

# Water Quality Screening Plan and Operational Guidelines 2005/06 Wet Season

## Lake Merced Pilot Stormwater Enhancement Project



Prepared for the North San Mateo County Sanitation District  
by EOA, Inc. with assistance from the San Francisco Public Utilities Commission



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# Water Quality Screening Plan and Operational Guidelines 2005/06 Wet Season

## Lake Merced Pilot Stormwater Enhancement Project

### 1.0 INTRODUCTION

The North San Mateo County Sanitation District (NSMCSD), a subsidiary of the City of Daly City, and the San Francisco Public Utilities Commission (SFPUC) have established a collaborative effort referred to as the Lake Merced Pilot Stormwater Enhancement Project. The pilot project is assessing the feasibility of diverting treated stormwater runoff from the Vista Grande drainage basin in Daly City into South Lake Merced in San Francisco. Stormwater runoff is treated by a Continuous Deflection System (CDS) and a riparian buffer along the shoreline of the lake before discharge to the lake (Figure 1). Overall objectives include treating stormwater to remove trash, bacteria, metals and other pollutants, increasing the water level of the lake and potentially alleviating occasional flooding and erosion in the vicinity of South Lake Merced during large precipitation events.

### 1.1 Recent Field Studies

Bacteriological and chemical monitoring data were collected from South Lake Merced following rainstorms during the two most recent winter wet seasons (2003/04 and 2004/05) (EOA 2005). The monitoring was conducted in accordance with a Preliminary Water Quality Screening Plan (PWQSP) prepared collaboratively by the NSMCSD and SFPUC (2004).<sup>1</sup> The primary goal was to determine whether the diversion of limited volumes of treated stormwater (about 0.1 to 3.2 million gallons per storm event) increased concentrations of bacterial indicators of fecal contamination in South Lake Merced, potentially indicating increased human health risk during recreation in the lake.

Data from bacteriological analyses of lake water samples collected following six storms with diversion and three background storms without diversion were assessed, including analysis for statistically significant ( $P \leq 0.05$ ) differences using t-tests. Bacterial indicator concentrations (total coliform, *Escherichia coli* and enterococci) were compared between 1) sampling stations close to the treated stormwater discharge point and a background station and 2) storms with diversion and background storm events. Concentrations in lake water samples were also compared to full body contact water quality criteria.

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<sup>1</sup>The PWQSP, which detailed activities during the 2003/04 wet season, was approved by California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) staff in a February 5, 2004 e-mail. A June 3, 2004 letter requested an extension of the pilot program into the 2004/05 wet season and a Water Board letter dated August 18, 2004 approved the extension.

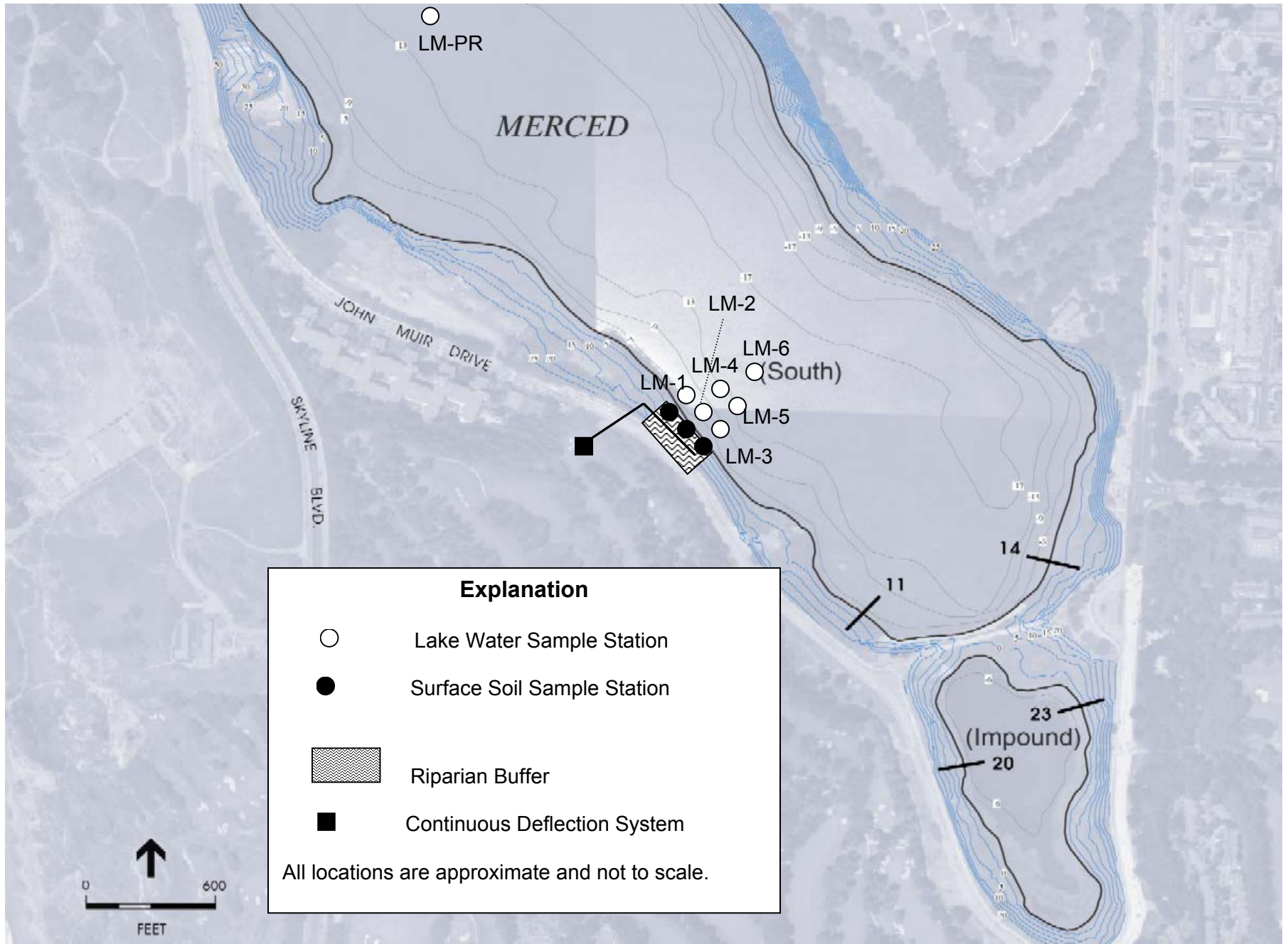


Figure 1. Approximate locations of stormwater treatment area and sample stations.

The study results suggested that statistically significant increases in total coliform concentrations following diversions and exceedances of total coliform central tendency water quality criteria (but not single sample maximums) were likely associated with sources other than the diversion (e.g., local stormwater runoff from the surrounding watershed washing soils and wildlife wastes into South Lake Merced). The two bacterial indicators monitored during the study that are most closely associated with human health risk were *E. coli* and enterococci. Geometric mean *E. coli* concentrations at most lake sample stations were higher following diversion events than background storm events, but the differences were not statistically significant. Enterococci were not detected in most lake samples and concentrations generally were not increased by the stormwater diversions. *E. coli* and enterococci concentrations did not exceed single sample maximum water quality criteria for infrequent full body contact recreation and did not exceed central tendency water quality criteria for full body contact when data from storms with diversion were lumped together. Although the applicability of these water quality criteria to the study is questionable, the criteria are conservative in that swimming is prohibited at Lake Merced (SFPUC Resolution No. 10,435)<sup>2</sup> and full body contact recreation was not observed during the study, except fishing. Based on a weight-of-evidence approach, the study results suggested that the pilot diversions probably did not increase potential fecal contamination-related human health risk during recreation in South Lake Merced.

In addition, the study found that CDS effluent concentrations of bacterial indicators were generally several orders of magnitude greater than the concentrations found in South Lake Merced. This suggests that treatment by the riparian buffer effectively reduced bacterial concentrations. Dilution of the diversion waters in South Lake Merced also likely played a role in the reductions, but to an unknown extent (EOA 2005).

## 1.2 Year Three Field Studies

This plan specifies year three (2005/06 wet season) monitoring activities and operational guidelines as a follow-up to the 2003/04 and 2004/05 wet season monitoring described above. The third year of monitoring will continue to screen for potential water quality impacts of diverting Vista Grande stormwater runoff (treated by the CDS and riparian buffer) to South Lake Merced. The year three water quality data will also supplement data collected during the previous two wet seasons and augment the previous preliminary evaluation of the diversion's water quality impacts (EOA 2005). Although the monitoring design is not intended to provide a comprehensive characterization of lake water quality conditions, the third year of data will help address some current data gaps in the project (e.g., metals concentrations in South Lake Merced following diversions without overflow of the Vista Grande canal into the lake). The year three data will also reduce uncertainty in statistical analyses of the project data. Additional monitoring data might also allow statistical analyses to more closely match diversion and background storm sizes, improving comparisons of lake water quality with and without diversions.

It should also be noted that a work plan is currently under development for performing an overall feasibility analysis and assessment of engineering design for diversion of Vista Grande stormwater to Lake Merced. This work plan will likely specify review of relevant literature followed by analysis of engineering design, potential water quality impacts, statistical power of proposed future monitoring, regulatory permitting and costs and benefits of project options. The additional data collected during year three will support this upcoming study and inform overall project planning.

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<sup>2</sup>Full body contact may occur infrequently due to the accidental capsizing of boats in South Lake Merced.

## 2.0 WATER QUALITY SCREENING PLAN

The general strategy outlined in this water quality screening plan is similar to the strategy employed during the past two years of the pilot study (EOA 2005) and includes:

- Collecting water samples from South Lake Merced following storm events with pilot diversions of treated stormwater runoff to the lake. Comparing bacteriological concentrations at sampling stations close to the treated stormwater discharge location to a background station relatively distant from the stormwater discharge area.
- Comparing bacterial indicator levels in lake samples collected following storms with diversion to levels following background storms without diversion, to determine whether the diversions have an incremental impact on the lake's bacteriological water quality (i.e., beyond the impact of other runoff entering the lake during storms).

Staff from the SFPUC's Water Quality Bureau will be responsible for collecting water samples from South Lake Merced, making associated observations and *in-situ* probe measurements in the field, collecting soil samples from the riparian buffer, and arranging delivery of water and soil samples to SFPUC's analytical laboratory. The NSMCSD and SFPUC will work cooperatively to operate the stormwater diversion/treatment equipment (see Section 3.0), collect CDS effluent samples, and record discharge flow rates and duration (allowing calculation of discharge volume) during all diversion episodes.

### 2.1 South Lake Merced Monitoring

#### 2.1.1 Diversion Event Monitoring

It is anticipated that lake samples will be collected following six storms with stormwater diversion during year three (see Section 3.2). Following each diversion event, SFPUC field staff will collect water samples from South Lake Merced at the seven sample stations shown on Figure 1. Stations LM-1 through LM-6 are in the vicinity of the riparian buffer, ranging from the shoreline to about 80 meters offshore. Station LM-PR is intended to provide background ambient water quality data in the lake and therefore is located at a greater distance from the stormwater discharge location.

Samples will be collected from the lake approximately 1 to 3 days after a diversion event is initiated. A field duplicate lake water sample will be collected during each sampling episode. Dissolved oxygen, pH, temperature and conductivity will be measured *in-situ* at each sampling location using field instruments.

The stormwater diversions will be performed sequentially with respect to the total volume of stormwater discharged per event. Following each storm, lake samples will be tested to determine whether moving to the next diversion event in the sequence is acceptable. Geometric mean *E. coli* concentrations following each diversion event will be required to be below an upper guide before progressing to the next storm in the sequence (see Section 3.2 for more details).

Lake samples will not be collected following any overflow of the Vista Grande canal into South Lake Merced, unless for purposes separate from this project.

### **2.1.2 Background Storms**

Stormwater runoff is not diverted to South Lake Merced during background storms. Lake samples will be collected following one background storm to supplement background storm data collected during the first two years of the pilot study (EOA 2005). Lake samples will be collected the day after a background storm ends, at the same seven locations described in Section 2.1.1 (stations LM-1 through LM-6 and LM-PR).

To-date, data from bacteriological analyses of lake water samples collected following six storms with diversion and three background storms without diversion have been assessed. Average rainfall during storms with stormwater diversion (1.76 inches)<sup>3</sup> was greater than average rainfall during background storms (1.02 inches). It is therefore likely that a greater volume of local stormwater runoff from the surrounding watershed and associated bacteria entered the lake during diversion storm events than background storms. This difference in average rainfall may have biased the results of past comparisons of bacteriological data between diversion event and background storms (EOA 2005). Thus the year three background storm should ideally be a larger rainfall event with sufficient precipitation to help reduce the gap between diversion and background storm average rainfall.

### **2.1.3 Field Observations**

Appropriate visual observations will be recorded at the time of the above diversion event and background storm lake sampling episodes. Observations recorded will include weather conditions, lake water levels, and the presence of any sheens, foams, or floating trash. In addition, observations regarding any recreational use at South Lake Merced and vicinity at the time of each sampling episode will be recorded. Such observations will include the number of people recreating, the approximate location, and the types of recreational activities. The presence of any wildlife will also be recorded. The form in Attachment A will be used to record recreational and wildlife observations. Digital photographs will also be taken during each sampling episode to help document the visual observations and general conditions of the lake.

### **2.1.4 Lake Stratification and Representative Sampling**

South Lake Merced is relatively shallow (i.e., generally less than 20 feet deep). Based on previous bimonthly ambient multi-level monitoring data collected by the SFPUC, South Lake Merced experiences primarily isothermal conditions with infrequent, weak stratification. During the summer there is a period of slight stratification, but with current lake elevations it is not sufficiently strong to impede mixing on a seasonal basis. During the winter the lake typically does not stratify at all (EDAW et al., 2004). Furthermore, temperature and dissolved oxygen depth profiles collected during the first two years of lake monitoring suggested that water quality conditions at the surface of South Lake Merced were generally representative of conditions deeper in the lake at the time of sampling (EOA 2005). Based on this information, bacteriological and chemical concentrations in lake surface samples collected during the year three monitoring period (approximately December 2005 through March 2006) will be assumed to generally represent concentrations deeper in South Lake Merced.

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<sup>3</sup>Based on sum of daily rainfall from the sample date and the three preceding days, using daily rainfall data collected at the Oceanside treatment plant rain gauge in Daly City during the 2003/04 and 2004/05 wet seasons.

## 2.2 CDS Effluent Monitoring

Grab water samples of the CDS effluent (station LM-CDS) will be collected during all diversion events. CDS effluent samples will be collected approximately one hour after a diversion event is initiated. Dissolved oxygen, pH, temperature and conductivity will also be measured in the effluent using field instruments.

## 2.3 Riparian Buffer Soil Sampling

Field staff will collect additional surface soil samples from the riparian buffer to test for accumulation of metals present in the diverted stormwater. Following completion of the year three diversions, one episode of soil sampling will be performed at the three locations sampled during the previous two years of the pilot study (Figure 1) (EOA 2005). The chemical analysis results will be compared to the past results to help assess whether metals are accumulating in the riparian buffer soils.

## 2.4 Laboratory Analysis Methods and Reporting Limits

The SFPUC's DHS-certified laboratory will perform all bacteriologic and chemical analyses. Soil samples collected from the riparian buffer will be analyzed for chromium, copper, nickel, lead, and zinc. All lake and CDS effluent samples will be analyzed for the following constituents (Table 1 summarizes the analysis methods and anticipated reporting limits):

- Bacteriological indicators - *E. coli* and enterococci.
- Metals - chromium, copper, nickel, lead, and zinc.
- Nutrients – NH<sub>3</sub>, nitrite, nitrate, total Kjeldahl nitrogen, phosphorus and ortho-phosphate.
- Conventional water chemistry analytes - alkalinity, hardness, total dissolved solids and total suspended solids.

## 2.5 Data Analysis and Reporting

The results of lake water sample and CDS effluent bacteriological assays will be reported as Most Probable Number (MPN) of *E. coli* and enterococci per 100 mL. These data will likely be log-transformed and geometric means ( $\log_{10}$  MPN/100 mL) will be reported with 95% confidence limits. Year three background storm and diversion event data will be combined with the data from the past two years of the pilot study and analyzed using appropriate statistical methods. In addition, the bacteriological indicator concentration data collected during year three and the past two years of the pilot study will be compared to the full body contact water quality criteria in Attachment B, Table B-1. Attachment B discusses the derivation of these criteria and some limitations of their application.

A year three report that summarizes and discusses the water quality screening program methodologies and results will be prepared by August 2006.

Table 1. Bacteriological and chemical analysis methods and reporting limits.

Analyte	Matrix	Analysis Method	Reporting Limit
Cr, Total	Water	EPA 200.7	0.6 ug/L
Cr, Total	Soil	EPA 6010B	0.1 ug/g
Cu, Total	Water	EPA 200.7	0.3 ug/L
Cu, Total	Soil	EPA 6010B	0.33 ug/g
Ni, Total	Water	EPA 200.7	0.5 ug/L
Ni, Total	Soil	EPA 6010B	0.33 ug/g
Pb, Total	Water	EPA 200.7	1.0 ug/L
Pb, Total	Soil	EPA 6010B	1.1 ug/g
Zn, Total	Water	EPA 200.7	0.7 ug/L
Zn, Total	Soil	EPA 6010B	0.1 ug/g
Alkalinity	Water	EPA 310.1	20 mg/L
Hardness	Water	EPA 130.2	2.0 mg/L
Total Dissolved Solids	Water	EPA 160.1	10 mg/L
Total Suspended Solids	Water	EPA 160.2	10 mg/L
Orthophosphate	Water	SM 4500-P A,B,C	0.060 mg/L
Phosphorus, Total	Water	SM 4500-P A,B,C	0.2 mg/L
Ammonia	Water	SM 4500-NH3 C,E,N	0.7 mg/L
Total Kjeldahl Nitrogen	Water	SM4500-N B	0.6 mg/L
Nitrate	Water	SM4500-NO3B B	0.20 mg/L
Nitrite	Water	SM4500-NO2B B	0.20 mg/L
<i>E. coli</i>	Water	Quantitray*	10 – 24,190 MPN/100 ml
Enterococci	Water	Quantitray**	10 – 24,190 MPN/100 ml

\*MMO-MUG using Colisure™ Media

\*\*Enterolert™ Media

### 3.0 OPERATIONAL GUIDELINES

This section provides guidelines for operating the stormwater diversion system during year three of the pilot project, including roles and responsibilities, operation and maintenance of the system, discharge volume specifications, follow-up sampling, erosion control, a mosquito monitoring and control program, vegetation control, and a public information program.

#### 3.1 Operation and Maintenance of the Diversion System

Attachment C provides guidelines for general operation and maintenance of the diversion system, including roles and responsibilities.

#### 3.2 Discharge Volume Specifications

Excluding diversion events with canal overflow, the maximum volume of Vista Grande stormwater runoff diverted to South Lake Merced per storm event during the first two years of the pilot study was 3.2 million gallons. The study results suggested that diversions at or below

this volume probably do not increase potential fecal contamination-related human health risk during recreation in South Lake Merced (EOA 2005). Based on these results, a per event discharge rate of approximately 3.2 million gallons will serve as a starting point for year three diversions.

It is anticipated that lake samples will be collected following seven storms during year three, one background storm (Storm 1) and six storms with stormwater diversion (Storms 2 through 7).<sup>4</sup> The anticipated monitoring period is approximately December 2005 through March 2006. Table 2 specifies the anticipated diversion volumes during the six diversion events.<sup>5</sup> The volume discharged will be held constant at approximately 3.2 million gallons for the first three storms with diversion (storms 2, 3 and 4), followed by storms 5, 6 and 7 with diversion volumes that are approximately 20%, 40% and 60% greater than 3.2 million gallons, respectively.

Diversions will be performed according to the sequence in Table 2. Following each storm, lake samples will be tested to determine whether moving to the next diversion event in the sequence is acceptable. The geometric mean *E. coli* concentration will be calculated from the lake sampling data collected following each diversion event. To prevent undue impacts to the lake, this geometric mean *E. coli* concentration will be required to be below an upper guide before progressing to the next storm in the Table 2 sequence. The upper guide will be developed by fitting *E. coli* data from background storms (see Section 2.1.2) to a lognormal distribution via the Method of Maximum Likelihood (Nash et al. 1979 and Olivieri et al. 1999). Background storm data used to develop the upper guide will include data from the three background storms monitored during the first two years of the pilot study (EOA 2005) and the additional background storm data collected during year three. The upper 80th percentile of the background storm *E. coli* distribution will be used as the upper guide, with one exception. If the 80<sup>th</sup> percentile of the background storm distribution is lower than 126 MPN/100 ml, the full body contact central tendency water quality criterion for *E. coli* (see Attachment B), than 126 MPN/100 ml would become the upper guide.

Table 2. Sequential plan for year three diversion events.

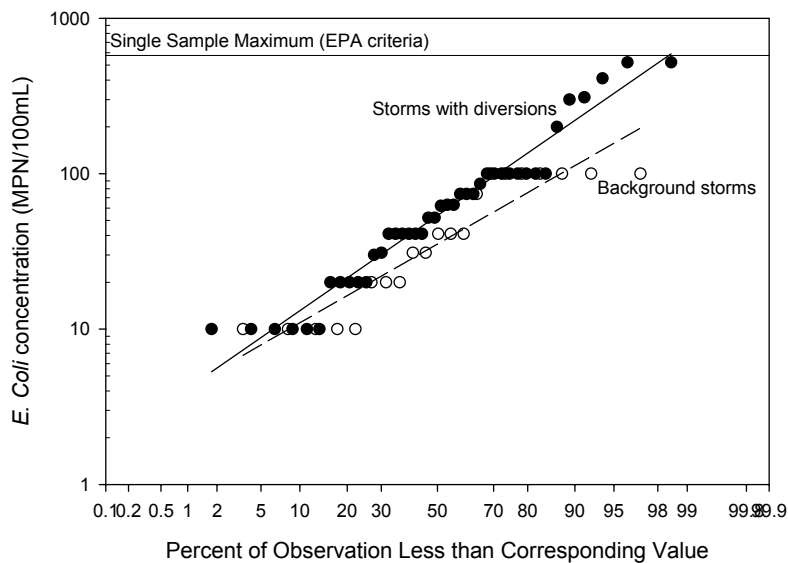
<b>Storm Number</b>	<b>Description</b>	<b>Approximate Total Volume Discharged (Million Gallons)</b>
1	Background Storm	0
2	Stormwater Diverted	3.2
3	Stormwater Diverted	3.2
4	Stormwater Diverted	3.2
5	Stormwater Diverted	3.8
6	Stormwater Diverted	4.5
7	Stormwater Diverted	5.1

<sup>4</sup>The actual number of sampling episodes may vary, depending on factors such as weather patterns and the availability of staff and equipment. Sampling will never be performed during unsafe conditions due to inclement weather or other causes. However, unless sampling is prevented by unsafe conditions, at least one set of lake samples will be collected following each diversion event.

<sup>5</sup>The volumes presented in Table 2 are not based on engineering calculations. The incremental increases were instead selected for the purposes of this project based on professional judgment.

For example, Figure 2 shows that the upper 80th percentile of the distribution of *E. Coli* concentration data from the three background storms monitored during the first two years of the pilot study is approximately 80 MPN/100 ml (EOA 2005), a value lower than the full body contact central tendency water quality criterion for *E. coli*. Thus, based on the currently available background storm data, the upper guide would be the *E. coli* water quality criterion of 126 MPN/100 ml. Geometric mean *E. coli* concentrations for each storm in the Table 2 sequence would need to be below 126 MPN/100 ml before increasing discharge volume and moving to the next storm. However, if the data from the additional background storm monitored during year three raises the upper 80th percentile *E. coli* concentration for all background storm data to a value above 126 MPN/100 ml, that value would then become the upper guide.

Figure 2. Probability plot of *E. Coli* concentrations in South Lake Merced following storm events.



Source: EOA 2005

### 3.3 Erosion Control

Based on observations during the 3,000 gallons-per-minute dye test conducted December 2003, erosion is not expected to be a concern given the relatively gentle topography, thick vegetation, and engineered geotextile underlying the alignment of the perforated pipe. However, in the event that significant erosion is observed, the discharge will be stopped or modified until the problem is corrected.

### 3.4 Mosquito Monitoring and Control

A comprehensive mosquito abatement plan for the surface waters of Lake Merced is available. Attachment D contains a supplemental mosquito monitoring and control program developed to address the specific conditions associated with this pilot study.

### 3.5 Vegetation Management

The site around the perforated pipe and overflow structure will require removal of overgrown vegetation as necessary to perform periodic inspections, maintenance and sampling in that area. A monthly inspection and removal program for noxious and invasive weed species listed in Attachment E will also be an integral part of a periodic maintenance program at the site. Personnel inspecting for noxious weed populations will be fluent in plant identification and familiar with native and non-native flora in San Francisco.

### 3.6 Public Information Program and Follow-up Sampling

The project site will be posted with a public notice regarding the pilot testing (Attachment F) and a second notice regarding general precautions for boaters in Lake Merced (Attachment G). In addition, before the project commences the SFPUC will send an e-mail announcement describing the pilot project to a list of boating and rowing groups that use Lake Merced and other interested parties (Attachment H). The announcement will be similar to an announcement sent in February 2004 (Attachment I) and will include both public notices as attachments.

If the bacteriological analysis results of samples from open water stations LM-4, 5, or 6 exceed single sample maximum water quality criteria presented in Table B-1 (Attachment B), the following actions will be taken:

1. The SFPUC will conduct additional sampling rounds until the levels have dropped below the maximum levels.
2. The SFPUC will send an e-mail announcement similar to an announcement sent in March 2004 (Attachment J) to the list of boating and rowing groups that use Lake Merced and other interested parties (Attachment H). Following sampling that shows that bacteriological results have fallen back below the criteria, the SFPUC will send a follow-up e-mail.

Such notices were needed twice during the pilot project to-date, in February 2004 and December 2004. However, it should be noted that in both cases the elevated levels of indicator bacteria did not appear to be related to the pilot stormwater diversions. Instead, they were likely caused by flooding and overflow of the Vista Grande canal into South Lake Merced.

## 4.0 REFERENCES

EDAW, Inc. and Talavera & Richardson in association with Merritt Smith Consultants, Hydroconsult Engineers, Hagar Environmental Science, Ward and Associates and Yuki Kawaguchi 2004. *Initiative to Raise and Maintain Lake Level and Improve Water Quality, Lake Merced, Task 3 Technical Memorandum: Lake Setting Alternative Lake Levels and Supplemental Water Requirements, Supplemental Water Sources, Lakeside Vegetation*. Prepared for the San Francisco Public Utilities Commission. September.

EOA, Inc. 2005. *Preliminary Water Quality Screening Results, Lake Merced Pilot Stormwater Enhancement Project*. Prepared for the NSMCSD by EOA, Inc. with assistance from the NSMCSD and the San Francisco Public Utilities Commission. October.

Nash, J. 1979. *Compact Numerical Methods for Computers: Linear Algebra and Function Minimization*. J. Wiley & Sons, NY.

NSMCSD and SFPUC 2004. *Preliminary Water Quality Screening Plan, 2003/04 Wet Season, Lake Merced Restoration – Phase 2 Pilot Stormwater Enhancement Project*. Prepared by the North San Mateo County Sanitation District and the San Francisco Public Utilities Commission with assistance from EOA, Inc. January 26.

Olivieri, A. W., Eisenberg, D. M., Soller, J., Eisenberg, J. N. E., Cooper, R. C., Tchobanoglous, G., Trussell, R. R., and Gagliardo, P. 1999. *Estimation of pathogen removal in an advanced water treatment facility using Monte Carlo simulation*. *Water Sci. Technol.*, 40(4-5)(4-5), 223-233.

**ATTACHMENT A**

**LAKE MERCED PILOT STORMWATER ENHANCEMENT PROJECT  
RECORD OF RECREATIONAL USE AND WILDLIFE AT SOUTH LAKE MERCED**

Name, Position and Organization: \_\_\_\_\_

Date: \_\_\_\_\_ Timeframe Present at Site (e.g., 8am – 2pm): \_\_\_\_\_

Weather Conditions: \_\_\_\_\_

On the below map, record the approximate location of any recreational activities on or near the shoreline of South Lake Merced (e.g., swimming, boating, windsurfing, fishing, wading, hiking) observed anytime while you are at the site. Include the number of people recreating, the types of recreational activities observed, and the numbers and types of any pets observed. Record presence or absence of birds and other wildlife.



## ATTACHMENT B

### LAKE MERCED PILOT STORMWATER ENHANCEMENT PROJECT

#### FULL BODY CONTACT WATER QUALITY CRITERIA

Table B-1 summarizes selected bacteriological water quality criteria for full body contact recreation. The *E. coli* and enterococci criteria are derived from epidemiological studies of bathers recreating at surface water beaches that received bacteriological contamination via treated wastewater (Stevenson, 1953; Cabelli, 1982; USEPA, 1986 and Wymer and Dufour, 2002). The bases for the criteria include an assumed tolerable gastrointestinal illness rate of eight illnesses per 1,000 recreation events at fresh water beaches (USEPA, 1986). The relationship between indicator organism concentration and risk of gastrointestinal illness assumes that each recreator ingests a constant volume of water. Although no such volumes are directly documented in the regulations, state and federal guidance documents typically estimate that 50 to 100 mL of water are ingested per recreation event.

Table B-1. Selected water quality criteria for full body contact recreation.

Indicator Bacteria	Estimate of Central Tendency (MPN/100mL)	Basis	Single Sample Maximum (MPN/100mL)	Basis
Total coliform	240 (median)	Basin Plan (SFBRWQCB, 1995).	10,000	Basin Plan (SFBRWQCB, 1995).
<i>E. coli</i>	126 (geometric mean)	USEPA <sup>1</sup> and SFPUC criteria for issuing a health advisory for swimming beaches. <sup>2</sup>	576	Infrequently used full body contact recreation (upper 95% confidence level).
Enterococci	33 (geometric mean)	USEPA <sup>1</sup> and SFPUC criteria for issuing a health advisory for swimming beaches. <sup>2</sup>	151	Infrequently used full body contact recreation (upper 95% confidence level).

Notes:

<sup>1</sup>USEPA, 1986

<sup>2</sup>Swimming is prohibited in Lake Merced by SFPUC resolution.

USEPA (1986 and 2002) supports the use of *E. coli* or enterococci rather than total coliform as bacteriological indicators of human health pathogenic risk during recreational swimming at surface water beaches. Total coliform occurs naturally in the environment

and may not be indicative of human fecal contamination and potentially associated pathogens. However, the general applicability of bacterial indicator organisms to predict human health risks associated with stormwater runoff has been widely questioned (Noble and Fuhrmann, 2001; Jiang et al., 2001 and Noble et al., 2003). The underlying question is whether it is reasonable to assume that stormwater runoff contains the same pathogens in the same ratios as wastewater effluent-impacted surface waters. Haile et al. (1999) begins to address this question, but investigates health effects associated with human exposure to *dry weather* urban runoff.

In addition, the geometric mean *E. coli* and enterococci criteria in Table B-1 are for “steady state *dry weather* conditions,” and should be compared to “a statistically sufficient number of samples (generally not less than five samples equally spaced over a 30-day period)” (USEPA, 1986). Such conditions and monitoring protocols are not applicable to the Pilot Stormwater Enhancement Project. Other limitations of applying these water quality criteria include that an insufficient population size or epidemic conditions in the community may invalidate the relationship between indicator organism concentration and risk of gastrointestinal illness (USEPA, 1986).

Although comparison of data from the Pilot Stormwater Enhancement Project to these water quality criteria is highly questionable, the criteria are conservative in that swimming is prohibited in Lake Merced (SFPUC Resolution No. 10,435)<sup>1</sup> and full body contact recreation was not observed during the first two years of the pilot study, except fishing (EOA 2005). It should be noted that the single sample maximum criteria may be more relevant than central tendency criteria in that they are specific to *infrequent* recreational use (e.g., a boat capsizing).

## References

Cabelli, V. J., Dufour, A. P., McCabe, L. J., and Levin, M. A. 1982. *Swimming-Associated Gastroenteritis and Water Quality*. Am. J. Epidemiol., 115, 606-616.

EOA, Inc. 2005. *Preliminary Water Quality Screening Results, Lake Merced Pilot Stormwater Enhancement Project*. Prepared for the NSMCSD by EOA, Inc. with assistance from the NSMCSD and the San Francisco Public Utilities Commission. October.

Haile, R. W., Witte, J. S., Gold, M., Cressey, R., McGee, C., Millikan, R. C., Glasser, A., Harawa, N., Ervin, C., Harmon, P., Harper, J., Dermand, J., Alamillo, J., Barrett, K., Nides, M., and Wang, G. Y. 1999. *The health effects of swimming in ocean water contaminated by storm drain runoff*. Epidemiology, 10(4), 355-363.

Jiang, S., Noble, R., and Chu, W. (2001). *Human Adenoviruses and coliphages in urban runoff-impacted coastal waters of southern California*. Appl. Environ. Microbiol., 67(1), 179-184.

Noble, R., and Fuhrman, J. 2001. *Enteroviruses detected by reverse transcriptase polymerase chain reaction from the coastal waters of Santa Monica Bay, California: low correlation to bacterial indicator levels*. Hydrobiologia, 460, 175-184.

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<sup>1</sup>Full body contact may occur infrequently due to accidental capsizing of boats in South Lake Merced.

Noble, R. T., Weisberg, S. B., Leecaster, M. K., McGee, C. D., Dorsey, J. H., Vainik, P., and Orozco-Borbon, V. 2003. *Storm effects on regional beach water quality along the southern california shoreline*. Journal of Water and Health, 1(1), 23-31.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) 1995. *Water Quality Control Plan, San Francisco Bay Basin (Region 2)*. June 21.

Stevenson, A. H. 1953. *Studies of Bathing Water Quality and Health*. American Journal of Public Health, 43: 529-538.

USEPA 1986. *Ambient water quality criteria for bacteria*. EPA440/5-84-002. January.

USEPA 2002. *Draft Implementation Guidance for Ambient Water Quality Criteria for Bacteria*. EPA-823-B-02-003. May.

Wymer, L. J., and Dufour, A. P. 2002. *A Model For Estimating the Incidence of Swimming-Related Gastrointestinal Illness as a Function of Water Quality Indicators*. Environmetrics, 13, 669-678.

## **ATTACHMENT C**

### **LAKE MERCED PILOT STORMWATER ENHANCEMENT PROJECT**

#### **OPERATION AND MAINTENANCE OF THE DIVERSION SYSTEM**

The NSMCSD will be the lead agency responsible for the operation of the diversion system gate valve (located at the head works of the Vista Grande tunnel) and the cleaning and maintenance of the CDS installed near the head works structure. Crews from the City of Daly City's Collection System section have been assigned to these tasks. The CDS units are cleaned and washed down using vacuum suction supplied by one of two Vac-Con trucks used in the Collection System fleet. Each Vac-Con truck is staffed by two members of the Collection System crew. At least one Vac-Con truck crew member will possess, at a minimum, a Grade I Certificate issued by the California Water Environment Association (CWEA).

Establishing flow rates for each diversion storm event will involve project coordination between staff from the City of Daly City Collection System section and the San Francisco Public Utilities Commission Bureau of Environmental and Regulatory Management (BERM). Weather forecasts will be tracked to provide as much lead time as possible to assure timely mobilization of staff and resources. During each diversion event, field staff will wait either one-half hour after the water level in the canal begins to rise or until the canal water level reaches approximately two feet before opening the diversion gate valve and allowing Vista Grande stormwater to flow into the CDS units.

A crew will be stationed at the tunnel head works and open the gate valve using a turn key. A crew will also be stationed across John Muir Drive adjacent to the Lake Merced Overflow Structure where stormwater flows will be measured following the flow equalization at the head works and CDS units before flows head towards the outfall box. Once flow has commenced through the perforated drainage pipe, the crew at the outfall box will measure the rate of flow, using the SFPUC installed flow meter, and communicate through the use of two-way radio whether the flow needs to be increased or decreased. The crew at the gate valve will record the number of "turns" on the gate valve turn key to achieve the desired flow rate. Once a storm event has ceased or flow discharge has run its allotted time, the gate valve will be closed.

For health and safety reasons, opening the gate valve and assessing rate of flow during the pilot program will only take place during daylight hours. The gate valve area is enclosed by a gated fence that is locked at all times to prevent trespassing. The CDS units are accessed through a hatch that remains closed and locked except during maintenance. This is to further ensure safety of Collection System crews and any trespassers. Confined space entry is not required to effectively clean out the CDS units using a Vac-Con truck. At the Lake Merced Overflow Structure, a small access hatch is also locked at all times. The study area is cordoned off and barricaded to prevent trespassing.

At least once each day during a storm event with stormwater diversion, BERM staff will inspect the perforated pipe discharge.

## Hazardous Materials Response Plan

The Daly City Fire Department retains first responder functional responsibility associated with any hazardous material response within the community. Pursuant to General Orders associated with Daly City Fire Department's Hazardous Materials Response Plan, the Incident Commander Notification includes call out to the Department of Water and Wastewater Resources (DWWR) on any spill entering the storm drain or sewer system. As part of DWWR's response to a hazardous materials spill notification, DWWR Collection System staff will close the diversion system gate valve and confirm its closure pending confirmation that no spill material is in the canal. Once clearance is obtained by all appropriate regulatory authorities, DWWR Collection System staff will open the valve and testing may resume.

## ATTACHMENT D

### LAKE MERCED PILOT STORMWATER ENHANCEMENT PROJECT MOSQUITO MONITORING AND CONTROL

City agencies, including the SFPUC, have signed a Memorandum of Understanding (MOU) with the San Francisco Department of Public Health (SFDPH) to coordinate mosquito abatement activities with regard to instances of West Nile Virus (WNV). Sampling protocols are established based on the level of alert status established by the DPH. As a result of the recent cases of WNV in the Bay Area, the city has moved into tier one alert status, which requires monitoring and treatment of areas with mosquito problems. Lake Merced has a comprehensive mosquito abatement plan for the surface waters of Lake Merced. The size, scope and associated logistics of the pilot stormwater enhancement project justify a tailored program to address the specific requirements associated with the conditions created by the pilot project.

The brick lined canal from the CDS unit to the overflow box has created a condition in which standing water is present year round, except during actual diversion events. This is prime *culex* mosquito (WNV carrier species) breeding habitat. Several observations made through the access door on the overflow structure have revealed dense larval mosquito populations. It is recommended that a regular program of inspection, monitoring, and necessary treatment be established along the following guidelines.

1. The mosquito abatement plan should meet or exceed those outlined in the MOU with the SFPUC and the DPH.
2. Any larvicides or adulticides must be on the approved list as prescribed by the City's Integrated Pest Management (IPM) ordinance.
3. The abatement plan shall apply only to the tunnel, overflow structure, and diffuser pipe. Open water within the pilot area shall fall under the jurisdiction of the Lake Merced Mosquito abatement plan, once adopted.
4. Monitoring should be performed *by trained City staff*, no less than once per month during periods of dry weather. (Dry weather for purposes of this plan only shall be defined as periods before the first diversion event and after the last planned diversion event as defined in the pilot project proposal.) During the rainy season, monitoring should not be required if diversion events occur within three week intervals or less. The diversion flows will flush out any egg rafts or larvae. The site should be assessed if three weeks (21 days) have elapsed between diversion events.
  - a. Technique - Upon arriving at the diversion structure, BERM field personnel will unlock and gently open door so that it rests just on top of the panel, but not completely open. Wait two minutes to ensure that the wrigglers (larvae) have resumed their usual surface position. With dip cup ready, open panel and quickly take surface grab. Observe for larvae (wrigglers) and pupae (tumblers) in the dipper and flying adults. Report level of mosquito activity as required in attachment 3 of the MOU.

## 5. Treatment

- a. Only products from the approved list may be applied in the treatment area, by a participating member of the San Francisco IPM Tactical Advisory Committee (TAC), as prescribed in the MOU.
- b. Minor amounts of mosquito larvae should be treated with a *Bacillus sphaericus* (Bs) or *Bacillus thuringiensis* var. *israelensis* (Bti). Significant larval activity should be treated with a surface film liquid such as Agnique MMF. Chemicals are to be used according to label directions. Treatments will only be applied if monitoring activities detect viable amounts of mosquito eggs or larvae.

## 6. Posting

- a. The PUC IPM plan requires a four-day prior and post pesticide application notification signage. PUC right of ways not normally used by the public require posting of a public access number. However the unique nature of this pilot area and the fact that the public does not normally access the area that might be treated, should exempt it from the four day posting requirement.
- b. To protect worker safety and comply with the intent of the PUC IPM plan, a sign with the PUC logo in accordance with Ordinance 274-97 (see attached) will be posted on the overflow structure and will remain for four days after each application.

## 7. Reporting

- a. Any application of pesticides will be recorded in a “spray log” and will include the following information:
  - i. Pesticide name EPA #, and signal word
  - ii. Active ingredient
  - iii. Target pest
  - iv. Area treated
  - v. Date/time of application
  - vi. Weather conditions
  - vii. Amount used / rate
  - viii. Name and phone number of the person who applied the chemical.
- b. This information shall be submitted to the PUC IPM coordinator and the Department of the Environment on a monthly basis, only if a pesticide has been applied during that month.



## NOTICE OF PESTICIDE(S) APPLICATION

Ordinance no. 274-97

Pesticide(s)  
Name

Active  
Ingredient

Target  
Pest

Area to be  
Treated

Date/Time of  
Application

Signal  
Word

EPA#

**Re-entry Period spray should be dry and dust settled**

**For further information call:**

## ATTACHMENT E

### SAN FRANCISCO WEED MANAGEMENT AREA (WMA) INVASIVE WEED LIST

8/16/2004

Species	Common Name	Family	Listings/ Status	Predominate Habitat(s)*
<i>Avena barbata</i>	wild oats			
<i>Acacia melanoxylon</i>	blackwood acacia	Fabaceae	3	central coast, disturbed areas
<i>Ammophila arenaria</i>	European beach grass	Poaceae	2	coastal foredunes
<i>Avena fatua</i>	wild oats			
<i>Brachypodium distachyon</i>	false brome			
<i>Brassica nigra</i>	black mustard	Brassicaceae	2	coastal, esp. fog-belt grasslands; disturbed areas
<i>Briza maxima</i>	rattlesnake grass	Poaceae	2	coastal; fog-belt grasslands; shaded sites
<i>Bromus diandrus</i>	ripgut brome	Poaceae	2	coastal dunes, coastal sage scrub, grasslands, open areas
<i>Camissonia cheiranthifolia</i>	beach suncup, shrubby	Onagraceae	2	coastal dunes
<i>ssp. suffruticosa</i>	beach-primrose			
<i>Carduus pycnocephalus</i>	Italian thistle	Asteraceae	1	roadsides, grasslands, shrublands, oak woodlands
<i>Carpobrotus edulis</i>	iceplant	Aizoaceae	2	coastal communities, esp. dunes
<i>Centaurea solstitialis</i>	yellow starthistle			
<i>Conicosia pugioniformis</i>	narrow-leaf iceplant	Aizoaceae	1	coastal dunes, sandy soils near coast
<i>Conium maculatum</i>	poison hemlock	Apiaceae	2	moist, disturbed areas; may invade wildlands
<i>Convolvulus arvensis</i>	bindweed			
<i>Cortaderia jubata</i>	Andean pampas grass	Poaceae	1	coastal habitats, esp. disturbed or exposed sites
<i>Cotoneaster franchetii</i>	cotoneaster	Rosaceae	3	coastal, disturbed areas, mixed-evergreen forest
<i>Cotoneaster lacteus</i>	cotoneaster	Rosaceae	3	coastal, disturbed areas, mixed-evergreen forest
<i>Cotoneaster pannosa</i>	cotoneaster	Rosaceae	3	coastal, disturbed areas, mixed-evergreen forest
<i>Cotoneaster sp.</i>	cotoneaster	Rosaceae	3	coastal, disturbed areas, mixed-evergreen forest
<i>Cytisus scoparius</i>	Scotch broom	Fabaceae	2	coastal scrub, oak woodlands; disturbed areas
<i>Dactylis glomerata</i>	orchard grass	Poaceae	2	disturbed areas, moist sites
<i>Delairea odorata</i>	cape ivy, German ivy	Asteraceae	1	coastal, riparian areas
<i>Duchesnea indica</i>	mock strawberry			
<i>Ehrharta erecta</i>	African veldt grass	Poaceae	1	wetlands, moist wildlands, disturbed areas; potential to spread rapidly in coastal, riparian, grassland habitats
<i>Erechtites glomerata</i>	Australian fireweed	Asteraceae	3	coastal woodlands, scrub
<i>Erechtites minima</i>	Australian fireweed	Asteraceae	3	coastal woodlands, scrub
<i>Festuca arundinacea</i>	tall fescue, alta fescue	Poaceae	3	coastal scrub, grasslands, disturbed areas
<i>Foeniculum vulgare</i>	sweet fennel	Apiaceae	3	grasslands

Species	Common Name	Family	Listings/ Status	Predominate Habitat(s)*
<i>Genista monspessulana</i>	French broom	Fabaceae	1	coastal scrub, oak woodlands, grasslands
<i>Hedera helix</i>	English Ivy	Araliaceae	2	coastal forests, riparian areas
<i>Hirschfeldia incana</i>	wild mustard	Brassicaceae	2	dunes & bluffs, disturbed areas
<i>Holcus lanatus</i>	purple velvet grass	Poaceae	1	coastal grasslands, wetlands, roadbanks
<i>Hordeum marinum</i> <i>ssp.gussoneanum</i>	Mediterranean barley			
<i>Hordeum murinum ssp.</i> <i>eporinum</i>	foxtail, foxtail barley			
<i>Hypochaeris glabra</i>	miniature dandelion			
<i>Hypochaeris radicata</i>	hairy dandelion, cats' ears			
<i>Lolium multiflorum</i>	Italian ryegrass			
<i>Medicago polymorpha</i>	California bur clover	Fabaceae	3	coastal dunes, disturbed and agricultural areas
<i>Melilotus officinalis</i>	yellow sweetclover	Fabaceae	3	coastal; open, disturbed sites
<i>Oxalis pes-caprae</i>	Bermuda buttercup	Oxalidaceae	1	disturbed areas, dune, grassland, shrubland
<i>Pennisetum clandestinum</i>	kikuyu grass	Poaceae	3	disturbed sites, roadsides; threat to wildlands?
<i>Picris echioides</i>	bristly ox-tongue			
<i>Plantago lanceolata</i>	English plantain			
<i>Raphanus sativus</i>	radish	Brassicaceae	2	roadsides, coastal, disturbed areas
<i>Rubus armeniacus</i>	Himalayan blackberry			
<i>Rubus discolor</i>	Himalayan blackberry	Rosaceae	2	riparian areas, marshes, oak woodlands, roadsides
<i>Rumex acetosella</i>	sheep sorrel	Polygonaceae	1	coastal, moist areas, disturbed places
<i>Scabiosa atropurpurea</i>	pinchusion flower			
<i>Senecio elegans</i>	purple ragwort	Asteraceae	3	coastal dunes
<i>Solanum furcatum</i>	nightshade			
<i>Sonchus asper</i>	sow thistle			
<i>Sonchus oleraceus</i>	sow thistle			
<i>Vinca major</i>	greater periwinkle	Apocynaceae	3	riparian, oak woodland, sheltered places

**Watch List** - These species do not present an immanent threat, but should be monitored regularly & weeded if necessary to ensure containment.

<i>Ageratina adenophora</i>	thoroughwort, eupatorium	Asteraceae	3	coastal canyons, coastal scrub, slopes
<i>Centaurea calcitrapa</i>	purple star-thistle	Asteraceae	3	grasslands
<i>Salsola soda</i>	Russian thistle	Chenopodiaceae	3	threat to salt marshes?
<i>Ulex europaea</i>	gorse, furze	Fabaceae	3	coastal scrub, grasslands

**Trees** - These species exacerbate growth, containment and/or removal difficulties of invasive species. Special management plans and/or permits may apply.

<i>Cupressus macrocarpa</i>	Monterey cypress	Cupressaceae	3	coastal dunes & bluffs
<i>Eucalyptus globulus</i>	blue gum eucalyptus	Myrtaceae	1	riparian areas, grasslands, moist slopes
<i>Pinus radiata</i>	Monterey pine	Pinaceae	3	coastal dunes & bluffs



## **ATTACHMENT F**

### **Notice to Recreational Boaters on Lake Merced Stormwater Treatment Test**

The San Francisco Public Utilities Commission and the City of Daly City are planning to conduct a stormwater treatment demonstration project on South Lake. Stormwater from the Vista Grande Canal, located just across John Muir Drive from South Lake, is being evaluated as a potential source of water to sustain the lake level of Lake Merced. This demonstration involves using a vegetated area along a small section of the southwestern shoreline of South Lake Merced as a stormwater treatment wetland. Lake water near the shoreline will be monitored carefully to assure compliance with public health and safety standards.

Please note that swimming and full body water contact is prohibited at Lake Merced. For more information on this project contact Suzanne Gautier of the San Francisco Public Utilities Commission at (415) 554-3204, 9AM to 5PM weekdays. For urgent calls, at night or on weekends concerning this project the City of Daly City, Department of Water and Wastewater Resources at (650) 991-8200.



## ATTACHMENT G

### General Information for Lake Merced Boaters

Individuals who use Lake Merced for boating purposes are urged to be cautious and to use common sense about contact with such water. Officials from the San Francisco Department of Public Health caution that it is impossible to guarantee that any natural body of water is free of risk from disease causing-organisms or injury. All rivers, streams and lakes contain naturally occurring algae, bacteria, viruses and parasites.

Microbiological organisms can also come from pet waste, birds, and human sewage. The concentrations of such organisms may be increased from runoff into Lake Merced for several days following rainfall because runoff can introduce bird and animal waste into Lake Merced. **Most of the time, Lake Merced water quality meets full body contact standards. However, lake water quality can sometimes exceed full body contact standards. Given that swimming is prohibited at Lake Merced, such exceedance does not pose a significant health risk.** The following suggestions are made to protect recreational boaters who may accidentally come into contact with the water:

- Persons whose immune systems are compromised should be careful to avoid swallowing water from any river, stream or lake.
- Prevent broken skin from directly contacting the water in Lake Merced, especially after a rain event.
- After boating in Lake Merced, wash your hands with soap prior to eating.
- Any boater who accidentally falls into Lake Merced should shower with soap as soon as reasonably possible.
- Do not add to the risk; use appropriate toilet facilities.

For additional Information Contact:

Environmental Health Section  
City and County of San Francisco Department of Public Health  
1390 Market St, Ste 910  
San Francisco CA 94102  
phone: 415-252-3973

**ATTACHMENT H**

**BOATING AND ROWING GROUPS THAT USE LAKE MERCED AND OTHER INTERESTED PARTIES**

<b>NAME</b>		<b>Organization</b>	<b>E-mail</b>
<b>Last</b>	<b>First</b>		
Latimer	Ward	America True/True Youth	ward@baysailing.org
Riley	Dawn	America True/True Youth	driley@americatrue.org
Cheu	Linda	Calif Dragon Boat Assoc	linda_cheu@hotmail.com
Wu	Hans	Calif Dragon Boat Assoc (Pres)	hanswu@aol.com
Danforth	Brian	Calif Dragon Boat Assoc	briandanforth@yahoo.com
Lariz	Mondy	California Trout	mlariz@lmtf.org
Plummer	John	Friends of Lake Merced	California Trout
Hentz	John	South End Rowing Club	sfasia@aol.com
Steele	Leslie	South End Rowing Club	lsteele@rchinc.org
Lee	David	USF-Athletic Dept.	leed@usfca.edu
Ehram	Gary	Dolphin Swimming & Boating Club	gary.ehram@worldnet.att.net
Storm	James	Dolphin Swimming & Boating Club	jestorm@yahoo.com

## ATTACHMENT I

### February 2004 E-mail Announcement Regarding the Pilot Project

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

From: Bartow, Greg

Sent: Tuesday, February 17, 2004 10:02 AM

To: 'batteryrow@aol.com'; 'cyclor@mac.com'; 'eldolphin9@aol.com'; 'evaa@mccue.com'; 'rvergara@siprep.org'; 'wlatimer@sfsu.edu'; 'linda\_cheu@hotmail.com'; 'hanswu@aol.com'; 'BRIANDANFORTH@YAHOO.COM'; 'sfasia@aol.com'; 'lstele@rchinc.org'; 'jldelacueva@usfca.edu'; 'leed@usfca.edu'; 'driley@americatrue.org'; 'ward@baysailing.org'  
Cc: Sinclair, Amy; Anderson, Lorraine ; Patrick Sweetland (E-mail); Taylor, Scott; Weintraub, June ; Yee, Marvin

Subject: Notice to Boating and Rowing Contacts at Lake Merced

This is an email notice to boating and rowing contacts at Lake Merced concerning two issues. Please feel free to pass this on to anyone you believe would be interested. The two issues are summarized below and discussed in more detail in the attachments. I've also pasted the contents of the attachments at the end of this email.

1. Pilot Stormwater Treatment Demonstration Project: The San Francisco Public Utilities Commission and the City of Daly City will be conducting a stormwater treatment demonstration on South Lake. Stormwater from the Vista Grande Canal, located just south of John Muir Drive from South Lake, is being evaluated as a potential source of water to sustain the lake level of Lake Merced. This demonstration involves using a vegetated area along a small section of the southwestern shoreline of South Lake Merced as a stormwater treatment wetland to reduce the level of contaminants known to be in stormwater. This project has been reviewed and approved by the SF Bay Regional Water Quality Control Board and SF Department of Public Health with input from the CA Dept. of Fish and Game, SF Dept. of Recreation and Parks, Lake Merced Task Force Water Committee, Golden Gate Audubon, CalTrout, and Friends of Lake Merced. The full notice is attached and repeated at the end of this email. If you have questions concerning the Pilot Stormwater Treatment Demonstration Project, please Amy Sinclair of the San Francisco Public Utilities Commission at (415) 551-4659.

2. General Information for Lake Merced Boaters: Background water quality samples taken from both South Lake and North Lake indicate that, most of the time, Lake Merced water quality meets full body contact standards. However, lake water quality can sometimes exceed full body contact standards. Given that swimming is prohibited at Lake Merced, such exceedance does not pose a significant health risk. The attachment (repeated below) provides suggestions to protect recreational boaters who may accidentally come into contact with the water. If you have questions concerning the General Information for Lake Merced Boaters, please contact the San Francisco Department of Public Health at 415-252-3973.

Sincerely,

Greg Bartow  
Groundwater Program Manager  
San Francisco Public Utilities Commission Planning Bureau

**ATTACHMENT J**

**March 2004 E-mail Announcement Regarding Elevated Bacteria Levels**

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

From: Bartow, Greg

Sent: Monday, March 01, 2004 7:10 PM

To: Bartow, Greg; 'batteryrow@aol.com'; 'cyclor@mac.com';  
'eldolphin9@aol.com'; 'evaa@mccue.com'; 'rvergara@siprep.org';  
'wlatimer@sfsu.edu'; 'linda\_chou@hotmail.com'; 'hanswu@aol.com';  
'BRIANDANFORTH@YAHOO.COM'; 'sfasia@aol.com'; 'lstele@rchinc.org';  
'jldelacueva@usfca.edu'; 'leed@usfca.edu'; 'driley@americatrue.org';  
'ward@baysailing.org'

Cc: Sinclair, Amy; Anderson, Lorraine ; Taylor, Scott; Weintraub, June ;  
Yee, Marvin

Subject: Notice to Boating and Rowing Contacts at Lake Merced

As you are probably aware there was significant flooding and a sewer overflow caused by the heavy rains of Feb 25, 2004 at Lake Merced. Recent bacteria testing results indicate that the lake water quality exceeds recommended standards for full body contact. We will be resampling the lake on March 3, 2004 and I will update you on those results prior to the upcoming weekend.

Sincerely,

Greg Bartow  
Groundwater Program Manager  
San Francisco Public Utilities Commission  
Planning Bureau  
1145 Market St., Suite 401  
San Francisco, CA 94103  
gbartow@sflower.org  
phone 415-934-5724  
fax 415-934-5750