CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

TIME SCHEDULE ORDER
ORDER NO. R2-2005-0048

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
WET WEATHER FACILITIES
ALAMEDA COUNTY

Adoption Date: September 21, 2005
Effective Date: October 1, 2005

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ORDER NO. R2-2005-0048

TIME SCHEDULE ORDER FOR:

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
WET WEATHER FACILITIES (WWFs)
ALAMEDA COUNTY

FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter "Board") finds that:

1. The East Bay Municipal Utility District, Special District No. 1 (hereinafter the Discharger) owns and operates the Point Isabel, San Antonio Creek, and Oakport Wet Weather Facilities (WWFs). The Board adopted Waste Discharge Requirements Order No. R2-2005-0047 (NPDES Permit CA0038440) regulating the wastewater discharges from these facilities.

Purpose of Time Schedule Order

2. As detailed in the findings below, because the discharges from the WWFs do not currently meet standards, they threaten to violate the receiving water limitations specified in Order No. R2-2005-0047. This Time Schedule Order requires the Discharger to study and assess treatment technologies, transport and storage capacities, and other regulatory strategies so as to provide the Board with the necessary information to determine appropriate requirements in the next permit reissuance that are protective of water quality, economically feasible, and in compliance with applicable standards and regulations..

Background

3. *East Bay Inflow and Infiltration Correction Program (I/ICP).* Because the East Bay Communities' sewers are connected to the Discharger's interceptors, excessive I/I from the East Bay Communities' collection systems can force their interceptors to overflow untreated wastewater through the seven (7) designed overflow structures in the interceptor system. The East Bay Communities and the Discharger initiated a 6-year East Bay I/I Study in 1980. The I/I Study outlined recommendations for a sewer improvement program called the East Bay I/ICP. Schedules to complete the I/ICP were developed for each member of the East Bay Communities. The East Bay Communities and the Discharger started implementing the East Bay I/ICP in 1987. Since then, the East Bay Communities have eliminated all known cross connections between sewer and storm drain systems, and 113 out of 115 sewer overflow points identified in the I/I Study as high threats to public health.

2. *Cost analysis of sewer rehabilitation program.* In the 1980's, the East Bay Communities performed a cost analysis during the I/I Study to determine the cost-effective level of rehabilitation. The cost-effective level of I/I elimination and system rehabilitation involves balancing the cost of rehabilitation of the East Bay Communities' sewer systems and the cost for increasing the capacity of the Discharger's interceptors, wastewater treatment facilities. In the early 1980s, the Discharger also performed a sensitivity analysis to study cost effects of various levels of rehabilitation on treatment alternatives for wet weather flow. Cost-Effective Ratios (C-E-Ratio) for various drainage basins were calculated. A C-E Ratio greater than one (1) indicates that I/I rehabilitation is cost effective. The analysis was performed by using a computer program supported by the Corps of Engineers Hydrologic Engineering Center, called STORM. This analysis derived a regional least-cost solution, which involves both East Bay Communities' sewer rehabilitation cost and transportation/treatment cost by the Discharger. The study results were described in the Wet Weather Facilities Update dated May 29, 1985. The Study concluded that the most cost effective solution was to rehabilitate the cost effective elements of the communities' collection systems, to provide relief sewers in the communities' systems, increase interceptor hydraulic capacity, and construct storage basins to handle wet weather flows up to a 5-year storm event.

3. *Design goal of East Bay I/ICP.* The design goal of East Bay I/ICP is to eliminate overflows from the East Bay Communities' collection systems and the Discharger's interceptor unless the rainfall exceeds a 5-year design storm event. Overflows may continue to occur for events less than the 5-year design storm until the East Bay Communities complete the I/ICP. However, the occurrence of overflows are expected to decrease as more of the East Bay I/ICP projects are completed.

4. *5-year Design Storm Event Definition.* The 5-year design storm event is a storm event that meets the following criteria: a 6-hour duration, and a maximum 1-hour rainfall intensity of a storm with return period of five (5) years. The storm is assumed to occur during saturated soil conditions, and to coincide with the peak 3-hour ultimate Base Wastewater Flow (BWF) condition. BWF consists of domestic wastewater flow from residential, commercial, and institutional sources plus industrial wastewater. BWF specifically excludes infiltration and inflow (I/I) from groundwater or storm water. Due to these conservative assumptions, the Wet Weather Facilities Pre-design Report concluded that the estimated peak flow produced by this event has a return period of approximately 13 years. The peak I/I flow from a 5-year storm was selected as the basis of design for the treatment level intended to protect beneficial uses as defined by the San Francisco Bay Basin Plan (Basin Plan), Maintenance Level C. Maintenance Level C requires secondary treatment to the half-year recurrence interval, primary treatment to the 5-year recurrence interval, and above the 5-year interval, overflows are allowed.

5. *EBMUD Wet Weather Program.* In conjunction with the I/I Study, the Discharger conducted its own wet weather program planning from 1975 to 1987, and developed a comprehensive East Bay Wet Weather Program. This East Bay Wet Weather Program combined the results of the I/I Studies and the EBMUD facility planning and developed a cohesive approach to reducing sanitary sewer overflows in the East Bay. The Discharger started implementing its component of the East Bay Wet Weather Program in 1987. Since then, the Discharger has spent about $310 million in capital on the East Bay Wet Weather Program and annual operating costs of approximately $3 million. The Discharger has

constructed three (3) WWFs, two (2) wet weather interceptors, improvements at its Main Wastewater Treatment Plant, system storage and pumping facilities, and has eliminated two (2) of the seven (7) designed wet weather overflow structures.

6. *WWFs Permitting Background*:

   a. Pre-1986 permitting background. The Board first issued an NPDES permit to the Discharger in 1976 for the wet weather discharges from overflow structures along its interceptor. The 1976 permit required the Discharger to eliminate untreated overflows from its interceptors, identify various zones along shoreline of San Francisco Bay based on beneficial uses, and establish level of treatment for wet weather overflows. The 1976 permit was reissued in 1984. In addition the requirement of elimination of wet weather overflows, the 1984 permit prescribed secondary limits for conventional pollutants and toxic limits for over 22 priority pollutants for overflows from all seven (7) overflow structures.

   b. U.S. EPA 1986 letter. By letter dated June 3, 1986, Board staff asked U.S. EPA whether overflows of sanitary wastes from collection systems are subject to secondary treatment requirements. U.S.EPA Region IX determined in its June 18, 1986, letter that the Discharger's wet weather overflow structures are not Publicly Owned Treatment Works (POTWs), and are therefore not subject to secondary treatment requirements pursuant to 40 CFR 122.2.

      Based on this determination, when the 1984 permit was reissued in 1987 (Order No. 87-18), the secondary treatment limits from the 1984 permit were replaced with technology-based limits using Best Conventional Pollution Control Technology and Best Available Technology Economically Achievable ("BCT/BAT").

   c. Post-1986 construction and permitting.

      (1) *Construction of three WWFs.* In reliance on U.S. EPA's June 18, 1986 letter and the 1987 permit, the Discharger – with the participation and approval of U.S. EPA and the Board– spent $310 million constructing three (3) WWFs discussed below. The construction of WWFs was completed in 1998. These WWFs have significantly reduced the frequency and impact of wet weather overflows.

      (2) *Subsequent permits.* The 1987 permit was reissued in 1992 and 1998 with no significant change to the requirements and effluent limits.

      (3) *2005 permit.* As noted above, the June 18, 1986 letter concludes that "EBMUD's wet weather overflow structures are not POTW's" and, therefore, not subject to secondary treatment limitations. During the permit's reissuance, however, U.S. EPA revisited its 1986 conclusion. In its letter of September 7, 2004, U.S. EPA states that its "...conclusions made in the 1986 letter no longer reflect EPA's position, and any releases from the collection system and discharges from the wastewater treatment plant must meet secondary treatment requirements." U.S. EPA further notes in this letter that "EPA supports the implementation of

the investigations, studies, and activities contained in the [Regional Water Board's] tentative time schedule order ..., [and] are hopeful that these studies and activities will provide ways for the Discharger to significantly reduce the discharge of pollutants to the Bay." In fact, such investigations, studies and activities are exactly the same requirements that would be imposed on the Discharger in order for it to be able to meet secondary treatment standards. Accordingly, whether secondary treatment standards apply to the WWFs is an issue without a practical difference in terms of requirements for this permit term and need not be resolved at this point. Given the foregoing and recognizing the hundreds of millions of dollars already spent by the Discharger in reliance of U.S. EPA's 1986 letter, this Order, along with the companion NPDES permit, continues to impose BAT/BCT requirements and contains requirements to enable the Discharger to reduce pollutant loads and ensure long-term compliance with all applicable standards.

WWF Descriptions

7. *EBMUD interceptor system.* The Discharger owns and operates its interceptor system, which includes a 29-mile long north and south interceptor, Adeline Interceptor, South Foothill Interceptor, and Alameda Interceptor. The interceptor has a hydraulic capacity of 760 mgd. It includes 15 pump stations, 5 overflow structures, three 3 WWFs, and a million-gallon wet weather storage basin along the Alameda Interceptor. (See Figure 1 attached)

8. *Wet Weather overflow structures.* The Discharger's interceptor system includes 5 wet weather overflow structures. Historically, there were 7 overflow structures, two of which have been removed and replaced by three WWFs during the implementation of the Discharger's Wet Weather Program. Discharges of untreated sewage from the remaining 5 overflow structures may occur as a result of I/I during winter storm events that are greater than a 5-year storm event (as defined in finding 12 below, with a 13-year return rate). Locations of the remaining five (5) overflow structures are: Oakland Inner Harbor at Alice Street, Oakland Inner Harbor at Webster Street, Elmhurst Creek, San Leandro Creek and Temescal Creek. During the past 10 years, there was only one overflow from one of these structures during the 1998 El Nino conditions.

9. *Point Isabel wet-weather treatment facility.* The Point Isabel WWF is located at 2755 Point Isabel Street, Richmond. It was constructed in 1993 and has a design capacity of 100 million gallons per day (mgd). The Point Isabel WWF provides primary treatment to wastewaters diverted from the North Interceptor during peak wet weather flow conditions. The treatment processes consist of coarse screens, bar screens, grit chambers, and sedimentation/disinfection basins. Screenings are disposed to landfill; grit and sludge are returned to the interceptor. The treated wastewater discharges through a submerged diffuser about 300 feet offshore at a depth of 8 feet below mean low tide line to Richmond Inner Harbor, part of central San Francisco Bay.

10. *San Antonio Creek wet-weather treatment facility.* The San Antonio Creek WWF is located at 225 and 330 Embarcadero Avenue, Oakland. It was constructed in 1996 and has a design capacity of 51 mgd. The San Antonio Creek WWF provides primary treatment to wastewaters diverted from the middle portion of the South Interceptor during peak wet weather flow conditions. The treatment process consists of grit removal, fine screening, and disinfection. Both screenings and grits are

returned to the interceptor. The treated wastewater discharges to Oakland Inner Harbor, part of lower San Francisco Bay.

11. *Oakport wet-weather treatment facility.* The Oakport WWF is located at 5597 Oakport Street, Oakland. It was constructed in 1990 and has a design capacity of 158 mgd. The Oakport WWF provides primary treatment to wastewaters diverted from the south portion of the South Interceptor. The treatment processes consists of course screens and sedimentation/disinfection basins. Both screenings and sludge are returned to the interceptor. The treated wastewater discharges to East Creek Slough at a location of approximately 700 feet upstream of Oakland Inner Harbor, part of lower San Francisco Bay.

Secondary Level Treatment Requirements

12. The 1972 CWA requires that each Publicly Owned Treatment Work (POTW) achieve secondary level treatment no later than July 1, 1977 [33U.S.C. 1311(b)(1)(B)]. These secondary treatment standards are defined as treatment that consistently achieves specified BOD_5, pH and TSS effluent limits. These secondary effluent standards are specified in 40CFR Part 133 (also see table 1 below).

Table 1 Secondary Effluent Standards

Parameters	Monthly Average	Weekly Average	Daily Maximum	Instantaneous Max
$CBOD_5$, mg/L	25	40		
TSS, mg/L	30	45		
85% removal, %	85	85		
pH				6.5-8.5
Settleable Matter, ml/L-hr.	0.1	0.2		
Oil & Grease	10		20	

WWF effluent quality summary

13. *Wet-weather treatment facility performance.* Tables 2 to 4 below summarize the discharge flow volumes, and maximum and median concentrations of conventional and toxic pollutants in effluents from all three WWFs.

The annual total discharge volumes currently exceed the long-term design goal of 100 million gallons per year specified under Prohibition A.3 of the permit for the WWFs (Order No. R2-2005-0047). BOD_5, TSS, and oil and grease concentration are all above secondary limits. BOD_5 and TSS removal efficiencies range from 20 to 40 percent, which are also below the secondary treatment requirement of 85% removal. Additionally, 19 toxic pollutant concentrations are above CTR criteria.

Table 2 Total Discharge Volume, 1998 to 2003 (Total volume discharged from all three facilities)

Season	Targeted Discharge Volume, MG	Actual Discharge Volume, MG
Winter of 1998-1999	100	236
Winter of 1999-2000	100	549
Winter of 2000-2001	100	214
Winter of 2001-2002	100	320
Winter of 2002-2003	100	362

Table 3 Treatment Performance for Conventional Pollutants from 1998 to 2003

Conventional Pollutants	Point Isabel		San Antonio		Oakport	
	Max.	Median	Max.	Median	Max.	Media
$CBOD_5$, mg/L	89	51	70	56	220	77
TSS, mg/L	100	37	180	107	160	69
Oil & Grease, mg/L	24	13	24	6.8	37	18
Total Coliform, MPN/100 ml	12	2	1300	140	2200	4
Fecal Coliform, MPN/100 ml	2	<2	110	13	30	2

Table 4 Toxic Pollutants that Exceed Criteria

Toxic Pollutants	Criteria (µg/L)	Maximum Effluent Concentrations, µg/L		
		Point Isabel	San Antonio	Oakport
Arsenic			8.75	
Chromium VI	50	170		320
Copper	3.7	53	60.9	86.2
Lead	8.1	18	36.1	36.8
Mercury	0.025	0.3	0.46	0.17
Nickel	8.2	26	26	22
Selenium	5	30		
Silver	1.9	20.3	22.6	26.4
Zinc	81	134	185	216
Cyanide	1	7	28	11
Dioxin TEQ	0.000000014	0.00000197	0.00000274	0.00000542
Benzo(a)pyrene	0.049		0.51	
Chrysene	0.049		0.066	
Dichlorobromomethane	46	52		
Tetrachloroethylene	9			74
Hexachlorobenzene	0.00077			0.023
4,4-DDT	0.00059	0.011	0.0037	0.0087
4,4-DDE	0.00059	0.00097	0.00097	0.00097
4,4-DDD	0.00084	0.0059		0.015

Toxic Pollutants	Criteria (µg/L)	Maximum Effluent Concentrations, µg/L		
		Point Isabel	San Antonio	Oakport
Dieldrin	0.00014	0.0029	0.00077	0.022
Endrin	0.002	0.003		
Heptachlor Expoxide	0.00011	0.0057		

Note: Blank cell means that the maximum effluent concentration from 1998 to 2003 for this constituent in this particular facility does not exceed the criteria.

SIP Case-by-Case Exception

14. The State Implementation Policy (SIP) provides for exceptions where the "... watersheds differ sufficiently from statewide conditions and those differences cannot be addressed through other provisions ..." of the SIP. The Discharger has stated its intent to apply to the State Water Resources Control Board (State Board) for mass offsets through SIP exceptions for toxic pollutants in the discharges that do not immediately comply with water quality standards. Once the necessary studies of this Order are completed, and if the Board agrees it is justified, the Board will support the Discharger's efforts for mass offsets through SIP exceptions. However, until the State Board makes a determination and obtains U.S. EPA's concurrence, the companion Permit to this Order must implement the provisions of the SIP. Because the process for granting an exception may be lengthy, the Board encourages the Discharger to finish the necessary studies and submit a complete application to State Board in a timely manner so that any determinations by the State Board will be available by the time of the next permit reissuance.

Authority and Basis for Time Schedule Order

15. *Water Code Authority.* Section 13300 of the California Water Code authorizes the Board to issue a time schedule when it finds that a discharge of waste is taking place or threatening to take place that violates or will violate requirements prescribed by the Board, or that the waste collection, treatment, or disposal facilities of a discharger are approaching capacity. The Board may require the Discharger to submit a detailed time schedule of specific actions that the Discharger shall take in order to correct or prevent a violation of requirements.

16. *Basis for time schedules.* The available data (Table 4) show that the discharge has reasonable potential to cause or contribute to exceedances of water quality standards for toxics. As a result, the discharges from these facilities threaten to violate the receiving water limitation D.1 specified in Order No. R2-2005-0047. Moreover, the Discharger's three WWFs meet BCT/BAT treatment requirements specified for industrial wastewater available in 1987, but technological developments in both treatment technologies and lateral infiltration controls since 1987 give rise to the possibility that the Discharger's WWFs no longer comply with BCT/BAT requirements. This TSO establishes a 4year schedule to allow the Discharger to investigate how best to reduce toxic pollutant loading to San Francisco Bay, to improve technology based performance for conventional pollutants, and to make progress toward compliance with applicable water quality objectives via direct controls or offsets in the form of pollutant mass reductions into San Francisco Bay from other off-site sources. Some examples of other off-site source reductions are treatment of nuisance flows from storm drain systems during dry weather, treatment of storm water from the first storm events ("first flush"), and funding clean-up or

closure of abandoned mines that would otherwise not be cleaned-up or closed. Technologies to be investigated include development of private lateral control program to further reduce I/I, and increase storage capacity of wastewater flows. Both these elements would tend to reduce peak and total flow to the facilities, thus increasing the feasibility of new treatment technologies and reducing the total discharge volume that threatens compliance with the receiving water limits. The information obtained from these studies will allow the Board to determine appropriate requirements in the next permit reissuance that are in compliance with applicable regulations, and protect water quality of San Francisco Bay.

CEQA and Public Notice

17. This action is an enforcement action and, as such, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) in accordance with section 15321, Title 14, California Code of Regulations.

18. The Board has notified the Discharger and interested persons of its intent under California Water Code section 13300 to consider the adoption of a TSO for the discharge, and has provided them with an opportunity to submit written comments and appear at the public hearing. Responses to written comments are hereby incorporated by reference as part of this Order.

19. The Board, in a public hearing, heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED that, in accordance with section 13300 of the California Water Code, the Discharger shall comply with the time schedule and other provisions specified below:

A. Requirements

1. **Investigate upgrading the level of treatment provided by the Point Isabel, San Antonio Creek and Oakport WWFs.**

   Completion Date: Within four years from the effective date of this Order, the Discharger shall submit a final report of a study performed in accordance with an approved Treatment Upgrade Study Work Plan described below.

   Study Plan Proposal: Within six months from the effective date of this Order, the Discharger shall submit a proposed Treatment Upgrade Study Work Plan to the Executive Officer that describes in detail a proposed study of the feasibility of upgrading treatment at the Point Isabel, San Antonio Creek and Oakport WWFs. This study will identify the costs and benefits of such treatment upgrades to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. Upgraded treatment alternatives studied shall focus on alternatives that achieve the pollutant reduction achievable at continuous flow facilities. This study is not expected to require pilot and/or bench studies but instead will rely on a review of existing literature, available data from operating systems in place and may include site visits. The total project cost (including both discharger in-house costs and outside consultant costs) is preliminarily estimated to be approximately $100,000 to achieve the

results stipulated below. The study in the Work Plan shall include:

a. Analysis of the conventional and toxic priority pollutant reduction attainable at the WWFs by the construction of additional or modified treatment systems at the WWFs (such as physical-chemical systems (e.g., ballasted flocculation), biological systems (e.g., continuously operating biological system), and other treatment systems feasible for the intermittent use application presented by these WWFs);

b. Cost and benefit analysis for each feasible technology;

c. Engineering and other appropriate analysis of the chance for successful operation of the alternative treatment systems, the time that it would take to have systems fully operational, the logistical impediments to implementing the systems, and any significant secondary environmental and social impacts from constructing new treatment systems at the WWF sites, including a review of the previous environmental impact reports that were created in connection with the original construction of the WWFs; and,

d. A schedule to complete the study by four years from the effective date of this Order, with appropriate interim milestones.

The Executive Officer shall have 45 days to review and approve the proposed Study Plan. If the Executive Officer does not comment on the proposed Study Plan during this time period, the Study Plan is deemed approved. Upon approval by the Executive Officer, the Discharger shall implement the Work Plan as a requirement of this Order.

2. Investigate One-System Permit Model

Completion Date: Within 18 months from the effective date of this TSO, the Discharger shall submit a final report addressing the three items described below. This study will identify the costs and benefits of the one-system permit model to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. This study is not expected to require pilot and/or bench studies but instead will rely on a review of available data. The total project cost is preliminarily estimated to be approximately $30,000 to achieve the results stipulated below.

a. Analysis of feasibility of meeting permit limits by combining the WWFs and the Discharger's main treatment plant under a single one-system permit. Applicable policy for this approach may be the October 16, 2001, State Board policy regarding "Legal Authority for Offsets, Pollutant Trading and Market Programs to Supplement Water Quality Regulation in California's Impaired Waters," and U.S. EPA December 2003 "Watershed based NPDES Permitting Implementation Guidance" (EPA833-B-03-004)."

b. Identification of constituents for which the Discharger can and cannot achieve compliance via application of this one-system approach. Upon the confirmation of the Executive Officer, the latter set of constituents ("Further Study Constituents") shall be the subject of further studies

pursuant to Requirement No. 6, below.

c. Analysis of local water quality effects of application of the one-system model to the combined discharge of the WWFs and the Discharger's main wastewater treatment facility.

d. The Board is neutral about the one system approach. By ordering the study, the Board is not endorsing it.

3. Investigate Offsetting Reductions of Toxic Pollutants

Completion Date: Within four years from the effective date of this Order, the Discharger shall submit a final report of a study performed in accordance with an approved Toxic Pollutant Study Work Plan described below. This study will identify the costs and benefits of such toxic pollutant reduction projects to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. This study is not expected to require pilot and/or bench studies but instead will rely on a review of available data as supplemented by limited field study as described below. The total project cost is preliminarily estimated to be approximately $80,000 to achieve the results stipulated below. After the literature review a sampling plan will be developed. The sampling effort shall include dry and wet weather sampling. In addition to the $80,000 referenced above, the total projected cost of the sampling and analysis is preliminarily estimated to be approximately $40,000.

Study Plan Proposal: Within six months from the effective date of this Order, the Discharger shall submit a proposed Toxic Pollutant Offset Study Work Plan to the Executive Officer that describes in detail a proposed study of offsetting reductions in loading of toxic priority pollutants that the Discharger could implement in lieu of reducing such discharges from the WWFs. The Board may consider such an offset approach as part of a strategy for ensuring attainment of water quality standards in all receiving waters related to the discharges. The study in the Work Plan shall include:

a. Analysis of the reduction of discharge of toxic priority pollutants to San Francisco Bay by the application of treatment, ecosystem restoration, and pollution prevention strategies for currently uncontrolled or inadequately controlled sources of pollutant discharge, including the following pollutant reduction strategy:

1. Reduction in pollutant discharge from municipal separate storm sewer systems ("MS4") or other storm water runoff by collecting and routing such discharges to treatment at municipal sewage secondary treatment plants;

2. Instituting greater regionalization of authority to monitor and control MS4, including the Discharger exercising or acquiring authority to monitor, operate, and/or own the storm drain systems within the Discharger's sanitary service area;

3. Reducing pollutant discharge from currently uncontrolled or inadequately controlled sources of pollutant discharge, such as major sources of air pollutants that tend to settle

into San Francisco Bay, and reduction in pollutant discharges from other industrial and municipal point sources; and,

4. Restoration of near-shore or shoreline wetland habitat to act as passive filters for toxic pollutants from storm runoff.

b. Cost and benefit analysis for each offsetting pollution strategy;

c. Engineering and other appropriate analysis of the chance for successful implementation of the pollution offsetting strategy, the time that it would take to implement and realize benefits from the pollution offsetting strategy, and the logistical impediments to implementing the strategies.. If in the course of conducting these studies any significant secondary environmental and social impacts are identified, the Discharger shall review and assess how those impacts affect feasibility. The analysis will include a qualitative assessment on the likelihood of the discharge causing localized impacts or impairments through consultation with water quality experts and review of available data such as the RMP.

d. Analysis of how the costs and benefits of the pollution offsetting strategy compare to the costs and benefits of improved treatment at the WWFs, including a comparative analysis of how much total mass of each toxic priority pollutant would be removed from discharges to San Francisco Bay if the equivalent of secondary treatment were employed at each of the WWFs versus if the pollution offsetting strategy were employed. This analysis shall include comparison of where within San Francisco Bay the pollutant reductions would be achieved and for what specific toxic pollutant to enable a true analysis of comparative benefits.

e. A schedule to complete the study by four years from the effective date of this Order, with appropriate interim milestones.

f. By requiring these studies the Board does not suggest that offsets are available without a review and assessment of quantitative localized impacts of the discharge and factoring those into the cost and benefit analysis.

The Executive Officer shall have 45 days to review and approve the proposed Study Work Plan. If the Executive Officer does not comment on the proposed Study Plan during this time period, the Study Plan is deemed approved. Upon approval by the Executive Officer, the Discharger shall implement the Study Plan as a requirement of this Order.

4. **Additional wet-weather flow storage and transportation study**
Completion Date: Within four years from the effective date of this Order, the Discharger shall submit a final report of a study performed in accordance with an approved Wet-weather Flow Storage and Transportation Study Work Plan described below. This study will identify the costs and benefits of such storage and conveyance upgrades to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. This study is not expected to require pilot and/or bench studies but instead will rely on a review of available data, hydraulic flow modeling and existing field

flow measurements. The total project cost is preliminarily estimated to be approximately $100,000 to achieve the results stipulated below.

Study Plan Proposal: Within six months from the effective date of this Order, the Discharger shall submit a proposed Wet-weather Flow Storage and Transportation Study Work Plan to the Executive Officer that describes in detail a proposed study of the Discharger's potential for expanding its current wet-weather storage and transport capacity to reduce or eliminate discharges from the WWFs. The study in the Work Plan shall include:

a. Analysis of potential locations and availability of land for storage facilities;

b. Analysis of the required storage volumes in order to achieve:
   1. zero discharge from WWFs;
   2. 50% reduction in discharge from the current design criteria, and
   3. maximum treatment feasibility (i.e., minimum costs) for treatment options evaluated under 1.a., above to achieve secondary treatment and water quality standards.

c. Analysis of required interceptor line capacity to convey the maximum flow to the Discharger's main treatment plant such that the full existing capacity is utilized for:
   (1) Secondary treatment, and
   (2) Primary treatment;

d. Analysis of feasible and cost-effective means of increasing the effective treatment capacity at the main treatment plant, i.e., capacity to treat additional waste loads to a greater pollutant reduction level than is attained by the WWFs as part of a combined strategy of increasing interceptor capacity and storage capacity to reduce or eliminate use of the WWFs;

e. Review of primary treatment efficiencies at the maximum design flow of the main treatment plant;

f. Engineering and other appropriate analysis of the logistics of increased storage and flow conveyance measures, and the time that it would take to have measures fully operational. If in the course of conducting these studies any significant secondary environmental and social impacts from constructing new storage and conveyance systems (e.g., flow equalization structures, relief sewers/larger sewers) are identified, the Discharger shall review and assess how those impacts affect feasibility; and

g. A schedule to complete the study by four years from the effective date of this Order, with appropriate interim milestones.

The Executive Officer shall have 45 days to review and approve the proposed Study Plan. If the Executive Officer does not comment on the proposed Study Plan during this time period, the Study Plan is deemed approved. Upon approval by the Executive Officer, the Discharger shall implement the Work Plan as a requirement of this Order.

5. Regional infiltration and inflow (I/I) management and reduction study

Completion Date: Within four years from the effective date of this Order, the Discharger shall submit a final report of a study performed in accordance with an approved I/I Management and Reduction Study Work Plan described below. This study will identify the costs and benefits of such I/I management and reduction projects to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. This study is not expected to require pilot and/or bench studies but instead will rely on a review of available data. The total project cost is preliminarily estimated to be approximately $160,000 to achieve the results stipulated below.

Study Plan Proposal: Within six months from the effective date of this Order, the Discharger shall submit a proposed Infiltration and Inflow (I/I) Management and Reduction Study Work Plan to the Executive Officer that includes:

a. The Discharger will look at existing published literature and other written sources of information regarding relative I/I reduction benefits and flow peaking factor reduction benefits yielded from expenditure on:
   1. Main trunk sewer line and main sewer lines repair/rehab/replacement
   2. Lateral sewer line repair/rehab/replacement

b. The Discharger will identify whether there are basins or sub-basins within the satellites' collections systems where I/I problems and high peaking factors are particularly acute such that focusing efforts on or in these basins or sub-basins would be more cost effective than a generalized approach through the following:

   1. The Discharger will examine existing information on I/I and peaking factor rates in these basins or sub-basins developed by the studies done in the 1980s

   2. The Discharger will analyze whether the information on I/I and peaking factor rates developed by the studies done in the 1980s is still accurate by comparing their model predictions with field data that can be gathered from their existing level indicators and flow monitoring at the WWFs and the Discharger's main wastewater treatment plant.

c. Review of the status of the communities' progress towards the CDO-mandated I/I Reduction Program, including both the I/I repair and rehabilitation projects/activities and the estimated current and projected I/I rates and peaking factors of each community as compared to projections developed as part of the Regional I/I reduction program in the early 1980s.

d. Analysis of the various methods for reducing I/I rates and associated peaking factors especially targeted to the satellite systems that are most responsible for increased peak wet weather flow in the Discharger's interceptors, including:

   (1) A private lateral line replacement program that would potentially include mandates for periodic inspection of private laterals, replacement of private laterals shown to be

defective, and partial subsidization of the cost of private lateral replacement;

(2) Through a process that includes solicitation of input from the satellite communities, the Discharger shall develop performance standards suitable for implemention as part of the Regional I/I control program. The standards will be developed by a review of current means used by the communities and by selected "best in class" collection systems from throughout the state, to manage, operate and maintain the collection systems in a means that minimizes the likelihood for controllable I/I. The standards will include:

i. The means to identify and the frequency to test for (through smoke testing, visual inspection and other appropriate means) illegal connections to satellite collection systems that serve as conduits of I/I, such as roof drains and other storm water collection apparatus plumbed into sewer lines, and other sources of storm water inflow such as missing cleanout caps or storm drains plumbed into sewer lines.
ii. Appropriate legal authority such as ordinances to enforce the practice of disallowing storm water into the sewer system, review of storm system inspection practices in accordance of the MS4 permits in regards to storm water diversions into the sanitary system and remedial activities to identify and eliminate storm water flows that are plumbed into sewer collection systems, such as requiring homeowners businesses, and municipalities to promptly sever any connections that route storm water into sewer lines.
iii. The means and frequency used to identify (via closed circuit television inspection, visual inspection, and other means) sewer line and related defects that facilitate I/I, such as missing manhole covers, permeable manhole covers, misaligned sewer line joints, manholes or sewer lines in poor condition.
iv. The remedial response to the sewer collection system defects that facilitate I/I, including sewer line rehabilitation, spot repair, and replacement. Also add grading/prioritization concept. Should include both short term and long-term rehabilitation provisions and time frame associated with those activities.
v. Review that design standards are consistent with industry standards (new pipe, rehab, repair, etc.)

e. Assessment of the state of the Regional FOG control program, and identification of possible improvements, which in addition to potentially controlling sanitary sewer overflows, may help eliminate hydraulic restrictions due to grease buildup in lines

f. Engineering and other appropriate analysis of the logistics of implementing I/I reduction, the time that it would take to implement I/I reduction, and any significant secondary environmental and social impacts from implementing I/I reduction.

g. Study of instituting greater regionalization of authority to investigate and control I/I into collection systems that discharge to the Discharger's interceptors, including, the Discharger exercising or acquiring authority:

(1) to monitor/meter and limit peak flows from satellite systems into the Discharger's interceptors;
(2) to require responsible parties to implement needed I/I reduction measures (e.g., to require private parties to repair, replace or eliminate defective lateral lines, missing cleanouts, illegal storm water connections, and other I/I problems and to require satellite systems to remedy defective sewer lines and manholes that are the source of excessive I/I); and
(3) to have ownership and/or operation of the City satellite collection systems transferred from the City satellite systems to the Discharger.

The Executive Officer shall have 45 days to review and approve the proposed Study Plan. If the Executive Officer does not comment on the proposed Study Plan during this time period, the Study Plan is deemed approved. Upon approval by the Executive Officer, the Discharger shall implement the Work Plan as a requirement of this Order.

6. Further Study Constituents

Completion Date: Submit a study plan within six (6) months from Board Executive Officer confirmation of the identity of the Further Study Constituents under Requirement No. 2, above. This study will identify the costs and benefits of such toxic pollutant reduction projects to be used for comparison analysis of the cost and benefits of other options studied pursuant to this Order. This study is expected to be a paper effort, using existing available data, and have a total project cost of $80,000. The work plan shall propose study elements to address the following for each such Constituent:

a. The feasibility of using water effects ratios and site-specific translators (pursuant to SIP section 1.4.1) to achieve compliance.

b. The feasibility of using mixing zones and dilution credits (pursuant to SIP section 1.4.2) to achieve compliance, after the Discharger has demonstrated compliance with WQBELs in receiving water, and has an aggressive pretreatment program including: (1) Completion of a source identification study; (2) development and implementation of a source reduction plan; and (3) Development of resources to fully implement the source control and reduction plan.

c. The feasibility of using site-specific objectives (pursuant to SIP section 5.2) to achieve compliance.

The study plan shall be reviewed by an independent panel, including experts and stakeholders, and shall include a schedule for completion of the study and submittal of a study report to the Executive Officer. The Board does not suggest (by requiring these studies) any of the above listed SIP exceptions may appropriately be granted for the WWF discharges.

B. Provisions

1. Semiannual progress report

The Discharger shall submit semi-annual progress report(s) to describe the progress of the activities specified in the above Requirements. Progress report(s) shall be submitted on April 1, and November 1, of each year, until the requirements have been fulfilled.

If the Discharger is delayed, interrupted, or prevented from meeting one or more of the time schedules in this Order due to circumstances beyond its reasonable control, the Discharger shall promptly notify the Executive Officer with written explanation of these circumstances and a time schedule by which the Discharger will comply with these requirements in full. In the event of such delays, the Board may consider modification of the time schedules established in this Order.

2. Failure to comply

If the Discharger fails to comply with the provisions of this Order, the Executive Officer is authorized to take further enforcement action, or to request the Attorney General take appropriate actions against the Discharger, in accordance with sections 13331, 13350, 13385, and 13386 of the California Water Code. This shall include injunctive and civil remedies, if appropriate, or the issuance of an Administrative Civil Liability Complaint for Board consideration.

3. Availability of this order

The Discharger shall maintain a copy of this Order at its facility so as to be available at all times to facility operating personnel.

4. Order effective date

This Order shall be effective on October 1, 2005.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 21, 2005.

Lawrence P. Kolb
for
Bruce H. Wolfe
Executive Officer