STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF MARCH 24-25, 2005
Prepared February 16, 2004

ITEM: 19

SUBJECT: Modification of Waste Discharge Requirements Order No. R3-2002-0043, National Pollutant Discharge Elimination System (NPDES) Permit No. CA 0049224, for the City of San Luis Obispo Water Reclamation Facility, and Indirect Dischargers and Local Sewering Entities of California State Polytechnic University and San Luis Obispo County Airport, San Luis Obispo County

KEY INFORMATION

Location:	City of San Luis Obispo
Waste Type:	Municipal wastewater
Design Capacity:	5.2 million-gallons-per-day (MGD).
Present Flow:	~4.3 MGD
Treatment:	Secondary with nitrification, cooling, dual-media filtration, chlorination/dechlorination.
Disposal:	Discharge to San Luis Obispo Creek
Recycling:	To begin in spring 2005
Existing Orders:	Waste Discharge Requirements Order No. R3-2002-0043 (NPDES No. CA0049224) and Waste Discharge/Master Reclamation Requirements Order No. R3-2003-081

SUMMARY

The existing NPDES Permit for the City of San Luis Obispo (Discharger) Water Reclamation Facility requires completion of several special studies. The permit also requires reopening of the Permit by June 1, 2005 to include California Toxics Rule and California Code of Regulations Title 22 effluent limitations as necessary, and a time schedule for compliance with any effluent limitations, in accordance with the results of the special studies.

The required special studies, which are discussed in detail below, found that effluent limitations for selenium, cyanide, bromoform, chlorodibromomethane, and dichlorobromomethane are required; that trihalomethanes are not degraded within a reasonably short distance downstream of the discharge point; and that modifications to the treatment process are available to decrease trihalomethanes in the discharge.

The proposed Permit, which is included as Attachment 1, includes the following modifications:

- New effluent limitations for selenium, cyanide, and bromoform that are effective immediately;
- Findings that specify final effluent limitations for chlorodibromomethane and dichlorobromomethane to be included in the subsequent Permit reissuance (2007);
- Five-year compliance schedule for chlorodibromomethane and dichlorobromomethane;
- Interim effluent limitations for chlorodibromomethane and dichlorobromomethane;
- Special provision requiring submittal of Trihalomethanes Reduction Evaluation by November 1, 2005; and
- Alternative effluent chlorine limitation to accommodate grab sampling and U.S. EPA-approved analysis methodology.

Staff's rationale for each of these modifications is discussed below.

DISCUSSION

Facility Description. The City of San Luis Obispo owns and operates a wastewater treatment plant (Plant) adjacent to San Luis Obispo Creek (Creek) in the City's western section. The Plant serves the Discharger, California State Polytechnic University, and the County Airport.

Treatment processes include preliminary treatment (screening, grinding, aerated grit removal), primary settling, biofiltration, secondary settling, activated sludge (ammonia removal), dual-media filtration, cooling, chlorine disinfection, and dechlorination. The Plant currently discharges an average of approximately 4.3 MGD to the Creek. The discharge is regulated by Waste Discharge Requirements (NPDES Permit No CA0048127) Order No. R3-2002-0043 (Permit).

During late summer and fall months, the Creek often contains no flow upstream of the discharge point. Creek flow downstream of the discharge point is often dominated by the discharge. The Discharger is currently constructing new treatment works to begin producing Tertiary 2.2 Recycled Water in spring 2005. Although the Discharger could potentially recycle all wastewater, California Department of Fish and Game requires the Discharger to maintain a certain amount of discharge flow to the Creek.

Permit Reopener. The existing Permit requires completion of several special studies, including a Reasonable Potential Analysis, a trihalomethanes degradation study, and a disinfection alternatives study. The existing Permit includes a clause requiring the Permit to be reopened by June 1, 2005, for Regional Board consideration to amend the Permit to "include, but not necessarily be limited to, California Toxics Rule (CTR) and California Code of Regulations (CCR) Title 22 effluent limitations as necessary, and a time schedule for compliance with any effluent limitations, in accordance with the results of the special studies."

Permit Modification vs. Reissuance. 40 CFR Section 122.62 states that when a permit is modified, "only the conditions subject to modification are reopened." This modification is limited in scope to issues specifically identified by the permit reopener (with exception of chlorine limitations and monitoring, discussed later). Other major issues, such as addition of sewer system management plan requirements, will be addressed when the Permit is reissued in 2007.

Receipt of new information that was not available at the time of permit issuance, and the need to correct technical mistakes, are also causes for modification (but not revocation and reissuance) of a NPDES permit. (40 CFR 122.62(a)(2) and (15).)

The basis for modifying the compliance method for chlorine is 40 CFR 122.62(a)(15), correction in the method of compliance. This change is not a change to the limit, but a change in how compliance is measured. The reopener language contained as part of the existing Permit's Standard Provisions allows modification for any reason allowed under Part 122. See further discussion under Chlorine Limitations and Monitoring.

Reasonable Potential Analysis. The Federal Clean Water Act (Title 40, Code of Federal Regulations (40 CFR) Part 122.44(d)(1)(i)) requires effluent limitations for any pollutant with a reasonable potential to exceed a water quality objective. The Discharger was required to complete a Reasonable Potential Analysis (RPA) to statistically determine which CTR and CCR Title 22 pollutants have reasonable potential to exceed their respective water quality objectives and require effluent limitations. The RPA was performed in accordance with the Implementation Policy, using conservative assumptions and a data set consisting of 7 to 9 effluent data points for each of the CTR and CCR Title 22 pollutants. The RPA consisted of a comparison of the maximum observed effluent concentration (MEC) and maximum background concentration (B) for each pollutant to the most stringent applicable water quality criteria for that pollutant. If either the MEC or B exceeds the most stringent applicable criterion (i.e. "has reasonable potential"), then that pollutant requires an effluent limitation.

The Discharger's RPA found that selenium, cyanide, bromoform, chlorodibromomethane, and dichlorobromomethane exhibited reasonable potential and require effluent limitations. Selenium has reasonable potential due to one elevated background concentration. One of seven

samples exceeded the lowest cyanide criterion (5.2 µg/L). One of nine effluent samples exceeded the lowest bromoform criterion (5 µg/L). All nine effluent samples exceeded the lowest chlorodibromomethane and dichlorobromomethane criteria (0.4 µg/L and 0.6 µg/L, respectively).

Trihalomethanes Degradation Study. Bromoform, chlorodibromomethane, and dichlorobromomethane belong to a family of compounds known as trihalomethanes (THMs), which are a byproduct of chlorine disinfection. The Discharger uses chlorine primarily as a disinfectant, but also to control undesirable bacterial growth in some treatment processes. A study was required to determine if THMs in the discharge were quickly attenuated in a "degradation zone" downstream of the discharge, through natural processes such as volatilization. The Discharger collected THMs data at several creek monitoring stations upstream and downstream of the discharge point. The study, prepared by Larry Walker Associates, dated November 2004, found that THMs volatilized from the creek, but did not normally degrade to below CTR criteria until approximately twenty-three thousand (23,000) feet, or 4.3 miles, downstream of the discharge point.

Staff is unaware of any regulatory requirements or guidance specific to degradation zones. The Implementation Policy provides for mixing zones, which are similar to degradation zones in that compliance may be determined downstream of the discharge point. However, the Implementation Policy requires mixing zones to be as small as practicable, not compromise the integrity of the entire water body, and not dominate the receiving water body. Twenty-three thousand (23,000) feet is not as small as practicable and dominates the receiving water body. Staff concludes that such a lengthy degradation zone is not permissible. Therefore, in order to comply with CTR criteria, discharged concentrations of THMs must be reduced.

Disinfection Alternatives Study. The existing Permit also required the Discharger to evaluate the feasibility of changes to wastewater treatment processes and operations to minimize formation of THMs. The study, prepared by Brown & Caldwell Engineers, dated November 30, 2004, evaluates several alternative disinfection methods, including chloramination, peracetic acid, chlorine dioxide, and ultraviolet light. Chloramination would not likely decrease discharge THM concentrations adequately and was disregarded. Peracetic acid, a powerful disinfectant with several advantages, was not recommended, "since it is more costly than using [sodium hypochlorite], and has not proven to be able to meet the stringent bacterial limits required by the discharge permit." Chlorine dioxide (a gas that does not react with organic materials to form THMs) and ultraviolet light are both considered promising to reduce formation of THMs. The study estimated total capital cost and annual operation and maintenance (O&M) costs for each alternative as follows, based on a design flow of 5.85 MGD:

Disinfection Method	Total Capital Cost[1]	Annual O&M Cost
Sodium Hypochlorite	$0 (existing)	$142,000
Ultraviolet Light	$2,591,000	$307,000
Chlorine Dioxide	$1,169,000	$328,000
Peracetic Acid	$737,000	$454,000

Summary of Studies. In summary, the required special studies found that effluent limitations for selenium, cyanide, bromoform, chlorodibromomethane, and dichlorobromomethane are required; THMs are not degraded within a reasonably short distance downstream of the discharge point; and modifications to the treatment process are available to decrease THMs in the discharge.

Implementation Policy. The Implementation Policy provides that where it is infeasible for a discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the Regional Board may establish a compliance schedule in an NPDES permit. When a compliance schedule exceeds one year from the date of permit issuance or modification, interim limitations shall be included in the NPDES permit. If the final compliance date extends beyond the permit term, the final compliance date and supporting explanation shall be included in the permit findings.

[1] Includes 30% for contingencies; 20% for contractor overhead, bonds, insurance, and profit; and 25% for administration and engineering.

The schedule of compliance for CTR-based limits must be as short as practicable, but in no case may exceed five years from the date of permit modification, or 10 years from the effective date of the Implementation Policy (which was May 18, 2000). If the compliance schedule exceeds the permit term, the final effluent limitations shall be included in the permit findings, with a statement that it is the intent of the Regional Board to incorporate the final effluent limitations in a subsequent permit reissuance.

Compliance Schedule. Immediate compliance with CTR criteria for cyanide, bromoform, chlorodibromomethane, and dichloro-bromomethane is not feasible. Significant changes to the treatment process that likely will require multiple years to implement are necessary to achieve compliance. The Discharger has made diligent efforts to quantify pollutant levels and sources. In accordance with the Implementation Policy, the Permit includes the following compliance schedule:

> "The Discharger shall adhere to the following schedule to achieve compliance with final effluent limitations for toxic pollutants set forth in the findings of this Order:

Compliance Schedule for Cyanide, Bromoform, Chlorodibromomethane, and Dichloro-bromomethane Final Effluent Limitations	
Interim Requirement	**Completion Date**
1. Send request for environmental and consulting engineering proposals.	November 1, 2005
2. Initiate design of facility improvements.	May 1, 2006
3. Complete design of facility improvements.	March 1, 2007
4. Complete CEQA process.	August 1, 2007
5. Obtain any necessary permits.	November 1, 2007
6. Issue Notice to Proceed to contractor.	December 1, 2007
7. Submit construction progress reports.	Quarterly (w/ self monitoring reports)
8. Complete construction and commence debugging and startup.	December 1, 2009
9. Comply with Final Effluent Limitations.	March 1, 2010

> The Discharger shall notify the Regional Board in writing of its compliance or non-compliance with interim requirements no later than fourteen days following each completion date."

The Implementation Policy specifies that if the final compliance date extends beyond the permit term, the final compliance date and supporting explanation shall be included in the permit findings. Since this Permit term ends May 31, 2007, Interim Requirements Nos. 4 through 9 are included in the Permit findings, but are not included as enforceable limitations in the Permit at this time. However, the findings specify that the Regional Board intends to incorporate Interim Requirements Nos. 4 through 9 into the Permit as enforceable requirements when the Permit is reissued in 2007.

Interim Effluent Limitations. When a compliance schedule exceeds one year, the Implementation Policy requires interim effluent limitations. Interim limitations must be based on current treatment facility performance or existing limitations, whichever are more stringent. In accordance with these requirements, the following interim effluent limitations are added to the Permit:

Constituent	**Daily Maximum (µg/L)**
Cyanide	7.0
Bromoform	9.2
Chlorodibromomethane	42
Dichlorobromomethane	27

These interim effluent limitations are based on the highest observed concentrations in plant effluent during the RPA period (December 2002 through June 2004). The interim effluent limitations become effective on the date this Permit

modification is approved and no longer apply when the final effluent limitations become effective on March 1, 2010.

The Discharger should be able to achieve immediate compliance with CTR criteria for selenium, therefore the Permit includes final effluent limitations for selenium (monthly average of 4.1 µg/L, daily maximum of 8.2 µg/L) that are effective immediately. Interim effluent limitations for selenium are not necessary. These selenium effluent limitations are based of CTR's fresh water chronic toxicity criteria.

Final Effluent Limitations. As discussed above, the Implementation Policy specifies that if the compliance schedule exceeds the permit term, the final effluent limitations shall be included in the permit findings, with a statement that it is the intent of the Regional Board to incorporate the final effluent limitations in a subsequent permit reissuance. Therefore, the following finding is added:

> "The Regional Board intends to incorporate the following final effluent limitations into this permit as enforceable limitations when this permit is reissued in 2007. These final effluent limitations are not being incorporated into this permit at this time because the schedule to comply with these limitations exceeds the permit term. The reissued permit will provide that the final effluent limitations will become effective and fully enforceable on **March 1, 2010**. In the meantime, the Discharger must comply with the interim effluent limitations and compliance schedule described in the previous findings.

Constituent	Monthly Average (µg/L)	Daily Maximum (µg/L)
Cyanide	4.3	8.6
Bromoform	4.3	8.6
Chlorodibromomethane	0.4	0.8
Dichlorobromomethane	0.6	1.1

> The cyanide limitations are based on CTR's fresh water chronic toxicity criteria. The bromoform, chlorodibromomethane, and dichlorobromomethane limitations are based on CTR's water and organism consumption human health criteria. Each limitation assumes no dilution by the receiving water."

The daily maximum limitations were calculated by multiplying the monthly average limitations by 2. This multiplier of 2 was determined by Table 2 of the Implementation Policy, using a coefficient of variation of 0.6, and less than 8 samples. This multiplier reflects the difference between the 95th and 99th percentile of occurrence probability.

Trihalomethanes Reduction Evaluation. The Discharger has expressed concern that it may not be able to achieve compliance with these final effluent limitations, even after implementation of significant and expensive changes to their treatment process, such as those discussed under Disinfection Alternatives Study above. It should be noted that the interim and final trihalomethanes limitations are more stringent than State drinking water standards. The Discharger believes that the likelihood of municipal or domestic use immediately downstream of the discharge point is unlikely. The Discharger would like to explore the possibility of achieving compliance by making simple operational changes to reduce formation of trihalomethanes, such as elimination of chlorination prior to filtration and cooling, combined with allowance of a 'point of compliance' a reasonably short distance downstream of the discharge point. In addition, the City has suggested that it may acquire conservation easements of that stretch of Creek to ensure no municipal or domestic use occurs.

Staff therefore proposes the following Special Provision:

> "Discharger shall submit a Trihalomethanes Reduction Evaluation by **November 1, 2005**. The Evaluation shall quantify reductions in trihalomethanes as the result of the following changes:
>
> - Elimination or replacement of chlorination prior to filtration and cooling;
> - Elimination or replacement of chlorination of filter backwash, and
> - Addition of air stripping to increase volatilization.
>
> If these changes are not capable of achieving compliance with the Final Effluent Limitations

> described in Finding No. 17, the Evaluation shall quantify, based on conservative assumptions of effluent-dominated Creek flow, the distance downstream of discharge point at which the Creek will achieve compliance with California Toxics Rule criteria."

Staff will consider the results of the Evaluation during the Permit reissuance process in 2007. In the meantime, the compliance schedule, interim effluent limitations, and final effluent limitations described above will remain fully effective.

Chlorine Limitations and Monitoring. As noted on page 2, Permit Modification vs. Reissuance, the basis for modifying the compliance method for chlorine is 40 CFR 122.62(a)(15). The existing Permit contains effluent limitations for total chlorine residual that are based on 99% compliance (i.e. effluent must contain less than 0.1 mg/L 99% of time). Such limitations require continuous monitoring. The existing Permit provides that the effluent limitation will decrease from 0.1 mg/L to 0.01 mg/L on December 31, 2004. The Discharger has correctly pointed out that continuous monitoring is not a U.S. EPA-approved methodology, and that continuous monitoring technology is not capable of consistently and accurately determining chlorine concentrations below approximately 0.02 mg/L. The Discharger has requested flexibility to continue using grab samples, which are analyzed according to U.S. EPA-approved methodology. Staff agrees that grab sampling is appropriate, but that the 99% compliance language is not appropriate to determine compliance of a grab sample result. Staff therefore proposes adding the following alternative chlorine effluent limitation:

> "If grab sampling is used instead of continuous analysis, total chlorine residual shall be undetectable by amperometric titration or an equally sensitive method (<0.02 mg/L)."

This language is consistent with that found in permit for other similar municipal wastewater treatment plant discharges and is as stringent as the existing requirements.

Monitoring and Reporting Program Changes. The current Monitoring and Reporting Program requires the Discharger to intensively monitor the discharge for Priority Pollutants and Basin Plan pollutants as part of their Reasonable Potential Analysis. Since the Reasonable Potential Analysis has been completed, intensive monitoring is no longer necessary. Therefore, the monitoring frequency for those constituents with reasonable potential (selenium, cyanide, bromoform, chlorodibromomethane, and dichlorobromomethane) has been increased to quarterly; and the monitoring frequency for those constituents with no reasonable potential has been decreased to annually. No other changes to the Monitoring and Reporting Program are proposed.

ENVIRONMENTAL SUMMARY

Modification of this NPDES Permit is exempt from the California Environmental Quality Act pursuant to Section 13389 of the California Water Code.

COMMENTS AND RESPONSES

Regional Board staff sent a draft of the modified Permit to the following interested parties on December 20, 2004, and invited them to submit written comments:

- **City of San Luis Obispo (Discharger)**
- **Cal Poly State University**
- **San Luis Obispo County Health Department**
- **State Water Resources Control Board**
- **State Department of Fish and Game**
- **State Department of Health Services**
- **U.S. Environmental Protection Agency**
- **Army Corps of Engineers**
- **Environmental Center of San Luis Obispo (ECOSLO)**

The Discharger published a notice of the public comment period and the March 25, 2005 Regional Board hearing in the local newspaper on December 30, 2004. Written comments were due February 1, 2005.

City of San Luis Obispo Wastewater Division (Discharger) submitted written comments on February 1, 2005. Staff responses to comments that are directly relevant to this item are provided below.

Comment Discharger-1:

"Trihalomethanes (THMs), Interim and Final Limits

As you are aware the City performed a study to determine the fate of THM's in San Luis Obispo Creek. The study revealed that THM concentrations complied with the California Toxics Rule approximately 23,000 feet downstream of the WRF's outfall and also created a model that, with in-stream sampling, verified the in-stream fate of THM's. The City is planning on studying ways of reducing THM's that may be created in certain processes not related to final disinfection. The desire is to reduce these concentrations to an acceptable level, along with possible purchases of conservation easements, so the City will not have to pursue costly and perhaps less effective methods of disinfection. The City appreciates the Board's openness to this approach and will be discussing the scope of work for the proposed Trihalomethane Reduction Evaluation with Board staff in the near future.

The City is concerned with meeting the five year compliance schedule with the CTR for THMs. While the City understands Board staff's approach to the schedule, it remains concerned that it may not be possible to pilot test another disinfection system to determine effectiveness, then design, finance, and construct a complaint [sic] facility in the 5 year time period. It will be very difficult to meet the proposed March 1, 2010, deadline while determining if the Trihalomethane Reduction Evaluation will be feasible and completing its WRF master plan."

Staff Response:

Staff understands the difficulty of complying with the five year compliance schedule. However, the five year schedule specified is the maximum allowed by the California Toxics Rule and the Implementation Policy. The Regional Board has no discretion to extend the schedule beyond five years. No changes to the Proposed Order are recommended.

Comment Discharger-2:

"Preliminary sampling after the RPA shows that the City will be able to comply with the final limit for Bromoform and most likely for Cyanide. As you are aware these constituents were placed in the permit because only one of the numerous samples taken during the RPA exceeded the lowest criterion. The City will continue to pursue sampling to ensure compliance with these constituents."

Staff Response:

While preparing the draft Order, staff believed that immediate compliance with the final effluent limitations for bromoform and cyanide was not feasible. This was the basis of the originally proposed compliance schedule and interim effluent limitations for these constituents. Since the Discharger believes it will likely be able to achieve immediate compliance with the proposed final effluent limitations for bromoform and cyanide, the proposed Order includes final effluent limitations for bromoform and cyanide that are effective immediately. Interim effluent limitations and compliance schedules for these two constituents are not necessary. This is reflected in the proposed Order.

Comment Discharger-3:

"The City continues to disagree that all aspects of the State's Implementation Policy (SIP) are being appropriately applied to its discharge and San Luis Obispo Creek. It is important to remember that San Luis Obispo Creek is an Effluent Dependant Waterbody (EDW) and there is no appropriate methodology found in the SIP to adequately address discharge limitation development for these receiving waters. The application of water quality objectives as discharge limitations leaves dischargers with few, if any, options for compliance and short compliance periods. The City is considering exploring Site Specific Objectives (SSOs) and will be using information and data from existing and future studies to determine feasibility. If the development of SSOs appears appropriate for San Luis Obispo Creek, and is in the City's best interests, the City would like to begin initiating, with the RWQCB, the SSO process per the SIP.

The City proposes the inclusion of a more reasonable compliance schedule after the RWQCB evaluates the results of the Trihalomethane Reduction Evaluation and feasibility of SSO's for San Luis Obispo Creek. This would be appropriate because not enough information is available to determine if the application of Human Health Criteria for the receiving water's MUN designation and EDW status is warranted."

Staff Response:

Staff appropriately applied the Implementation Policy in this case. Staff acknowledges that compliance with the Implementation Policy is difficult for discharges to effluent dependent water bodies. However, this is not a valid reason to delay the compliance schedule. The Implementation Policy suggests that site-specific objectives may be appropriate for effluent dependant water bodies (Appendix 5-8), but requires the objectives to be in place within the five-year compliance period. No changes are recommended as a result of this comment.

Comment Discharger-4:

"Chlorine Residual Limitations

As previously discussed in the City's attached September 20, 2004, chlorine residual monitoring letter, it is not possible to measure chlorine down to the limits proposed in the draft permit. The proposed 0.02 mg/L limit for grab sampling cannot be achieved using the approved methods found in 40 CFR 136 "Guidelines Establishing Test Procedures for Analysis of Pollutants." There is no technically justified or legally defensible method to detect chlorine residual below 0.1 mg/L.

The City has also had further discussions with one of the editors of Standard Methods, the manual that lists all standard methods that comply with 40 CFR 136, who has again confirmed that that the lowest reliable bench test monitoring for chlorine residual is 0.1 mg/L. Limits below 0.1 mg/L are unreliable and cannot be adequately duplicated to ensure consistency and accuracy. Mr. Edward Askew, one of the author/editors of Standard Methods, is available to discuss these issues and provide insight on the performance criteria that analytical methods must achieve before being adopted by Standards Methods and listed in 40 CFR 136. Please refer to the City's September 20th letter for additional information regarding approved analytical methods.

As previously stated in the City's September 20, 2004 letter, the City is more comfortable using a grab sampling method with approved analytic methods than continuous chlorine monitoring. The City is concerned that the proposed grab sample method is significantly more stringent than the limit for continuous chlorine monitoring. While both of the proposals lack technically justified limits, the continuous monitoring limit allows periods of non-compliance per calendar month while grab sampling offers none.

The current chlorine residual limit being used by the City is a compliance based limit. The "99%" compliance factor in the current limit is based upon an acceptable amount of error for an analytical test. Thus 99% compliance translates into approximately 7 hours and 26 minutes of excursion above that limit per calendar month. Board staff has expressed concerns regarding this type of limit using grab samples because, unlike continuous monitoring, it lacked a defined amount of samples when an excursion was detected. The City proposes defining the amount of samples per excursion and changing the compliance factor from 99% to a more stringent 99.5% to address board staff's concerns while offering greater protection to the receiving water and using an approved analytical method that is technically justified and legally defensible.

The City is also proposing changing the continuous chlorine monitoring base limit from 0.01 mg/L to 0.1 mg/L to reflect the lowest detection found in 40 CFR 136. Although no approved method exists for continuous chlorine monitoring, this limit better reflects the lowest limit that can be verified using an EPA approved "lab bench" method.

<u>Continuous Monitoring</u>

The City Proposes: Change the compliance base limit from 0.01 mg/L to 0.1 mg/L

Grab Sampling

The City Proposes: Compliance determinations for total chlorine shall be based on 99.5% compliance. To determine 99.5% compliance with effluent limitations for total chlorine residual the following conditions shall be satisfied:

i. The total time which the total chlorine residual values are above 0.1 mg/L (instantaneous maximum value) shall not exceed 3 hours and 30 minutes in any calendar month.

ii. No individual excursion from 0.1 mg/L shall exceed 30 minutes; and must include results of no less than 2 grab samples.

iii. No individual excursion shall exceed 2.0 mg/L."

Staff Response:

In response to this comment, staff surveyed several local laboratories regarding their chlorine detection limits. Some labs are able to detect chlorine at less than 0.1 mg/L, but the lesser detection limits are not reliable. Staff agrees that specification of the less reliable detection limit of 0.02 mg/L is not appropriate. Staff does not want to be in the untenable position of enforcing an unreliable detection limit. Staff's original intent was to specify the Method Detection Limit, which is defined in 40 CFR Part 136 as "the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero…" Staff therefore proposes the following revision to the effluent chlorine limitation:

> "If grab sampling is used instead of continuous analysis, total chlorine residual shall be less than the Method Detection Limit, as determined by the procedure set forth in 40 CFR Part 136, Appendix B (currently, <0.1 mg/L)."

Staff appreciates the Discharger's suggested 99.5% grab sampling language, but believes such language is nebulous and would make compliance determination too difficult. Moreover, in order to demonstrate 99.5% compliance with the Method Detection Limit of 0.1 mg/L, the Discharger would need to take a second grab sample within 8 minutes of taking the sample wherein an initial exceedance was observed. This is practically impossible. Grab samples by nature represent 100% of the time period in which they are taken. Staff believes the revised language proposed here is reasonable and appropriate.

Comment Discharger-5:

"Thank you for considering the City's comments and proposals on these issues. The City is working diligently to ensure that all studies are completed in the minimum amount of time to facilitate RWQCB consideration of the results and subsequent compliance schedules. Study, design and construction of new treatment processes to comply with capacity, long overdue operations and maintenance improvements and compliance with regulatory requirements may be as high $40 million dollars. This would be a significant burden to a community the size of San Luis Obispo. The City appreciates the RWQCB's cooperation in working with the City to consider alternative approaches to achieving compliance. As you know we are committed to protecting water quality in San Luis Obispo Creek and look forward to providing more information to you in the near future."

Staff Response:

Comment noted.

Environmental Center of San Luis Obispo (ECOSLO) submitted written comments on February 1 and 2, 2005. Responses to comments are provided below.

Comment ECOSLO-1:

"The staff report does not contain adequate information about the potential health and environmental impacts of the toxicants that are the subject of this permit modification. The family of Trihalomethanes (THMs) has been known to cause cancer, tumors and other serious diseases in animals. A number of tests have shown CDBM to cause genotoxicity, including mutations in bacteria and yeast, and chromosal aberrations and sister chromotid exchanges in mammalian cells both in vitro and in vivo.

Chloroform, dichlorobromomethane and bromoform have been classified by the EPA as probable human carcinogens. Chlorodi-bromomethane (CDBM) has been listed by the EPA as a possible carcinogen. Based on the available scientific information, the California Office of Environmental Health Hazard Assessment ("OEHHA") has placed CDBM on the state's Proposition 65 list of carcinogens.

The available scientific information clearly demonstrates that THMs pose a serious threat to human health and the environment. The summary information provided here is designed only to illustrate that the record does not contain adequate information about the health hazards of THMs to enable the Board to make an informed decision regarding interim limits and long-term plans to regulate the discharge of these chemicals into Waters of the United States.

Cyanide is also of great concern. Typically, cyanide joins with other chemicals to form compounds, such as hydrogen cyanide. When cyanide is exposed to the environment, chemicals enter into the air, water and soil. As cyanide enters the air, gaseous hydrogen cyanide is formed. When cyanide enters the water, hydrogen cyanide is formed and is evaporated. When cyanide enters the soil some cyanide particles form hydrogen cyanide. Once cyanide builds into higher concentrations, it becomes toxic to soil microor-ganisms and the cyanide is able to pass through the soil into ground water. According to the EPA small amounts of cyanide are likely to cause: rapid breathing, tremors, heart pains, vomiting, blood changes, headaches, and other neurological effects. Exposure to large amounts of cyanide can cause weight loss, thyroid effects, nerve damage, damage of the brain and heart, and may cause coma and death.

Discharges of cyanide are generally from metal finishing industries, iron, and steel mills, and organic chemical industries and some wastewater treatment plants. According to the EPA a high risk of being exposed to cyanide comes from breathing near a hazardous waste site containing cyanide, smoking cigarettes and breathing smoke-filled air during fires, and breathing air, drinking water, touching soil or eating foods that contain cyanide. Cyanide poses a serious threat to human health and the environment."

Staff Response:

Staff appreciates the ECOSLO's insight to the toxic effects of THMs and cyanide. The proposed effluent limitations discussed in this report are based on the California Toxics Rule and the Implementation Policy. The toxic effects of these chemicals were described in detail when these regulations were promulgated. If the reader is interested in more information about the toxic effects of these chemicals, the reader is encouraged to read the California Toxics Rule at: http://www.epa.gov/OST/standards/ctrindex.html, or the Implementation Policy at: http://www.waterboards.ca.gov/iswp/index.html.

Comment ECOSLO-2:

"The Staff report claims that immediate full compliance with the California Toxics Rule (CTR) criteria for cyanide, bromoform, chlorodi-bromomethane and dichlorobromomethane is not feasible, yet it fails to explain why it is not feasible. It is not clear what definition of "feasible" the staff is using. Although the Clean Water Act does not contain a definition of 'feasible' under section 4(f) of the DOT Act, an alternative is considered feasible if it can be built as a matter of sound engineering. Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 411 (1971). The Supreme Court defined "feasible" in American Textile Manufacturers Institute, Inc., v. Donovan, 452 U.S. 490, 101 S.Ct. 2478, 69 L.Ed.2d 185 (1981). In Donovan, the Supreme Court addressed the definition of "feasible" in Section 6(b)(5) of the Occupational Safety and Health Act, 29 U.S.C. § 655(b)(5) (1982). 452 U.S. at 508, 101 S.Ct. at 2490. The Court rejected the argument that a determination of "feasibility" required a cost-benefit analysis, and concluded that feasible meant " 'capable of being done, executed, or effected.' " *Id.* at 508-09. But the staff report also claims that the Discharger wants to explore the possibility of achieving compliance by making "simple" operational changes to reduce formation of the THM's. Accordingly, before the Board can conclude that short term compliance with CTR is infeasible, it must find that the "simple" measures proposed by the discharger are not capable of being implemented for engineering reasons.

Even if the so-called "simple" measures to reduce the production of THMs prove insufficient for full compliance with CTR, the Board to must nevertheless require their implementation as interim mitigation measures. To this end, we ask that the staff provide some basic information about mitigation measures that are to be studied by the discharger subject to the November 1, 2005 deadline. This information should include how soon each of these measures can be implemented, and the cost to the discharger. The Board can then decide which measures should be implemented in the short run.

Monitoring the effluent subsequent to the implementation of the interim measures will give the discharger the opportunity to accurately gauge the efficacy of these measures and the extent to which their implementation will result in compliance with the CTR standards for cyanide and THMs. Even if these measures do not result in full compliance, they will serve as a good faith interim effort to ameliorate the discharge of these toxicants into sensitive waters until more effective measures can be implemented.

ECOSLO objects to the five year timeline that the staff has proposed for full compliance with the CTR. In light of the seriousness of the THM contamination, a 2 year implementation timeline is much more appropriate."

Staff Response:

As discussed in staff's response to Comment Discharger-2 above, the Discharger will likely be able to achieve immediate compliance with the final effluent limitations for bromoform and cyanide without significant changes to its treatment process. Effluent limitations for these two constituents will become effective immediately. This should partially address ECOSLO's concerns.

When suggesting that compliance with the final effluent limitations for chlorodibromomethane and dichlorobromomethane is feasible within two years, ECOSLO does not recognize the time required to make significant changes to the Discharger's treatment process. Compliance with the final effluent limitations will not likely be possible without significant and costly changes to the treatment process. Staff's experience with other wastewater treatment plant upgrades indicates that multiple years will be needed to complete the planning, design, financing, and construction phases of the project. On the contrary, the Discharger argues that they may not be able to complete such a project within five years. Staff believes that the proposed compliance schedule is reasonable and appropriate.

The Implementation Policy defines "infeasible" to mean "not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The Discharger has made this demonstration. No changes to the Proposed Order are proposed as a result of this comment.

Comment ECOSLO-3:

"Moreover, ECOSLO believes the use of mixing zones as a means to satisfy the regulatory mandates of the CTR is inappropriate in this case. Likewise, the discharger's proposal to purchase a conservation easement as a means for compliance with the CTR is unprecedented and inappropriate. The purchase of such an easement will not in any way relieve the discharger of its obligation to comply with all applicable environmental regulations."

Staff Response:

Staff is not proposing that the mixing zone provisions of the Implementation Policy be applied to this discharge at this time. Staff is simply allowing the Discharger to quantify reductions in trihalomethanes as the result of the simple operational changes, and quantify, based on conservative assumptions of effluent-dominated Creek flow, the distance downstream of the discharge point at which the Creek will achieve compliance with California Toxics Rule criteria.

As stated previously, staff will consider the results of the evaluation during the Permit reissuance process in 2007.

Comment ECOSLO-4:

"As the staff report acknowledges, [the Implementation Policy] explains how CTR water quality criteria must be implemented through NPDES

permits and WDRs. The following is an excerpt from [the Policy]:

"The [Implementation] Policy contains provisions to lessen or avoid potentially significant adverse effects on the environment stemming from the TMDL compliance schedule provisions. These provisions include the following:

1. The compliance schedule provisions are narrowly written to apply only to those situations where the discharger demonstrates that it is infeasible to achieve immediate compliance with the CTR criteria;

2. The compliance schedule provisions do not apply to new discharges;

3. The discharger must submit the following justification before compliance schedules may be authorized in a permit:

   (a) Documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts,

   (b) Documentation of source control and/or pollution minimization efforts currently underway or completed,

   (c) A proposed schedule for additional source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades), and

   (d) A demonstration that the proposed schedule is as short as practicable;

4. The schedule of compliance must be as short as practicable and must include specified required actions that demonstrate progress toward attainment of the CTR criterion or effluent limitation;"

These guidelines make clear that compliance schedules must be "narrowly" written to apply only to those situations where the discharger has demonstrated that immediate compliance with CTR criteria is infeasible. The discharger has made no such demonstration in this instance. Moreover, the guidelines provide that the discharger "must" submit (as justification for the compliance schedule), documentation of "source control and/or pollution minimization efforts" that are planned for implementation, underway, completed. No such documentation has been provided in this instance, probably because no such measures have been completed or are scheduled at this time. As ECOSLO stated in its original comments, a compliance schedule should not be granted unless appropriate interim source control measures or pollution minimization actions are identified and implemented as soon as practicable. Resolution 2000-15 demonstrates that ECOSLO's demands are in fact consistent with the appropriate state guidelines."

Staff Response:

Portions of the above Implementation Policy excerpt apply to *TMDL* compliance schedule provisions, not the California Toxics Rule-based effluent limitations in the proposed Order. The Implementation Policy states that the Regional Board may establish a compliance schedule in an NPDES permit if the discharger requests and demonstrates that it is infeasible for the discharger to achieve immediate compliance with a California Toxics Rule criterion.

Through several meetings with Regional Board staff and written correspondence (including its comment letter above), the Discharger has: (1) documented that diligent efforts have been made to quantify pollutant levels in the discharge (see "Reasonable Potential Analysis" above) and the sources of the pollutant in the waste stream (background concentrations in drinking water and chlorination at the wastewater treatment plant); (2) documented source control and pollution minimization efforts currently underway or completed (see "Disinfection Alternatives Study," and "Trihalomethanes Reduction Evaluation" above), (3) proposed a schedule for additional or future source control measures, pollutant minimization actions, or waste treatment; and (4) demonstrated that the proposed schedule is as short as practicable (see "Compliance Schedule" above).

The Implementation Policy specifies that a compliance schedule "shall include a schedule for completion that reflects a *realistic assessment* of the shortest practicable time required to perform each

task" (emphasis added). By suggesting that compliance with the final effluent limitations be achieved within two years, the commenter fails to recognize that just design and financing of such a significant project will require at least two years. The proposed compliance schedule reflects a realistic assessment of the time required to complete such a project. Staff recommends no changes to the proposed compliance schedule.

Sierra Club, Santa Lucia Chapter, submitted comments by email on February 1, 2005.

Comment Sierra Club-1:

"Based on the information provided by staff, the Board cannot make a decision on the regulation of discharge of Trihalomethanes (THMs) into Waters of the United States. The staff report is inadequate to address the health and environmental impacts and necessary effluent limitations of probable carcinogens chloroform, bromoform and dichlorobromomethane and bromoform, and for the Prop 65 listed carcinogen chlorodi-bromomethane (CDBM), all discharged into San Luis Obispo Creek by the San Luis Obispo Water Reclamation Facility.

The Staff Report does not reference or summarize the body of scientific evidence on the human and environmental health threats posed by these toxicants."

Staff Response:

This comment is similar to Comment ECOSLO-1 above. Please refer to staff's response to Comment ECOSLO-1.

Comment Sierra Club-2:

"Immediate compliance with the California Toxics Rule (CTR) criteria for cyanide, bromoform, chlorodibromomethane and dichlorobromomethane is claimed not to be feasible. This needs to be explained, as per the requirement of State Water Resources Control Board Resolution No. 2000-15 stating that compliance schedules may only be created when the discharger has demonstrated "that it is infeasible to achieve immediate compliance with the CTR criteria." The discharger must also submit proof of "source control and/or pollution minimization efforts" planned, implemented, underway, or completed."

Staff Response:

As discussed in staff's response to Comment Discharger-2 above, the Discharger has indicated that it will likely be able to achieve immediate compliance with final effluent limitations for bromoform and cyanide. The proposed Order has been revised to include final effluent limitations for bromoform and cyanide that become effective immediately. Interim limitations and a compliance schedule for these two constituents are not necessary.

As explained in staff's response to Comment ECOSLO-4 above, the Implementation Policy's conditions for application of its compliance schedule provisions to chlorodibromomethane and dichlorobromomethane have been satisfied.

Comment Sierra Club-3:

"At minimum, the discharger's "simple" efforts to reduce THM's must be implemented as interim mitigation measures, with monitoring to gauge compliance."

Staff Response:

Staff agrees that simple changes to the use of chlorine in the treatment process to reduce the concentration of trihalomethanes in the discharge should be pursued by the Discharger. This is why staff proposed the special provision requiring the Discharger to complete a Trihalomethanes Reduction Evaluation. Staff has added the following to the Trihalomethanes Reduction Evaluation requirement in response to this comment:

> "Discharger shall implement any changes, or combination of changes, that the Discharger determines will be effective in reducing trihalomethanes, unless the Discharger demonstrates to the Executive Officer's satisfaction that the change or changes are infeasible (as defined in the Implementation Policy). The Discharger may instead implement alternatives to any feasible changes identified by the Trihalomethanes Reduction Evaluation, if the Discharger demonstrates to

> the Executive Officer's satisfaction that the alternatives will have comparable efficacy in reducing trihalomethanes."

Comment Sierra Club-4:

"The five-year timeline proposed for compliance is excessive. The Sierra Club supports a 2-year timeframe and rejects the proposed purchase of a conservation easement as irrelevant to satisfaction of the Discharger's obligation to refrain from acts destructive to human health and the environment."

Staff Response:

Please see staff's response to Comment ECOSLO-4 above.

Environment in the Public Interest (EPI) of San Luis Obispo, submitted written comments on February 1, 2005.

Comment EPI-1:

"The San Luis Obispo *Coastkeeper*, a Program of Environment in the Public Interest, has reviewed the Staff Report, and Draft Modified NPDES permit for the City of San Luis Obispo currently under consideration by RWQCB-3. I am writing to express general support for Staff's proposed modifications, with the following specific requests for changes to the Draft NPDES Permit:

1. Compliance Schedule.

The San Luis Obispo Coastkeeper notes the time schedule, while meeting the maximum time allowed under the law, is very generous toward the City. I urge a more aggressive time schedule to achieve compliance, and request the Board consider 24 months.

Staff has been very thorough in analyzing the detrimental affects, applicable numerical objectives, and the immediate need to protect the beneficial uses of the receiving waters – San Luis Obispo Creek. In Los Osos, the Board has required the installation of a complete wastewater system on a 4-year time schedule order, allowing 5 years for a remodel/update to an existing plant seems inconsistent."

Staff Response:

In response to this and previous comments regarding the proposed compliance schedule, staff held a meeting for all commenters on February 14, 2005. At the meeting, City staff explained their plans to achieve full compliance: (1) complete the Trihalomethanes Reduction Evaluation as soon as possible; (2) pilot test a new disinfection process, (which may require up to one year); (3) design a new disinfection system; and (4) finance, permit, and construct it. City staff explained that they are planning to increase the capacity of the treatment plant, and that regulatory compliance with final effluent limitations will be driving the timeline for such an upgrade. The Discharger explained why this process would require up to five years or more.

The Discharger also stated that they might pursue Site Specific Objectives for the trihalomethanes in San Luis Obispo Creek, as provided by the State's Implementation Policy. It should be noted that the U.S. EPA's Maximum Contaminant Level (drinking water standard) for total THMs is 80 µg/L, which is over 40 times greater than the final effluent limitations proposed here.

The Los Osos time schedule is not comparable, since that facility has been in the planning stages for decades, does not involve an effluent-dominated water body and involves different impacts and waste constituents.

Staff recommends no changes to the Proposed Order as a result of this comment.

Comment EPI-2:

"<u>2. Mixing Zone.</u>

The San Luis Obispo Coastkeeper concurs with Staff that a "degradation zone" of 4.3 miles is unpermitable. Staff points out the requirement on page 3 of the Staff Report that

> "The Implementation Policy requires mixing zones to be as small as practicable, not compromise the integrity of the entire water body, and not dominate the receiving water body."

A mixing zone extending 4.3 miles reaches to approximately the point at which San Luis Creek passes under the Highway 101 at Avila Valley –

clearly not as small as practicable. In addition, the flow from the wastewater treatment plant dominates the receiving water body for most of the year, and may actually constitute of the entire flow for 6 months or more. I urge that compliance with the California Toxics Rule and California Code of Regulations be required at the point of discharge."

Staff Response:

Staff is not proposing a point of compliance downstream of the discharge at this time. This concept will only be considered after the Discharger has completed the required Trihalomethanes Reduction Evaluation, when this permit is scheduled for reissuance in 2007.

CONCLUSION

After carefully considering all of these comments, staff believes the proposed modifications balance the commenters' divergent perspectives, while complying with the California Toxic Rule and the Implementation Policy. Staff recommends approval of these modifications of Waste Discharge Requirements Order No. R3-2002-0043, National Pollutant Discharge Elimination System (NPDES) Permit No. CA 0049224:

- New effluent limitations for selenium, cyanide, and bromoform that are effective immediately;
- Findings that specify final effluent limitations for chlorodibromomethane and dichloro-bromomethane to be included in the Permit during reissuance in 2007;
- Five-year compliance schedule for chlorodi-bromomethane and dichlorobromomethane;
- Interim effluent limitations for chlorodi-bromomethane and dichlorobromomethane;
- Special provision requiring submittal of Trihalomethanes Reduction Evaluation by November 1, 2005 and implementation of feasible alternatives; and
- Alternative effluent chlorine limitation to accommodate grab sampling and U.S. EPA-approved analysis methodology.

RECOMMENDATION

Staff recommends adoption of Modified Waste Discharge Requirements (NPDES Permit) Order No. RB3-2002-0043.

ATTACHMENT

1. Modified Waste Discharge Requirements (NPDES Permit) Order No. RB3-2002-0043, including Monitoring and Reporting Program No. R3-2002-0043

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