adjacent area.

My informational source for this claim is in : Atmospheric Deposition, A Handbook for Watershed Managers, Office of Wetlands, Oceans, and Watersheds U.S. Environmental Protection Agency Washington, DC 20460 EPA-453/R-01-009 September 2001 see:<http://www.epa.gov/airtrends/nitrogen.html>)

This table from the above citation summarizes N loading and percentages.

It is a fair assumption that the truck hauling NOx would follow on these percentages.

Salt Water Intrusion Reduction

For tank pumping the quantity of water removed from the hydrologic cycle of Estero Bay and removed from recharge is: 9000 Gallons/yr. X 5000 Households = 45 million gallons per year. The impact of this withdrawal is unknown but it is the equivalent of almost two months usage for the whole community. Source separation could avoid legal complaints by water purveyors for the huge draw against groundwater recharge.

Source separation including .2 liter urine wash down per flush for a family of three would probably not exceed 400 gallons per year. So 400×5000 households = 1.1 Million Gallons but the water conservation from saved toilet flushes $6 \times 1.6 \text{ gal/flush} \times 365 \text{ days} \times 5000$ households = 17.5 Million gallons/yr saved by not being withdrawn. The net gain to basin hydrology in any case would be over 15 Million gallons per year. There would be no net withdrawal.

The motivational feedback to not flush lots of water with urine is that pumping would occur less often costing the homeowner less money.

2% EPA Benchmark Affordability Reached⁷

The benchmark cost according to the EPA should not exceed 4% of yearly income of a family for both water and sewer cost. For sewer cost alone the amount would be 2%. The income of 33% of the families at Baywood Elementary earn below \$28,000 per year with many being one income single parents like myself. $\$28,000 \times 2\% \times 1/12 = \$46.00/\text{MO}$. Or \$138.00 per quarterly pumping compared to \$800.00 for the tank pumping requirement. This would approximate the pumping cost of 100 gallons. Standard portable toilets cost approx \$60.00 to service. Hence source separation would meet the low income community needs were Septic pumping does not.

Behavioral Motivation

Behavioral motivation is primarily monetary. The secondary motivation would be environmental awareness. Source separation could be eventually resource oriented where urine is reprocessed onto liquid fertilizer for agricultural users. Swedish studies involving resource source separation and contaminant removal are well documented and available from the author at the request of your department.

CONCLUSION

It is hoped by this permit application that both yourselves and the RWQCB will consider source separation and pumping as an alternative to septic pumping. It is understood that any approval for an alternative would have to meet the RWQCB needs if applied throughout the community. I think the plan for my property does that. This plan would make Los Osos cutting edge in resource management in line with advanced studies and pilot projects being carried out in Sweden and elsewhere without the risk of the project unknowns of using human urea as a resource. It sets up waste separation behaviors that are the most energy efficient way of processing human groundwater Nitrogen pollution (see enclosed study). Pending your approval, I have five other prohibition zone homeowners waiting for a similar installation.

The main reasons for approving my plan are:

- 1) 60 % nitrate removal compared to 22%.
- 2) Lower cost per household.
- 3) No groundwater withdrawal.
- 4) Uses off the shelf industry standardized equipment.
- 5) Creates advanced environmental awareness.
- 6) 1/10 the traffic and air pollution generated.
- 7) Possible resource management in the future.
- 8) Much lower energy consumption requirements.
- 9) Economic advantage for many small local retrofitting contractors.

Thank you for your consideration. It is my intention to avoid a CDO on my property by making improvements immediately. Your prompt attention is necessary to prevent devaluation of my property and potential legal encumbrances caused by your inaction. Lets act now to save our Bay!

Please feel free to call me at:

Steve Paige

805-215-9025 cell

805-528-4738 Home

1)Nutrients in urine: energetic aspects of removal and recovery M. Maurer*, P. Schwegler and T.A. Larsen
EA WAG, Environmental Engineering, Uberlandstrasse 133, CH-8600 Dubendorf, Switzerland

2) Siegrist et al. et al, 1976 2Beckerus et al, 1998 3Jonsson et al, 1997, Medcalf and Eddy, 2003

3) Department of Nutritional Sciences NS 160 University of California, Berkeley Unit III: HUMAN PROTEIN NEEDS

4) 3 & 2 page 2.

5) Federal Data from the EPA ONSITE WASTEWATER TREATMENT SYSTEMS MANUAL
EPA/625/ROO/008

6) http://www.epa.gov/air/airtrends/aqtrnd99/fr_table.html

7) EPA 832-B-97-004 Financial Capability Assessment