CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. 2093
FOR
SOUTHERN CALIFORNIA EDISON COMPANY
Mandalay Generating Station
(CA0001180)

I. MONITORING AND REPORTING PROGRAM

A. The discharger shall implement this monitoring program on the effective date of this Order. Effluent monitoring reports shall be submitted monthly, by the first day of the second month following each monthly sampling period. The first monitoring report under this program is due by March 1, 1995, covering the monitoring period of January 1995.

B. Quarterly effluent analyses shall be performed during the months of February, May, August, and November. Semiannual effluent analyses shall be performed during the months of May and November. Annual effluent analyses shall be performed during the month of May. Results of quarterly, semiannual, and annual analyses shall be reported in the appropriate monthly monitoring report following analyses.

C. Laboratory analyses - all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer. A copy of laboratory certification shall be provided each time a new and/or renewal is obtained from ELAP.

D. Analytical data shall be reported on Regional Board Laboratory Report Forms. These forms contain the requirements for analytical test results and Quality Assurance/Quality Control (QA/QC) reports for all water/wastewater samples analyzed for volatile organic compounds, petroleum hydrocarbons, and metals. Analytical results for major wastewater constituents and other toxic materials for which the Regional Board has not yet developed laboratory forms shall be reported separately but with similar information as in the Regional Board's laboratory forms.

F. Water/wastewater samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All QA/QC items must be run on the same dates when samples were actually analyzed, and the results shall be reported on Regional Board format and submitted with the laboratory

reports. Proper chain of custody procedures must be followed and a copy shall be submitted with the report.

The data shall be submitted to the Regional Board on a hard copy and on a 3 1/2" or 5 1/4" computer diskette. The submitted data must be IBM compatible, preferably using Lotus 123, dBase, or Quattro Pro software.

G. The detection limits employed for effluent analyses shall be lower than the permit limits established for a given parameter, unless the discharger can demonstrate that a particular detection limit is not attainable and obtains approval for a higher detection limit from the Executive Officer. At least once a year, the discharger shall submit a list of the analytical methods employed for each test and associated laboratory quality assurance/quality control procedures.

II. EFFLUENT MONITORING

A. Sampling stations shall be established at each point of discharge and shall be located where representative samples of the effluent can be obtained. The following shall constitute the effluent monitoring program for Discharge Serial No. 001:

1. Wastewater Constituents/Parameters

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Total waste flow[1]	gal/day	---	daily
Temperature[1]	^0F	continuous	---
pH	pH units	grab	weekly
Total residual chlorine[2]	mg/l	grab[3]	daily
Free available chlorine[2]	mg/l	grab[3]	daily
Ammonia nitrogen	µg/l	grab	annually
Nitrate nitrogen	mg/l	grab	annually
Radioactivity[4]	pCi/ml	grab	annually
Toxicity, chronic[5,6,7]	TU_c	grab	quarterly

(For footnotes, see pages T-3 and T-4)

1. Wastewater Constituents/Parameters (continued)

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Priority pollutants (See page T-16)	µg/l	grab	[8]

[1] Where continuous monitoring of temperature, and flow is required, the following shall be included in the report:

Temperature: Only the maximum temperature for each calendar day shall be reported, except when temperatures exceed 106°F, in which case the reason(s), time of day, and duration of such events shall also be reported.

Flow: Total daily flow.

[2] Monitoring is only applicable during periods of chlorine addition. A statement certifying that chlorination did not occur during the day may be submitted in lieu of an analysis.

[3] Multiple grab samples, with at least four equally spaced samples during each hour of chlorine addition, the maximum and average concentrations on the duration of chlorine addition shall be reported. Alternatively, a single grab sample may be collected at the time of peak residual chlorine concentration. The discharger shall conduct a study on the plant's chlorination cycle to determine the time of peak residual chlorine concentration. The study plan shall be subject to the Executive Officer's approval.

[4] Radioactivity determinations of gross and net beta activity, in picocuries per liter, shall be made within 48 hours following preparation of samples. The overall efficiency of the counting system, size of sample, and counting time shall be such that radioactivity can be determined to a sensitivity of ten picocuries per liter with a 95% confidence limit not to exceed 50 percent.

A statement certifying that radioactive pollutants were not added to the discharge may be submitted in lieu of monitoring.

[5] Initial screening shall be conducted using a minimum of three test species with approved test protocols listed in the California Ocean Plan (State Water Resources Control Board, 1990) to determine the most sensitive test organism for chronic toxicity testing (other test species may be added to the Ocean Plan list when approved by the State Board). The initial screening process shall be conducted for a minimum of three months, but not to exceed five months, to account for potential variability of the effluent. If possible, the test species used during the screening process should include a fish, an invertebrate, and an aquatic plant.

After the initial screening period, chronic toxicity testing may be limited to the most sensitive test species. However, the initial screening process shall be repeated annually, with a minimum of three test species with approved test protocols to ensure use of the most sensitive species for chronic toxicity testing. One month would be sufficient if it indicates that the most sensitive species is the same as the previous one. However, if the first month screening indicates another species as the most sensitive, then the three month screening period must be completed.

Dilution and control waters should be obtained from an unaffected area of the receiving waters. Standard dilution water may be used if the above source exhibits toxicity greater than 1.0 tu_c. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each batch of bioassay tests and reported with the test results.

[6] Chronic toxicity shall be expressed and reported as toxic units, where:

$$tu_c = 100/NOEC$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed on Pages 22-23 of the Ocean Plan.

The effluent tests shall be conducted with concurrent reference toxicant tests. Both the reference toxicant and effluent test must meet all protocols. If the test acceptability criteria is not achieved, then the discharger must re-sample and re-test within 14 days. The discharger shall submit the data on a hard copy and on an electronic disk as specified in Suggested Standard Reporting Requirements for Monitoring Chronic Toxicity (SWRCB, August 1993).

[7] In the event of an exceedance of the chronic toxicity effluent limitation, the sampling frequency shall be increased to monthly until compliance has been demonstrated for three consecutive months. If the discharge consistently exceeds the chronic toxicity effluent limitation, a toxicity identification evaluation (TIE) is required. The TIE shall include all reasonable steps to identify the source(s) of toxicity. Once the source of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level.

[8] Once every five years beginning in 1996.

2. Metals

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Antimony	µg/l	grab	semi-annually
Arsenic	µg/l	grab	semi-annually
Beryllium	µg/l	grab	semi-annually
Chromium (III)	µg/l	grab	semi-annually
Hexavalent chromium	µg/l	grab	semi-annually
Cadmium	µg/l	grab	semi-annually
Copper	µg/l	grab	semi-annually
Lead	µg/l	grab	semi-annually
Mercury	µg/l	grab	semi-annually
Nickel	µg/l	grab	semi-annually
Selenium	µg/l	grab	semi-annually
Silver	µg/l	grab	semi-annually
Thallium	µg/l	grab	semi-annually
Zinc	µg/l	grab	semi-annually

B. The effluent monitoring program for Inplant Waste Streams is as follows:

1. Chemical Metal Cleaning Wastes:

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Flow[1]	mgd	---	monthly
pH	pH unit	grab	monthly
Suspended Solids	mg/l	grab	monthly
Oil and grease	mg/l	grab	monthly
Copper, total	mg/l	grab	monthly
Iron, total	mg/l	grab	monthly

[1] If no discharge occurred during the month, the report shall so state.

2. Non-Chemical Metal Cleaning Wastes:

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Flow[1]	mgd	---	monthly
pH	pH unit	grab	monthly
Suspended Solids	mg/l	grab	monthly
Oil and grease	mg/l	grab	monthly
Copper[2]	mg/l	grab	monthly
Iron[2]	mg/l	grab	monthly

[1] If no discharge occurred during the month, the report shall so state.

[2] Dissolved metal fractions only.

3. Low Volume Wastes:

Constituents	Units	Type of Sample	Minimum Frequency of Analysis[1]
Flow[2]	mgd	---	monthly
pH	pH unit	grab	monthly
Suspended solids	mg/l	grab	monthly
Oil and grease	mg/l	grab	monthly

[1] Sampling shall be done during discharge of non-chemical metal cleaning wastes, if there is any discharge during the month.

[2] If no discharge occurred during the month, the report shall so state.

III. RECEIVING WATER MONITORING

A. Regional Monitoring Program

1. Pursuant to the Code of Federal Regulation [40 CFR §122.41(j) and §122.48(b)], the monitoring program for a discharger receiving a National Pollutant Elimination System (NPDES) permit must determine compliance with NPDES permit terms and conditions, and demonstrate that State water quality standards are met.

2. Since compliance monitoring focuses on the effects of point source discharge, it is not designed to assess impacts from other sources of pollution (e.g., non-point

source run-off, aerial fallout) nor to evaluate the current status of important ecological resources on a regional basis.

Several efforts are underway to develop and implement a comprehensive regional monitoring program for the Southern California Bight. These efforts have the support and participation from regulatory agencies, dischargers, and environmental groups. The goal is to establish a regional program to address public health concerns, monitor trends in natural resources and nearshore habitats, and assess regional impacts from all contaminant sources.

3. A pilot regional monitoring program was conducted during the summer of 1994 to test an alternative sampling design that combines elements of compliance monitoring with a broader regional assessment approach. This pilot program was designed by USEPA, the State Water Resources Control Board, and three Regional Water Quality Control Boards (Los Angeles, Santa Ana, San Diego) in conjunction with the Southern California Coastal Water Research Project and participating discharger agencies.

4. The results of the pilot program will be evaluated and used to redesign the current monitoring program and to develop a comprehensive regional monitoring program for the Southern California Bight. At the same time, the monitoring programs conducted by other dischargers and agencies will be integrated into this regional program. If predictable relationships among the biological, water quality, and effluent monitoring variables can be demonstrated, it may be appropriate to decrease the sampling effort. Conversely, the monitoring program may be intensified if it appears that the objectives cannot be achieved through the existing monitoring program. In general, the goal is a more efficient monitoring program that can be used for both compliance and regional bight-wide assessments.

5. Substantial changes to the compliance monitoring program for this generating station may be required over the next few years to fulfill the goals of regional monitoring, while retaining the compliance monitoring component required to evaluate the potential impacts from the NPDES discharge. Revisions to the existing program will be

made under the discretion of the USEPA and the Los Angeles Regional Board as necessary to accomplish this goal; and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number, type, and location of samples collected.

B. Regional Database

1. Development and implementation of an information management system to support integrated analysis and transfer of monitoring program data is required so that management decisions for the protection of beneficial uses and public resources can be based on an evaluation of all available information. This represents one significant component of the action plan developed for the Santa Monica Bay Restoration Project. The Los Angeles Regional Board supports this goal and plans to move forward by establishing a Regional Database containing discharger monitoring data and other pertinent information submitted to or collected by the Regional Board and other agencies.

2. Southern California Edison and the City of Los Angeles Department of Water and Power have indicated a desire to assist the Regional Board in establishing this regional database system. This could be accomplished by diverting a portion of the resources normally dedicated to the power plant's annual receiving water monitoring programs into the creation of a database and associated analytical tools.

3. USEPA and the Los Angeles Regional Board believe that the existing monitoring programs for Southern California Edison and the City of Los Angeles Department of Water and Power's generating stations will be substantially revised when these programs are integrated into a comprehensive regional monitoring program. These revisions are expected to be implemented within the next two years.

4. Although the monitoring conducted over the past several years has demonstrated an increase in temperature in the receiving waters around the discharge points of the generating stations, no adverse impacts to benthic infaunal or fish communities have been documented.

Therefore, until the monitoring programs are revised for inclusion into a comprehensive regional program, USEPA and the Los Angeles Regional Board would have no objection to reducing the receiving monitoring required for compliance monitoring purposes, provided that SCE and DWP help fund the creation of a regional database. Upon approval by the Executive Officer, SCE and DWP may implement such a plan in lieu of the Receiving Water Monitoring specified below.

C. Monitoring of Algicide Spraying

The Discharger periodically sprays the Mandalay Canal with an algicide to control algal growth in the intake canal. The discharger shall notify the Regional Board at least two weeks prior to each application of algicide. Water samples shall be collected at a minimum of three locations (Wooley Road, 5th Street and Unocal Bridge, or other locations subject to approval by the Executive Officer) and analyzed for total residual oxidant concentration. The discharger also shall conduct visual observations of the canal following algicide applications to assess the effectiveness of the spraying program in controlling algal growth and to observe any unusual mortality of fish or invertebrates. The discharger shall report the results of sample analyses and visual observations, as well as a description of the amounts and locations of all algicide applications, in the appropriate monthly monitoring report to the Regional Board.

D. Receiving Water Monitoring

The receiving water monitoring program shall consist of periodic biological surveys of the area surrounding the discharge, and shall include studies of those physical-chemical characteristics of the receiving waters which may be impacted by the discharge.

Location of Sampling Stations (see Attached Figure 3):

1. Receiving water stations in the surf zone shall be located as follows:

   a. Station RW1 - 1180 feet upcoast of the discharge channel.

b. Station RW2 - 1180 feet downcoast of the discharge channel.

c. Station RW3 - 2360 feet upcoast of the discharge channel.

d. Station RW4 - 2360 feet downcoast of the discharge channel.

e. Station RW5 - At the discharge channel.

2. Receiving water stations offshore of the discharge area shall be located as follows:

a. Station RW6 - directly offshore of station RW13 at a depth of 30 feet.

b. Station RW7 - directly offshore of station RW16 at a depth of 30 feet.

c. Station RW8 - directly offshore of station RW11 at a depth of 30 feet.

d. Station RW9 - directly offshore of station RW17 at a depth of 30 feet.

e. Station RW10 - directly offshore of station RW12 at a depth of 30 feet.

f. Station RW11 - directly offshore of station RW5 at a depth of 20 feet.

g. Station RW12 - directly offshore of station RW4 at a depth of 20 feet.

h. Station RW13 - directly offshore of station RW3 at a depth of 20 feet.

i. Station RW14 - 1970 yards downcoast of the discharge channel at a depth of 20 feet.

j. Station RW15 - 1970 yards upcoast of the discharge channel at a depth of 20 feet.

k. Station RW16 - directly offshore of station RW1 at a depth of 20 feet.

l. Station RW17 - directly offshore of station RW2 at a depth of 20 feet.

3. Benthic stations shall be located as follows:

a. Station B1 shall be located directly beneath Station RW11.

b. Station B2 shall be located directly beneath Station RW12.

c. Station B3 shall be located directly beneath Station RW13.

d. Station B4 shall be located directly beneath Station RW14.

e. Station B5 shall be located directly beneath Station RW15.

4. Trawling stations shall be located as follows:

a. Station T1 - Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW15.

b. Station T2 - Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW16.

c. Station T3 - Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW17.

d. Station T4 - Parallel to the shore at a depth of 20 feet, extending equidistant to either side of Station RW14.

E. Type and Frequency of Sampling:

1. Surface temperatures, dissolved oxygen levels and pH shall be measured semi-annually (summer and winter) each year at Stations RW1 through RW5. All stations shall be

sampled on both a flooding tide and an ebbing tide during each semi-annual survey.

2. Temperature profiles shall be measured semi-annually (summer and winter) each year at Stations RW6 through RW17 from surface to bottom at a minimum of one-meter intervals. Dissolved oxygen levels and pH shall be measured semi-annually at least at the surface, mid-depth and bottom at each station. All stations shall be sampled on both a flooding tide and an ebbing tide during each semi-annual survey.

3. Sampling by otter trawl shall be conducted semi-annually (summer and winter) each year along transects at Stations T1 through T4.

   a. Trawl net dimensions shall be as follows:

      1. At least a 25 ft throat width.

      2. 1.5 in mesh-size (body).

      3. 0.5 in mesh-size (liner in the cod end).

   b. Two replicate trawls shall be conducted at each station for a duration of 10 minutes each at a uniform speed between 2.0 and 2.5 knots.

   c. The identity, size (standard length), wet weight, and number of fish in each trawl shall be reported. The number of fish affected by abnormal growth or disease, such as fin erosion, lesions, and papillomas, shall be reported. Fish species shall be reported in rank order of abundance and frequency of occurrence for each trawl. The Shannon-Wiener diversity index shall also be computed for each trawl.

   d. All commercially important macroinvertebrates shall be identified, enumerated, and reported in the same manner as fish species.

4. Benthic sampling shall be conducted annually during the summer at Stations B1 through B5.

a. One liter sediment core samples shall be collected by divers at each of the benthic stations for biological examination and determination of biomass and diversity, and for sediment analyses. Four replicates shall be obtained at each station for benthic analyses, and each shall be analyzed separately. A fifth sample shall be taken at each station for sediment analyses and general description.

b. Each benthic replicate sample shall be sieved through a 0.5 mm standard mesh screen. All organisms recovered shall be enumerated and identified to the lowest taxon possible. Infaunal organisms shall be reported as concentrations per liter for each replicate and each station. Total abundance, number of species and Shannon-Weiner diversity indices shall be calculated (using natural logs) for each replicate and each station.

Biomass shall be determined as the wet weight in grams or milligrams retained on a 0.5 millimeter screen per unit volume (e.g., 1 liter) of sediment. Biomass shall be reported for each major taxonomic group (e.g., polychaetes, crustaceans, mollusks) for each replicate and each station.

c. Sediment grain size analyses shall be performed on each sediment sample (sufficiently detailed to calculate percent weight in relation to phi size). Sub-samples (upper two centimeters) shall be taken from each sediment sample and analyzed for copper, chromium, nickel and zinc.

6. The following general observations or measurements at receiving water, benthic and trawl stations shall be reported:

a. Tidal stage and time of monitoring.

b. General water conditions.

c. Extent of visible turbidity or color patches.

d. Appearance of oil films or grease, or floatable material.

e. Depth at each station for each sampling period.

f. Presence or absence of red tide.

g. Presence of marine life.

h. Presence and activity of the California least tern and the California brown pelican.

SUMMARY OF RECEIVING WATER MONITORING PROGRAM

Parameter	Units	Stations	Type of Sample	Minimum Frequency
Temperature	°C	RW1-RW5	surface	semi-annually (flood, ebb)
Temperature	°C	RW6-RW17	vertical profile	semi-annually (flood, ebb)
Dissolved oxygen	mg/L	RW1-RW5	surface	semi-annually (flood, ebb)
Dissolved oxygen	mg/L	RW6-RW17	vertical profile	semi-annually (flood, ebb)
pH	pH units	RW1-RW5	surface	semi-annually (flood, ebb)
pH	pH units	RW6-RW17	vertical profile	semi-annually (flood, ebb)
Fish and macro invertebrates	---	T1-T4	trawl	semi-annually
Benthic infauna	---	B1-B5	grab	annually
Sediments	---	B1-B5	grab	annually

F. Chlorine Residual Study

Pursuant to Section 301(g), the discharger has applied for a variance from the residual chlorine effluent limitation based on Ocean Plan objectives. If the USEPA approves the variance request, the Discharger shall conduct a study to demonstrate that there is no significant adverse impact on the receiving water as a result of the discharge of higher levels of residual chlorine. Within 90 days following the USEPA's final approval of the variance request, the discharger shall submit a study plan for approval by Executive Officer and the Discharger shall implement the approved study within 90 days of approval.

IV. STORM WATER MONITORING AND REPORTING

The discharger shall implement the attached Storm Water Monitoring and Reporting Program (Attachment 1).

Ordered by: Robert P. Ghirelli
ROBERT P. GHIRELLI
Executive Officer, D.Env.

Date: December 5, 1994

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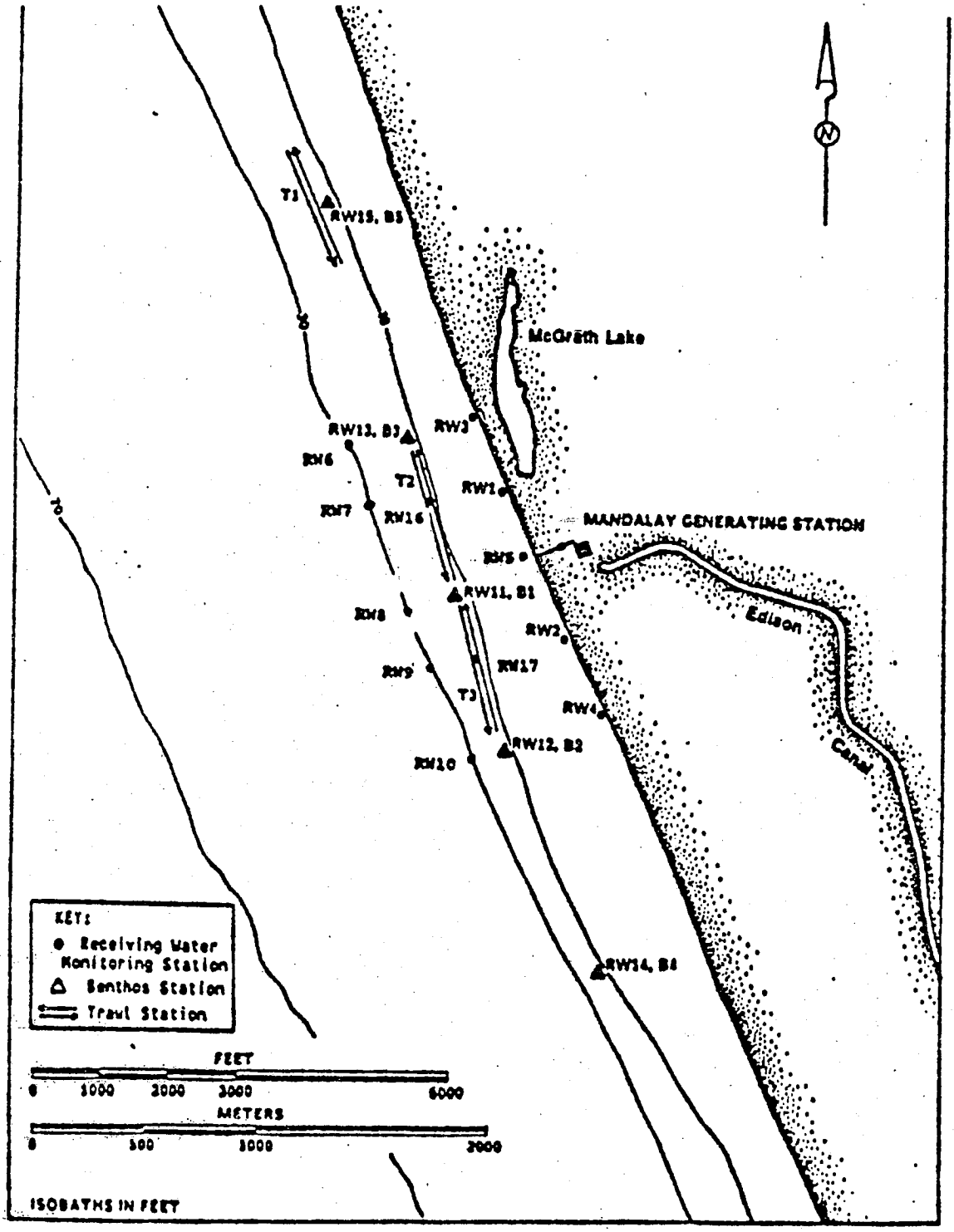
PRIORITY POLLUTANTS

Metals	Base/Neutral Extractibles	Acid Extractibles
Antimony	Acenaphthene	2,4,6-Trichlorophenol
Arsenic	Benzidine	P-Chloro-M-cresol
Beryllium	1,2,4-Trichlorobenzene	2-Chlorophenol
Cadmium	Hexachlorobenzene	2,4-Dichlorophenol
Chromium	Hexachloroethane	2,4-Dimethylphenol
Copper	Bis (2-Chloroethyl) ether	2-Nitrophenol
Lead	2-Chloronaphthalene	4-Nitrophenol
Mercury	1,2-Dichlorobenzene	2,4-Dinitrophenol
Nickel	1,3-Dichlorobenzene	4,6-Dinitro-O-cresol
Selenium	1,4-Dichlorobenzene	Pentachlorophenol
Silver	3,3'-Dichlorobenzidine	Phenol
Thallium	2,4-Dinitrotoluene	
Zinc	2,6-Dinitrotoluene	Volatile Organics
	1,2-Diphenylhydrazine	
Miscellaneous	Fluoranthene	Acrolein
	4-Chlorophenyl phenyl ether	Acrylonitrile
Cyanide	4-Bromophenyl phenyl ether	Benzene
Asbestos (only if specifically required)	Bis (2-Chloroisopropyl) ether	Carbon tetrachloride
	Bis (2-Chloroethoxy) methane	Chlorobenzene
	Hexachlorobutadiene	1,2-Dichloroethane
	Hexachlorocyclopentadiene	1,1,1-Trichloroethane
Pesticides	Isophorone	1,1-Dichloroethane
	Naphthalene	1,1,2-Trichloroethane
Aldrin	Nitrobenzene	1,1,2,2-Tetrachloroethane
Chlordane	N-Nitrosodimethylamine	Chloroethane
Dieldrin	N-Nitrosodi-N-propylamine	Chloroform
4,4'-DDT	M-Nitrosodiphenylamine	1,1-Dichloroethylene
4,4'-DDE	Bis (2-Ethylhexyl) phthalate	1,2-Transdichloroethylene
4,4'-DDD	Butyl benzyl phthalate	1,2-Dichloropropane
Alpha endosulfan	Di-N-Butyl phthalate	1,2-Dichloropropylene
Beta endosulfan	Di-N-Octyl phthalate	Ethylbenzene
Endosulfan sulfate	Diethyl phthalate	Methylene chloride
Endrin	Dimethyl phthalate	Methyl chloride
Endrin aldehyde	Benzo (A) anthracene	Methyl bromide
Heptachlor	Benzo (A) pyrene	Bromoform
Heptachlor epoxide	Benzo (B) fluoranthene	Bromodichloromethane
Alpha BHC	Benzo (K) fluoranthene	Dibromochloromethane
Beta BHC	Chrysene	Tetrachloroethylene
Gamma BHC	Acenaphthylene	Toluene
Delta BHC	Anthracene	Trichloroethylene
Toxaphene	1,12-Benzoperylene	Vinyl chloride
PCB 1016	Fluorene	2-Chloroethyl vinyl ether
PCB 1221	Phenanthrene	
PCB 1232	1,2,5,6-Dibenzanthracene	
PCB 1242	Indeno (1,2,3-CD) pyrene	
PCB 1248	Pyrene	
PCB 1254	TCDD	
PCB 1260		



Mandalay Receiving Water Monitoring Stations.

FIGURE 3