

P O Box 1678  
Santa Rosa, CA 95402

DEC 07 1994

Marie Meredith  
Santa Rosa Dept. of Community Development  
POB 1678  
Santa Rosa, CA 95402

DEPARTMENT OF 079  
COMMUNITY DEVELOPMENT

RE: 12/7/94 Scope of work for the Santa Rosa Waste Water's EIR/EIS

The Sierra Club's Water Committee from the Sonoma County Group has the following concerns regarding the areas of the Petaluma River to the Bay and the West County area including the Esteros on out to the Ocean outfall.

- WC A  
B  
C  
D  
E  
F  
G  
H  
I
- 1) Will there be studies to analyze the benefits of water conservation? Including the cost comparison of replacing all old toilets versus the cost of subsidizing irrigation?
  - 2) How will the public be informed of the water quality monitoring results?
  - 3) Can you please list all chemicals, toxins, nutrients and byproducts that you will specifically test for in the treated and untreated wastewater?
  - 4) Will the water quality monitoring system prevent over chlorinated or otherwise harmful waste water from getting into the environment?
  - 5) What will be the projected routes for the pipelines and or facilities needed for storage, reuse or discharge? A map of these routes would be helpful.
  - 6) Will the project increase the flood potential by reducing the irrigated field's absorption of rain and thereby increase runoff?
  - 7) What studies will be done to cover the seasonal and historical flooding, impact of high tides, combined with the current drought conditions and how will the discharge and irrigation affect these conditions?
  - 8) What impact will this project have on the Farallones National Marine Sanctuary?
  - 9) What impact will discharge or irrigation have on the fresh water marshes and in addition the salt water marshes of the Bay?
  - 10) What long term studies will be done to determine the effect of the ocean as a turbulent body of water and it spreading pollutants over a wide area?
  - 11) What long term studies will be done to determine the effect and amount of bioaccumulation of noxious materials over time? What exactly will be studied? Does this include dissolved nutrients, dissolved toxins and suspended particles?
  - 12) What long term studies will be done to determine the effect and amount of biomagnification of toxins that are passed along the food chain and accumulate in progressively higher concentrations?
  - 13) How will reuse or discharge affect the short term and long term functioning of any stream, river, estuary or ocean?
  - 14) Will you make specific references to the studies/data used to answer these questions?

Please answer the above questions in regards to how they relate to the areas of the Petaluma River to the Bay and the West County area including the Esteros on out to the Ocean.

Thank you,

*Marcia Camacho*  
Marcia Camacho  
Sierra Club Water Committee, Sonoma County Group



## CONVERSATION RECORD

TIME  
10:00 AMDATE  
Dec. 7, 1994

TYPE

☐ VISIT☐ CONFERENCE☒ TELEPHONE

ROUTING

CINVESTIGATOR: RWJ

P.O. Box 1873

Santa Rosa, CA 95402

DEC 07 1994

DEPARTMENT OF

COMMUNITY DEVELOPMENT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Gerry Murphy

ORGANIZATION (office, dept., bureau, etc.)

TELEPHONE NO.

(707)  
795-8292

SUBJECT

Input About HBA's Proposed Scope of Work for Long-Term Wastewater Project EIR/ETIS

SUMMARY

Gerry Murphy resides in Bloomfield and wanted the following points considered as part of Formal Scoping:

- A  
1. Stay aware of the Bay Area Dischargers' study of shipping treated wastewater to the Central Valley for reuse. Depending upon the results of the study, this could be a partial solution for Santa Rosa to consider.
- B1 2. HBA should be aware that some of the areas being evaluated by the County for landfill sites in West County are near proposed dam sites.
- B23 3. HBA should be sure to utilize the data collected by the County in its Solid Waste Disposal Study Report (particularly info. about West County wells and aquifers) in preparing the EIR/ETIS.
- C  
4. What effect (long-term) would the proposed Stump Ranch Reservoir have on the recharging aquifer discovered there by the County during its Solid Waste study? (Cont'd on attached page)
- CW  
ACTION REQUIRED Include as part of the public record of input during Formal Scoping and evaluate above items for inclusion in Scope.

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

G. Robbins, URBAN PLT.

Gary Robbins

12-7-94

ACTION TAKEN

SIGNATURE

TITLE

DATE

## Summary (cont'd)

0  
cont'd

5. If a reservoir were to be built on the Button Ranch, what would be the long-term effect of replacement wells. (the City would need to develop) on the existing shallow wells found throughout West County?

# Geyser Alternative-Energy Development Corporation

(a division of the LEONARD STEWART CORPORATION, a Delaware corporation)

22 Woodwardia Square, Santa Rosa, California 95409 • (707) 538-0293

December 6, 1994

TO: City Of Santa Rosa

CITY OF SANTA ROSA

RE:

RESPONSE TO NOTICE OF PREPARATION  
SCOPING OF THE EIR/EIS

P.O. Box 1673  
Santa Rosa, CA 95402

on the

DEC 07 1994

SANTA ROSA SUBREGIONAL  
LONG-TERM WASTEWATER PROJECT

DEPARTMENT OF  
COMMUNITY DEVELOPMENT

## INTRODUCTION:

The GEYSER ALTERNATIVE-ENERGY DEVELOPMENT CORPORATION has already submitted this proposed long-term solution in writing to the City of Santa Rosa's sewer effluent (wastewater) discharge problem, dubbed the "Geyser Discharge Alternative of the Geyser Alternative-Energy Corporation" wherein this company would fund, engineer/this facility to transport all of the City's present and its long-term future effluent discharge volume on to the Geyser steam-field, located in the north-east portion of Sonoma County, some 30 miles from Santa Rosa, and integrate this effluent into a significantly modified geothermal power generation system, rejuvenate the now depleting steam field aquifer, increase the geothermal power generation capacity of the field and potentially render said effluent potable for unrestricted re-use.

## THE PURPOSE OF THESE SCOPING COMMENTS:

These REMARKS are intended to reaffirm this same proposal as presented earlier and to address questions which have been raised regarding its all-weather suitability/capability, and its long-term disposal potential and capacity, its environmental impacts, and to re-emphasize the merits of this unique proposal, as having the least negative environmental impact, generating the least propensity to legal intervention and/or prohibition; it being the only truly viable and unqualified proposal for a long-term effluent discharge solution before the City, and it being the only proposal which does not require any funding what-so-ever by/from the City to engineer, construct, and implement and is the only proposal wherein the City would not be obligated to operate, manage, and maintain and would not have to bear the costs associated therewith; therefore, saving the City from any further involvement subsequent to the acceptance of this proposal.

The hereinafter segmentation of the whole proposal into its elements is solely for the purpose of its analysis, and is as follows:

## PROJECT ELEMENTS AND THEIR ANALYSIS

<u>Project Elements</u>		<u>Response/Rebuttal</u>
1. Does this proposal contain the lowest amount of potential public constraints?	Yes	Significant public approval and acceptance has been expressed to date.
2. Has this proposal received any threats of intended litigation if pursued?	None	- Same -

707 543 3219 P.25

TTY SANTA ROSA BLDG DIV

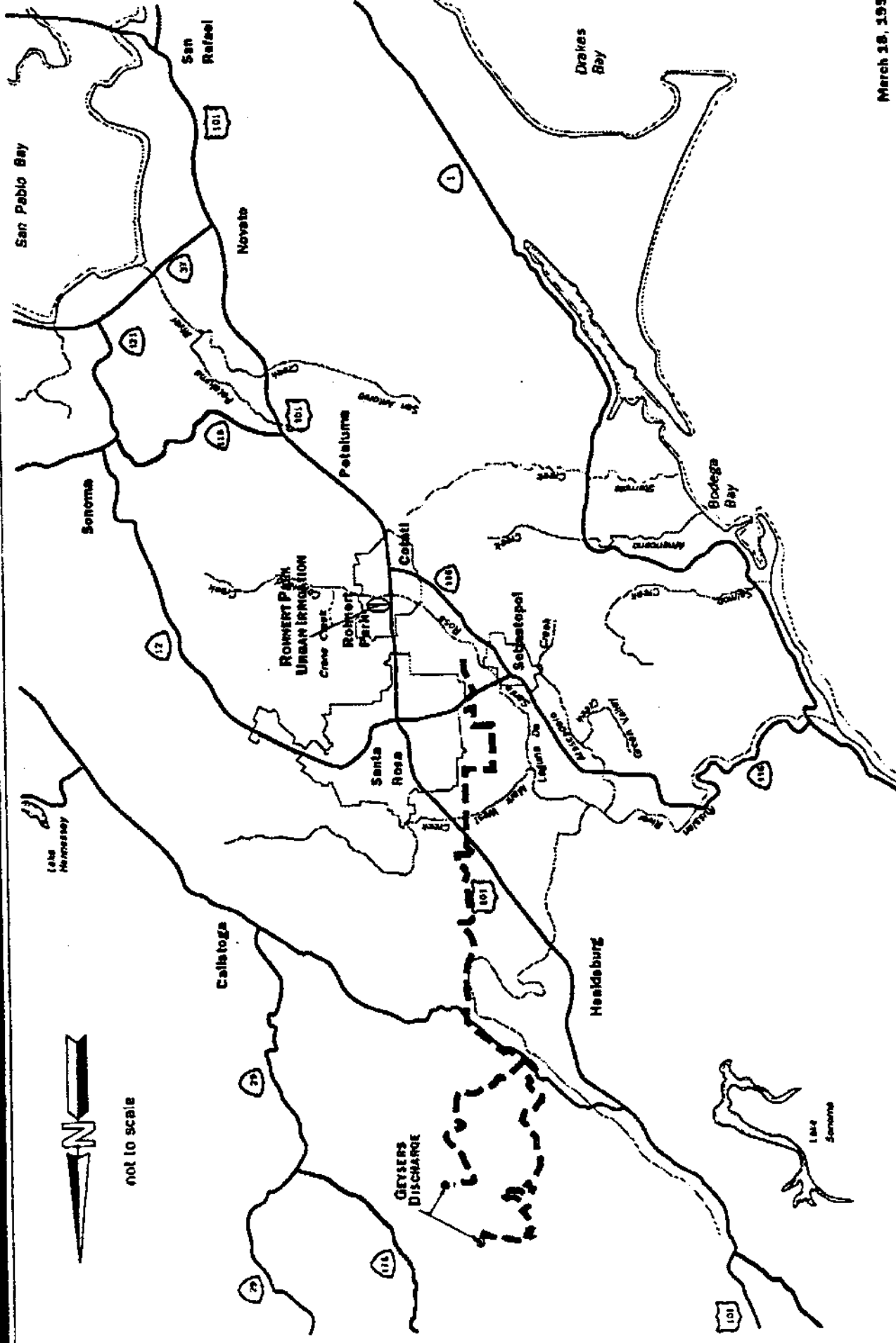
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As of 12/19/94  
12/19/94 12/19/94 12/19/94

*Santa Rosa*  
Subregional Long-Term  
Wastewater Project

## ALTERNATIVE 5

March 18, 1994



<u>Project Elements</u>		<u>Response/Rebuttal</u>
3. Have there been any expression of regulatory non-conformance therewith?	None	
4. Have any construction constraints been encountered to date?	No	Only <sup>well established</sup> engineering and/or construction principles are involved.
5. Would there be ease of operation and maintenance?	Yes	Performed by the GA-ED Corp'n.
6. Could the construction be staged?	Yes	To the benefit of the whole project.
7. Does this proposed system lend itself to sustained reliability?	Yes	There would be no experimental engineering, construction, or machinery/equipment utilized.
8. Is the full text of the engineering and economic integration of this system the exclusive intellectual property of the Leonard Stewart Corporation?	Yes	c 1994 Leonard Stewart Corp'n with all rights reserved.
9. Is this proposal predicated upon public reliance for funding?	No	None what-so-ever.
For engineering?	No	None.
For construction?	No	None.
10. Would this proposed system be economically feasible?	Yes	Subject to its operation and maintenance (O&M) and management be performed by the GA-ED Corporation.
11. Have extensive engineering studies been conducted?	Yes	Including seismic studies.
12. Could the associated pumping cost be significantly mitigated?	Yes	But only as a part of an integrated system.
13. Could the proposed system be made cost effective?	Yes	Subject to its becoming a totally integrated system.
14. Could this system accommodate the current maximum volume of dischargeable effluent?	Yes	Considerably more.
In excess of the 22.4 mgd being targeted in this long-term study?	Yes	In excess of 29 mgd.
15. Could a large volume of effluent discharge be sustainable?	Yes	Indefinitely
During all-weather and all-season conditions?	Yes	Indefinitely

<u>Project Elements</u>	<u>.Response/Rebuttal</u>	
16. Would the City become obligated to guarantee and maintain some minimum sustained volume of flow to the system?	Yes	By whatever means.
17. Would the City need to contain/store effluent to ensure stabilized flow?	Potentially	
18. Could this system accommodate increased flows periodically?	Yes	Subject only to the maximum pumping capacity.
19. What impact would there be to combine storm runoff with sewer effluent?	None	
20. Would additional effluent treatment/filtration be needed?	No	
21. Would there be cyclical/seasonal fluctuations in this system's discharge?	No	The system's operation would be constant and sustained to the volume at hand.
22. Can a significant reduction in odors be anticipated at the Geysers?	Yes	Virtually all emissions into the atmosphere would be eliminated; hence, creating a major improvement in air quality.
23. Would the capacity of this system exceed that of the anticipated population growth by the year 2010?	Yes	With a margin remaining.
24. Would the engineering associated with this proposal be classified as experimental?  Necessitate any new/untried or hazardous engineering or construction principles and/or materials?	No	All of its engineering and construction principles are in existence and being used.  - Same -
25. Could this system accommodate lower treatment levels at the treatment plant?  Resulting in producing a negative environmental impact?	Yes  No	
26. Would wet weather conditions be adverse to or over-burden this system?	No	As long as the pumping capacity was not exceeded.
27. Would this project become dependent upon City or other public bodies for pipeline easement acquisitions?	Yes	Not to exclude their holding power to exercise their right of imminent domain.
28. Would there be increased atmospheric discharge of steam?	No	Atmospheric discharges would be eliminated.



<u>Project Elements</u>		<u>Response/Rebuttal</u>
29. Is injection into the Steam-field aquifer experimental?	No	It has been performed on this and other sites for years.
Is it effective?	Yes	
30. Can the steam-field injection into the aquifer leach to surrounding areas?	Not likely	It has been determined that this aquifer is independent and self-contained; hence, cannot be rejuvenated other than by prolonged rainfall (years) and/or by injection.
31. Would domestic wells and/or water tables be affected by this injection?	No	
32. Would effluent injection at the steam-field increase its daily seismic activities?	None is anticipated	Studies indicate that replacement of steam depletion could be mitigating to the existing activities.
33. Would the daily seismic activities within the steam-field area be adequately addressed to ensure against ruptures or damage?	Yes	Utilizing known engineering principles and relying upon existing site studies.
34. Would this project increase flood and/or flood patterns?	No	
35. Would there be any surface runoff or discharge at the steam-field?	No	
36. Would the stream water of Big Sulphur Creek still be required to operate the steam-field?	No	Subject only to the adequacy of minimum-sustained flow of effluent made available by the City.
37. Would there be any discharge of effluent into Big Sulphur Creek?	No	
38. Would this system cause/prompt any adverse winds or soil erosion?	No	
39. Would there be any stream channel modification?	No	
40. Would this proposal affect agriculture?	No	
41. Would there be loss of designated open space?	No	
42. Under this proposal, would the effluent have to be disinfected by the City?	No	

<u>Project Elements</u>	<u>Response/Rebuttal</u>	
43. Under this proposal, would the City be obligated to perform any pre-treatment programs:		
Nitrate removal?	No	No "polishing" would be required.
Phosphate removal?	No	
Metals removal?	No	
Any purifications beyond what is currently being performed?	No	None what-so-ever.
44. Would the pumping facilities ancillary to the pipeline be of low profile?	Yes	
45. Would any structures be placed upon soil which would likely collapse?	No	
46. Would there be any adverse view or viewsheds or scenic corridors associated with the construction?	Nil to none	
47. Would the ancillary facilities of this project (e.g., pump stations) be compatible with the lands involved?	Yes	They would be passive to the environment.
48. What possibility would there be of loss of riparian habitat in the area?	None	There would be no discharges.
49. Would the operation endanger animal, or vegetation, valley oaks, and/or vernal pools?	No	None at the steam-field, minimally during pipeline construction.
50. Would maintenance roads be constructed and maintained along the pipeline?	Yes	
Will they cause adverse impacts?	Minimal	to none; very limited use would be required along the line.
51. Could the pipeline corridors be re-aligned with flexibility?	Yes	If conducted prior to the initiation of construction.
52. Would stream and/or road crossings by the pipeline become an impass?	No	None would pose difficulty over and above what could normally be found/encountered on any other project of this size.
53. Would stream-flow augmentation using potable water be an option under this proposal?	Yes	Very much so.
54. Would this proposal impact the objective of the 4,000 Russian River signatories objecting to River discharge?	Yes	No discharge what-so-ever into the River would become necessary; discharge would become optional and/or arbitrary on the part of the City.

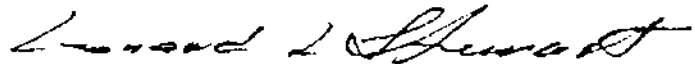
<u>Project Elements</u>	<u>Response/Rebuttal</u>	
55. Could this proposed project impact population growth, housing, and the economics of this area?	Yes,	most significantly; effluent discharge problems would be solved, allowing growth, housing construction, industry, and correlated jobs.
56. Would this proposed system preclude the City of engaging in various irrigation commitments?	No	
57. Would this system obligate the City to dump effluent into the Russian River?	No	
58. Could the City elect to discharge some effluent into the River and/or other streams for stream-flow augmentation?	Yes	As long as it did not impair prearranged minimum flows to the Geysers.
59. Is there any public health risk associated with this proposal?	None	
60. Would this proposed means of effluent discharge have any direct financial benefit to the City?	Yes	Clean alternative-energy (electric) generation with tax revenue sharing therefrom.
61. Would this proposal constitute a reclamation of sewer effluent discharge?	Yes	Resulting in power generation, rejuvenation of the steam-field aquifer, and subsequent potential reuse of potable water.
62. Would the City further benefit financially from this proposal, and not available thru any other submitted alternate?	Yes	The City would bear: 1) no construction costs, 2) no operating & maintenance cost 3) a diminished need to up-grade its treatment plant(s).
63. What would be the potential life (longevity) of this system?	Permanent,	and indefinite.
64. Would regional involvement be beneficial to the City?	Yes	To facilitate obtaining easements and to obtain a minimum level of effluent discharge.
65. Does the longevity of this proposed system meet the definition of a "long term solution" to the City's problem?	Yes	It would be permanent, and would not diminish with time.
66. Are funds to construct this system currently available?	Yes	A preliminary commitment of availability of the many millions of dollars to construct this system is already in hand.

SYNOPTIC SUMMARY

1. This proposed alternative to the sewer effluent discharge problem of the City of Santa Rosa contains an improvement to the ecology of its operating site. The air, ground/soil, and ground-water/streams would be improved and/or cleaned.
2. This proposal constitutes a long-term solution, virtually without expiration, obsolescence, or degeneration date.
3. Its capacity can be made unlimited.
4. It is an all-weather, all-season system, not prone to break-down.
5. It is not offensive to the public nor to the natural elements; hence, is user as well as site and nature friendly.
6. The system is flexible and fully adaptable to treatment-plant capabilities and capacity.
7. No legal impediments have been evidenced to date, and none are anticipated, which could cause a restraint to its implementation and operation.
8. Of utmost importance is that there would be:
  - (a) No engineering/design cost to the City,
  - (b) No construction cost to the City,
  - (c) No capital funding costs/liabilities to the City, and
  - (d) No operational/management or maintenance expertise or costs to the City.

Therefore, this proposed solution to the sewer effluent problem of the City approaches a near optimal system and solution, and is far superior to any other option available or proposed.

GEYSER ALTERNATIVE-ENERGY  
DEVELOPMENT CORPORATION



Leonard L. Stewart,  
Executive Officer

**Santa Rosa****Subregional Long-Term Wastewater Project****SCOPING COMMENT FORM**Name: Ernest A. Briggs Due December 15, 1994  
Colleen A. BriggsDate: 12-5-94Address: 4314 Lichen RoadCity: Panama State: Ca Zip: 94951Phone: (707-795-4634)RECEIVED  
CITY OF SANTA ROSA**How to use:**

Please fill out the above information. Please provide your written comments about the Summary EIR/EIS Consultants Draft Scope of Work or the Preliminary Scoping Report on the form below. Please print or write legibly, or attach this form to your typed comments. You may add additional pages of your own if needed. When completed fold the form so the City's address is showing and tape the edge together, (Do not use staples), and drop in the mail.

Comments: Bloomfield Reservoir (S40)Sonoma County A.P.# 027-030-003AP 027-180-033 AP# 027-230-010AP 027-030-010 AP# 027-020-006AP 027-010-12-

1. PROPERTY OWNER COLLEEN A. Briggs & Ernest A. Briggs  
this property is NOT for "SALE"

2. PROPERTY OWNER COLLEEN A. Briggs & Ernest A. Briggs  
wants to HAVE ABOVE PROPERTY Take out of  
"Wastewater Project"

3- this DOCUMENT IS ~~TO~~ BE INCLUDED INTO  
the SCOPING Phase

Thank you  
Ernest A. Briggs



083

**RRWPC****Russian River Watershed Protection Committee**

Post Office Box 501  
Guerneville, CA 95446  
(707) 869-0410

**CITY OF SANTA ROSA**

P.O. Box 1673  
Santa Rosa, CA 95402

DEC 07 1994

DEPARTMENT OF  
COMMUNITY DEVELOPMENT

To: Harland Bartholomew & Associates &  
City of Santa Rosa

From: Russian River Watershed Protection Committee  
Brenda Adelman

Re: **Preliminary Scoping Report:  
Subregional Long-Term Wastewater Project**

Date: December 7, 1994

The following comments represent an evolving concern about the continuing practices and ever increasing amounts of wastewater discharged into the Russian River by the City of Santa Rosa. Because, due to the system's complexity, we are constantly learning of additional and extensive impacts on the local environment, we are aware that our information and knowledge at any given point in time is never really complete. With that in mind, and *focused on those alternatives that propose over 1% discharge*, we raise our current questions and issues about the long term wastewater project.

**General concerns about the project:**

- A. 1994*
1. There are extensive signs of degradation in the Russian River and the Laguna de Santa Rosa has already been declared an impaired water body. Will this EIR/EIS utilize scientific methods for determining whether wastewater discharges are in some part responsible for degradation such as excessive algal growth in the river and low dissolved oxygen in the Laguna? In other words, will appropriate data be obtained in the field, in a representative manner, in order to determine the exact cause of the problem and the extent of its impact?

We are concerned that past documents written by city consultants and Regional Board staff have worked backwards by theorizing the cause of the problem and then developing and focusing on the rationale and data that would prove their case. (ie. Nutrients in Laguna sediments were attributed to dairy farm waste without benefit of mass loading studies.)

*Formerly River Citizens Sewer Committee*

In other words, thus far only *some* of the likely causes of the problem have been studied and conclusions about the cause of degradation are thereby scientifically invalid. (Two days ago we received the *Waste Reduction Strategy for the Laguna de Santa Rosa* from the Regional Board. Since we have not yet had time to read that document, we do not intend this comment at this time to apply to that latest work.)

2. Will City consultants provide complete citations, page references, authorities, and scientific analysis that gives sound reasons for conclusions based on a fair interpretation of the data provided? Will this scoping document be fashioned with a clear view of *science* in mind and with the scientific method utilized, or will it simply make a *political* rationale for the City to do with impunity what they merely wanted to do in the first place---increase wastewater discharges to the Russian River?

To what extent is this document going to rely on past studies and analyses? Please detail extensively by specific reference any work that has been previously published and utilized for this document. Further, will this document carefully reference all information utilized from those documents as they are specifically applied by using footnotes that include page numbers that direct the reader to the relevant material? If not, why not?

b  
m  
We would like to request that HBA revisit the comments presented for the first two EIR/EIS processes and review any that are pertinent to this new document. It is only fair that if you use information and studies developed for those prior documents, that you also readdress major concerns that may have been inadequately reviewed at that time (neither EIR/EIS was ever certified.)

3. The *Preliminary Scoping Report* has repeatedly indicated concern for meeting compliance with existing regulations while sometimes excluding potential impacts that are not regulated. RRWPC wonders if CEQA and NEPA mandate examination of ALL anticipated impacts, whether regulated or not? How is it determined to what level of detail impacts, especially non-regulated ones, will be analyzed?

C  
G  
Similarly, the city is avoiding responsibility for impacts while, though observed, cannot be specifically established in a cause and effect relationship. We are particularly concerned about chronic effects that are not so readily observed and the whole problem of estrogenic impact on fetal development (wildlife and humans). If it were to prove impossible to scientifically establish *precise* cause and effect relationships here, even with substantial evidence of impact, what is the city's responsibility to study such project impacts in this document? Is the city relieved of



responsibility for addressing impacts that would be difficult and expensive to study?

- DW1
4. Previously it has been claimed that this EIR/EIS would be at a *project* level of detail for all alternatives. Please specify whether this is still the case. If so, please explain the following statement on page 53: "More detailed plans (not a part of this scope/budget) would be required for permitting any individual wetlands creation component that may go forward with a selected alternative after the Final EIR/EIS is complete."

Does this same situation exist for other components? Specify. At what point will specific information about selected wetlands sites be provided? How can a valid EIR/EIS be completed to a *project* level of detail without inclusion of this analysis? Aren't wetlands components in the Laguna the same for all alternatives?

- E (hand)
5. Twenty year general plan growth projections provide the major and driving assumption for the scope of the project. Has the determination of that number adequately assessed the limited nature of infrastructure resources and the costs in developing them? (ie, Have general and specific plans addressed this issue?) Would city appointed and elected officials who moan about projected estimated project costs be willing to consider *reducing* (not eliminating as in the No Project Alternative), general plan projections? Why not?

- F1
6. How can the City assure their low income residents that they are not subsidizing the cost of growth? How does the City determine which improvement expenditures are maintenance and upgrades and which are to serve new connections? Are there situations where it is impossible to separate the two? Explain.

- F2
7. How are we to deal with the contradictions indicated when discussions of money ensue? The rationale for eliminating many proposed studies is, and will be, that they are too expensive. Yet, the City is spending over \$500,000 on public relations consultants. How does the choice of expenditures reflect the current needs of the decision makers? In other words, is the focus too much on satisfying system regulators and potential judicial decisions rather than providing long range protection of beneficial uses for future generations?

- G (hand)
8. Reservoir sites under 1000 million gallons (mg) were eliminated from consideration because it was determined that their cost would be too great. It was also stated that smaller reservoirs would REQUIRE a 10% river discharge. Please compare the cost, including debt service, operation &

maintenance, and potential litigation, of a system that PHASES a series of smaller reservoirs (ie. 500 mg-1000 mg) over a 20 year period. Include comparative analysis of ease of procurement, likelihood and costs of litigation of larger sites, and necessity for condemnation proceedings on smaller versus large sites.

H1 9. Will the EIR/EIS address issues relating to existing portions of the system already in use or only new additions to the system? RRWPC preference and intent is that all of the issues raised be applied/addressed to all current and future portions of the entire system.

H2 10. Finally, we wonder who has been noticed about the scoping process? Over the last ten years RRWPC has been informing our supporters about Santa Rosa's progress in wastewater discharges into the Russian River. We know that many of those people have asked to be put on Santa Rosa's mailing list. Has the City done so? Have all of those people been notified? If not, who has not and why not?

I ult 11. Further, in regards to your public review policies, we wonder if you could give a full explanation for why Alternative 2M, which received the greatest amount of public support and was of moderate cost, was not selected for further study? What implications does this have for the public input process? How seriously will public input be considered? Is this process merely a charade whereby officials can say they let the public speak but then ignore all of what they have to say?

Judy 12. For three years RRWPC has been closely tracking the development of the Russian River Model developed with the support of the Regional Board. We have submitted extensive comments indicating our concerns about the model. Santa Rosa consultants (Dave Smith) have been apprised of our concerns and have copies of the most recent analyses written by Doug Greene. Further, we now submit comments from John Rosenblum who reiterates those concerns for this document. We fully support his point of view.

As a lay person, I believe that computer analysis puts an additional, and in some cases impenetrable barrier between the public and the institution using the tool. There is virtually no way for the public to replicate the data fed to the computer in order to assess the validity of the information and its conclusions. Therefore, there may be no way for the public to objectively assess whether the information is correct, or the conclusions reasonable. Agencies almost never allow for outside independent audits of their work and small community groups can't afford it.

We ask that you carefully consider and respond to Dr. Rosenblum's comments. We also ask that you clearly state in all your studies and reports the extent of the use of computer analysis, and carefully delineate which numbers are computer generated and which are based on actual data collected in the field.

### Cumulative Impacts:

K1 Cumulative impacts have consistently been the weakest portion of any EIR we have seen. Yet the lower Russian River is the sink for all degrading activities throughout the entire watershed. All other environmental impact analysis is meaningless if *cumulative impacts* are not adequately addressed. This means, for instance, that all potential growth throughout the watershed during the entire study period for all dischargers needs to be analyzed!!

RRWPC assumes inclusion of all types of toxic loading for all systems currently discharging into the Russian River and its tributaries as required for a meaningful cumulative impacts analysis. This should include a complete analysis of toxic loadings from the Geysers as well as all other waste dischargers actively loading the river at this time as well as reasonable projections of future loadings for the next twenty years.

- K2
1. Where impacts are studied in relation to the flow, it is important to look at data on a daily basis. Since the river can change as much as 45,000 cfs in a single day, it is meaningless to look at *monthly* averages. In general, data should be presented with a variable range, and not just as an average.

K3

  2. Will your cumulative impacts analysis include compilations and comparisons of various wastewater constituents including, but not limited to, pathogens, toxins such as heavy metals, chemicals as well as nutrients and other conventional loadings?

K4

  3. Please discuss the full range of implications for the precedent setting nature of Santa Rosa's potentially greatly increased discharges to the Russian River. Assuming that other municipalities may want to grow as much as Santa Rosa, what would be the total impact if all other dischargers followed Santa Rosa's lead in asking for higher than 1% discharges? (Please give all possible scenarios from 1% to 20% for all dischargers and the whole range of possible loadings impacts from all constituents under all flow scenarios.)

Please present information in relation to:

- a. water quality in lower river,

- ✓ b. increased risk of exposure to pathogens, carcinogens, etc. including viruses and parasites,
  - M c. impacts on lower river economy due to *perception* of a dirty river,
  - N d. impact on anadromous fishery including general fish health and reproductive capacity, (How will current and future cumulative discharges further affect already heavily impacted fishery?)
  - 01 e. impacts on harbor seals and Russian River estuary,
  - 02 f. stream flow analysis indicating true daily fluctuations of combined wastewater percentages in lower river (need for careful analysis of Santa Rosa's ACTUAL discharge percentage as it flows into the river,
  - 03 g. specific impacts of higher loadings on dissolved oxygen in lower Russian River,
  - 04 h. combined influences of growth in Santa Rosa plain and paving over of the flood plain to form impervious surfaces.
- 04 4. To what extent are winter flows increased in the Laguna as a result of urban growth and paving? To what extent are toxins added to the creeks in this flood plain as a result of operating Laguna tributary channels as flood control channels serving the needs of existing and new development? What toxins are added as a result of urban run-off from this new development? (These issues were never adequately addressed either in the South East Area Plan or the South West Area Plan.)

### Stream Flow Impacts:

RRWPC has previously expressed concern about the methods by which Santa Rosa determines their amount of discharge on a daily basis. Discharges are based on the high hourly flow of the day before as measured at the Hacienda Bridge by the Department of Water Resources. The discharge is then set at 1% or 5% of the river flow depending on what is currently allowed by the Regional Board. The discharge can take place over the course of a day but the actual water released does not reach the river for one to eight days.

In the meantime, the river can fluctuate as much as 45,000 cfs in a single day. Santa Rosa's discharge has gone as high as 140,000 gallons in a single day (in the last three years). At high flows, a 5% discharge can represent as much as 2 billion gallons discharge allowed for a single day. Yet these same flows can represent much higher flow percentages for the Laguna de Santa Rosa, Santa Rosa Creek and Mark West Creek. We have the following concerns:

- 05 1. What is the true discharge rate into the Russian River of all possible flow scenarios (river AND discharges) if calculated for the actual time the water flows into the river?

- 06 2. How would highest flows/discharges conceivable impact downstream flood scenarios? (Could Santa Rosa's discharge exacerbate downstream flooding? How much? How does this combine with greater runoff upstream because of filling in the Santa Rosa plain with impervious surfaces?) How much is discharge increased in Guerneville and downstream as a result of higher discharges?
- 07 3. How does increased sedimentation from upstream development impact affect Santa Rosa's flow rates into the Laguna? What impact does high discharges have on stream bank erosion?
- 08 4. How do increased diversions in upstream Russian River affect Santa Rosa's need for higher discharge percentages, especially in drought years?
- 09 5. What constrictions does Santa Rosa face in regards to upper flow limits? How can these restrictions be superseded? What is the most Santa Rosa can discharge in a single day during the entire study period? How do Santa Rosa's discharges subtract from Laguna flood plain capacity?
- 010 6. What is the full range of wastewater percentages under all possible discharge and flow scenarios in several reaches of Laguna waterways:
- a. Laguna Treatment Plant to Santa Rosa Creek
  - b. Santa Rosa Creek: Delta Pond to Laguna
  - c. Laguna at Santa Rosa Creek to Mark West Creek confluence,
  - d. Mark West Creek to Russian River (in this reach please define how all of Santa Rosa's discharges combines with all of Windsor's to affect much higher wastewater flow percentages and takes into account extensive water diversions in that waterway as well.)
- 011 7. What percent of the discharge season would flow exceed 50% in all reaches of the Laguna system at 1%, 3%, 5%, 8%, 10%, 12%, 15%, 18%, & 20%? (Break down reaches as suggested above.) Then, at all discharge scenarios, when are discharges over 50% of the flow during anadromous fish runs?

### Water Quality Impacts:

RRWPC has always believed that thorough comparative study of the area where Mark West Creek flows into the Russian River and the area immediately upstream from that location would yield large amounts of significant data about how the activities of the Laguna affect the Russian River. Please summarize all such data available that could illuminate this situation.

- 012 1. What are the anticipated impacts on dissolved oxygen, pH, temperature, turbidity, conductivity, etc. both in the Laguna and Russian River from all the various flow and dilution scenarios both in the main water column and along the banks of the waterway?

Specifically, will you conduct diurnal dissolved oxygen studies in the Russian River? Are there nutrient residuals from Santa Rosa's winter discharges that cause impacts during the non-discharge season? Please explain.

To what extent does Santa Rosa's wastewater impact temperature levels, temperature and conductivity in the Laguna AND along the lower Russian River either:

- a. by itself,
- b. in combination with all current dischargers and those anticipated for the life of the project,
- c. in combination with all other nutrient contributions from all sources?

- 013 2. How does Laguna degradation and all wastewater discharges contribute to exotic plant growth in the Russian River?

- 014 3. How does wastewater affect river and Laguna temperatures? Compare these temperature levels to what is needed for a healthy fishery. How do existing and projected temperatures (range—not average) affect vitality of the fishery?

- 015 4. What chemicals, pesticides, herbicides, including inert ingredients, are used by agriculture, the Sonoma County Water Agency vegetation control program, and Cal Trans weed abatement program along the Laguna and Russian River? How does wastewater help transport those chemicals to the river? What are all the potential chemical interactions when all of these substances come together? What effects can these compounds produce synergistically on aquatic life? on human health? What happens to alum in the treatment process? Are toxic aluminum effects resulting from its usage? What are these?

#### Toxicity Issues:

- P 501  
102 1. One of the most controversial issues of wastewater toxicity has to do with chlorine and the disinfection process. That chlorine, which kills germs cheaply and easily has also been implicated, in combination with other wastewater constituents, as a potential carcinogen and estrogenic chemical.

P cont 2  
Sof  
ML

Current discharge regulations require that Santa Rosa retain a 1.5 mg/l residual at the end of the chlorine contact chamber and non detectable readings at point of discharge. The effluent is dechlorinated in the winter and allowed to evaporate in the ponds in the summer. Yet heavy chlorine dosages in the ponds combined with drawn down conditions have caused death in wildlife on several occasions. This causes us to raise the following issues:

a. Where does the chlorine go when it evaporates? What are the possible connections it can make to form toxic compounds? What effect would these potentially toxic compounds have on the environment? What is the degree of risk of airborne contaminants?

b. If excessive chlorine kills the fish, what does it do to the birds who eat the fish? Can you characterize all potentially affected wildlife (along with population estimates) that utilize pond and wetland habitat? What interaction exists between ponds and waterways? What is the typical movement of the various species between the two water bodies? How do fish get in Brown Pond? Can they get out? How does chlorine affect the otters, deer, raccoons, etc. that utilize the ponds?

If agencies regulate impacts of wastewater on wildlife *outside* of the ponds, but not inside, what happens when the wildlife feeding at the ponds are affected by the toxicity of the wastewater and leave the pond environment for other places? What is the logic of protecting wildlife outside of the ponds but not inside? Wouldn't it be more responsible to dechlorinate the wastewater before it enters the pond on a year round basis?

Q  
ML

## 2. Regarding chronic toxicity:

In regard to the tests Santa Rosa conducted in 1992 and 1994 on chronic toxicity, we wonder if there was no observed effect at 25% and a sublethal toxic effect at 50%, how do we know what was going on between those two values? At which precise point does toxicity begin? Also, if acute toxicity occurred in 1992 and 1994, doesn't it behoove you to identify the cause and discover why it stopped? Or is it possible that the toxicity could reoccur?

While we have not had a chance to study the flow data, we have trouble trusting that Laguna flows are over 50% wastewater only 5% of the time. Does that mean 5% of the discharge season or the whole year? Does it include irrigation runoff and seepage? Also, even if that 5% period of time is correct, could it be that it occurs at the very time it might have the most serious impact, such as immediately before salmon and steelhead

return to their spawning grounds? Could you tell us what percent of the time that the fish are running that the flows are over 50% wastewater?

The fat head minnow was utilized as one of the test species. What is the minnows sensitivities? Why was it selected for testing?

Since mortality for *Ceriodaphnia dubia* has been inconsistent, wouldn't it be appropriate to continue chronic toxicity testing for many years before drawing final conclusions about wastewater toxicity? Also, doesn't it make sense that wastewater will have spikes of toxicity? CH2MHill has recommended that TIE tests to determine causes of toxicity are not necessary. We do not concur with that conclusion and feel it is much too premature. Toxicity has been cited. It behooves you to find its cause!

What impact does adding leachate from the County Dump contribute to toxicity? Is it possible for the system to become overloaded? How consistent and reliable is the treatment process in removing ALL toxins? Why not give us a graph showing levels of toxicity over a long period of time. Have levels of toxicity changed since leachate has been added?

3. What testing is being conducted (or will be) on wells in the Laguna area? Are you testing wells for all heavy metals, organochlorines, trihalomethanes, pathogens, etc.?

4. HBA has stated that they will study sediments for heavy metals in the ponds and wetland (Kelly). Why was no mention made of the chronic toxicity studies conducted in Kelly Pond, Delta and Santa Rosa Creek? Sediment accumulations in Kelly higher than background levels in Santa Rosa Creek were found for arsenic, aluminum, cadmium, chromium, copper, lead, manganese, selenium, silver, and zinc. Cadmium, chromium, copper, lead and mercury reached elevated levels in clams.

In general, test results were based on too short a time frame to give meaningful conclusions. At the end of the report (p.46) several conclusions and recommendations are made for follow up testing. Is it the intent of this EIR/EIS process to follow up with all of these recommendations? Exactly what chronic toxicity testing is proposed by this EIR/EIS process?

If you are just doing quarterly monitoring of chronic toxicity, could you be missing important periods of toxic exposure?

City officials have made the comment that time plays a role in toxicity and that ponds are supposedly less toxic than final effluent. If it is true that the



toxins wind up in the sediments instead of the water column, while that may be fine for water quality, it gives concern to buildup of toxins in sediments. Please explain the relationships between aquatic life existing within or in close proximity to the sediments and the fish and other creatures that consume them as part of the food chain. How do the sediments interact with the algae and plant life and other food sources?

R4

5. Is there a way to *map* toxic exposures in the waterways as well as their duration? Can you trace toxic levels of copper, mercury, cadmium, chromium, and lead between the plant and the Mark West Creek outlet into the Russian River? To be really meaningful, regular chronic toxicity testing needs to occur over an extended period of time. What information is available as past exposures? What ongoing tests are being proposed for the future?

R5

6. If testing of samples of wastewater shows only trace amounts of a heavy metal or nondetectable in mercury, can it be assumed that that amount could be multiplied out by the amount of wastewater in order to get a sense of the total load? What would you assume to be the TOTAL yearly load of each heavy metal? How do sediments upstream and downstream of discharges compare in terms of metals content?

S 5th

7. Does the city use PVC piping in their wastewater system? If so, is it known what toxic contribution these make?

T WL  
FIS

8. Fish Migration Studies:

The only valid conclusion that can be drawn from these studies thus far is that some fish are getting through to spawn in Santa Rosa Creek and fewer in Mark West Creek. It has been theorized that most fish go through when flows are high and dilution great. It has been suggested that consultants do not know how many fish are spawning, how many are dying, or how many have impaired reproductive systems. It is not known what effect wastewater has on the homing instinct of the fish. It is not known what impact wastewater discharges have in conjunction with water diversions and urban runoff.

How will future tests *prove* that wastewater, either alone or in combination with other toxins, does not impede either the life of the fish or their reproductive abilities? Will offspring be tracked over a period of time to determine their reproductive health?

### Irrigation Impacts:

- U1 1. What impact does wastewater irrigation have on groundwaters where  
U2 farmers irrigate over 24' a year? Have you studied any wells in close  
proximity to heavy irrigation activities?
- U3 2. Are there toxins accumulating in irrigated soils such as salts, heavy  
metals, etc. that will cause negative impacts on ground water? How  
thoroughly have you tested for this? Or will you test for this?
- U4 3. Can you identify range, amounts, application events of pesticides used on  
irrigated lands? Do any pesticides end up in the waterway or  
groundwater?
- U5 4. What is the interrelation of irrigation and grazing? How do cows  
contribute to Laguna degradation in relation to irrigation? Do farmers  
rotate irrigation and grazing? Is land ever given a chance to dry out before  
allowing grazing? What are the crop patterns in the Laguna?
- U6 5. Page 52 of *Scoping Report* calls for irrigation suitability land classification  
including drainage, parcel size, soils, topographical factors, etc. To what  
extent has this been conducted to lands currently irrigated? To what  
extent is it being planned for future irrigation?
- U7 6. The Laguna Area has an undulating landscape. There are many gullies  
and swales that could allow the irrigation water to drain into waterways.  
Also, irrigation spray is often carried by wind into waterways. How will  
this be monitored and controlled? How do you map out Laguna with  
swales in mind showing where irrigation can take place and where it  
cannot?
- U8 7. How has irrigation in the past ten years impacted Valley Oaks in the  
Laguna. I remember a promise ten years ago by the City that irrigation of  
the oaks would not be allowed. How has this been controlled? What is  
the oak population now compared to then? What measures/monitoring  
is in place to ASSURE protection of the trees? What is the health status of  
the trees? Have they or will they be studied?
- U9 8. What policies are in place to protect vernal pools and endangered plant  
species? Has there been an assessment of ALL irrigated lands for these? If  
any exist, how can their integrity be assured in the long run? (ie, through  
what kind of monitoring/management plan?)

U10 9. There seems to be an assumption in the scoping document that lands currently irrigated will not be extensively studied for irrigation viability. Yet we wonder if those soils have been analyzed for heavy metals, salts accumulation and other contaminants.

U11 10. Will it be assumed that existing irrigation lands in the Laguna are appropriately identified as to *irrigation suitability land classification and facilities planning level irrigation layouts*? (p.52) Please make that document available if former determinations are to be considered adequate.

U12 What kind of management monitoring plan will be put in effect to determine appropriate daily and even hourly irrigation amounts? How will city track, at any given time, the soil types, crop, weather, slope, etc. to guarantee that proper irrigation procedures, techniques and applications are followed. How much water can be applied to clay soils in a year? Do individual farmer contracts note restrictions tied to constraints of parcel being irrigated? What contractual constraints are in place to assure that farmers do not over irrigate at certain times in order to fulfill the contract or be paid more money?

U13 Does long term irrigation change the constituency of the soil in any respect? Is there any difference in impact from those lands irrigated at one acre foot versus those irrigated at three acre feet a year? What impact do

U14 soils, saturated through irrigation, have on the flood control capacity of the Laguna?

We appreciate and fully support the questions about irrigation posed by John Rosenblum and submitted with this document. We hope they are given your full consideration. We also submit his comments on the City's *Water Quality Attainment Plan* to also be considered as part of this EIR/EIS process.

✓  
Wetlands:

1. RRWPC submits comments here from Vicki Reynolds, wetlands field biologist, regarding wetlands creation and design. We fully support her concerns and hope you will give her comments full consideration.

✓ 1 2. What happens to the sediments in wetlands when flooded over? How does sedimentation during flood periods affect overall functioning and life span of the wetland? How will wetlands be constructed in the flood plain impact flood control capacity of the Laguna? What are all the

potential flood impacts of operating constructed wetlands in the flood plain? Will these wetlands serve as mitigation for fill in other areas?

V2 3. How are wetlands managed to assure consistent vector control? How is this maintained without utilizing a summer discharge?

V3 4. What causes unusually high nitrate concentrations in groundwater at well MW-6 at Kelly Farm? Also, why are conductivity, TDS, and chloride showing increasing trends in concentration here? What implications does this have for other potential wetland sites?

V4 5. Can City demonstrate ways in which wetlands would be managed so as to protect beneficial uses at all times? Will the City provide a management plan to demonstrate how compliance with wastewater limits will at all times be achieved? Will there be an on-going monitoring plan? Describe. Will there be an on-going vector control program? Describe. How will wetlands minimize occurrence of botulism? Will there be a commitment of funds to guarantee resources will be made available to carry out monitoring and management programs for the life of the project?

What management techniques will be used to achieve desired vegetative growth? Will the wetlands focus on providing wastewater treatment or wildlife habitat? If wildlife habitat, whose habitat will be targeted? Will vegetation vary by season?

V5 6. Will the City be attempting environmental enhancements with wastewater marshlands? What is being enhanced? How will this be accomplished and sustained? How will it be managed in the long term? Would wetlands be fully protected as waters of the state? What is the anticipated quality of wastewater discharge to the marsh, in the marsh, and discharged from the marsh? Will water be dechlorinated before being put in marsh?

V6 7. Would the wetlands be counted on to remove heavy metals and other toxins? If so, where do these substances go when the plants die? How will metals and other toxins be prevented from going into the sediments?

V7 8. How will the wetlands be managed in the late fall/early winter when ground water and saturation levels are high and evapotranspiration is at a minimum? How much water is expected to evaporate each month and during various weather scenarios? Do any toxins evaporate with the water? What happens to those toxins? Can they adversely affect other environments? Explain.

## Pathogens and Health:

- W1 1. Three years ago the State Department of Health Services determined that 5% wastewater discharge limit was only a *guideline and not a regulation*, and thereafter all requests for higher discharge would be reviewed on a case by case basis. We are concerned that that department has had very little involvement with this process since that time. They have submitted no questions or comments for the current scoping process and they have not appeared at any meetings this entire year.

Precisely what is their authority in this process? Could you reproduce any and all health regulations that pertain to any part of this project? Could you reveal to us any information about how they will plug into this process? What has the City done to keep DOHS informed of your process? Which staff people have you been dealing with from that agency?

W2 We submit here two old letters from Mr. Bruce Burton. We would like to know if all concerns expressed in these letters have been adequately addressed? Explain. How would these comments relate to the current project proposals? How would you respond if they were applied to all current proposed alternatives? Will the City study the wastewater for viruses? And parasites? How extensively? What protections are, or will be put in place to protect against cryptosporidium? (See enclosed article)

W3  
W4 Is Sweetwater Springs Water District now in full compliance with the *Surface Water Treatment Rule*? Are all other water districts on the Russian River in full compliance? If not, how might the cumulative impacts of all discharges for the study period affect the Guerneville water supply? Why do my plants die when I use Guerneville tap water on them? What water quality protection is DOHS giving us? Why do most people in Guerneville still buy bottled water? How much do Guerneville residents spend on their water, including bottled water purchases? Are Guerneville residents paying the price for Santa Rosa's contamination?

2. RRWPC has been concerned for several years now about bacteriological contamination on lower river beaches. We have produced a chart of data for the last four years showing the level of contamination (based on Sonoma County Health Department records) which we submit here.

W5 We have submitted some citizen testimonies of health problems from swimming in the river including eye and ear infections, skin rashes, symptoms of parasitic infection (gastrointestinal illness), etc. We submit these to you with this document in the hopes you will seriously address the issue of Santa Rosa's wastewater contribution to pathogens in the

Russian River. We also submit Dr. Marc Lappe's letter to the Regional Board on the dangers of allowing increased coliform contamination into the river. We would also like you to address all of the issues raised by the Sonoma County Water Agency regarding rapid infiltration in their January, 1990 testimony for the former EIR/EIS.

W6 3. While we do not blame Santa Rosa for *all* Russian River pathogens, we believe that the City has not taken adequate responsibility for the contribution they do make. It is theorized that bacteria (and other pathogens?) get stored in the sediments and then get stirred up by fish or human activity. We hear a great deal about the 2.2 coliform standard. Please explain exactly what this means in terms of likely viral, bacteriological, or parasitic contamination in the total amount of wastewater each day. What is the total potential exposure to these pathogens. What tests will you be conducting to assess exposure? We submit here an article on Dr. Pierre Payment's experiments in Canada. He discovered that current wastewater technology does NOT adequately remove viruses. How does his work relate to Santa Rosa's process?

W7 4. RRWPC has been collecting many articles on estrogenic chemicals. We submit some of them here. While City reports acknowledge the problem, those reports maintain that much more research is needed before complete understanding about the impacts are known. Unfortunately, by the time those impacts are completely understood, the damage would have been done already.

We believe that Santa Rosa has some responsibility in addressing the issues raised by these documents. RRWPC will be going into this in much greater depth in the near future and would like to keep the door open here as to ways that Santa Rosa might contribute to further the understanding about this very significant issue. The stakes are so high here that something must be done; we are talking about reproductive health and the continued viability of ALL species. We hope that the deadline of this document does not cut off dialogue on this issue.

W8 Similarly, there is a great deal coming out on the extreme toxicity of dioxins. The EPA is currently holding special hearings on its regulation. What tests has Santa Rosa completed on this pollutant? What evidence exists as to whether their wastewater contributes dioxin to the waste stream? If so, how much? Are any further contributions anticipated during the study period? Please explain.

December 6, 1994

**COMMENTS AND ADDITIONAL QUESTIONS FOR EIR/EIS SCOPING  
FOR THE SANTA ROSA SUBREGIONAL WASTEWATER PROJECT**

*Submitted by John Rosenblum, Ph.D.  
for the Russian River Watershed Protection Committee*

**THE ROLE AND FORMAT OF THE SCOPING DOCUMENT**

It is very difficult to relate the sections of the Scoping Report to a COMPLETE scope of work to evaluate each Alternative. Even accepting the need to avoid repetitiveness, the format of the Scoping Report is confusing for "outside" readers. Throughout the report, considerable previous familiarity with the details of each Alternative is required to recognize the relevance of many different "issues" and "tasks".

- X1 1. *Will all the questions in Section 3 (List of Issues and Impact Criteria) be answered in the EIR/EIS? What opportunities will be provided to evaluate and verify the adequacy of the answers? What happens when answers are missing or strongly contested? The Scoping Report creates the impression that all these questions will be answered in full.*

**USE OF COMPUTER MODELS FOR WATER QUALITY ASSESSMENT IN THE  
LAGUNA AND THE RUSSIAN RIVER**

- X2 1. *What is the relevance of the Qual2-based model to the Russian River and the Laguna de Santa Rosa? Include an evaluation of the relevance of the modeling effort:*
- a. *Towards resolving environmental degradation of the Russian River.*
  - b. *Applicability of a steady-state model.*
  - c. *Tracking cumulative multi-year trends, especially nutrient impacts and benthic interactions with the water column.*
  - d. *Benthic effects and interactions with the water-column.*
- X3 2. *How can the public evaluate the models? Given the FAILURE of the RWQCB's attempt (definitely NOT COMPLETED as implied in sec.3, p.1 of the Scoping Report) to create a public-participation workshop on its use of the Qual2 model, how will the City provide a more meaningful forum? Will the City provide full and free public access to the models? When and to whom will the City submit the models for independent peer-review? Part of the solution is to provide the public with discs of the River and Laguna models (and their interfaces), with the data sets used for calibration and verification.*

- X4 3. What criteria will be used to evaluate the predictive ability of the models? Test several criteria to evaluate the predictive ability of the model. Review the model results in light of each criterion; describe measures to improve predictions.
- X5 4. How will the models' calibration parameters be verified? Independently verify and corroborate the values of parameters used in model calibration. Show that the parameters are valid for more than a single set (year) of validation/calibration data. Test and compare different calibration methods.
- X6 5. How will the City determine the validity of input data? Review the quality and validity of all the input data:
- Include a method of representation that includes statistical uncertainties:
    - Tests whether the distributions are normal or other types.
    - Number of data points.
    - For normal distribution, show average and standard deviation; for other distributions, show confidence intervals.
  - Describe uncertainties in the data, for example:
    - Russian River flows, including storm transients.
    - Up-to-date and verified withdrawal volumes (e.g. irrigation, municipal supply), by season.
    - Dissolved oxygen: severe oxygen deficiencies at night, especially in the Laguna, not included in daytime "grabs" and average 24-hr concentrations.
    - Water temperature measurements not taken in stream.
    - Nitrate loads in the Subregional Wastewater Treatment Plant's effluent.

#### EVALUATION OF THE "NO PROJECT" ALTERNATIVE

- Y  
Full
1. Can water efficiency and growth control eliminate the short-term (5-10 years) need for a new wastewater treatment plant? How does the cost of implementing adequate water efficiency and growth-control compare to the FULL cost (including studies, permitting, and financing) of the other alternatives?

#### EVALUATION OF IRRIGATION IN ALL ALTERNATIVES

- Z  
Net  
A A 24/23  
A B 1/24
1. How will the NET irrigation area be calculated? Include the following details for each property:
    - a. Total area.
    - b. Area with slopes steeper than recommended or allowed for cultivation.
    - c. Area of roads, buildings, parking/storage, animal congregation (e.g. around feeding areas).



AC  
LW/04

2. *What type of soils will be irrigated, and are they suitable for cultivation?* Include the following details for each property:

- a. Map of soil types within the net irrigation area.
- b. Existence and depth of impermeable subsurface layer.
- c. Leveling, tilling, fencing, and drainage required for cultivation.

3. *What cultivation is expected?* Include the following details for each property:

- a. The type of plants to be grown.
- b. Number of crops or pasture rotations per season.
- c. Compatibility of soil types and the crops.
- d. Fertilization and soil amendment needs.

AD

4. *How much water will be used?* Include water balance for each property in each season:

- a. Volume taken up by plants.
- b. Volume lost to evapotranspiration.
- c. Volume drained from root zones.
- d. Volume of fresh or rain-water required for flushing salts from root zones.

AF  
LW

5. *Will wastewater constituents accumulate in the soil and/or migrate to ground water?* Include a mass balance for main constituents of concern (e.g. sodium, chloride, nitrogen/nitrates, copper) for each property in each season:

- a. Mass taken up by plants:
  - i. Removed from property.
  - ii. Used as animal fodder (on-site, within the watershed, and exported outside the watershed).
  - iii. Remaining on-site.
- b. Mass accumulating (annually and over a decade) within the root zones.
- c. Mass flushed from the root zones, and their subsequent paths within the watershed.

AF  
WY

6. *How will drainage be provided?* For each property provide the following details:

- a. Type of drainage system required for the combination of soil and crop.
- b. Location of discharge and receiving-water body.
- c. Quality of drainage effluent.
- d. Potential water-quality and stream-flow impacts, including the CUMULATIVE impact of all discharges in each watershed/receiving-water.

AG  
Final

7.

*What will be the FULL cost of wastewater irrigation? Include the following details for each property:*

- a. Initial cost of inter-seasonal reservoirs and supply pipelines (including legal costs, permitting).
- b. Initial cost of irrigation supply lines and equipment (e.g. sprinklers, pumps).
- c. Initial cost of field preparations for cultivation, including leveling, tilling, fencing, and drainage.
- d. Annual costs of permitting, environmental monitoring, and receiving-water impact-mitigation measures (for the reservoir system and at the irrigation sites).
- e. Operating and maintenance costs (for the reservoir system and at the irrigation sites).

AH1  
Final

8.

*What will be the socio-economic impacts of wastewater irrigation? Aggregate the impact from the individual impacts at each site:*

- a. Changes in farming operations (e.g. dry pasture dairy to irrigated pasture or vegetable crops).
- b. Need for and costs of new farming equipment.
- c. Time and costs of transition to new operations (e.g. lost harvesting seasons).
- d. Change in farm/property income.
- e. Impact on suppliers from changed purchasing needs (e.g. dairy equipment, animal feed)
- f. Impact on product purchasers (e.g. meat and dairy processors).
- g. Impact on labor (farm workers, suppliers, processors, and services).

AH2

9.

*Who will be responsible for the wastewater at each stage? How will irrigation be regulated? Include the following details:*

- a. Summarize the legal statutes governing the use of effluent for irrigation.
- b. Describe the liabilities and possible penalties to the City and each farmer if drainage or over-irrigation results in discharges to receiving waters.
- b. List agencies responsible for oversight and/or permitting of storage reservoirs, irrigation systems, drainage discharges, and groundwater monitoring.
- c. List permits and standards required by farmers for irrigation with effluent.

AI

#### WETLANDS CREATION DESIGN (TASK 23.3.4)

1.

*What are the design criteria for the wetlands (e.g. restoration of natural habitat; maximize evaporation in summer; minimize nitrogen or phosphorus concentrations in the effluent in winter)?*

- AI could  
ML  
↓
2. *How many years will be required to attain stable operation of the constructed wetlands? How will performance be monitored, and how will attainment of steady-state be recognized?*
  3. *What seasonal changes in performance are expected? How will accumulations in and releases from the sediment effect performance?*
  4. *Will harvesting of algae or other plants be required, and how will it effect wildlife attracted to the area? Will there be a need to change water levels in the ponds, and will its timing (e.g. highest in summer) effect wildlife?*
  5. *Will chlorination/dechlorination be required before and/or after the wetlands, and how will this effect: (a) performance of the wetlands, (b) regulation of the discharge?*

#### BIOACCUMULATION (TASK 23.3.4)

- AJ1
1. *How will long-term chronic impacts of non-detectable concentrations of toxics be evaluated from SMWP and TSMP data? How will the applicability and validity of the data be evaluated? SMWP and TSMP search only for detectable concentrations in the tissue, and do not look for other signs of stress; in addition sampling is too infrequent at any given site.*
- AJ2
2. *Will other methods (besides a review of TSMP and SMWP results) will be used to evaluate potential bioaccumulation? For example, in the South SF Bay, a 20-year USGS survey of clam-shell diameters showed a declining trend long before silver was detected in their tissue.*



## CITY OF SANTA ROSA

084

P.O. Box 1678  
Santa Rosa, CA 95402

E20 07 1994

Marie Meredith  
Santa Rosa Dept. of Community Development  
POB 1678  
Santa Rosa, CA 95402

12/7/94

DEPARTMENT OF  
COMMUNITY DEVELOPMENT

RE: Scope of work for the Santa Rosa Waste Water's RIR/SIS

- A We
- B1
- B2
- B3
- B4
- B5
- B6
- B7
- B8
- B9
- C Lufas
- D Set
- E WL
- Fall
- G
- 1) Will there be studies to analyze the benefits of water conservation? Including the cost comparison of replacing all old toilets versus the cost of subsidizing irrigation?
  - 2) How will the public be informed of the water quality monitoring results?
  - 3) Can you please list all chemicals, toxins, nutrients and byproducts that you will specifically test for in the treated and untreated wastewater? How can I ask specific enough questions, since I am not a chemist, as to find out how you plan to identify, neutralize and remove toxins and heavy metals from the waste water?
  - 4) Will the water quality monitoring system prevent over chlorinated or otherwise harmful waste water from getting into the environment?
  - 5) Since monitoring is considered mitigation, will you setup an ombudsman program and or committee of the public so we can have input in the mitigation and monitoring methods and in the long term monitoring studies?
  - 6) Why is additional or higher level treatment of wastewater considered mitigation?
  - 7) Can you raise the standards used by the North Coast Regional Water Quality Board?
  - 8) What are the short term and long term accumulation rates and length of time for saturation levels of heavy metals in the soils? Is it really economically feasible to remove the saturated soils every 20-40 years?
  - 9) What studies will be done in regards to the copper problem when discharge reaches brackish or salt water?
  - 10) In regards to water quality, what studies will be done on sulfates, estrogen, ammonia converting to nitrates, sodium, chemical infiltration by people dumping toxic wastes into the system, chlorine and chlorine mimicking estrogen?
  - 11) What long term studies will be undertaken for crop absorption and containment of toxic contaminants?
  - 12) What will be the impact of the increased mosquito problem? How will this problem be dealt with?
  - 13) Will there be monitoring wells and surface runoff sites to supplement the sites monitored by the City of Santa Rosa? This is needed because of the level of distrust that we have in the City of Santa Rosa, especially since we found out about a non published fish kill, this makes us wonder what other facts the City is withholding from the public.
  - 14) What will be the projected routes for the pipelines and or facilities needed for storage, reuse or discharge? A map of these routes would be helpful.
  - 15) Will the project increase the flood potential by reducing the irrigated field's absorption of rain and thereby increase runoff?
  - 16) What studies will be done to cover the seasonal and historical flooding.
- V

Page 2 Camacho

impact of high tides, combined with the current drought conditions and how will the discharge and irrigation affect these conditions?

17) What impact will this project have on the Farallones National Marine Sanctuary?

18) What long term studies will be done to determine the effect of the ocean as a turbulent body of water and it spreading pollutants over a wide area?

19) What long term studies will be done to determine the effect and amount of bioaccumulation of noxious materials over time? What exactly will be studied? Does this include dissolved nutrients, dissolved toxins and suspended particles?

20) What long term studies will be done to determine the effect and amount of biomagnification of toxins that are passed along the food chain and accumulate in progressively higher concentrations?

21) How will reuse or discharge affect the short term and long term functioning of any stream, river, estuary or ocean?

22) What is the cost comparison between private residential sewage systems versus the subregional system for a household? This would include the cost of the land for locating the residential system.

23) What exactly are the products included in the term of "disinfection byproducts"? What is the original product? Is this chlorine?

24) Are crops grown for human consumption allowed to be irrigated by waste water?

25) If the scenic corridors, views and recreational opportunities are disrupted by this project, then how can the property values not be affected by this project?

26) Can you explain the conflict by reading 1.2 discussions and then comparing with 1.5 and 1.6? Isn't soil erosion considered soil disruption? Isn't deposition of sediment considered soil disruption?

27) If the dam failed, what provisions of safety are you providing for people, animals and the land?

28) What will be the land use impact of "city" water replacing contaminated well water?

29) What will be the land use impact regarding change in land use from the use irrigated water?

30) What will be the impact of the increase in population growth in agricultural areas due to changes in zoning?

31) Will you make specific references to the studies/data used to answer these questions?

32) Will you pay for an appraisal of our house and property to set a base line for value?

33) Will you pay for the water quality testing of our well before project implementation to set a base line of our current water quality?

We still consider the following issue a problem: Project decisions that are made by the City Council and SPO whom are not subject to election by us.

Please answer the above questions in regards as to how they relate to the areas of the West County area including the Esteros on out to the Ocean.

Thank you,

Marcí & Don Camacho  
11547 College Street  
Petaluma, CA 94952  
707-795-2687

*Marcí Camacho*

Comments/Questions on SCOPE OF WORK, Santa Rosa Long-Term  
Wastewater Project (EIR/EIS)...especially in regard to Esteros

- R  
myel
1. Will interrupting the natural cycle of seasonal water levels with effluent (tertiary treated or better) endanger the eco system?
  2. Will all wastewater be tertiary treated or treated at the optimum current technology, that is used for irrigation, stored in dams, piped, occupies wet lands, or otherwise addressed in Santa Rosa's disposal plans? No spills!
  3. Is some provision made to clean ground water, wet lands, and waterways, of residual toxics, estrogens, carcinogenic elements and compounds?
  - S  
Sof { 4. Will Santa Rosa be responsible for mosquito control on water ways?
  5. Are drinking water supply intakes including individual ranch wells?
  6. Is it possible to have only household wastewater in this proposed system for storage, irrigation, and wetlands?
  - Turkey { 7. Will ranchers be forced to irrigate if in the area designed by the plan for irrigation?
  8. Will natural grazing land be removed from the use of wild animals?
  - U WL  
FIS 9. Would the baseline be developed over at least a year to understand the changing weather, seasons, wild animal and bird migrations needs, and fish nursery uses, of the present natural environment?
  - Vaul 10. Has study been devoted to the archeological potential that will be forever disturbed, covered, with the alteration of stream beds, wet lands, fields, canyons, and artificial man made pipes, dams and wetlands?
  - Wag { 11. Is the computer simulation model sophisticated enough to provide evaluation of earthquake influence, heavy rain, drought, leaching ground water, "cave ins" or erosion?
  - X wet 12. Is it recognized that all wetlands do not follow the same pattern but serve a different population in each location using different soil/water bases, vegetation, and inhabitants?



13. Will the privacy and private ownership of the surrounding area be respected with permission only access, fully insured for all responsibility of injury of observers-trespassers by Santa Rosa in pre contracted times, limited numbers, in only designated areas?
14. Are collections of samples made and data used from before and after natural rain, discharges from creeks, over a long period of time even including the seven year drought being experienced by target areas in Sonoma County?
15. The present water table is much lower than normal during this present period of drought in Sonoma County. Is this being considered in the studies of land absorption/use? How far the ground water with effluent travels? How much land will be effected by ground water with effluent?
16. Has the influence of tide, wind, temperature of the water, fresh water in proportion to ocean water, salinity, been considered in any changing of the water contained in the sensitive estero eco system?
17. Does a landowner have the right to refuse excavation, construction, trail access, or recreational implementation on his property? If any of the above are involved, will provision to post signs, fence and otherwise protect private property be assumed and provided/installed by the city of Santa Rosa?
18. Will wetlands and water courses, vegetation, and present eco system remain natural without man's intervention wherever possible, as man made wet lands are known to be temporary?
19. Will Santa Rosa water subscribers be required use gray water, composting toilets, and effluent, especially if land owners in water disposal target areas are expected to implement them?
20. If the addition of Santa Rosa effluent so changes the environment of the esteros, that present normal run off is determined to exceed established water quality standards, will Santa Rosa be responsible financially to make adjustments or cut off the effluent?

21. The estero provides nurseries for dungeness crabs, at present. Can this condition be preserved? Will the effluent become toxins in the crab we eat?
22. Will there be an introduction of wildlife species which are predators to present agricultural or wild life?



## Ad Hoc Committee On Clean Water

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Ed Brauner  
Assistant City Manager  
City of Santa Rosa  
Santa Rosa, Ca.

December 1, 1994

Dear Mr. Brauner,

I have received the Draft Preliminary Scoping Report and appreciate the opportunity to comment on its range of recommendations for the EIR/EIS on the City's long-term wastewater disposal project.

In general, the proposed study is very comprehensive covering a vast range of issues. There has been an obvious attempt to encompass every question, every concern, every nuance of every issue that has been raised during the course of the preliminary studies and discussions with the public.

Considering the scope, how intensively will the City be able to study each area? Time and financial constraints will no doubt force the City to emphasize certain areas and cover others with less depth and intensity.

My contribution to the problem-solving process will therefore be to try to get an overview and ask for emphasis and thoroughness in those areas I believe will be the most important when it comes time to select among alternatives.

My belief is that, in this case, as with many things,

**Less is More.**

The less waste we create, the less water we use to transport it, the simpler the project. The less impact, the fewer the errors, accidents, unforeseen adverse surprises and the lower the cost in the long run. Let's begin at the beginning:

Given: Humans create waste.

Variables:

1. Number of humans;

A1 The projected growth of the area served by the subregional system is is not acceptable to some and those people would say that that is the heart of the problem. Everything else, including the volume and scope of the EIR emanates from difficulty in accommodating the waste generated by the population we are attempting to serve.

This issue should be addressed in the EIR.

P. O. Box 484 Occidental, Ca. 95465 (707) 874-3855 phone/FAX

## 2. Amount of waste

A2  
This amount is variable and affects every alternative. It will determine everything from method of disposal to amounts of storage, pipeline, irrigation land, and amount discharged into receiving waters. Therefore there should be emphasis on, and rigorous study of, all options, including innovative ones, for waste reduction. That would mean emphasis on study of, improvement of pre-treatment methods, applicability of incinerating or composting toilets etc.

## 3. Amount of waste water

A3  
While humans create waste, we don't necessarily have to create vast amounts of wastewater. The need to create huge storage ponds and discharge increasingly large volumes of wastewater into our creeks and rivers comes from putting our waste into water. The more water we add to the mix, the more water we have to dispose of. All water that we mix with sewage, whether intentionally or unintentionally, becomes sewage to be treated.

Therefore, reducing the amount of wastewater created should be studied in depth and emphasized. Reduction of the amount of wastewater created will lessen risks of accidental spills, and lessen cost of treatment, construction and storage. This means priority to studies of conventional and innovative methods of water conservation, grey-water recycling, incinerating toilets as mentioned above, etc.

## 5. Infiltrating rainwater

B  
In the rainy season, when the ground is saturated, underground sewer lines act like a reverse leach-field: water enters the pipes increasing the amount of water headed for the sewer plant by as much as 200% to 300%! The more pipelines we create to disperse the effluent after it leaves the treatment plant, the more infiltration will occur there too and cause a corresponding increase in the amount of effluent headed for whatever alternative is chosen, whether storage ponds, the geysers, the Russian River or irrigation fields. The consequence is that the more pipelines we create, the more infiltration, the less percolation of rainwater into the ground and the aquifer. The result is, that just as parking lots, roads and culverts interrupt the normal rate of absorption of rainwater and cause too-rapid runoff, underground pipelines capture water moving through the soil and either send it to the sewage plant or send it to a storage pond to be discharged elsewhere. Since large volumes of water are coming into the pipes when the ground is saturated, we can assume that wastewater is leaking out of them when the land around them is dry. Therefore, the best way to tackle this problem is to minimize the amount of pipelines. Fewer pipes means fewer pipes to leak, break and repair, and the lower the cost. What is the cumulative

3 of 7

impact of underground pipes picking up millions of gallons of water per day and interrupting the natural recharge of the aquifer?

C  
my  
6. Disinfection

Because we mingle our waste and the billions of bacteria in it with fresh, potable water, by necessity we must disinfect all of it. How we disinfect it is variable. The study of the possible adverse impacts of chlorine has been mentioned and I believe should be one of your most comprehensive undertakings. I am submitting with this letter numerous articles from scientific journals and popular magazines that discuss apparent carcinogenic and estrogenic effects of chlorine and organochlorides. The potential for sterility, other reproductive anomalies or impairments to aquatic life is so enormous, this issue must be treated in depth. Use of wastewater for wetlands could be disastrous due to presence of chlorinated hydrocarbons. Many of the attached articles on chlorine have been submitted previously to the City but have not been included in your "library catalogue". Please include these articles. The possible estrogenic effects of chlorinated hydrocarbons is a pivotal problem to be dealt with in finding the safest means of dealing with our wastewater. Included also is a statement by the Chlorine Chemistry Council (CCC) in response to the U.S. and Canadian International Joint Commission which has been advocating severe limitation of the use of chlorine. The chlorine industry's statement shows how pervasive chlorine chemistry is in our lives. According to the CCC report, chlorine is used in 85% of all medicines, 96% of "crop-protection chemicals" (euphemism for pesticides?), and is our main disinfectant controlling cholera and AIDS. The CCC claims that airplanes, autos, houses, high-tech video and audio equipment and thousands of other products that are common parts of everyday modern life, could not be produced as we know them, or perhaps not at all without chlorine chemistry. No doubt that is all true, and therefore, if the hazards of chlorine for cancer and reproductive failure are as great as some research suggests, finding an alternative to chlorine for treatment of wastewater is just the tip of the iceberg. It is potentially a society-wide problem. If it proves to be true, that organic compounds of chlorine are responsible for lowered sperm counts, breast and testicular cancer, feminization of the males of many species including alligators and seagulls, we may have stumbled on the single greatest factor responsible for the dramatic decline of species we have seen over the last 30 years. In our best effort to make "advances" in decreasing the number of pathogens in our wastewater by adding chlorination, we may have opened a pandora's box of reproductive and endocrine dysfunction. What we think of as "advances" and "progress" rarely comes without a price.

Please include in your scope of study, the value and cost of

C could

4 of 7

de-chlorinating effluent, year-round. My understanding is that at present chlorinated effluent goes to storage ponds and from storage to irrigation. As such, chlorine can combine with organics to produce chlorinated hydrocarbons which could be distributed onto the soil or become airborne in spray irrigation. So long as chlorine remains our main vehicle of disinfection, and if in fact chlorinated hydrocarbons are a major risk to wildlife and ourselves, dispersal of chlorinated effluent, whether piped long distances to new storage ponds or used to irrigate new pastures, we will open up a set of new and major problems.

Please consider the paragraph on point-source pollution in the attached letter by Earle Cummings to I-Ming Cheng of the Department of Water Resources regarding accidental overflows of treated effluent from sprayfield containment. He also raises the problem of Russian River floodwater filling the Laguna bringing it in contact with recently sprayed fields. Any chlorine residual in the sprayfield would mingle with Laguna floodwaters and could be toxic.

Included in the chlorine papers is the NRDC report on drinking water, "Think Before You Drink"

#### 7. Monitoring and research techniques

Monitoring and research is a necessary part of discovery. We need to know where we are to know where to go. However, the choice of research methods is a variable. Following the principle of "Less is More", the least intrusive, least damaging approach is best.

"Electrofishing" was mentioned on page 50 as one of the techniques to be employed to survey fish populations. Most people have never heard of "electrofishing", if more people hear about it, there is a good chance there would be increased opposition. It is a method whereby an electrical current of varying intensity is passed through a waterway. Fish are shocked, stunned and float to the surface. A researcher can then count them in order to assess the population. Unfortunately, there is a mortality rate associated with this practice. I have heard estimates up to 30%. What about reproductive impairment or immunosuppression? Considering that we are trying to monitor the presence of endangered or threatened species, such a radical and potentially lethal technique to count fish is not appropriate. Also, the amount of electrical current that can be tolerated is different depending on the size of the fish. It is possible that different species have different tolerances. Also, it is my understanding that electroshock is even more harmful to invertebrates, (ex. endangered shrimp).

I have seen electroshocking performed and have witnessed fish sinking, not necessarily floating to the surface, and I

507

DL have seen fish die. So, whatever the mortality rate, there will be that many fewer fish after the electroshocking than there were before. Please do a thorough study of electroshock equipment and procedures and include those materials in your library catalogue. Less invasive and less potentially lethal procedures are available like seining and trapping that do not necessarily kill so many fish.

We are also experiencing a dramatic decline in frogs and other amphibians. It would be an ironic tragedy if, in the process of "monitoring" to see how well we are "protecting" aquatic species, we are in fact killing them off a percent at a time. The cumulative effects of our monitoring could result in extinction.

E  
dict 8. Kelly Pond Demonstration Wetland

Past studies of KPDW were inconclusive regarding wildlife populations. For example bird counts used questionable methodology. Will you redo the analysis of the wildlife in KPDW, with a more accurate assessment of wildlife use, health and survival?

On page 55 of the PSR, it says samples will be taken from only one location in KPDW. Several locations would be more appropriate especially because of the chlorine issue, since chlorinated effluent is at times discharged into KPDW. How chlorine and its organic compounds move through the wetland system would be very important to know.

F  
FIS 9. Impacts on Fish Migration

The Supplemental Public Report on Proposed Revisions to the Water Quality Control Plan for the North Coast Region, by the RWQCB, dated 2/22/94, states, "Salmonid migration studies performed by the City of Santa Rosa indicate the possibility of migration effects to steelhead trout and coho salmon at higher discharge rates" and suggests reviewing the need for "no-discharge windows".

Our past review of the raw data of the fish migration studies performed in 1992 revealed that summary statements regarding presence of fish and wastewater concentrations were not quite accurate. The assumption was made that steelhead found in the fyke nets in the creeks had been swimming in whatever concentration of wastewater existed in the Laguna the night before. That need not necessarily be the case. The raw data showed that the only certainty was that the fish were found most of the time in water where the concentration of wastewater was zero! Wastewater discharges vary in quantity and are not continuous. It was entirely possible, from reviewing the data, that migrating fish waited until the concentration of wastewater dropped, thus availing themselves of "windows" of opportunity. The fact remains that 80% of the time steelhead were found when the

concentration of wastewater at that spot was zero. The way the 1994 data is analyzed is essential. Please provide the raw data in addition to summary conclusions regarding fish movement through the Laguna. The summary statement has been made (Sept. 6 1994) that wastewater has no significant effect on the steelhead fishery. Please substantiate that statement through presentation of raw data from the fish migration study.

#### 10. Alternative technology

G1 It is not clear how alternative technology could be reviewed regarding various alternatives. I believe the City is reviewing alternative technologies in a parallel fashion. Please make available new information that may have come to light regarding either disinfection with Ultra-violet or Advanced Integrated Pond Systems as designed by Dr. William Oswald at U.C. Berkeley and the possible application for any of the alternatives under consideration.

#### 11. Injection into the aquifer.

G2 All alternatives contain the option of "recharging" the aquifer with wastewater. This option could be the most damaging of all. If there is legitimate concern that wastewater flowing down the Russian River could contaminate the drinking supply of downstream users, then putting wastewater purposefully into the aquifer could contaminate wells. If wastewater is not OK for the River, or only at limited concentrations, it is therefore certainly not OK for the aquifer. Once contaminated, the aquifer is lost, or will be tremendously costly to recover. How did injection into the aquifer get incorporated into each alternative? Please consider the hazards of unknowns, accidents, equipment malfunction etc. The stakes are terribly high for this alternative.

#### 12. Unknown variables

G3 In our best effort to analyze everything, we must take into consideration unknown impacts, unknown problems, glitches, hitches and surprises. We can't possibly know what all the problems will be ahead of time to prepare for them. There is always the element of surprise, the totally unexpected effect of what we do. Hence Least is More. If we minimize our impact, we minimize the chance that we will break, disrupt, destroy or impair. Please consider in your review of each alternative the relative "risk of the unknown".

#### 13 Act Locally Impact Globally

G4 Attached is a copy of an article titled "Act Locally Impact Globally" by Ann Maurice discussing our habit of using freshwater as a conduit for waste. The millions of dollars in studies to be undertaken by Santa Rosa and all the



concerned regulatory agencies is necessitated by continuing this questionable practice. Defecating into fresh water and flushing it via pipes underground starts a chain of events leading to this inevitable costly morass of paperwork by consultants. We spend millions of hours and millions of dollars to protect the custom of using water to transport our waste. Please review this article for its perspective on the overall picture of what we continue to do. And please include it in your "library catalogue". There must be a simpler solution.

Sincerely,



Ann Maurice  
Ad Hoc Committee on Clean Water

Also included is article, "The Fall and Rise of the Russian River", by Ann Maurice, in TROUT, Autumn 1994, Volume 35, Number 4. Please include in your library catalogue.

## **CHLORINE CHEMISTRY COUNCIL MANAGING DIRECTOR RESPONDS TO RELEASE OF INTERNATIONAL JOINT COMMISSION'S REPORT**

WASHINGTON, Feb. 17 /E-Wire/ – The following statement was issued today by Brad Lienhart, managing director of the Chlorine Chemistry Council (CCC), in response to release of the International Joint Commission's (IJC) Seventh Biennial Report Under the Great Lakes Water Quality Agreement of 1978 to the Governments of the United States and Canada and the State and Provincial Governments of the Great Lakes Basin:

"The Chlorine Chemistry Council is extremely disappointed with the International Joint Commission (IJC) and its recommendations on chlorine and chlorinated compounds. The IJC report is not a sound-science approach to decision making.

"For the past two-plus years, those of us who represent chlorine chemistry have tried to play a cooperative, constructive role in the IJC process. We have been in continuing contact with the commissioners and staff. We and numerous independent scientists have offered sound scientific viewpoints; we have participated in every forum the IJC has made available to us. We were active participants with 2,000 attendees including independent scientists at the October 1993 biennial meeting in Windsor, Ontario.

"Despite our past involvement, the industry's views on science, health, risk, product use and other issues related to chlorine chemistry in the Great Lakes ecosystem are being dismissed without due consideration.

"Issues involving chlorine chemistry need to be addressed by the appropriate U.S. and Canadian regulatory authorities. Both EPA and Environment Canada have indicated a commitment to apply science and a weight-of-evidence approach to any analysis of chlorine chemistry issues. Our industry has numerous activities underway with these two agencies involving chlorine chemistry. CCC is open and willing to discuss areas of concern that may not be covered by one of these existing activities.

"Where we can provide meaningful input into policy development, we will continue to work constructively to ensure that decisions regarding the future of chlorine and chlorinated compounds are:

- Based on sound science that weighs all of the evidence in an even-handed manner, including risk-benefit analysis of potential alternatives and risks of not having chlorine available to society.
- Fair and balanced, involving all parties that will be impacted by its outcome, and
- Undertaken with full consideration of socio-economic factors for both chlorine and possible alternatives when lives of people will be affected.

"The IJC recommendations meet none of these criteria."

### **Why A Possible Ban on Chlorine Chemistry Must Not Be Taken Lightly**

- Chlorine and chlorinated compounds are used to meet the most vital needs of modern life, including protecting the water supply, in 85 percent of all medicines, 96 percent of all crop-protection chemicals, in hospital and food-handling cleanliness, keeping swimming pools safe and, through refrigeration and packaging, keeping food fresh and free of contamination.
- Chlorine plays a critical role in protecting public health. The Latin American cholera epidemic is a direct result of inadequate drinking water disinfection. Around the world, some 25,000 children die every day of causes related to dirty water. In the United States and Canada, most people can take safe drinking water for granted thanks to chlorination – one of the most significant public health advances of the 20th century. Chlorine chemistry also is used to control the spread of AIDS through disinfection of needles.
- Chlorine and chlorinated compounds save U.S. consumers more than \$90 billion annually – \$1,440 for every family of four -- versus alternative products or processes. In addition, chlorine-based products contribute a nearly \$3 billion net trade surplus. Depriving society of chlorine chemistry's benefits without justification would cause irreparable damage to the U.S. economy and would severely diminish U.S. global competitiveness.
- An automobile, as we know it -- made using light-weight high-performance plastics for energy efficiency -- could not be built without chlorine chemistry. Neither could an airplane, a house,

computers, high-tech video and audio equipment or thousands of other products that are part of modern life.

1.3 million U.S. jobs and some 100,000 Canadian jobs depend on the chlorine industry – more than the number of jobs in Oregon. Wages and salaries total more than \$30 billion a year. Further, almost 40 percent of all U.S. jobs and income depend in some way on chlorine and the products of the chlorine industry. Two hundred twelve industries use chlorine and related compounds, generating 45 million jobs and \$1.6 trillion in economic activity.

- Chlorine chemicals span a wide range and should not be considered as a single group for the purposes of risk assessment or regulatory action. With the exception of a few persistent, bioaccumulative compounds (e.g. DDT) in localized areas resulting from historical uses, current concentrations of chlorine or chlorinated compounds have not been shown to cause adverse effects on humans or the environment. The chlorine industry supports technological improvements to lower the already low risks of adverse effects related to chlorine in the environment.

**CONTACT:** *Debbie Schwartz of the Chlorine Chemistry Council, 202-887-6921.*

*Ann Maurice (to hear their point of view)* — Chlorine

*FYI*

*Jinca*

## DEPARTMENT OF WATER RESOURCES

State of California  
OFFICE MEMO

The Resources Agency

TO: I-Ming Cheng

DATE: September 26, 1994

FROM: Earle W. Cummings  
Urban Streams Restoration Program

SUBJECT: Laguna de Santa  
Rosa Water Quality Objective  
Language

Here are some suggestions for Planning Objectives and actions that would help achieve those objectives. I have not followed up with Implementation Strategy Objectives or Monitoring Objectives, because I have the impression your working group may need to discuss the planning objectives at some length to eliminate possible conflicts or difficulties in implementing them.

1. Water pollution from point and non-point sources.

*I Hyd*  
↓  
a. Point Source. From my experience with the Laguna, point source pollution is being addressed by ponding the chlorinated discharge from treatment plants and discharging from the ponds to spray-fields. Usually no point source discharge to the Laguna or Creek takes place except where treated effluent accidentally overflows the sprayfield containment, or during extended wet weather when evapotranspiration can't keep up with the disposal requirement. There is also a potential problem when floodwater from the Russian River, combined with Santa Rosa Creek discharge fills the Laguna, bringing Laguna water in contact with spray fields that are just sprayed. If a chlorine residual is too high, it can be toxic.

Objective: I suggest as a planning objective that "No discharge of treated or untreated effluent be permitted to enter waters of Santa Rosa Creek or the Laguna de Santa Rosa unless it is free of bacterial contamination by human fecal organisms and free of residual chlorine."

*J Hyd*  
*K Wet*  
*L veg*  
*M Riparian*  
*N Uis*  
*O*  
b. Non-point source A principal source of non-point pollution to Santa Rosa Creek and other tributaries to the Laguna is urban and suburban runoff, containing oils and greases, heavy metals, a variety of hydrocarbons, household chemicals, detergents, pesticides, fertilizers, lawn trimmings and so on. A second source is fecal contamination from livestock, pets, and homeless people living along the creek corridor. To correct non-point pollution problems, creek corridors can include a depressed floodway with constructed wetland fringes for first-flush retention; the vegetation in the depressed floodway and low-flow channel is then managed for consistency with conveyance capacity and other purposes such as water quality (shade, sediment retention) recreation, visual amenity and alternative transportation (jogging, biking, equestrian use), with the maintenance costs distributed to community services districts, homeowners associations and households according to the degree the corridor is serving those additional purposes.

Objective: I suggest as a planning objective for non-point pollution, "Establish a creek management agency with the authority and expertise to prescribe channel design and management that reduce non-point pollution problems."

P 2. Lack of riparian vegetation as it relates to water quality.

Riparian vegetation serves to strengthen soil against collapse and surface erosion, thereby preventing sediment pollution. A canopy of trees casts shade and keeps water temperatures cool. Roots of trees intercept nutrients (particularly nitrates and phosphates) in shallow groundwater flowing toward the stream. During sustained high water, a fringe of trees and shrubs along the base of embankments can reduce wave wash erosion and sediment mobilization or effluent lagoon impoundment failure by dampening wind-driven waves which might impinge on water control structures.

Objective: I suggest as a planning objective, "Incorporate riparian vegetation in the design of structures and channels where it can contribute to the protection of water quality from thermal, nutrient or sediment pollution."

Q 3. Grazing in riparian areas as it affects water quality.

Livestock prefer to feed on succulent, highly digestible forage, which includes riparian plant species. They also avoid stressful thermal situations, and so spend a disproportionate amount of time in shady riparian areas, to the detriment of the riparian plants. Livestock can also be carefully managed to economically suppress or stimulate vegetation.

Objective: I suggest as a planning objective, "Manage livestock in riparian areas as part of a vegetation management program, with fencing, season of use, and stocking rates which can be demonstrated to accomplish stable channel configuration and support intact riparian corridors that protect water quality."

R 4. Flood control channel clearing impacts to water quality.

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Channels designed with a focus on their ability to convey significant storm flows may be larger than needed to convey the normal low flow. During low flow conditions, such a channel may only convey a shallow sheet of water, fully exposed to sunshine. Several emergent wetland plant species like cattail and bulrush grow extremely quickly and tenaciously in warm shallow water. During high and intermediate flows, the dense beds of cattails and bulrush are efficient sediment traps. The result is a need for frequent channel excavation to restore capacity, but because the channel is of uniform depth, excavation of the sediment may require excavation in the waterway, with adverse water quality impacts.

Objective: I suggest as a planning objective, "Design storm channels with consideration of sediment transport and intermediate flow performance so that warm, shallow-water areas can be minimized; consider designing multi-stage channel with dimensions and velocities matched to particle sizes coming down from the watershed so there is efficient sediment transport in the low-flow portion of the channel

*R cont'd*  
and sediment deposition occurs at somewhat higher elevations in the channel so maintenance excavation can be carried out in the dry."

5. Sedimentation effects; pollutant, damage to pool habitat, impairing channel capacity

See above objectives.

6. No net fill policy

I am not clear on the terms of the no net fill policy, but in general, anything that reduces the amount of Laguna storage reduces the amount of sediment trapping and pollutant metabolism taking place in the impounded water. These beneficial processes are sensitive to residence time and amount of contacted vegetation, so reduce the volume of the Laguna or vegetated area and you reduce these "Ecosystem Services."

Objective: I suggest as planning objective, "During floods, the existing vegetated area and volume of stored water in the Laguna de Santa Rosa provide valuable services to improve the quality of water detained in the basin, and modifications of the basin should be permitted where the modification will not reduce these services; it is a rebuttable presumption that reduced storage volume and area inundated are detrimental to the water quality benefits of the Laguna."

7. See 1 above.

8. See 1 above.

- S*  
9. Impacts of water diversion (low summer flows) on fishery.

I think that the flows from major tributaries in summer may be higher than they were during earlier development of the Laguna. Water from the Russian River and Eel River are supplementing local supplies, and irrigation in suburban areas may be sustaining surface flows in reaches of the streams which were formerly seasonally dry. The issue of quality may still be a concern. Where sources of polluted water enter a section of the creek with acceptable water quality, there may be insufficient assimilative capacity to accommodate the discharge and sustain aquatic life. This is addressed to some degree in 1 above.

LAGUNA.WQO

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\*\*\*\*\* GREENPEACE PRESS RELEASE \*\*\*\*\*

**PUBLIC HEALTH ASSOCIATION PASSES CHLORINE PHASE-OUT RESOLUTION**

*1-11-94*  
SAN FRANCISCO, October 28, 1993 (GP) The American Public Health Association (APHA), the nation's premier public health organization, voted this afternoon that "chlorine-containing organic compounds are found to pose public health risks" and approved a resolution that these chemicals should be treated as a class and subject to a broad phase-out.

APHA, with over 30,000 members, is the nation's leading association of public health scientists and practitioners. The chlorine-free resolution, "Recognizing and Addressing the Environmental and Occupational Health Problems Posed by Chlorinated Organic Compounds," was passed today at APHA's annual meeting in San Francisco.

"The APHA has found that the class of chlorine-containing chemicals should be considered guilty until proven innocent," said Dr. Peter Orris, a Chicago-based physician and APHA spokesman on the resolution. "The public health approach emphasizes prevention: that means phasing-out the chlorine-based processes that produce these chemicals in favor of safer alternatives."

The APHA resolution recognizes that environmental pollution by chlorine-containing chemicals is now widespread and has been implicated in a broad range of health effects, including cancer, infertility, and birth defects. The resolution also notes that "virtually all chlorinated organic compounds that have been studied exhibit at least one of a wide range of series toxic effects ... and are recognized as significant workplace hazards."

According to the resolution, "The only feasible and prudent approach to eliminating the release and discharge of chlorinated organic chemicals and consequent exposures is to avoid the use of chlorine and its compounds in manufacturing processes."

Based on this and other evidence, the APHA recommended that "there should be a rebuttable presumption that chlorine-containing organic chemicals pose a significant risk." Under this policy, all chlorine-based chemicals and processes would be phased-out, with exceptions only if industry can prove that an individual use is free of significant risk or is essential and has no alternatives that pose a lower risk. The resolution calls for special attention to be paid to eliminating chlorine-based bleaches in the pulp and paper industry.

The resolution has been under debate by the APHA for more than a year. It was inspired by a similar stand that was adopted in 1992 by the International Joint Commission on the Great Lakes (IJC). The APHA resolution cites the IJC's findings and comes to very similar conclusions.

"For the past two years, the chemical industry has argued that the IJC's chlorine-free proposals were based on emotion and not good science," said Jack Weinberg of Greenpeace's Chlorine-Free Campaign. "Today's vote by an Association representing the nation's leading public health experts should put to rest, once and for all, those self-serving industry claims."

The APHA resolution notes that "virtually all chlorinated organic compounds that have been studied exhibit at least one of a wide range of serious toxic effects such as endocrine dysfunction, developmental impairment, birth defects, reproductive dysfunction and infertility, immunosuppression and cancer, often at extremely low doses."

The resolution also calls for legislative action to protect chemical industry workers who may be displaced by the transition to a chlorine-free economy.

"The next step is passage of Congressman Richardson's 'Chlorine-Free Zero Discharge Act of 1993.' The bill would phase-out chlorine based bleaching by the paper industry and then begin a process to protect health and the environment from other uses of chlorine," Weinberg said.

The full text of the APHA's resolution will be available from the APHA press room at 8:30 AM, October 28, phone 415-442-6194.

**CONTACT:** Dr. Peter Orris, APHA spokesman, 312-633-5310

Jack Weinberg, Greenpeace, 415-512-9025

Joe Thornton, Greenpeace, 206-632-4326

**ENDS**

*1* Toxics committee *1* Mon *1* FILE Issue/Chlorine

PCHL PG/Greenpeace/Chlorine

DANIEL PANETTA

*Solar Today*  
*Magazine*

# Sustainability and Wastewater Treatment

**Advanced Integrated Wastewater Pond Systems offer an attractive alternative to expensive, energy consuming and malodorous conventional wastewater treatment facilities.**

**F**or many in the world, water is not simply a key to the quality of life but is the key to life itself. How we handle our water, in its various forms, reveals our preconceptions and often an almost willful ignorance of holistic principles. This is particularly evident in the area of our society's wastes.

Even though wastewater is 99 percent pure water, we have treated this valuable resource in a linear fashion, using it once and disposing of it by non-recoverable means while suffering the need for additional water. Examples can be seen in cities around the world but perhaps the most blatant example is Southern California.

A near desert environment, the area has only enough water resources for a small fraction of its current population. Yet, while spending billions of dollars and using enormous amounts of energy to import water over hundreds of miles of difficult terrain, the region continues to dump trillions of gallons of 99 percent fresh water into the Pacific Ocean each year. Efforts have be-



The Advanced Integrated Wastewater Pond System at St. Helena, California. Sludge removal has not been required at this facility in over 25 years of continuous operation.

gun to reclaim this valuable commodity, but they appear to be too little, too late. Los Angeles County only reclaims about 10 percent of its massive wastewater flow, yet is currently looking as far north as Alaska for "new" sources of water.

This same kind of thinking has also made complex and expensive mechanical treatment plants the unquestioned standard for wastewater treatment (WWT). Even though they are theoretically de-

signed for high levels of treatment, it has been known for decades that these plants work poorly and are difficult to operate reliably. Conventional plants have a life expectancy of approximately 20 years, requiring the community to bear the expense of replacing or upgrading the aged facility just as the initial construction loan is being retired.

## Infrastructure: A Matter of Necessity and Limitation

At a time when our towns and cities are faced with escalating costs for building and maintaining infrastructure, the federal government has instituted a policy of shifting costs to the local level. Prior to 1983, Federal and state subsidies paid up to 85 percent of WWT costs. Communities are now on their own to pay for needed WWT infrastructure without the benefit of assistance programs or any tax breaks which reflect the reduction in governmental subsidies.

This policy quietly increases competition





The Ridgemark, California Advanced Integrated Wastewater Pond System is adjacent to a residential area and golf course.

for already scarce tax dollars. The results are predictable. The public coffers will not be able to bear the expense of required infrastructure and "quality-of-life" oriented projects such as parks and open space.

Evidence of this dilemma can be seen in the small coastal town of Los Osos, California, population 15,000. Los Osos is currently under a state imposed building moratorium until the citizens agree to pay for a conventional WWT plant. The plant will cost the people of Los Osos \$71.5 million—over \$40,000 per household.

In an early edition of the project environmental impact review, when the project only cost \$39 million, financial consultants concluded that almost 30 percent of the citizens would have significant difficulty paying for this project.

The community of Los Osos is not an anomaly. In the U.S. it is estimated that rural communities account for 90 percent of all proposed new WWT facilities. Many other small communities will soon face the same unacceptable choices, pitting potential health and water quality concerns against affordable housing and desirable community amenities.

### Bioremediation: Alternative WWT Technology

In recent decades, alternatives have been developed to address these concerns. One of the most successful of these, the Advanced Integrated Wastewater Pond System (AIWPS), has proven to be both economically and environmentally sound.

AIWPS have been operating successfully for decades at a number of locations

around the world. When properly designed and operated, AIWPS require significantly less capital, energy and operation and maintenance than mechanical systems. They use less land, produce less odor and fill in with age more slowly than ordinary ponds.

For communities in the sunny part of the world, AIWPS can provide

simple, reliable and nuisance-free WWT with the potential for water reclamation and environmental enhancement at a price that is significantly more affordable than conventional wastewater plants.

In its most basic and reliable form, the AIWPS it consists of a series of four ponds, each designed to perform one or more basic treatment processes.

The first in a series is a **Facultative Pond**. It consists of two primary components: an aerobic upper layer and an anaerobic digester pit below. Raw sewage first enters the system by way of the anaerobic pit, where its velocity is kept below the settling rate of sewage solids, helminth ova and parasite cysts, permanently trapping them in the lower pit.

Helminthic diseases are considered to be the main risk from treated water in developing countries, resulting in millions of children who have been weakened by parasites falling prey to childhood diseases. Because of the large pit volume possible and its oxygen-starved reducing environment, the solids, helminth ova and cysts ferment until only ash remains. This is a particularly important point as it almost entirely alleviates the need for solid waste (sludge) disposal, a problem common to conventional systems.

The pond's aerobic upper layer is an oxygen rich zone which effectively mitigates offensive odors. This is accomplished by oxidizing highly malodorous gases generated by anaerobic reduction processes in the fermentation pit below.

The second pond in the series is a paddle wheel mixed, concrete lined race-way called a **High Rate Pond**. In such an

environment microalgae grow profusely, releasing considerable amounts of oxygen from the water by photosynthesis. Bacteria are then able to effectively oxidize effluent wastes from the facultative pond. A portion of this oxygen rich water is recirculated to the upper layer of the facultative pond to ensure mitigation of offensive sewage odors.

Algae's capability to generate oxygen through photosynthesis is notable. It can typically release oxygen at a rate equivalent to 20 kilograms (kg) of oxygen per kilowatt hour (kWh). This should be compared with the introduction of 1 kg of oxygen per kWh typical of mechanical aeration. An energy savings of more than ten-fold through "solar power".

The **Settling Pond** is the third pond in the AIWPS series and allows for sedimentation and removal of algae from the effluent. Settled algae tend to hibernate and thus do not immediately decompose to produce odor nuisance. Algae harvested from the settling pond are rich in nitrogen, phosphorus and potash and could be used for energy generation, as fertilizer or for livestock feed.

The **Maturation or Stabilization Pond** is the fourth and sometimes final pond of the series depending on the treatment needs. This pond provides added disinfection by exposing pathogens to the sun's ultraviolet rays and by natural die-off over time, in addition to storing water for irrigation and/or groundwater recharge.

### Environmental Impacts

As health agencies place more restrictions on the use of sludge as fertilizer, communities are increasingly forced to dispose of it in landfills or toxic dumps. A state-of-the-art, conventional, WWT plant can generate 400-600 tons of sludge yearly from a town of only 10,000 people. In comparison, the AIWPS municipal facility at Hollister, California which is twice as large, hasn't removed any sludge in 15 years of operation. By alleviating sludge disposal, a community can significantly reduce the plant's operational costs, save fossil fuel, reduce airborne emissions from transporting solids and reduce the required landfill space.

In addition, the type of WWT technology a community chooses will directly affect electrical consumption. The state-of-the-art conventional plant proposed for Los Osos is projected to increase their electricity consumption by 5 percent in phase 1.

## Wastewater Treatment



In Santee, California, effluent from a conventional WWT plant receives additional treatment in a series of 3 maturation ponds, percolation filters and chlorination. It then goes into a series of seven lakes for fishing, boating and recreation in the Santee Lakes Regional Parks and Campground. The citizens of the area have enjoyed this 150-acre park facility since the 1960s with no reported ill effects.

In Arcata, California, effluent from a conventional WWT plant receives additional treatment in a pond system and is used to create a chain of manmade marshes which are an integral part of a wetland park and wildlife sanctuary. Not only does the marsh help "polish" the effluent to meet wastewater discharge standards but it has become a popular destination for bird watchers and tourists.

This energy demand is divided between operating the WWT plant and the pumps in the pipe collection system. As noted above the AIWPS is considerably more energy efficient in waste processing. An AIWPS has the added advantage that it can be operated in smaller, decentralized plants within the community, reducing the amount of electricity for pumping.

Another energy consideration is that algae grown in the AIWPS can be harvested and put into methane digesters. The gas can then be used to generate electricity as is currently being done in Sonnyvale, California.

WWT technology significantly impacts water quality. The amount of wastewater which is dumped, spilled or leaked into the ocean, for instance, is beginning to take its toll. Recent studies suggest that "red tides" and the resulting fish kills and shellfish toxicity are related to increased nutrient levels due to wastewater.

### Economics

The economy of the AIWPS results from a number of factors beyond operation and maintenance. For example, the cost of the reactor volume, in reinforced concrete reactors, such as the seeping tanks and digesters used in conventional plants, is between \$350 to \$700 per cubic meter (1990\$). The AIWPS uses formed earth reactors which cost less than \$5 per cubic meter (1990\$) or about one hundredfold less. By using earthwork, large reactor volumes can be achieved very economically.

The cost of solids waste disposal in landfills or toxic dumps is often not accounted for in conventional economic comparisons. In addition, the life spans of the various technologies are rarely compared. Although conventional WWT plants have an operational life of around 20 years (significantly less in tropical regions) the AIWPS reactor, constructed primarily of compacted

earth, never needs replacement.

### WWT: Precedent for Integration

Past planning practice has been to locate WWT plants as far from the community they serve as possible, because they smell bad and look like an industrial plant. The AIWPS doesn't look or smell like a sewage treatment plant.

The following are examples of communities that have challenged the paradigm of what a wastewater treatment facility is like and its physical relationship to the community it serves.

#### St Helena, California

This is a small community located at the gateway to Northern California's world renowned wine country. Choosing a WWT system was very important to the area as local wine tasting rooms could ill afford offensive odors and the visual intrusion of a conventional WWT plant. The AIWPS facility is located in the vineyards not far from the area's major wineries. It has a track record of over twenty-five years of flawless and almost invisible performance as their municipal wastewater treatment facility.

#### Ridgemark, California

For more than a decade, the AIWPS has been operating successfully as an integral part of the residential community of Ridgemark, California. The designers of this community of around 3,000 people choose the pond system because it was affordable and water from the ponds could be used to irrigate the golf course and recharge their groundwater basin. Acceptance of AIWPS

adjacent to housing, the golf course and within view of the nicer homes indicates its potential in other communities.

#### Santee, California

In Santee, effluent from a conventional WWT plant receives additional treatment by a series of 3 maturation ponds, percolation filters and chlorination. It then goes into a series of seven lakes for fishing, boating and recreation in the Santee Lakes Regional Parks and Campground. The citizens of the area have enjoyed this 150-acre park facility since the 1960s with no reported ill effects.

#### Arcata, California

In Arcata, effluent from a conventional WWT plant receives additional treatment in a pond system and is used to create a chain of manmade marshes which are an integral part of a wetland park and wildlife sanctuary. Not only does the marsh help "polish" the effluent to meet wastewater discharge standards but it has become a popular destination for bird watchers and tourists.

Both the Santee and Arcata projects are unique and creative multiple land use solutions to the problem of utilizing and upgrading treated wastewater from existing conventional treatment plants.

### Summary

If we are to bring our society into balance with the earth's resources and leave our children a livable environment, we must challenge our current attitudes toward "waste". Thinking of it as a resource can open up new possibilities and suggest alternatives to conventional solutions.

To successfully challenge these long standing preconceptions and prejudices, new working relationships must be formed. The aesthetic sensibilities of the environmental designer in conjunction with the technological skills of the environmental engineer will be sorely needed to integrate the pieces of our world into a whole. Perhaps then we can once again merge art and science to achieve forms of community-oriented technology which can sustain the environment and the quality of our lives. ☉

*Daniel Panetta is Assistant Professor of Architecture at California Polytechnic State University in San Luis Obispo, California. He can be reached at Cal Poly, CAED, Architecture Department, San Luis Obispo, California 93407. (805) 756-2075.*

Author's Note: I would like to acknowledge Dr. William Oswald for his years of effort and sacrifice spent in developing the Advanced Integrated Wastewater Pond System and for his continued support as a teacher, collaborator and friend.

# Sonoma County



# E.I.R.

## ENVIRONMENTAL IMPACT REPORT

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### Act Locally, Impact Globally

by Ann Maurice

Has it occurred to you that the wastewater problems we are experiencing locally are occurring elsewhere in California and in other parts of the country? A cross-section of people have concerns about the quality of our water and the centuries' old practice of dumping our sewage into rivers.

The idea of using drinking water as a conduit for waste wasn't invented in Sonoma County. The ingenious Mr. Crapper who invented the flush toilet is being seen less and less as a culture hero allowing for great advances of civilization, and more and more as the infamous inventor of one of the most environmentally damaging contraptions ever devised by mankind!

### *Using clean, potable water to transport body wastes makes no sense at all.*

For years my dog has been trying to talk me out of fouling his drinking bowl. For years I have been trying to talk my dog out of drinking out of the toilet. Finally, after years of this relentless dialogue, I have finally come to my senses. My dog was right! Dogs all over the country have been right. What took me so long to get it? Drinking water is for drinking. That's good, fresh, cool water in that porcelain bowl and my dog has the good sense to drink it. It is *my* plan for that good water that is the problem!

Using clean, potable water to transport body wastes makes no sense at all. It has been estimated that 80-90% of the water used for public sanitation and 50% of the water used in the home is utilized to flush toilets! We spend billions of dollars on dams to provide the water and power necessary to deliver drinking water. And what do we do with at least half of it? After we've contaminated it with our bodily wastes, we send it to the Rube Goldbergesque sewage plant to disinfect it. How? By further contaminating the once potable water with highly toxic chlorine. The chlorine kills off most of the bacteria, but unfortunately, if chlorinated water is dumped in our rivers, it will kill off most aquatic life as well. And the whole process gets more complicated with nitrification, de nitrification and ammonia thrown in. So after spending millions putting toxic chemicals in for disinfection, we've got to spend millions more to get them out!

With one push of the lever, a multi million dollar chain

*Continued to page 9*

## Act Locally, Impact Globally, continued from front page

of events begins. It has probably wreaked more environmental havoc over the years than we care to admit. We spend millions having to get the water we have spoiled back to a quality suitable for discharge into our waterways — all this money and resources spent to protect our inalienable right to flush.

Exasperated environmentalists lock horns with staff of municipal utility districts over whether or not the engineers have succeeded in getting wastewater back to the quality it was when we first defecated into it. And after the environmentalists and the engineers leave the debate table, they all go home to flush again.

The only environmentally correct sensible being in this scenario is my dog whose waste is biodegradable and naturally disinfected by sun and soil and becomes compost in no time and who, unlike all the humans I know, would ever defecate in clean water.

With more and more people coming to their senses and becoming aware of our nationwide water problems, it is possible that the Santa Rosa Subregional system is on the cusp, on the threshold of a new way of doing business.

Is it possible that in the process of resolving our local wastewater problem (through the Wastewater Discharge Citizen Participation program the City of Santa Rosa is conducting) that we could be paving the way for a new approach to wastewater reduction, treatment and disposal?

Is it possible that the local debate over the Santa Rosa treatment plant is revealing weaknesses of our "conventional" water and plumbing system in general, our centralized sewage treatment plants, and our customary use of chlorine as a disinfection agent? And is it possible that by successfully resolving these problems on a local level, we might be one of the early links in the chain of events that dramatically alters and corrects our customary and historical misuse of water?

### The Problem

The system is set up using storage ponds for wastewater. The more wastewater we produce, the more we need storage. We like to flush and we like to hear the sound of running water while we brush our teeth, and we believe we have a God-given right to shower every day (regardless of rainfall and the volume of water in the Russian River). All the water from all the sinks and toilets of Santa Rosa, Rohnert Park, Cotati, Sebastopol and South Park County Sanitation District heads for the treatment plant. But there's more of it than can be disposed of in one fell swoosh. So the landscape is dotted with sewage ponds.

If the problem is defined as disposing of the gigantic volume of wastewater we create, we will be stuck in the same rut of unacceptable solutions. If we go back a step and question whether we have to create this massive amount of wastewater in the first place, and whether we have to use chlorine to treat it, we open up a world of possibilities.

#### ■ Problem #1 — Using potable water as a conduit for waste.

If it is true that 50% of water used in the home is for toilet flushing, think of the potable water that could be saved by:

- Waterless toilets: composting toilets; incinerating toilets; toilets using a fluid other than water: dry, solar oven toilets.
- Double plumbing, using "grey water," not potable water in the sanitary system.

The technology is there. Let's investigate.

#### ■ Problem #2 — Using chlorine as a disinfectant.

Santa Rosa has taken the lead in announcing their intention to eventually phase out use of chlorine. Chlorine is a hazardous chemical to handle. In addition, it combines with organic materials to form other toxic and

• Distillation. This option is a new application of an old technology and has enthusiastic supporters in the area. There is actually a demonstration municipal project opening in Orange County. Proponents say that virtually all pathogens are destroyed in the distillation process and that it is energy-efficient and relatively cheap (comparatively speaking, as wastewater treatment systems go), and eliminates the need for chlorine.

• What other options are out there? I'm told the Coast Guard uses double plumbing because potable water is too valuable on a ship to be used in the sanitary system. Makes sense. What do they do in submarines?

This is where the general public comes in as a source of ideas. It's unlikely that any of the engineers working for the City in the past ever thought of contacting the Coast Guard or the Navy for innovative suggestions regarding sewage disposal.

It is rumored that not every country uses chlorine as a disinfectant because of its harmful effects on people and especially aquatic life. What are they doing instead, and is anybody checking this out?

"Expert opinion" without common sense is largely responsible for the mess we're in. Bureaucrats are usually not in the forefront of innovation. They need infusions of creative energy from brainstormers and problem-solvers. It took us over 100 years to make a mess of our rivers and bring wild salmon to the brink of extinction. We're just starting to recognize the problems and admit they exist.

Now that Santa Rosa is asking for citizen input, the door is cracked open, giving us a chance to make some real and profound changes. The brainstorming process has begun. Santa Rosa has invited the public to submit all ideas as "inventive" or as "farfetched" as they may seem to be. There have already been four public workshops seeking input on alternatives, and they will hold workshops to screen them in November. There is still time to submit ideas.

I for one, am going to make sure that the City's consultants research our suggestions. I can't wait to find out more about Ozone, Ultra-violet and Distillation. And it's about time the County Health Department and the Regional Water Quality Board got interested in new developments in toilet technology.

Move over Mr. Crapper, we're making changes.

*Ann Maurice is a Sebastopol resident and participant in the Technical Review Group evaluating environmental studies produced by the City of Santa Rosa regarding waste discharge into the Laguna de Santa Rosa and the Russian River.*

## Salmon-Run Numbers Are Sobering

by Glen Martin

Remember last year? Remember when 1,180 returning winter-run Sacramento River salmon were tallied, a tenfold increase from 1991? Remember the clinking of champagne glasses and the cheers all around?

Remember all the loose talk about the winter-run coming back from the precipice?

Well, at the Dom Perignon back in the cellar. The new figures are in, and they aren't pretty. Precisely 341 returning winter-run chinook salmon were counted at Red Bluff Diversion Dam this year — the second-lowest figure on record.

**Until we address the system as a whole, all our anadromous fisheries will continue to decline until they collapse completely.**

In other words, winter-run salmon are still barely hanging on by their fin tips. They continue to hover on the literal brink of

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Santa Rosa, CA 95402

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## DEPARTMENT OF

The following comments have been provided by Vicki Reynolds,  
Wetland Field Biologist.

Comments to Preliminary Scoping Report, dated October 12, 1994,  
Harland Bartholomew & Associates, Inc., Pages 52 - 55:

**"Wetlands Creation Design":**

## 1. General comment:

A1 The discussion within the scoping report relative to this component states that potential sites for wetland creation will occur concurrent with the wetland delineation efforts. The discussion does not, however, describe the criteria which will be utilized by the survey team to determine which sites will be considered. Some kind of a prioritized list of selection criteria should be developed in the scoping report to guide the field and aerial photo selection of potential wetland creation sites. Suggestions for this list include giving highest priority to sites which are not themselves currently defined to be wetlands pursuant to the Clean Water Act; are at an elevation at or above the 100 year flood plain for the particular adjacent water body; and do not currently contain any important natural resource or habitat, other than wetlands, which are critical to an ecological balance to the immediate region. With such criteria, it is conceivable that lands which are under current agricultural use, and above or at the 100 year flood plain get selected rather than some riparian or wetland area within the 100 year flood plain of the various candidate water bodies (i.e., Laguna de Santa Rosa; Americano and Stemple Creeks; etc.).

A2 2. First sentence under this category reads "Potential sites for wetland creation for project components and wetland enhancement for habitat loss will be identified during the wetland delineation effort." (underlining added to ask the following questions): The concept of enhancement has inherent within it the fact that the area to be enhanced is already a wetland.

a. Are the habitat losses which are being anticipated related to the overall project, or from impacts associated with wetland creation, or from some other currently unidentified impacts?

b. What kinds of enhancements are being considered? Introduction of treated wastewater into existing wetlands has the potential of changing, at a minimum, the hydrology of that aquatic system, and consequentially that system itself would need to be mitigated, as well.

c. Although the remainder of this section discusses the various information which will be developed for the wetland creation sites, what might be the information developed for wetland enhancement projects, if determined to be appropriate?

-A3 3. Paragraph 4 of this section provides a listing of the number of acres to be created along each of the candidate waterbodies. How were these numbers developed? How do these numbers relate to project impacts, or do they relate to the needs for disposal of treated wastewater?



*Santa Rosa*

## Subregional Long-Term Wastewater Project

**SCOPING COMMENT FORM**

Due December 5, 1994

Name: Clifford OstremDate: 12-5-94Address: 7720 Bodaca Ave, 25City: Sebastopol Ca, 95472

State:

Zip:

Phone: (707) 829-3421**How to use:**

Please fill out the above information. Please provide your written comments about the Summary EIR/EIS Consultants Draft Scope of Work or the Preliminary Scoping Report on the form below. Please print or write legibly, or attach this form to your typed comments. You may add additional pages of your own if needed. When completed fold the form so the City's address is showing and tape the edge together, (Do not use staples), and drop in the mail.

Comments: Dilution is the solution to pollution

*A*  
*AK*  
My suggestion is to transport our wastewater to the deep waters of San Pablo bay by a common carrier: Southern Pacific Pipeline or etc.

My past experience with pipeline shipments at Richmond, Calif. suggest that it could be done, perhaps, less costly and faster than the other suggested methods.

Yours Very Truly

*Clifford Ostrem*

Clifford Ostrem

CITY OF SANTA ROSA

P.O. Box 1578  
Santa Rosa, CA 95402

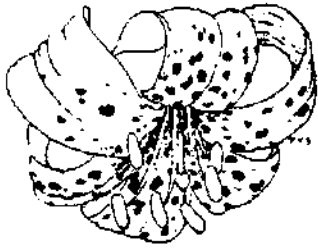
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DEPARTMENT OF  
COMMUNITY DEVELOPMENT





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# CALIFORNIA NATIVE PLANT SOCIETY

Milo Baker Chapter  
1123 Palomino Road  
Cloverdale, California 95425  
(707) 894-5798

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To <b>Lee</b>	From
Co. <b>HBA</b>	Co.
Dept.	Phone
Fax # <b>916 488-3264</b>	Fax #

December 4, 1994

Marie Meredith  
City of Santa Rosa  
P. O. Box 1678  
Santa Rosa, California 95402

Re: Santa Rosa Long-Term Wastewater Project  
EIR/EIS Scoping Session-Additional comments to November 17  
Scoping Session

Dear Marie:

Sonoma County is floristically rich, its vegetation diversity created, at least in part, by a broad range in altitude from sea level to 4000 feet, a wide variety of soils, a Mediterranean climate and an abundance of habitat types. Among the 58 California counties, Sonoma County ranks ninth in total listed plant species, fifth in those considered rare or endangered and second in state-listed species.

Diverse habitat types in the County support 123 listed plant species; 67 of these are considered rare or endangered. Nineteen or approximately 29 percent of the rare or endangered plant species are Sonoma County endemics, meaning that they occur only in this county. The county also contains a number of plant communities that are tracked by the California Natural Diversity Data Base to determine their rarity potential. Several uncommon or listed animal species of concern are also known to occur in many of the plant communities, particularly in seasonal and perennial wetlands. Much of this information is available from the California Natural Diversity Data Base, information not yet available from the CNDDB files may be acquired from organizations and qualified individuals with local expertise.

A1 The scope of this project is such that the potential for significant impacts to biotic resources is very high. The lack of specific information contained in the preliminary scoping document relating to precise locations of pipeline corridors, augmentation sites, and wetland creation sites precludes a reviewers ability to determine the impact significance precisely for each alternative, however, we would like to call attention to some of the potential impacts.

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CITY OF SANTA ROSA

A2  
Alternative 2: The South County Alternative has the potential to impact the tidal marshes in the lower reaches of Adobe Creek, Petaluma River, the Petaluma Salt Marsh and resident endangered species, including, but not limited to, the Salt Marsh Harvest Mouse and plant species *Polygonum marinense*, and *Cordylanthus mollis* ssp. *mollis*. San Pablo Bay marshes are also known to support sensitive plant and animal species.

A3  
Alternative 3: The Community Separator-South County Alternative has the potential to convert existing seasonal wetlands into agricultural use in the western Santa Rosa Plains creating impacts to vernal pool habitat and species. As currently proposed, the alternative also has the potential to impact Blucher Creek, which contains *Syncaris pacifica*, the state and federally endangered freshwater shrimp. Blucher Creek is also the water source for the Cunningham Marsh, a biologically significant eutrophic marsh that contains many plant species found elsewhere in the county only in Pitkin Marsh in the Vinehill area. Cunningham Marsh contains nine listed plant species of varying degrees of rarity, including a federally listed species and several with state or federal candidate status. As much of the Pitkin Marsh wetland habitat has been degraded by incompatible land uses, it is essential that this project avoid impacts to Blucher Creek and Cunningham Marsh. The Society recommends that Alternative 3 be modified to remove Blucher Creek from the list of potential augmentation sites.

A4  
Alternative 4 includes similar impacts to Blucher Creek, and has the potential to impact wetlands in Chileno Valley, the Estero Americano, Stemple Creek, San Antonio Creek and the Estero de San Antonio. These wetlands support a variety of plant and animal species, including several listed species. This alternative also will result in the loss of significant plant communities on the Button Ranch, including the only substantial woodland plant community remaining in the Petaluma Gap. Several plant species uncommon in Sonoma County occur in native perennial grasslands on the Button Ranch. Native perennial grasslands are declining throughout California and are currently being tracked by the California Natural Diversity Data Base. Conversion of rangelands to irrigated croplands in the west county alternative may impact historical location sites for listed plant species, including but not restricted to: *Trifolium amoenum*, *Alopecurus aequalis* var. *sonomensis*, and *Hemizonia congesta* ssp. *leucocephala*.

A5  
Alternative 5: Several of the Geothermal units at the Geysers are located on serpentine soils, a unique soil type that supports a variety of rare plant species restricted to serpentine, including several *Streptanthus* species and subspecies, the Serpentine Reed Grass *Calamagrostis ophiditis* and *Eriogonum nervulosum*. The Geyser's region also provides habitat for *Lupinus sericatus* and the Geysers *Panicum*, *Dichanthelium lanuginosum* var. *thermale*.

A6  
During the oral testimony at the Scoping Meeting on November 17, 1994, conflicting comments surfaced regarding the potential for increased seismic activity at the Geysers as a result of the implementation of this alternative. The testimony was given by persons who are known to be knowledgeable in this field. The Library Catalogue lists several technical studies that have been made of the Geyser's injection proposal. In addition to making these studies available for public review it may encourage public support for this alternative by referencing in the EIR/EIS similar long-term projects that have occurred in other areas. If human safety and pollution are not factors of the Geyser's alternative, and it can be determined that sufficient flexibility exists in the choice of pipeline routes, treatment plants and injection sites to avoid conflicts with significant habitat and species, the Geyser's alternative may provide a less environmentally damaging alternative to the reuse of the wastewater resource than is evident in some of the other alternatives.

A7  
Ocean outfall alternative: Although the scoping report document does not specify the exact pipeline route and ocean discharge point, an earlier screening document shows Ocean Discharge Alternative 3G as discharging into the ocean near the mouth of the Russian River. This alternative may have the potential to impact rare plant species, including *Lupinus tidestromii* a federally listed species. Other listed plant species occur in the general area of ocean discharge. The pipeline route indicated in the screening report has the potential to impact endangered plant species that occur in several areas in the Sebastopol, Camp Meeker and Duncans Mills quadrangles. Areas north and south of the Russian River are known Spotted Owl and Osprey territory.

Similar impacts may occur if other coastal outfall locations are considered. Populations of rare or endangered plant and animal species occur in many areas in coastal habitat in several plant community types. Among these are wetlands of special significance, including but not limited to: Tomales

Bay, the Esteros, Duncans Mills, Willow Creek, Bodega Bay, Bodega Head, Salmon Creek and the mouth of the Russian River.

A8 As cited earlier in these comments, Sonoma County was historically and currently is rich in biological resources. However, during the past two centuries of human occupation and use, many of those resources have diminished or become degraded. The potential for further degradation and loss of biological resources is extremely high for this project through the loss of native vegetation and the conversion of existing agricultural land use to other forms of agricultural use, therefore, the project cumulative loss or alteration vegetation diversity should be addressed in the EIR/EIS.. A comparative analysis for each alternative should be included.

A9 The impacts upon biological resources in the county have occurred in the recent past because of changes in agricultural use, the conversion of large agricultural holdings to smaller parcels, and subsequent conversion of rural residential lands to urban development. The EIR/EIS should include a projection of future population growth as a result of this project and a comparative analysis of each alternative.

A10 The cited examples of potential impacts to listed species and habitat are a small fraction of those that may occur as a result of one or more of the proposed alternatives. They are mentioned to emphasize the need for thorough field study during EIR/EIS preparation to adequately assess the impacts each alternative may impose on biological resources. As local biological resource organizations such as the Audubon Society and the California Native Plant Society are able to provide documented resource data not yet available from the California Natural Diversity Data Base, we encourage the environmental consultants who are preparing the EIS/EIR documents to contact these organizations for additional input. Local resource contacts include Betty Burrridge ((707) 527-0225 and Ken Wilson (707) 823-8408 for the Audubon Society. Betty Guggolz (707) 894-5798 is the Rare Plant Coordinator for the Sonoma County Chapter of the California Native Plant Society.

Sincerely,

*Betty L. Guggolz*

Betty L. Guggolz  
Milo Baker Chapter  
CNPS

Post-It™ brand fax transmittal memo 7671

# of pages &gt;

To <b>Lee</b>	From <b>Maria</b>
Co. <b>HBA</b>	Co.
Dept.	Phone # <b>543-3181</b>
Fax # <b>916 483-3364</b>	Fax #

089

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JUL 11 1994

 Leon & Nadine D Beck  
 11395 Valley Ford Rd  
 Concordia CA 94952
CITY OF SANTA ROSA  
MANAGEMENT

City of Santa Rosa -  
 Office of the City Mgr.  
 100 Santa Rosa, Ave Rm 10  
 Santa Rosa, Ca - 95404

attn: Ed Brauner

Re. Wastewater - project

Dear Mr Brauner:

I have conscientiously and thoroughly reviewed the various reports and summaries, i.e. NOP/NOI, Preliminary Scope Report, etc for the alternatives for the City of Santa Rosa Wastewater. In addition I have regularly attended and participated in the meetings and workshops in the past years. I also attended both scoping sessions on Nov. 17, 1994.

In reading the "Preliminary Scoping Report"

the sections - 4. Scope of Work - pg. 22 - item 21.4.2 refers "to prior geotechnical data - work in these areas is limited to review and evaluation of existing geologic, seismic, and geotechnical data." In as much as this was researched. I was much surprised that under the "B-Initial Study" Section Four Alternate Four - West County - pg. 2 - items 7-8-9 referring to earthquakes - are checked MAYBE and NO. The Dam site S-20 is directly over an earthquake fault of record - called the "Bloomfield Fault." Also the S-40, S-53, and S-56 are also on this fault. - On pg 3 item 13, With such stress on the fault in spite of engineering - in case of a shift and a quake there. could be unsurmountable damage - who will be responsible? (Enclosed is a map indicating this fault.

I also noticed in none of the maps in the Scoping Report is there an indication of any of the local recorded faults.

- Not being an engineer, hydrologist, or seismologist I could not fairly make a true judgement on any one of the alternatives. But, as a retired accountant-auditor I kept thinking of the cost factors and the need to meet the deadlines set by the Water Board. - Also I have always felt diversity was important in long term planning - Well I suddenly came up with a zero-wins plan -

For easily meeting the deadlines and cut costs it would be best to contract with the Dyers -

1. The Dyers need additional water -

- (a) they will pay for a good portion of the costs. To pipe and pump the wastewater to their facilities. (Can. save jobs in So. Cal.)
- (b) Contract with the Dyers. to be flexible to meet seasonal needs for both parties. Include specific terms and time limits with the ability to renegotiate and to extend the contract.

2. The Russian River group will be happy with the 1% to 5% mol - sharing with the Dyers.

3. To meet the various other items in the six Alternatives that are worthy of consideration in the future with inevitable growth and increased wastewater. The use of the Dyers will allow time to fully implement the following -

- (a) Dual piping for new construction and re-piping to parks, golf courses etc.

B  
cont'd

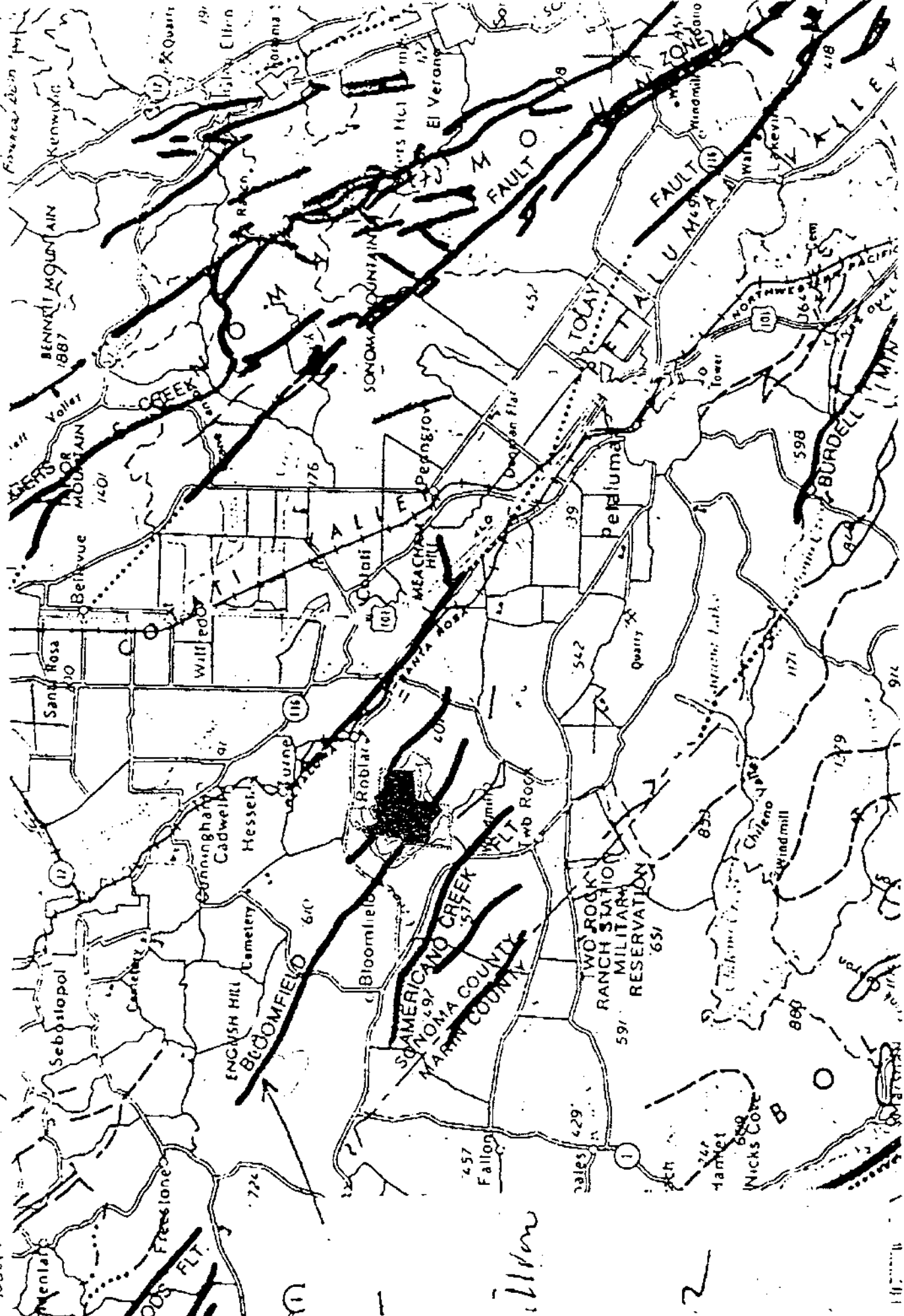
(b) Separators, wetlands, irrigation and small reservoirs, can be balanced and implemented as time and need requires.

In summary the City and the Dyers can have a partnership in the development of a cost effective waste project, spread over time.

Sincerely yours  
Nadine Beck.

Site of City of Santa Rosa is at T.S. Dam.  
 Dam site is directly over the recorded Bloomfield earthquake fault.  
 Reservoir is directly over recorded Duncan earthquake fault.

Source: Map Sonoma State Univ. - Geology Dept.  
 3000 Ranch St. S.E. Pres. Toilets 3444  
 Financial Dept.



207 543 3219 P.04

211 SANTA ROSA BLDG DIV

12-08-1994 04:15PM



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DEC 08 1994

CITY OF SANTA ROSA  
MANAGEMENTLeon P Beck 090  
1139 Valley Ford Rd  
Bloomfield Ca  
94957CITY OF SANTA ROSA,  
OFFICE OF THE CITY MGR,  
700 SANTA ROSA AVE, ROOM 10  
SANTA ROSA, CA 95404

12-7-94.

Re: WASTEWATER PROJECTATTENTION: ED BRAUNER

DEAR MR BRAUNER,

THE PRELIMINARY SCOPING REPORT  
FAILS TO ANSWER THE FOLLOWING  
QUESTIONS =

- 1) Why is there no reference  
to recent EARTHQUAKE SURVEY  
DITCHES WHICH SHOWED RECENT MOVEMENT  
& FRACTURES IN THE AREA  
OF THE DAMSITE FOR T-5?
- 2) Why do you not include  
STUDIES ~~TO BE~~ MADE BY GEOLOGISTS -  
HYDROLOGISTS PAID FOR BY JOW TRASH?

Ago

B1  
WJH

WASTEWATER SCAVING COMMENTS PAGE 2.

B2 3) DO YOU REALIZE, SHOULD YOUR CONSULTANTS + PROJECT TEAM SIMPLY REVIEW THE ALREADY PROVEN INADEQUATE REPORTS THE CITY HAS USED BEFORE, THE CONCLUSIONS THEY CAN DERIVE WILL BE BASED ON FLAWED INFORMATION?

B3 4) IF ALL DOCUMENTS LISTED ON PAGE 11 HAVE BEEN PUBLISHED, WHY HAVEN'T WE BEEN NOTIFIED SO WE COULD SEE THEM IN A TIMELY MANNER?  
OF 10-21-94

B4 5) WHAT WILL YOU DO TO ACCOMMODATE US WITH THE 1993-1994 INFORMATION LISTED WE HAVE NOT SEEN?

C1 6) HOW WILL YOU NOTIFY US, IN AMPLE TIME, OF THE MEETINGS AND INFORMATION NEEDED TO DEVELOP THE ISSUES, THE CRITERIA, THE VISUAL RESOURCES, ESPECIALLY THE GEOLOGY, HYDROLOGY + WATER QUALITY, GROUNDWATER, CONSERVATION, FAR LAND USE + AGRICULTURE -  
DATED 10-20-94 pgs 2-thru 7.  
Geo  
Hyd  
GW  
WC  
W/ty

## WASTE WATER SCRAPING COMMENTS

Pg 3

- 7) Will you insure we are notified of the work in progress, outlined on pgs 8 through ~~12~~<sup>69</sup> inclusive dated 10-20-94? so we may not only
- C2 Review + comment on the project results - but more importantly discuss the information gathering and evaluation process?
- 8) What is being changed in the operation so we do not again receive results with inadequate
- C3 time to properly review before comment period closes?
- 9) Report of 08/13/94 pgs 7 states
- C4 Task 3 - Review Existing Documents (COMPLETED)
- Task 4 = "INCORPORATED IN TASK 3"
- so are we to infer you have finished analyzing results of on going studies
- ???

## WASTEWATER SCOPING COMMENTS

10) Task 5 is Title (Completed) <sup>pg 4</sup>  
 Yet it reads:

THE BASIC 11 ARE TO COMPLY 111

C5 THE ENVIRONMENTAL CRITERIA  
 USED SHALL BE DEVELOPED BY 11

THE CONSULTANT WILL ALSO  
 DEVELOP THE SET OF ENGINEERING  
 CRITERIA 11

(WITH ADDITIONAL OUTLINE OF  
 FUTURE WORK TO BE DONE BY THE  
 CONSULTANTS!)

QUESTION = HOW CAN THE CRITERIA  
 BE SAID TO BE COMPLETED?

11) THE REPORT NAMES ONLY  
 AGENCIES - WHEN IS THE PUBLIC  
 TO BE INCLUDED?

12) TASK 6 IS SAID TO BE COMPLETED,  
 WHERE IS THE REPORT?

(WHY GO ON?) TASKS - 7 thru 13 -

13) IS THIS BEAR THE RESULT?

03 TASK - 14 - & 15 thru 18

## WASTEWATER SEEPING COMMENTS

pg. 5

D4 14) ON PG 22 OF OCTOBER 12, 94 ITEM 21.4.2.

WHY DO YOU CHANGE THE NAME  
OF THE SITE FROM "T-5" TO "S20B"  
AND THE BLOOMFIELD RESERVOIR SITE  
TO (S40B)?

15) LIMIT YOUR EVALUATION TO WHAT YOU  
HAVE ON RECORD?D5  
ARE YOU GOING TO IGNORE  
STUDIES OF THE LOMA PRIETA  
AND NORTHRIDGE EARTHQUAKES AND  
THEIR FINDINGS ON THESE EAST-WEST-  
WESTERLY FAULTS BETWEEN MAJOR  
FAULT LINES?E  
my 16) FOR TASK 22.1.4 ALTERNATIVE 4  
THE HYDROLOGIC ANALYSIS FOR THE  
RUSSIAN RIVER IS INCOMPLETE FOR THIS  
SITE, THE WALKER CREEK, TURLOCK,  
STOMPH CREEK + ESTERO SAN ANTONIO  
STREAMS + AREA. I RESPECTFULLY  
DIFFER WITH THE ~~OPRA~~ OPINION THAT  
THE R.R. ANALYSIS IS ALL THAT IS REQUIRED.  
THEY ARE NOT ALIKE.  
WILL YOU PLEASE RECONSIDER THIS?

## WASTE WATER SLOPING COMMENTS

Page 4.

#17) TASK 22.2 WATER QUALITY  
22.2.4. WATER QUALITY SPECIAL STUDIES.  
10-12-94 pg 25.

17-A) How will you justify taking only two (2) sample of stream water in the fair weather period of spring + summer 1994?

17-B) Is the winter water quality parameters different at other times?

17-C) Don't you think more than 2 samples should be taken?

17-D) And fall + winter samples also?

#2 18) You characterize West County streams + esteros as not going to have direct flow augmentation - if this is true why do you have a spillway in your dam?

#3 19) The field survey omits many particulates from your classified "irrigation streams", especially total metals. I find this inadequate.

## WASTE WATER SCOPING COMMENTS

Page 7.

F4 20) YOU LIMIT YOUR FIELD SURVEY OF WEST COUNTY STREAMS + ESTERO TO FIVE (5) SAMPLES. I FIND THIS TO BE INADEQUATE, YOU SHOULD BETTER THAN YOUR FLOW AUGMENTATION STREAMS, BUT NOT ADEQUATE FOR THIS BASIC STUDY.

6/11/94 21) MOST GLARING OMISSION I FIND IN THE PRELIMINARY SCOPING REPORT IS AN AREA TO BE MOST IMPACTED, OVER TIME BY THE CITIES WASTE WATER DISCHARGE. REGARDLESS OF THE OPTION THAT AFFECTS THE RUSSIAN RIVER, SALMON CREEK, AMERILAND CREEK, ESTERO AMERICANO, WALKER CREEK, STAMPEL CREEK, AND ESTERO SAN ANTONIO, EITHER DIRECT OR INDIRECT DISCHARGE INTO THE OCEAN FROM THE MOUTH OF THE RUSSIAN RIVER, SALMON CREEK, BODEN BAY, AND THE WHOLE OF TOMALES BAY - AND EVENTUALLY CORDERO BANKS -

I FIND IN THIS REPORT NO STUDY TO ESTABLISH A BASIS OF PARTICULARS IN THIS AFFECTED AREA. THIS IS A FATAL FLAW, IS IT NOT?

## WASTE WATER SCOPING COMMENTS

page 8

22)

BESIDES ESTABLISHING THE BASIS OF THE TO BE IMPACTED BAYS AND OCEAN-WATERS, WHAT WILL BE DISCHARGED THAT WILL ADVERSELY AFFECT THE PRESENT LIVING THINGS, PLANTS, FISH, SHELL FISH, MAMMALS, BIRDS, AND HUMANS THAT USE THESE WATERS, OR THE BOUNTY OF THE SEA.

23)

HOW DO YOU INTEND TO MITIGATE THE HARD METALS DISCHARGED THAT ~~IS~~ IS TOXIC TO FILTER FEEDERS (IE: OYSTERS) THEN THOSE WHO EAT THEM.

24)

HOW DO YOU PLAN TO MITIGATE TOXIC "BLOOMS" OF ALGAE CAUSED BY DISCHARGE OF CHEMICALS IN WASTE WATER?

25)

ALTERNATIVE FOUR, WEST(COUNTY) POLLAMATION, OI EARTH I FIND

1.) YOUR X IN MAYBE IS INADEQUATE. WATER & WEIGHT OVER A FAULT DOES CHANGE GEOLOGIC & EARTH CONDITIONS

2.) WE HAVE REPORTS ON THIS <sup>T-5</sup> SITE THAT SAY MAYBE IS NOT TRUE. READ THE U. C. NATURAL RESERVE STATEMENT!



## WASTE WATER SCOPING COMMENT

ALTERNATIVE FOUR - WEST COUNTY REC. Page 9.

5) 01 EARTH. 5) ADVERSE WATER EROSION NOT JUST DURING CONSTRUCTION + BUT ALSO AFTERWARDS FROM IRRIGATION + SILTATION!

13 6) YOUR MITIGATION STATEMENTS ARE NOT PLANNING FAR ENOUGH - INADEQUATE

14 7) MAYBE IS NOT THE CORRECT ANSWER! YOU ARE DEFINITELY PUTTING PEOPLE, ANIMALS, LIVES OF PLANTS + ANIMALS AT HIGHER THAN NECESSARY OR ACCEPTABLE RISK!

8) I HAVEN'T HAD TIME TO STUDY THE ALQUIST - PAOLO SPECIAL STUDIES ZONE - BUT THE DAM IS ON A KNOWN ACTIVE FAULT - I CHALLENGE THIS RESPONSE OF NO! TRY TO SATISFY ME. PLEASE.

9) THIS IS YES, NOT MAYBE - THE BOTTOM OF THE VALLEY IS FILL FROM EROSION = JUST LIKE THE MARINA DISTRICT IN SAN FRANCISCO - EXCEPT THIS IS NATURE, NOT MAN THAT DID IT.

# WASTE WATER SCOPING COMMENTS.

## ALTERNATIVE FOUR - WEST COUNTY. REC. PG 10.

### 01 - EARTH

10) THERE IS ALREADY LANDSLIDING IN OUR AREA. AN HONEST MAN WOULD HAVE CHECKED YES WITH AN X. WHY DIDN'T YOU?

~~11) I DON'T KNOW YET.~~

BUT I'LL CHECK AND RESERVE THE RIGHT TO OFFER A CORRECTION IF I FIND ONE.

12) NO MAYBE ON THIS - WE HAVE SINKS & BULGES AND COULD SHOW YOU - IT SHOULD BE YES.

13) HOW DO YOU STOP AN EARTHQUAKE FAULT FROM SHAKING, MOVING, SLIDING? THIS ALSO IS YES.

### AIR QUALITY -

17) IS YES BY YOUR OWN DISCUSSION. NO ENGINEERING PROJECT IS WITHOUT IT - MAYBE INDEED - PROVE ME WRONG!

18)	DEFINITELY YES			
3)	"	"	✓	✓
4)	"	"	✓	✓
5)	"	"	✓	✓
6)	"	"	✓	✓

## WASTE WATER SCOPING COMMENTS.

page 11

I REGRET IN ORDER TO MEET THE  
DEADLINE STATED AT THE MEETING  
NOVEMBER 17, 1994 AT STEAD LAB  
I MUST RUSH + MAIL THIS NOW.

0 I'd like to reserve the right to  
ADD AMEND + MAIL MORE COMMENTS  
IN THE NEAR FUTURE -

Leon P. Beck

[Click here to go to next section.](#)