County of Santa Cruz

HEALTH SERVICES AGENCY

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 95060-4073
(831) 454-2022 FAX: (831) 454-3128 TDD: (831) 454-4123

ENVIRONMENTAL HEALTH

March 2, 2000

Agenda: March 7, 2000

BOARD OF SUPERVISORS
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Subject: Status Report on Water Quality at Santa Cruz Biotechnology Ranch

Members of the Board:

On February 1, 2000, your Board considered **a status** report from Environmental Health on water quality downstream of the Santa Cruz Biotechnology (SCB) biomedical livestock operation located above Highway 1 at Back Ranch Road in the North Coast area. At that time your Board directed Environmental Health to provide a follow up report on March 7, 2000.

Sample Results

Samples collected from the drainages leaving the barn complex areas of Santa Cruz Biotechnology during and immediately after storms have continued to show quite elevated levels of fecal coliform bacteria (2800-30,380 cfu/100ml), well above the body contact standard of 400 cfu/100 ml. (Attachment 1) Drainage from the Santa Cruz Biotechnology pasture areas is much lower, at 50-500 cfu/100ml. Bacteria levels in other county streams, including nearby Majors Creek, are quite a bit lower than earlier in the winter, and now generally meet body contact standards, even one day after rain.

Onsite water quality sampling and site observations indicate that the high bacteria levels at SCB are originating from parts of the site where runoff from bare soil in the holding pens is conveyed by pipes or overland flow to drainageways. The animals are outside in these areas when it is not raining, resulting in soil disruption and compaction as well as deposition of manure. Although manure is regularly collected from these areas, the bare and compacted soil contribute to runoff of residual manure and bacteria whenever it rains significantly. Although the manure piles have been covered with tarps, leachate from water-logged soils under the manure piles may also be contributing bacteria to runoff water. Further sampling will be done to confirm the most significant sources of bacterial contamination on the site.

Some 20 samples have also been collected from drainages at other properties along Back Ranch Road and Highway 1. These included areas with horses, cattle, and sheep, as well as some undisturbed areas. The majority of these had fecal coliform levels less than 400 cfu/100ml, although several livestock areas showed initial counts of 12,640 and 17,360, declining to 1,150 and 1,100 later in the sampling period. Two other livestock areas sampled in the San Lorenzo Valley had fecal coliform levels of 28,000 (goat pasture near Ben Lomond) and 17,500-73,000 cfu/100ml (horse stable near Felton). Environmental Health staff will be working with the owners of the latter two operations to identify improvements that need to be implemented to improve water quality.

Posting of Warning Signs

The Lorenzi drainage leaving Santa Cruz Biotechnology has been posted with a sign at Coast Road warning that the water is unsafe for body contact. The Scaroni drainage has not been posted at this time because the beach area is currently closed to the public. The Scaroni drainage will be posted if bacteria counts continue to remain high once the beach is reopened.

Need for Improvement

The elevated bacteria levels at many of the sampled livestock operations indicate a general need for improved water quality protection at such operations. However, the very high readings at Santa Cruz Biotechnology (and the two San Lorenzo Valley operations) indicate a need for targeted and substantial improvements at those operations. On February 18, 2000, Santa Cruz Biotechnology was directed to develop a proposal for further improvement (Attachment 2). A response was submitted to Environmental Health staff on February 28, 2000, which identified some improvements to be made in the handling of the manure piles. Staff is working with SCB to identify additional improvements that also need to be made.

Environmental Health, Planning, and Regional Water Quality Control Board staff met on February 23, 2000, to discuss the situation at Santa Cruz Biotechnology with representatives of Save Our Agricultural Land, Coastal Watershed Council, Surfrider Foundation, Center for Marine Conservation, and Save Our Shores. SCB staff were invited, but unable to attend on short notice. Discussion focused on a variety of non-structural, temporary structural, and structural management practices that could be implemented at the site to improve stormwater quality. There was general consensus that opportunities for improvement this winter were limited, given the lateness of the season. However, it is essential that adequate testing be completed within the operation during the remaining storms to identify the significant sources of contamination that need to be addressed before next winter.

In its February 1, 2000, report to your Board of Supervisors, Environmental Health staff indicated that "Further water quality improvements would likely require the following actions:

1. Follow up sampling within the operation during runoff conditions to identify parts of the operation with the greatest contribution to water quality degradation.
2. Further implementation of additional drainage improvements and nonstructural measures to address problems identified by sampling.
3. Reduction of exposed holding pen areas by adding temporary roof extensions, adding tents, and/or reducing numbers of animals to a number that could be kept under cover during the winter.
4. Relocation of holding pen areas further from slopes and drainageways.
5. Development of measures to hold and/or treat contaminated runoff."

Environmental Health staff and Regional Water Quality Control Board staff are working with SCB to ensure that the first and second elements occur during the remainder of this winter. Staff expects that improvements in water quality can be gained by additional drainage improvements to keep clean water out of pen and manure areas and by improved tarping of manure piles. However, particularly given the recent sampling results and site observations, staff believes that it is unlikely that water quality conditions can be fully brought to acceptable levels during storms without addressing the larger issue of bringing animal numbers

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and infrastructure into conformance with each other. Staff believes that there ultimately needs to be adequate temporary or permanent structural measures to keep animal holding areas and manure out of the rain and off of water-logged soils during the winter months. Collection and treatment of contaminated water is also a possible option that could be a part of an overall management scheme. It is expected that these options will be further evaluated during preparation of the Environmental Impact Report for the facility master plan. However, until additional temporary or permanent structural measures are implemented, periodic non-compliance with water quality standards during storm periods is likely.

Manure Management for Other Livestock Operations

The water quality sampling results for other livestock operations indicate a general need for further improvement at many operations. Improved livestock and manure management for water quality protection has been a part of Environmental Health's work program for the past several years. Staff convened a "Manure Management Committee" of livestock owners to develop brochures and information programs. Staff also worked directly with livestock operations in the San Lorenzo Valley to provide education and promote voluntary compliance, with firmer enforcement action only taken as necessary. These efforts have been diminished due to staff vacancies, but are being stepped up again and will be further expanded in the fall through a joint grant-funded educational and demonstration program with the Resource Conservation District, Ecology Action, and Environmental Health.

It is **RECOMMENDED** that your Board accept and file this report.

Sincerely,

Rama Khalsa, PH.D.
Health Services Agency Administrator

for Diane L. Evans, R.E.H.S.
Director of Environmental Health

RECOMMENDED

Susan A. Mauriello
County Administrative Officer

cc: CAO
Environmental Health
HSA Administration
Planning Department
Regional Water Quality Control Board
Santa Cruz Biotechnology

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Attachment I

Fecal Coliform Readings (cfu/100ml.) for Samples Collected in the Vicinity of Santa Cruz Biotechnology Ranch.

	12/9/1999	12/13/1999	1/18/2000	1/25/2000	1/27/2000	1/31/2000	2/1/2000	2/10/2000	2/14/2000	2/15/2000	2/23/2000	
Rain in Previous 24 Hours	0.79	0.00	2.15	2.92	0.00	0.50	0.00	1.49	4.55	0.00	2.27	
Rain in Previous 3 days, at Felton	0.79	0.00	2.87	9.42	3.97	0.50	0.50	1.49	6.83	4.55	2.27	
Map Location												
LG0 - LAGUNA CR @ MOUTH	150.00											
MJ1 - MAJORS CR @ BEACH (9)	820.00	70.00	3,100.00		160.00	130.00			150.00		25.00	
MJ3 - MAJORS CR 50M. NORTH OF HWY 1 (7)		176.00	4,600.00		60.00	120.00			100.00		50.00	
O540 - FOUR MILE BEACH	16.00	0.90										
O545 - RED,WHITE,BLUE BEACH	188.00				24.00				40.00		100.00	
O546 - LAGUNA BEACH	8.00											
SCB0 - SCARONI STREAM @ BEACH (8)					20.00	160.00			4,100.00		550.00	
SCB01 - SCARONI STREAM @ HWY 1 (5)			16,900.00	400.00	160.00	300.00		30,380.00			2,800.00	
SCB011E - EAST B. RANCH RD BELOW FARM RD					140.00	1,110.00		1,040.00	6,300.00		8,300.00	
SCB011W - WEST B.RANCH RD BELOW FARM RD							0.90	3,900.00	350.00		200.00	
SCB019 - SCARONI SPRING @ EAST PENS									9,250.00		33,330.00	
SCB02 - BURNS STREAM @ HWY 1 (4)				80.00	140.00	50.00		1,480.00	500.00		250.00	
SCB03 - LORENZI STREAM @ HWY 1 (3)	99,200.00	140.00			120.00	600.00		24,800.00	3,000.00		8,850.00	
SCB03C - LORENZI @ COAST RD									2,950.00			
SCB03E - EAST BRANCH LORENZI DRAINAGE (2)		150.00			170.00	450.00		25,740.00	4,750.00		8,200.00	
SCB03EKV - KIDVILLE DRAINAGE									5,750.00			
SCB03W - WEST SIDE OF PASTURE/LORENZI D (1)		20.00			60.00	20.00		6,780.00	1,150.00		300.00	
SCB03W4 - LORENZI WEST END OF SCBIO										380.00		
SCB03W5 - WEST PEN DRAIN @ LORENZI										160.00		
SCB03W7 - UPPER W LORENZI BELOW CULVERTS										180.00		
SCB03W8 - 12" PVC CULVERT WEST OF SCBT									200.00			
SCB03W9 - 6 " DRAINAGE BEYOND SCBT									49.00			
SCB05 - EDWARDS CR @ MAJORS CR (6)			500.00			90.00			49.00		50.00	
SCB12W - BACKRANCH ROAD, W. SIDE								240.00				
SCB13W - WEST SIDE B. RANCH RD					100.00	100.00						
SCB14 - DRAINAGE BELOW CATTLE											100.00	
SCB18 - BACKRANCH RD - HORSES AND SHEEP							60.00	180.00				
SCB183 - HORSES AND SHEEP								1,140.00			150.00	
SCB184 - HORSES AND SHEEP								12,640.00			1,150.00	
SCB185 - HORSES AND SHEEP											200.00	
SCR020.9 - DRAINAGE @ 20.90 - HORSES								17,360.00	1,800.00		1,100.00	
SCR024.3 - DRAINAGE @ 24.33 HWY 1						100.00				40.00		
SCR024.6 - DRAINAGE @ 24.67 HWY 1					20.00	30.00				40.00		
SCY01E - HORSE STABLE EAST DRAIN											1,000.00	
SCY01S - HORSE STABLE SOUTH DRAIN											1,300.00	

Monday, February 28, 2000

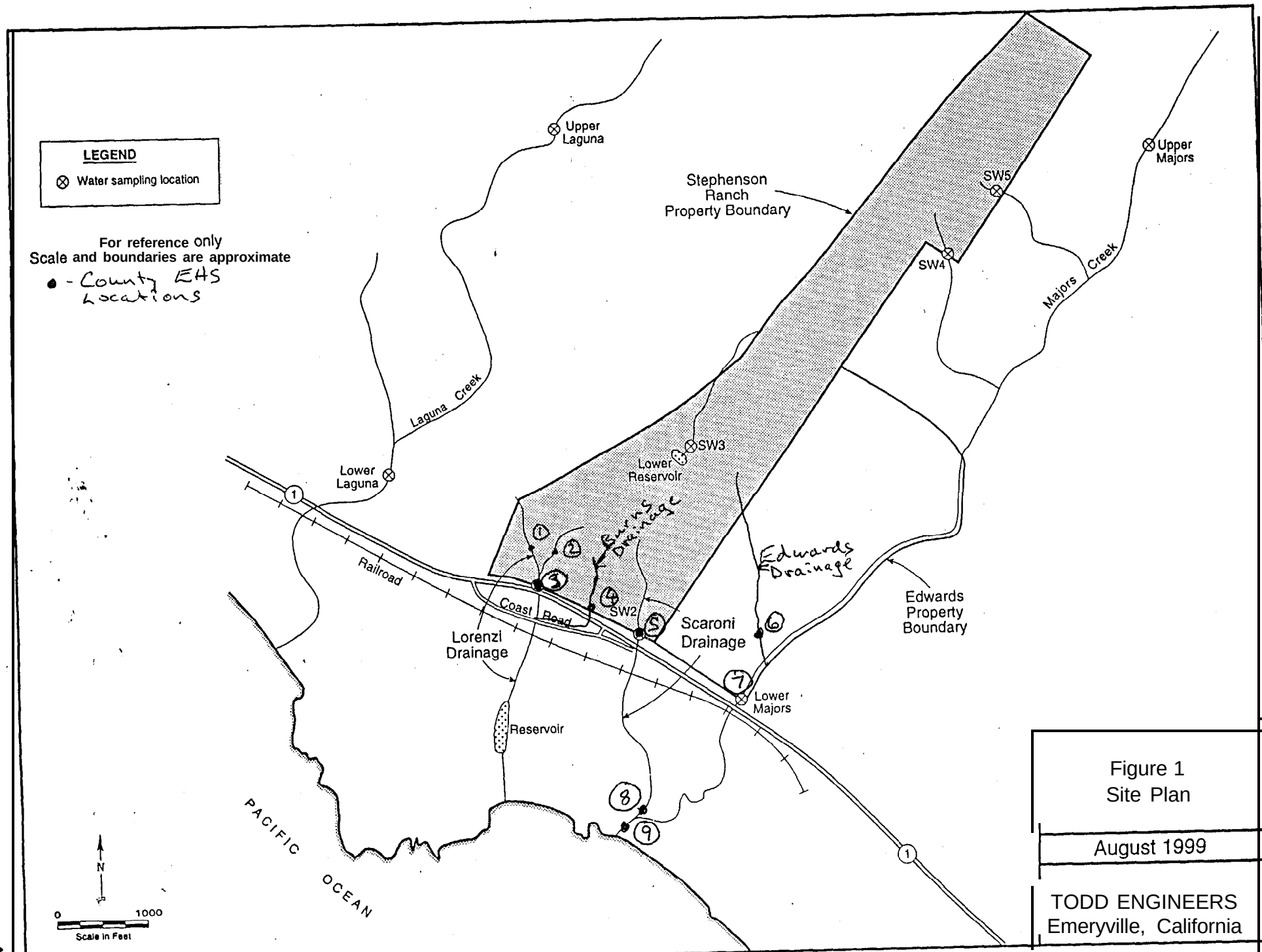

Figure 1
Site Plan

August 1999

TODD ENGINEERS
Emeryville, California

ATTACHMENT C

Attachment 26

County of Santa Cruz

HEALTH SERVICES AGENCY

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 950604073

(831) 454-2022 FAX: (831) 454-3128 TDD: (831) 4544123

ENVIRONMENTAL HEALTH

February 18, 2000

Matt Mullin
Santa Cruz Biotechnology Inc.
2161 Delaware Avenue
Santa Cruz, CA 95060

RE: Stephenson Ranch
5322 Coast Highway 1, Santa Cruz

Dear Mr. Mullin:

Water quality samples from stormwater in some drainages leaving the Santa Cruz Biotechnology Livestock operation continue to be greatly elevated relative to body contact standards and relative to other waterways. Notably, it appears the Edward's drainage and Major's Creek fall well within water quality contact standards, while the Burn's drainage exceeds standards, and Scaroni and Lorenzi greatly exceeds standards. Attached is a location map with sample results for the period from February 10, 2000 through February 15, 2000.

An on-site inspection was conducted on February 15, 2000. It was noted that the manure stockpiling locations may be providing a substantial impact to the Scaroni and Lorenzi drainages. Specifically, the manure storage area at the West Barn complex appears to be insufficiently elevated, and with the absence of an impervious layer below, allowing manure leachate to migrate to the drainage interceptor. The role of the 4" trench drain should be evaluated in this aspect as well as it's influence on the other Farm Road drainage interceptors. It was also noted that the 12" discharge line from the closest drainage interceptor does not utilize the vegetative buffer strip (VBS) at all, and, in fact, runs below it to finally discharge above Lorenzi's drainage. It may provide some incremental benefit to dispense the run-off from this interceptor above the VBS before it reaches the Lorenzi Creek. This may also be beneficial for the drainage interceptor outlet below the office (and adjacent to the septic system). The overland flow through the paddock area was noted to be also a possible source of contamination.

The East Barn complex has a dissipater that serves the barns, but it may be that the manure stockpile may be contributing to the elevated count in the Scaroni drainages from manure leachate encountering groundwater and flowing into the gully. Further elevating the storage pad and providing an impervious membrane, then securing the cover tarps to that, may provide further insurance for containing contaminants on site. Contaminated run-off must be dispersed and/or treated to prevent water quality degradation. An element of this that should be considered is timely hauling away of accumulated manure during the rainy season.

The upper meadow area, while having slight run-off, appears to have no significant problems or impact.

In order to reduce the highly elevated bacteria levels in the Lorenzi and Scaroni drainages, Santa Cruz Biotechnology is hereby requested to identify and implement additional measures for water quality protection. Improvements in the manure piles need to be made, or the manure will need to be hauled offsite, pursuant to previous direction from the Board of Supervisors. Please submit a proposed plan to Environmental Health not later than February 28, 2000. We will be completing our report to the Board of Supervisors at that time. Additional water quality protection measures should be implemented as soon as possible, but not later than March 6, 2000.

We have a meeting scheduled for Wednesday, February 23, 2000. EHS looks forward to discussing the possible solutions for mitigating the water quality impact from SCBI.

Sincerely,

Rick Jones
Environmental Health

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February 28, 2000

Mr. Rick Jones
Environmental Health Services
70 1 Ocean Street, Room 3 12
Santa Cruz, CA 95060

RE: Stephenson Ranch

Dear Mr. Jones:

I am in receipt of your letter dated February 18, 2000 regarding water quality in and around the vicinity of the Stephenson Ranch. Attached to your letter was a map of the Stephenson Ranch that denoted the results of three separate rounds of stormwater sampling. Also included on the map were the water quality results of several off-site locations.

The stormwater sampling recently conducted by Environmental Health Services (EHS) showed elevated bacteria in some of the drainage ways leaving the Stephenson Ranch, as well as in other off-site drainage ways. Santa Cruz Biotechnology, Inc. (SCB) continues with its desire to mitigate possible sources of contamination that may originate from its ranching activities. SCB appreciates the cooperative working relationship with EHS.

While we do not believe that SCB's composting manure piles significantly contribute to E. coli contamination that has been recently recorded in a few of the drainages leaving the property, we certainly appreciate the suggestions made in your letter to address any possible contribution from the manure compost piles. We will do our best to comply with your suggestions, and hope that all levels of county government would also share our mutual desire to identify and implement reasonable water quality protection measures.

Accordingly, and consistent with your suggestions, SCB proposes to enhance its cornposting manure pile storage system on the lower terrace by implementing a slightly elevated, impervious storage pad under each compost pile. A six to 12 inch impervious perimeter berm will also be included to contain cornposting manure within the storage area and to prevent stormwater from running onto the pad. Additionally, we propose to replace the multiple tarps that are currently used to cover each pile with a single, large,

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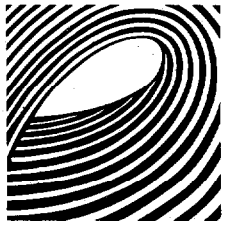
continuous tarp (available through Windtamer Tarps Corporation). The new single piece tarps (one for each pile) will be 12 ml. thick, highly water repellent, and UV resistant. Although SCB has been diligent in its tarping practices, the use of a single tarp system will further ensure the manure compost piles are protected from stormwater. Moreover, the tarps may be securely anchored to the impervious storage pad with tie downs. In combination, the impervious storage pad with berm, a single tarp, and improved anchoring will further protect each manure compost pile from precipitation and stormwater runoff.

We look forward to working with you to implement these manure compost storage improvements.

Sincerely,

Matt Mullin



Surfrider Foundation

Copy To Each Supervisor 0533

W 9

Mardi Wormhoudt
Board of Supervisors
701 Ocean Street
Santa Cmz, Calif. 95060

Feb. 28, 2000

Dear County Supervisor **Wormhoudt,**

The Surfrider Foundation is' an all-volunteer non-profit environmental group that, among other things, focuses on water quality issues. One of our activities is monitoring various beaches and watercourses for bacterial contamination. We use membrane filtration to determine levels of total and fecal coliform bacteria in our samples on a weekly basis. We have been monitoring the runoff from the Santa Cruz Biotech facilities for the last three winters.

As with most runoff, our results have been mixed. Three weeks ago for instance we had measurements (2100+) of over ten times the state limit body contact (200 per 100ml.), 1 week ago our results were around 100. While this may by itself seem inconsistent, what is consistent is that the problem is not going away. There has been some improvement on a tributary to Majors Creek after the goats were pulled from the riparian area. In other areas what we have seen is that there are consistently high levels every winter for the last three years. If anything the highs are higher and, show up more often this year than previous years. When our data is compared with other data gathered over years from all around the property by County Environmental Health, Save Our Ag. Land and Santa Cruz Biotech themselves it shows a pollution problem that is still with us and it points directly at Santa Cruz Biotech as its source. The numbers we have been recording are dwarfed by many of the other tests that have been done {samples of 20,000-90,000).

Our intent is not to run Santa Cruz Biotech. off their land. By using best management practices they should be able, to make a living and not harm their neighbor's land and public watersheds or continue to be a potential public. health threat. It is our hope that as the largest confined feedlot/animal research facility in the county that they would manage their operation properly. This can be done right now even on a temporary basis with 'manure haul off, diminishing the herd, active cornposting systems (e.g. The Bedminster system), retention ponds or tanks with aeration if need be. There are professors at UC Davis who are expert at turning manure management problems into usable resources. These coliform counts must come down. It is in the public's best interest.

We respectively request the Santa Cruz County' Board of Supervisors to instruct the Planning Department and the Environmental Health Dept. to take action. Mitigation should be required which will lead to lowering the coliform counts in the water runoff, coming from the Santa Cruz Biotech property, to much more acceptable levels. We know that these are complex issues. We also know that any suggested mitigation is destined to fail if not acted upon with due diligence.. This problem can be solved if all parties act in good faith, towards cleaning this up. It will be of benefit to everyone on all sides of this issue,

Sincerely,

Jamie Proffitt- Surfrider Foundation

P.S. - Good Luck!

surfrider foundation · santa cruz chapter
Box 3203 Santa Cruz, California 95063 USA 408423.7667

cc: Mardi Wormhaudt

4/10

2/24/00

~~0534~~

Dear Supervisor Almquist;

I am writing to you as a concerned and very affected neighbor of Santa Cruz Biotech on the North Coast of Santa Cruz. I live on Coast Road, downstream from SCBI's feedlot-style outdoor goat laboratory facility. My Neighborhood is currently deluged by water that is so heavily polluted with E-Coli bacteria, as measured by several sources, that I don't dare let my pets near it to drink or walk and I wonder how my neighbors keep their children and pets out of it.

As a property owner in Santa Cruz county I pay very high taxes and vote for people like you to represent me in my county government – to protect my interests and those of my neighbors regarding health and safety in our neighborhoods. My taxes pay for clean water, which the City of Santa Cruz faithfully delivers everyday, and I live in the richest nation in the world. So why must I walk through flows of raw animal sewage to approach my neighbors' front doors ? Why is this allowed to happen ? Does this happen in your neighborhood ?

I hope and urge the Board of Supervisors to officially adopt its prior determination, conveyed to the Regional Water Quality Control Board (RWQCB), that the water quality samples collected over the past THREE years provides "conclusive evidence of water quality problems originating on the site" of SCBI.

My neighbors and I would like the Supervisors to acknowledge that the polluted water is sufficiently likely to come in contact with humans AND that the "body contact" standard levels (200 MPN for E. coli is the max. allowed for human contact) should apply; and that it take the following specific actions, stated in order of priority, to stop the water pollution runoff from SCBI's site:

(a) immediately move all goat pens on the lower terrace to be located north of all barns;

(b) immediately remove all goats from the upper terrace which the Weber Report demonstrates is connected hydro-geologically to a neighboring residential well;

(c) immediately fence the goats 30 feet away from the ephemeral Scaroni Creek below the lower reservoir;

(d) test the subsurface soil between all barns/tents holding goats and the nearby riparian corridors for E. coli, nitrates, phosphorous, ammonia and urea so as to determine whether pollution is travelling laterally underground into the riparian corridors and if so where, if anywhere, the goats could be relocated to so as to avoid such lateral underground travel of the pollution;

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(e) reduce the number of goats on the SCBI site to 1000 (they originally promised ONLY 400) by transporting them to the new 7000+ acre SCBI facility near Shandon in San Luis Obispo County or another location chosen by SCBI;

(f) if the foregoing steps do not reduce water pollution runoff to safe levels (200 MPN for E. coli), further reduce the number of goats in the same manner by increments of 100 until such standard is achieved;

(g) if any of the sites of the large manure stockpiles are in an area of lateral underground transfer of pollution, **require the manure to be hauled *offsite;*** and

(h) if any of the sites of the existing barns/tents holding goats are in an area of lateral underground transfer of pollution, require the barn/tent to be moved to a location demonstrated to be a sufficient distance away from **said** area of lateral underground transfer.

The readings for water pollution in the rains this winter have been staggering. Please hear my concerns and those of other Santa Cruz County citizens by requiring SCBI to comply with the above. Thank you for your attention to this matter.

Sincerely Yours,

Patricia Damron
5510 Coast Road
Santa Cruz, CA 95060

cc: Supervisor Mardi Wormhaudt