



**West Region Operations**

7251 Amigo Street, Suite 120  
Las Vegas, NV 89119  
Tel: 702-407-4800  
Fax: 702-407-4852

August 14, 2003

Mr. Dennis Dickerson  
Executive Officer  
Los Angeles Regional Water Quality Control Board (LARWQCB)  
320 W. 4<sup>th</sup> Street Suite 200  
Los Angeles, California 90013

RE: NPDES Permit CA0001180  
Effluent Copper Limit Issue  
Reliant Mandalay Generating Station, Oxnard, CA.

Dear Mr. Dickerson:

On April 23, 2002 Reliant Energy submitted to the LARWQCB a request to examine the permitted copper limit for Outfall 001, once through cooling water, at the Reliant's Mandalay Generating Station. A copy of the request is attached.

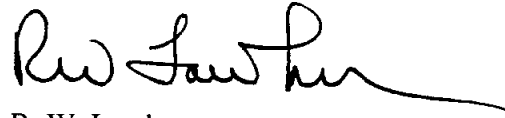
A brief summary of the concern is as follows:

- The plant receives cooling water from the Pacific Ocean through the Channel Islands Harbor and then the Edison Canal. The canal receives runoff from agriculture and development along its path to the plant.
- We have, at times, exceeded the permitted discharge limit of 5.6 ug/l, and on July 9, 2001 we received Complaint No. 10-083 referencing several copper exceedences.
- Data collected from the canal and submitted with the April 23, 2002 letter shows that oftentimes the copper level in the intake canal exceeds the 5.6 ug/l limit and the once through cooling process does not add copper to the water.

Our request was that the permitted copper limit be applied after applying an allowance for the ambient copper levels in the intake canal. By this letter, we are requesting the LARWQCB respond to our earlier request expeditiously to minimize our exposure

potential to exceedence conditions caused by factors beyond our control. Should you have additional questions, please contact me at 702-407-4884 or Ms. Julie Babcock at 702-407-4880.

Sincerely,

A handwritten signature in black ink, appearing to read "R. W. Lawhn", with a long horizontal flourish extending to the right.

R. W. Lawhn  
Director  
Environmental, Safety & Industrial Health  
Western Region



Western Region Operations

7251 Amigo Street, Suite 120  
Las Vegas, NV 89119  
Tel: 702-407-4800  
Fax: 702-407-4852

April 23, 2002

Mr. Dennis Dickerson  
Executive Officer  
Los Angeles Regional Water Quality Board (LARWQCB)  
320 W. 4th Street Suite 200  
Los Angeles CA 90013

RE: NPDES Permit CA0001180  
Effluent Copper Limit Issue  
Reliant Mandalay Generating Station, Oxnard, CA

2002 MAY 29 A 10:12

Dear Mr. Dickerson:

Reliant Energy Mandalay, L.L.C., owns and operates the 560 megawatt (MW) Mandalay Generating Station located near Oxnard, CA. Monitoring results for the cooling water intake and permitted discharge associated with the Mandalay Generating Facility have exhibited elevated concentrations of copper relative to the effluent limitation. This document provides an overview of the Mandalay Generating Station copper effluent limit issue and requested joint action toward its resolution.

#### Site Setting

The Mandalay Generating Station is located at 393 North Harbor Boulevard, Oxnard, California (Figures 1 and 2, Attachment A). The facility is designed to discharge up to 255.3 million gallons per day of once-through cooling water from two steam electric generating units into the Pacific Ocean at Mandalay Beach.

Intake water from the Pacific Ocean enters the Edison Canal System via the Channel Islands Harbor, located approximately seven miles south of the plant (Figure 3). Water from the Harbor flows through the Edison Canal past approximately 5 miles of agricultural land before entering the plant intake structure located at the end of the Edison Canal (Figures 3 through 7).

The once-through cooling water and low volumes of internal wastewater streams are discharged from the facility through a concrete and rock-revetted structure (Discharge Serial No. 001) located at a point directly across the beach, west of the facility (Figures 8 & 9). The wastewater discharge is permitted under NPDES Permit No. CA0001180.

#### Copper Compliance History

On April 25, 2001, the Mandalay Generating Station received a Notice of Violation citing six semiannual grab samples, during the period of May 1996 to November 2000, above the permitted 30-day average limit of 5.6 ug/l for copper (Attachment B). On July 9, 2001 Complaint No. 01-083 was received (Attachment B). The complaint cited the November 4, 2000 elevated copper, included in the April 25, 2001 NOV, and a fine of \$3000 was imposed.

The two semi-annual samples collected since the November 4, 2000 event have exhibited copper concentrations above the permitted 30-day average for copper, 7 ug/L on May 24, 2001 and 14.1 ug/L on November 1 2001. Copper concentrations over time are summarized in Figure 10 and Table 1 of Attachment A. To date, the Mandalay Generating Station has operated well below the Daily Maximum permit limit for copper (38 ug/l).

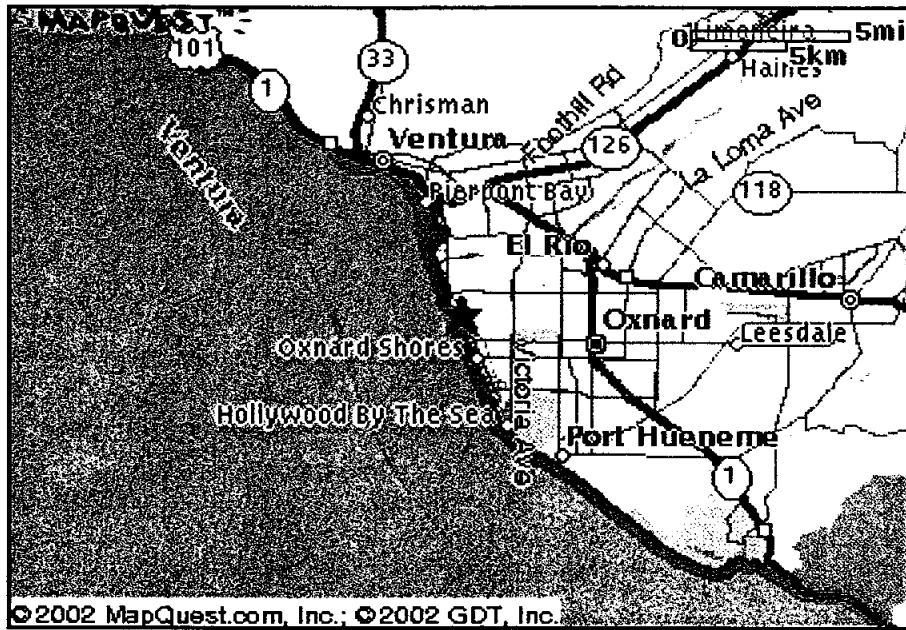


Figure 1 - Site Location

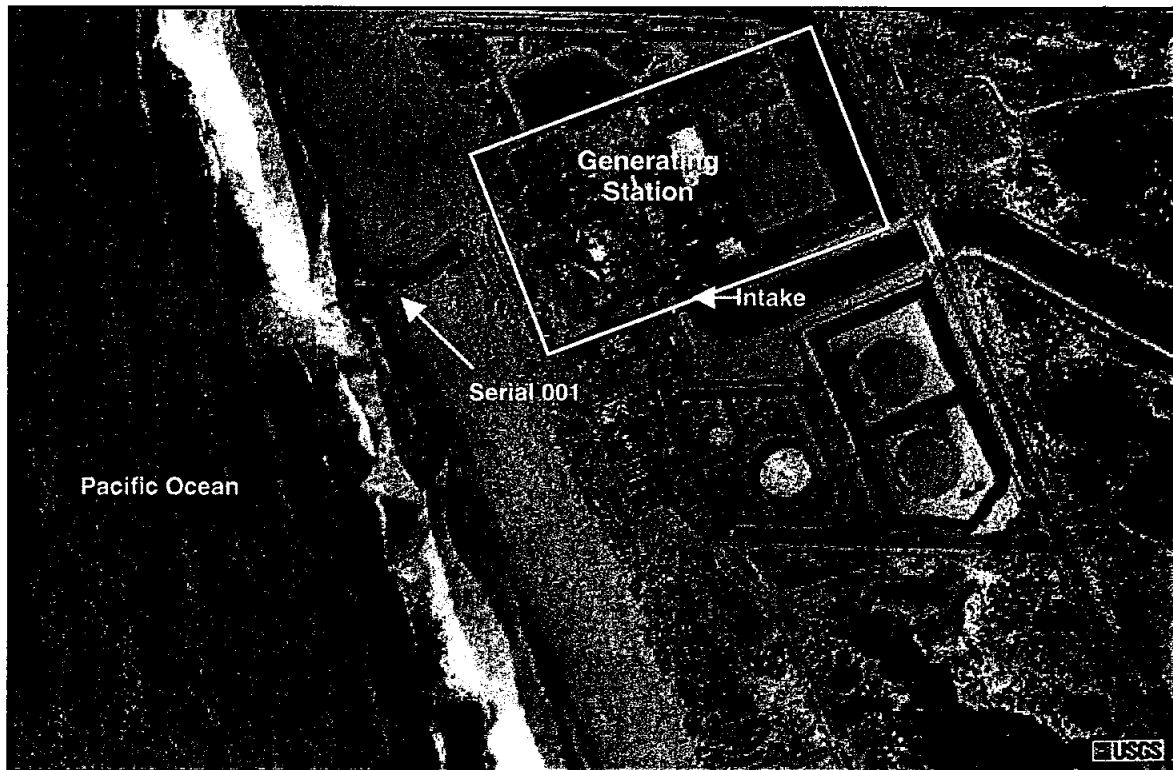
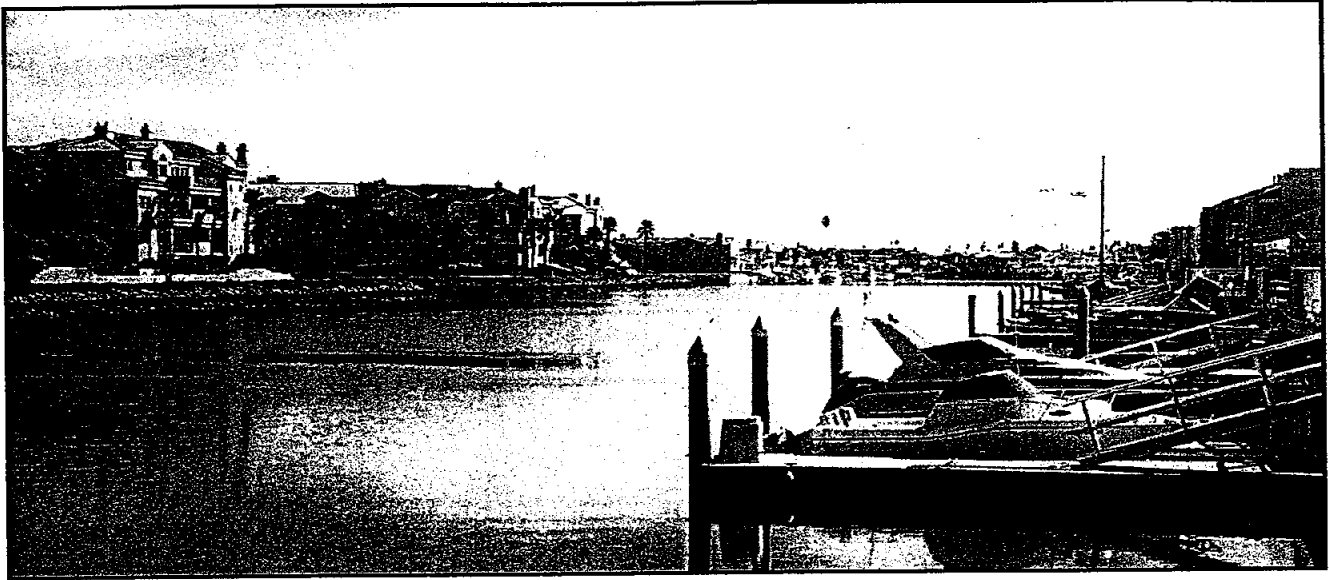


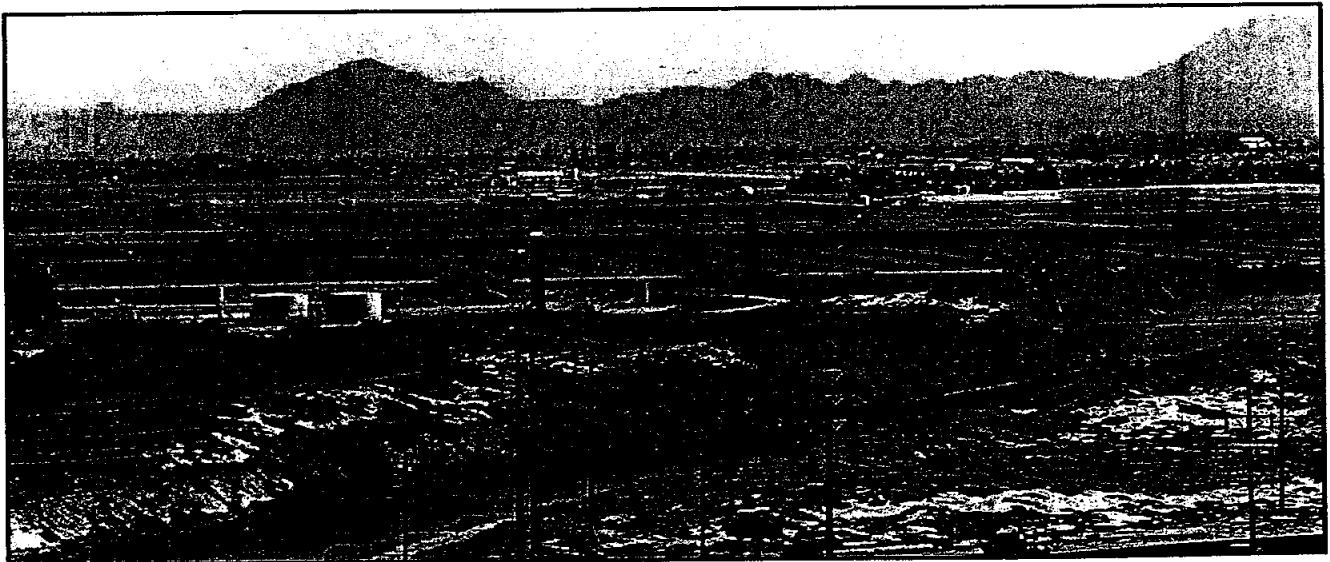
Figure 2 - Aerial View of Mandalay Generating Station (1995 Aerial Photography)



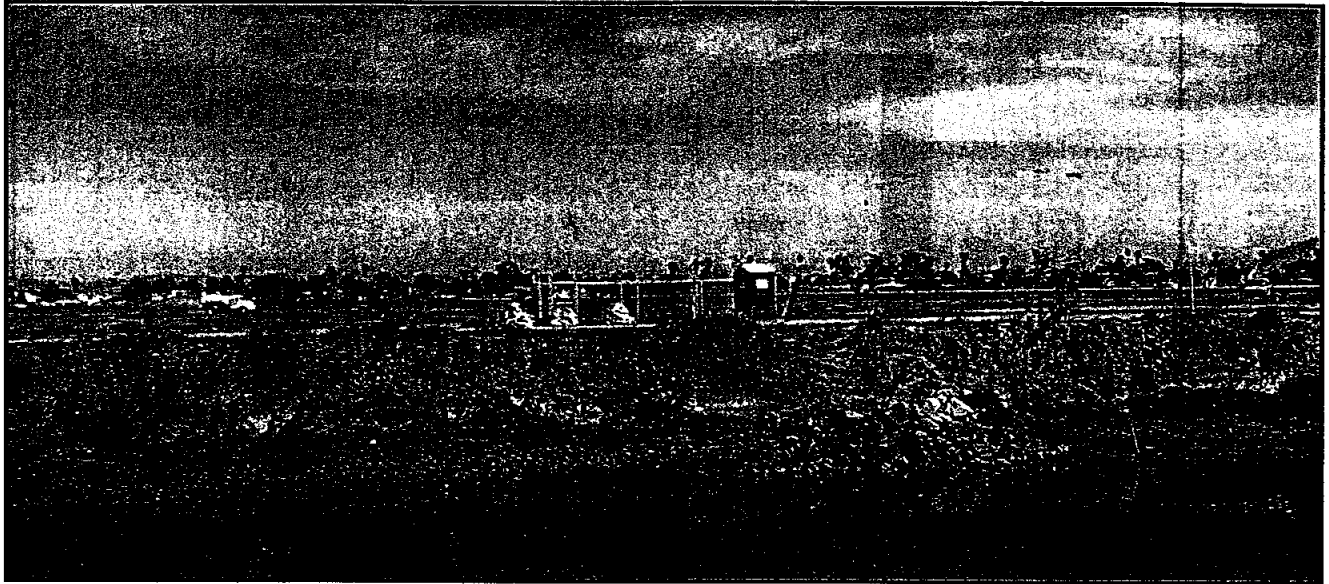
Figure 3 - Marina, Canal, Intake, Discharge



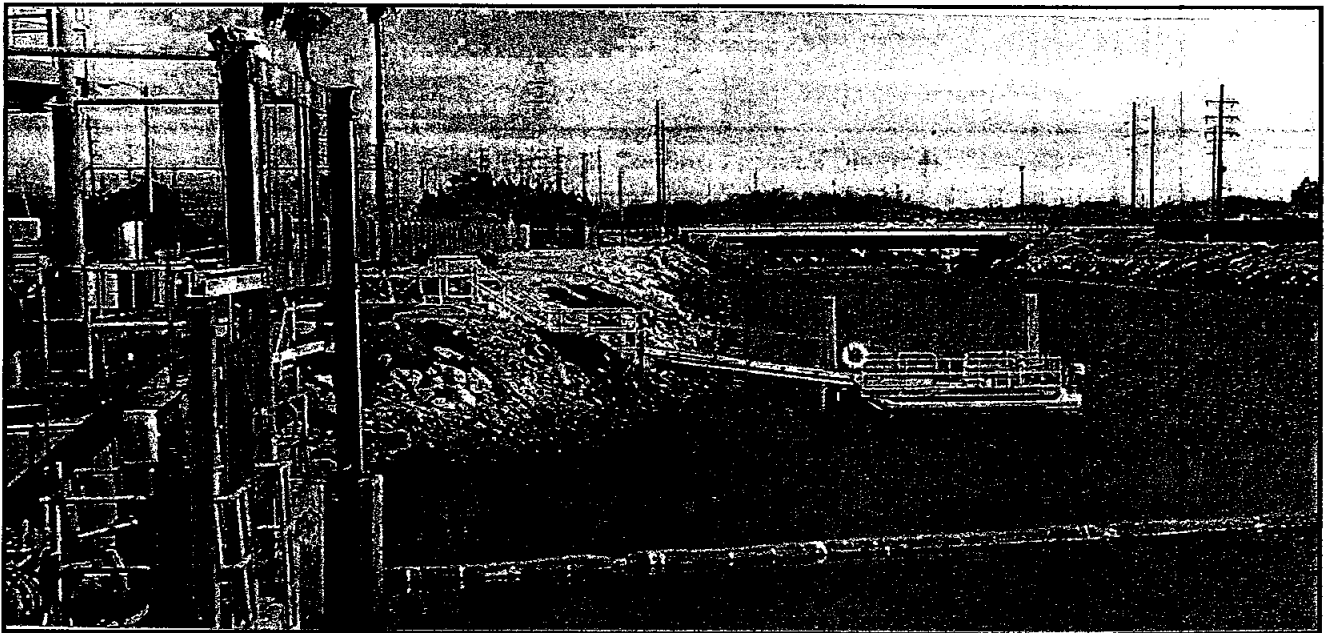
**Figure 4 - Development Along Edison Canal**



**Figure 5 - Agricultural Land Along Edison Canal**



**Figure 6 - Examples of Non-Point Source Runoff**



**Figure 7 - Mandalay Intake & Chlorination Area**

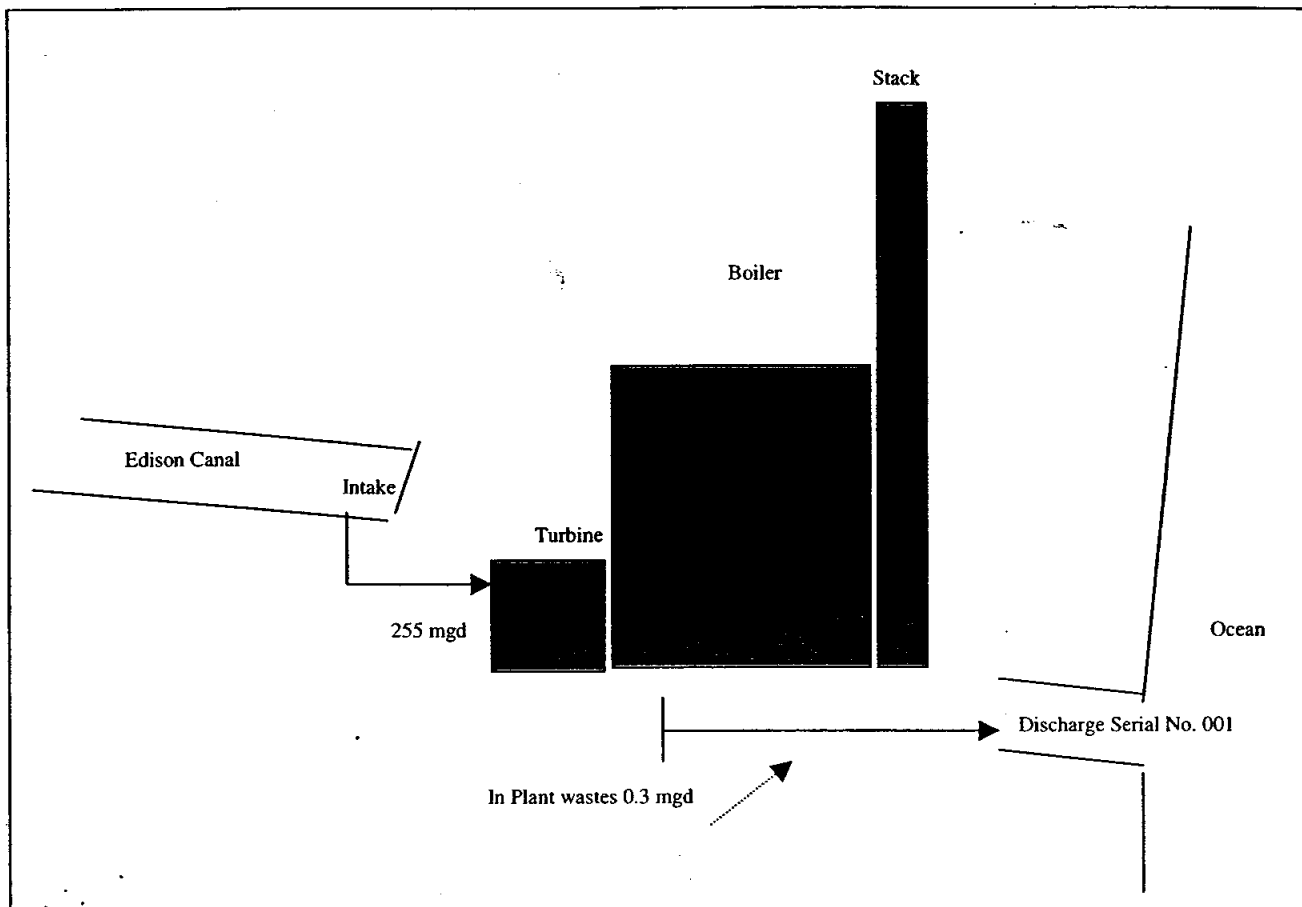
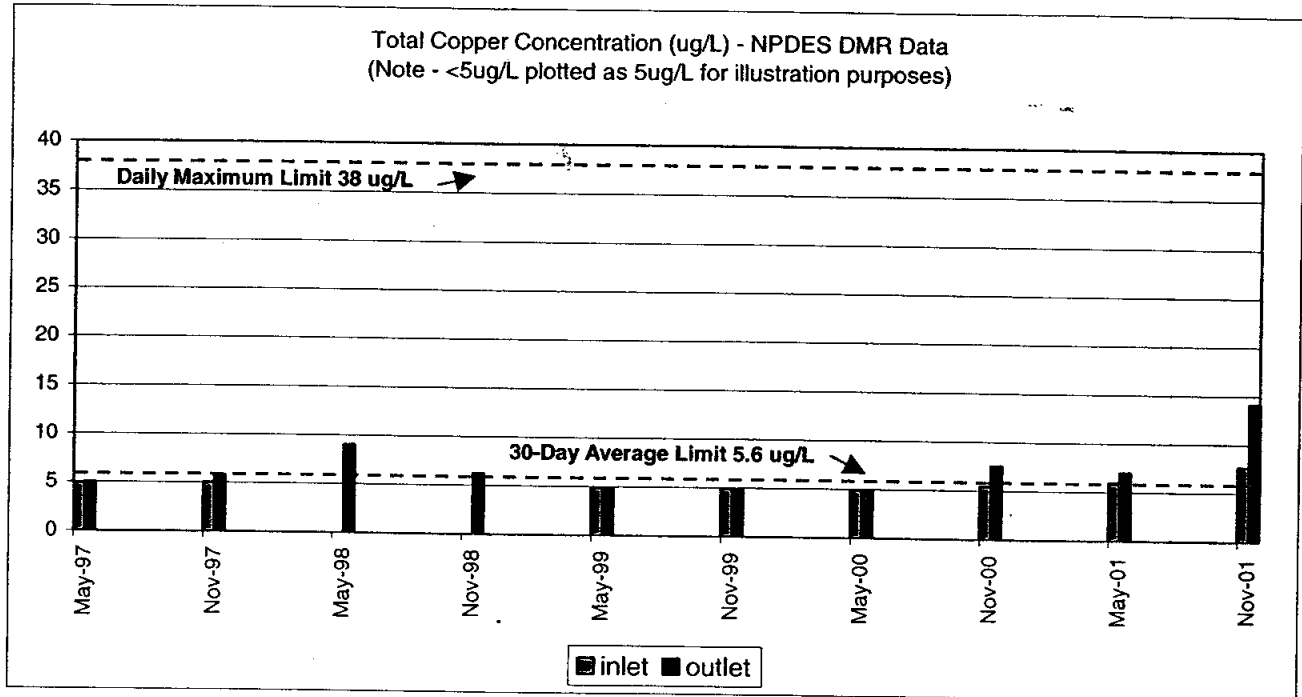


Figure 8 – Once Through Cooling Process Diagram



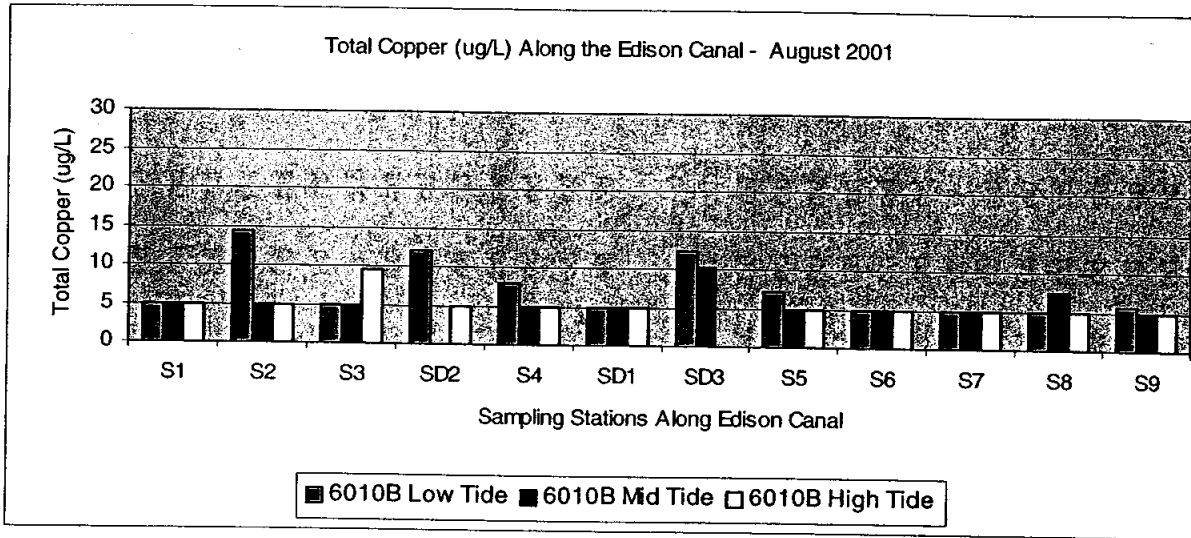
Figure 9 - Discharge Serial Number 001



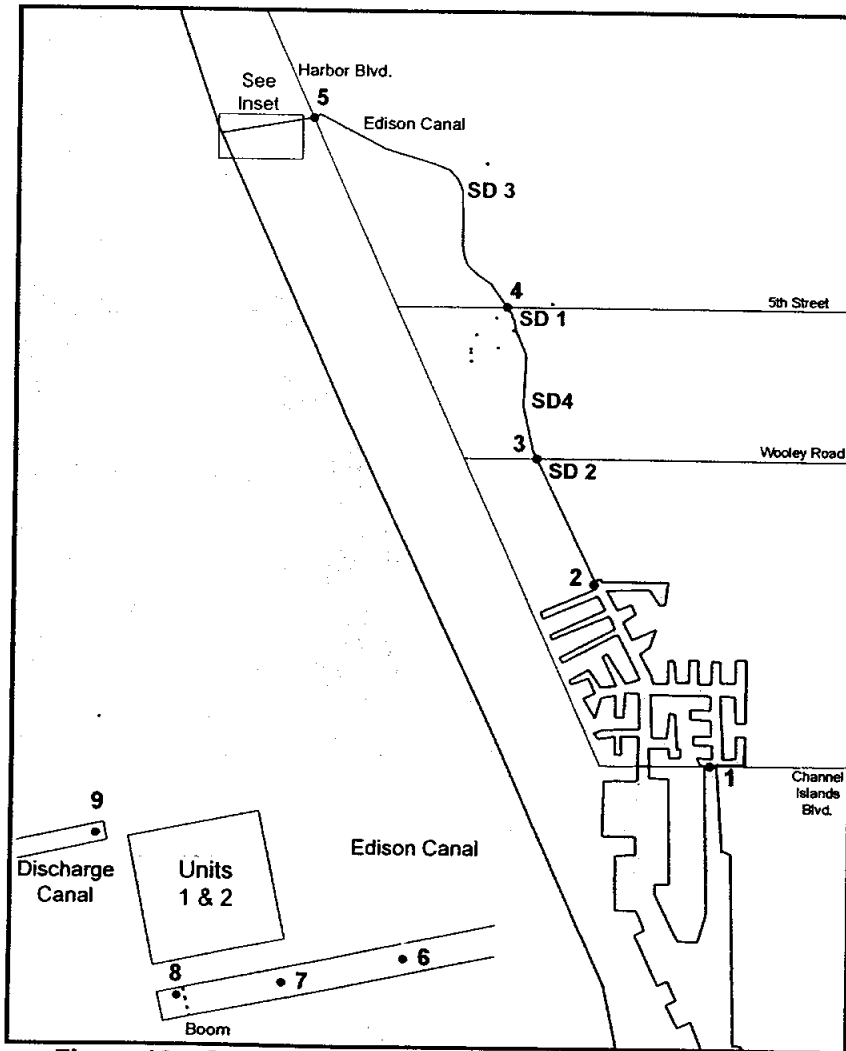


| Sample Date       | Copper - Inlet | Copper - Outlet |
|-------------------|----------------|-----------------|
| May 16, 1997      | <5             | <5              |
| November 18, 1997 | 5              | 5.8             |
| May 7, 1998       | no data        | 9               |
| November 3, 1998  | no data        | 6.2             |
| May 5, 1999       | <5             | <5              |
| November 4, 1999  | <5             | <5              |
| May 3, 2000       | <5             | <5              |
| November 4, 2000  | 5.47           | 7.53            |
| May 24, 2001      | 6              | 7               |
| November 1, 2001  | 7.64           | 14.1            |

**Figure 10- Copper Concentrations Over Time**



**Figure 11 - Copper Concentrations Along Edison Canal, 2001**



**Figure 12 - Sampling Points Along the Edison Canal, 2001**



**Attachment B**

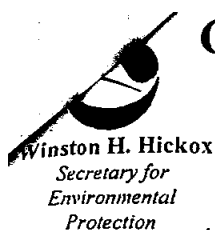
**Notice of Violation, 4/25/2001**

**Complaint No. 01-083, 7/9/2001**

# California Regional Water Quality Control Board

## Los Angeles Region

(50 Years Serving Coastal Los Angeles and Ventura Counties)



Gray Davis  
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013  
Phone (213) 576-6600 FAX (213) 576-6640  
Internet Address: <http://www.swrcb.ca.gov/rvqcb4>

April 25, 2001

Mr. R. W. Lawhn, Manager  
Environmental Department  
Reliant Energy  
12301 Kurland Drive  
Huston, TX 77034

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED  
CLAIM NO. 7001 0360 0000 3649 6348

Dear Mr. Lawhn:

**NOTICE OF VIOLATIONS OF WASTE DISCHARGE REQUIREMENTS AND NPDES PERMIT  
- RELIANT ENERGY INCORPORATED, MANDALAY GENERATING STATION, 393 N.  
HARBOR BLVD., OXNARD, CA (FILE NO. 58-005, CI-2093, NPDES ORDER NO. 94-131,  
CA0001180)**

In the process of renewing the National Pollutant Discharge Elimination System (NPDES) permit for your facility's discharges to the Pacific Ocean, staff reviewed your monitoring reports for the previous years. Staff found you have violated the 30-day average effluent limit for lead in June 1998. The copper 30-day effluent limit of 5.6 µg/L was also violated as shown in the following table.

**Copper Effluent Limit Violations  
(Limit: 5.6 mg/L 30-day Average)**

| <u>Month Reported</u> | <u>Date Sample</u> | <u>Units</u> | <u>Copper Concentration</u> |
|-----------------------|--------------------|--------------|-----------------------------|
| December              | November 4, 2000   | µg/L         | 7.53                        |
| December              | November 1, 1998   | µg/L         | 6.2                         |
| June                  | May 7, 1998        | µg/L         | 9                           |
| December              | November 18, 1997  | µg/L         | 5.8                         |
| December              | November 7, 1996   | µg/L         | 13                          |
| June                  | May 13, 1996       | µg/L         | 11                          |

You are required to comply with the following tasks:

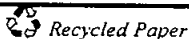
1. Implement corrective and preventive actions to bring your discharge into full compliance with the Effluent Limitations of Board Order No. 94-131.

RECEIVED

California Environmental Protection Agency

APR 30 2001

\*\*\*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption\*\*\*  
\*\*\*For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/energychallenge.html>\*\*\*



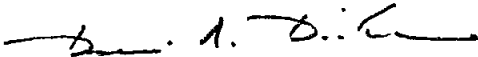
Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

2. Submit, for approval by the Regional Board's Executive Officer, a report detailing the corrective actions taken and the results thereof.

Pursuant to sections 13260, 13261, and 13376 of the California Water Code, you are required to achieve compliance with the requirements of Board Order No. 94-131. You are now subject to an enforcement action by the Regional Board and the assessment of penalties of up to \$1,000 per day per violation. Pursuant to section 13385 of the California Water Code, you are subject to penalties ranging from a mandatory minimum penalty of \$3,000 for each serious violation (as defined by section 13385 of the California Water Code) to \$10,000 for each day in which each violation occurs plus \$10 multiplied by the number of gallons by which the volume discharged but not cleaned up exceeds 1,000 gallons. These civil liabilities can be assessed by the Regional Board for failure to comply, and without further warning.

If you have any question, please contact Cassandra Owens at (213) 576-6750 or David Hung at (213) 576-6664.

Sincerely,

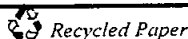


Dennis A. Dickerson  
Executive Officer

cc: Mr. Jorge Leon, Office of Chief Counsel, State Water Resources Control Board  
Mr. Jim Kassel, Division of Water Quality, State Water Resources Control Board  
Ms. Julie Babcock, Reliant Energy Incorporated, Mandalay Generating Station  
Mr. Edward Malinowski, Reliant Energy Incorporated, Mandalay Generating Station

**California Environmental Protection Agency**

\*\*\*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption\*\*\*  
\*\*\*For a list of simple ways to reduce demand and cut your energy costs, see the tips at: <http://www.swrcb.ca.gov/news/echallenge.html>\*\*\*



Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

### Further Investigation of Historical Data & Additional Sampling - Copper

In response to continuing intermittent copper exceedences, Reliant Energy began a detailed investigation of the existing copper data and, based on that data, initiated screening of potential upstream sources. A review of historical copper monitoring data indicated that concentrations of copper are similar coming into and leaving the generating station (Figure 10). The data validates that plant processes and materials are not a statistically relevant contributing source of copper into the discharge.

Recent field efforts indicate that samples of canal water collected upstream of the facility intake contain significant concentrations of copper (Figures 11 & 12, and MBC Applied Environmental Services, August 2001 – Attachment C). In addition, analysis of storm water runoff entering the canal from the surrounding lands show elevated copper concentrations relative to ambient canal water, further demonstrating that processes not associated with the Mandalay Generating Station are introducing copper into the canal system.

The data review also generated questions regarding the limitations of current analytical methods and clean sampling techniques. Producing accurate test results at trace concentrations (i.e., 5 ug/L) can be difficult under even ideal conditions. Chloride ion interference associated with the saltwater matrix sampled at Mandalay results in analytical method detection limits that are essentially the same as the permit effluent limits for copper and other metals, increasing the chance for permit violations based on "false positives". In addition, recent studies conducted by the EPA indicate that one of the greatest challenges associated with measuring trace level pollutants is precluding sample contamination during collection, transport, and analysis (EPA Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria, 1995). Reliant Energy is currently working with Calscience Environmental Laboratories to identify ways to decrease saltwater matrix interference, lower detection and reporting limits, and better ensure the accuracy of future analyses. Modifications to any existing sample preparation protocols will be consistent with permit requirements.

### Requested Action

Based on our current understanding of water quality guidance documents, policies, and rules that apply to the Mandalay Generating Station, Reliant Energy respectfully requests that the Regional Water Quality Control Board provide that compliance with the existing 30-day copper limit be determined after allowance for the ambient copper levels in the plant intake water.

We believe that such a revision, based on the consideration of no-net addition of copper (commonly referred to as intake credits), is appropriate given that non-point and point sources of pollutant loading along the canal are beyond our reasonable control. Non-point sources include, storm water and irrigation runoff from agricultural fields, and boat and dock maintenance activities associated with the Channel Islands Harbor.

Reliant Energy acknowledges that applying monthly average limitations to a single grab sample may have, in itself, contributed to the indicated monthly average exceedences. Accordingly, we will expedite receipt of laboratory results for copper and implement accelerated sampling to allow multiple grab samples to define the average.

Reliant Energy believes that the requested action can be granted in accordance with the Basin Plan and Ocean Plan, and is supported by the following:

- The concept of intake credits is in line with the Regional Water Quality Advisory Task Force recommendation to consider pre-existing water chemistry (i.e., mineral content) when setting wastewater limits (page 5-8, Basin Plan).
- Previous work conducted at the facility to support a revision to the NPDES permit effluent limit for total residual chlorine during 1995, included estimation of a site-specific dilution ratio. The study indicated that the standard dilution ratio of 2.6 used to calculate effluent limits for coastal generating stations was conservative compared

to site conditions at the Mandalay Generating Station, and that an accurate site-specific dilution ration is closer to 5.2 (Analysis of 301(g) Variance Application For Southern California Edison Company Mandalay Generating Station, EPA Region 9, February 1995). Using the site-specific dilution ratio to calculate a revised copper limit would allow the LARWQCB to provide relief for the Mandalay Generating Station while still remaining protective of the water quality standard established under the Ocean Plan.

- Precedents have been set by neighboring Regional Water Quality Boards to consider intake concentrations prior to enforcement at similar power plants which discharge once-through cooling water into the Pacific Ocean. Specific generating stations include the Moss Landing Power Plant, regulated by the Central Coast Regional Water Quality Board, and the Encina Power Plant, regulated by the San Diego Regional Water Quality Board (Attachment D).

We look forward to working with the LARWQCB to develop a solution to the NPDES copper effluent limit issue and would welcome the opportunity to meet with Ms. Owens and members of the staff to discuss this request. Please contact me at (702) 407-4884 or Ms Julie Babcock at (702) 407-4880 if you have any questions or require additional information.

Sincerely,



Robert W. Lawhn  
Director-Environmental, Safety & Ind Health, Western Region

cc w att.: Ms. Cassandra Owens, Environmental Scientist 3, LARWQCB



## **Attachment A – Figures & Tables**

Figure 1 - Site Location Map

Figure 2 – Aerial View of Mandalay Generating Station - 1995

Figure 3 – Marina, Canal, Intake, Discharge – 1995

Figure 4- Development Along Edison Canal, 2002

Figure 5 – Agricultural Land Along Edison Canal, 2002

Figure 6 – Examples of Non-Point Source Runoff, 2002

Figure 7 – Mandalay Intake & Chlorination Area. 2002

Figure 8 – Once Through Cooling System Diagram

Figure 9 – Discharge Serial 001, 2002

Figure 10 – Copper Concentrations Over Time

Figure 11 – Copper Concentrations Along the Edison Canal, 2001

Figure 12 – Sampling Points Along Edison Canal, 2001

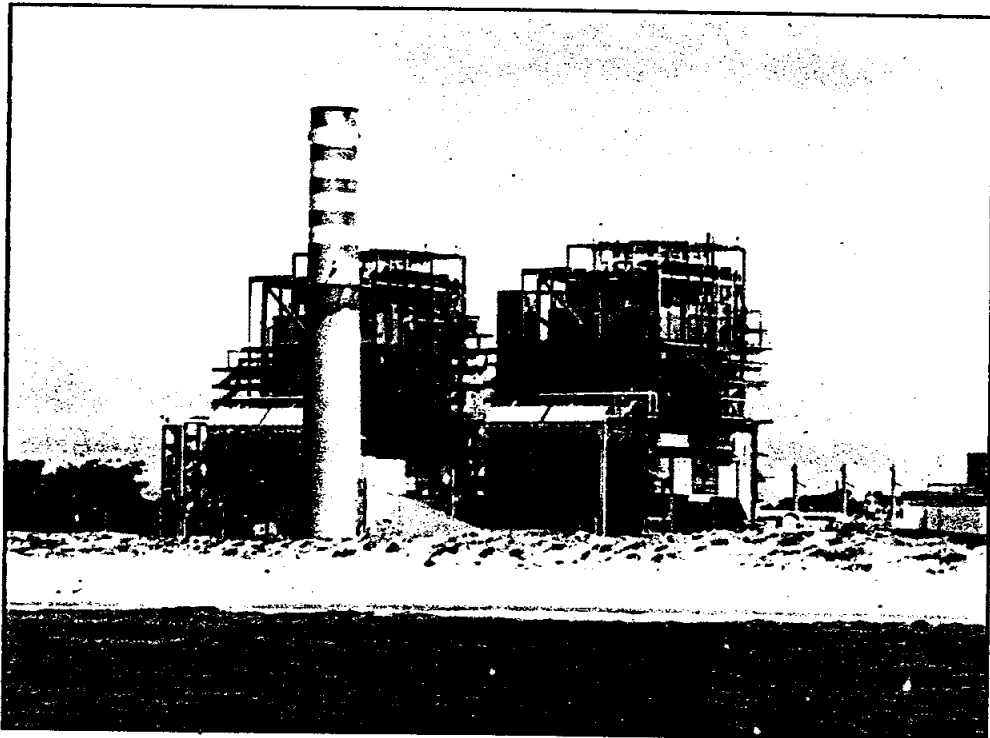
Table 1 – Metals Concentrations Over Time

**Attachment C**

**Evaluation of Copper Concentrations in the Edison Canal Intake Cooling Water  
for the Reliant Energy Mandalay Generating Station; August 2001, MBC  
Applied Environmental Sciences**

**EVALUATION OF COPPER CONCENTRATIONS  
IN THE EDISON CANAL INTAKE COOLING WATER  
FOR THE RELIANT ENERGY  
MANDALAY GENERATING STATION**

**August 2001**



*Prepared for:*

**Reliant Energy  
Oxnard, California**



*Prepared by:*

**MBC Applied Environmental Sciences  
Costa Mesa, California**

**EVALUATION OF COPPER CONCENTRATIONS  
IN THE EDISON CANAL INTAKE COOLING WATER  
FOR THE RELIANT ENERGY  
MANDALAY GENERATING STATION**

**August 2001**

2002 MAY 29 10:12

**Prepared for:  
Reliant Energy  
Oxnard, California 93033**

**Prepared by:  
MBC Applied Environmental Sciences  
Costa Mesa, California 92626**

# **PROJECT STAFF**

**MBC *Applied Environmental Sciences***

**Project Manager - M. D. Curtis**

## **Marine Scientists**

**M. D. Curtis  
E. C. Elstad  
M. J. Mancuso  
R. H. Moore**

## **Word Processing**

**M. R. Pavlick**

2002 MAY 29 / A ID: 12

**EVALUATION OF COPPER CONCENTRATIONS  
IN THE EDISON CANAL INTAKE COOLING WATER  
FOR THE RELIANT ENERGY MANDALAY GENERATING STATION**

**INTRODUCTION**

On 23 April 2001, MBC Applied Environmental Sciences (MBC) met with plant personnel at Reliant Energy's Mandalay Generating Station to discuss the pending receipt of a "Notice of Violation" for copper concentrations in the discharge effluent. The meeting was called to determine what the station could do to lower the copper concentrations in the discharge waters. The station had been notified by the Los Angeles Regional Water Quality Control Board that they would be cited and on 25 April 2001, a notice was received. A review of the notice indicated that copper concentrations had been over the acceptable limit a total of six instances dating from 13 May 1996 to 4 December 2000. Copper concentrations during this period ranged from 5.8 to 13 µg/l (micrograms per liter) exceeding the regulatory limit of 5.6 µg/l.

During a discussion with plant personnel, they indicated that efforts had been made to determine any possible source from the plant, but during a thorough investigation none had been found. They had speculated, and taken a few samples that appeared to indicate, that the high copper concentrations analyzed at the intake water were not from the plant, but were due to the intake water from Edison Canal having high concentrations. It was speculated that the concentrations may come from agricultural runoff high in pesticides with a copper base or from the Channel Islands Harbor because of the potential for boat bottom paints and other associated marine applications to have high copper contents. It was agreed that MBC would conduct a survey of both water and sediment concentrations at accessible locations in the Edison Canal and in Channel Islands Harbor.

At the request of plant personnel, a second survey was conducted on 22 August 2001 to confirm the previous data reported and to provide additional data to identify potential sources of the copper contamination. Water samples were collected at the nine stations previously occupied during three tidal stages to determine tidal influence on the copper transport from the harbor and from four storm drains discharging directly into the canal. Duplicate samples from each location were collected for analysis by two analytical chemistry laboratories.

**FIELD SAMPLING AND COLLECTION METHODOLOGY**

The second sampling period for water and sediment chemistry in the Edison Canal at Reliant Energy's Mandalay Generating Station was conducted on 22 August 2001. Sampling was conducted at the nine locations established during the previous sampling effort; two locations in Channel Islands harbor, six locations in the intake canal between the harbor and the traveling screens, and one at the discharge from the plant (Figure 1). Additional water samples were collected from four storm drains discharging directly into the intake canal; two storm drains adjacent to Stations 3 and 4, one storm drain between Station 3 and 4, and one storm drain between Stations 4 and 5.

Water samples were collected on 22 August 2001 at mid-depth during the low, mid, and high tidal stages with a van Dorn grab sampler. (During the previous study, conducted on 25 April 2001, water samples were collected at mid-depth at only the mid tidal stage with a van Dorn grab sampler.) The water samples were preserved in appropriate pre-cleaned containers. Sediment samples were collected from the bottom with a modified Ponar grab. Sediment from the surface 2.5 cm was extracted from the grab with a plastic spoon and placed in the appropriate pre-cleaned containers. Containers were placed on ice after collection and immediately transported to MBC's laboratory. A Chain-of-Custody Record was prepared and samples were maintained at 4°C until delivered to each analytical laboratory.

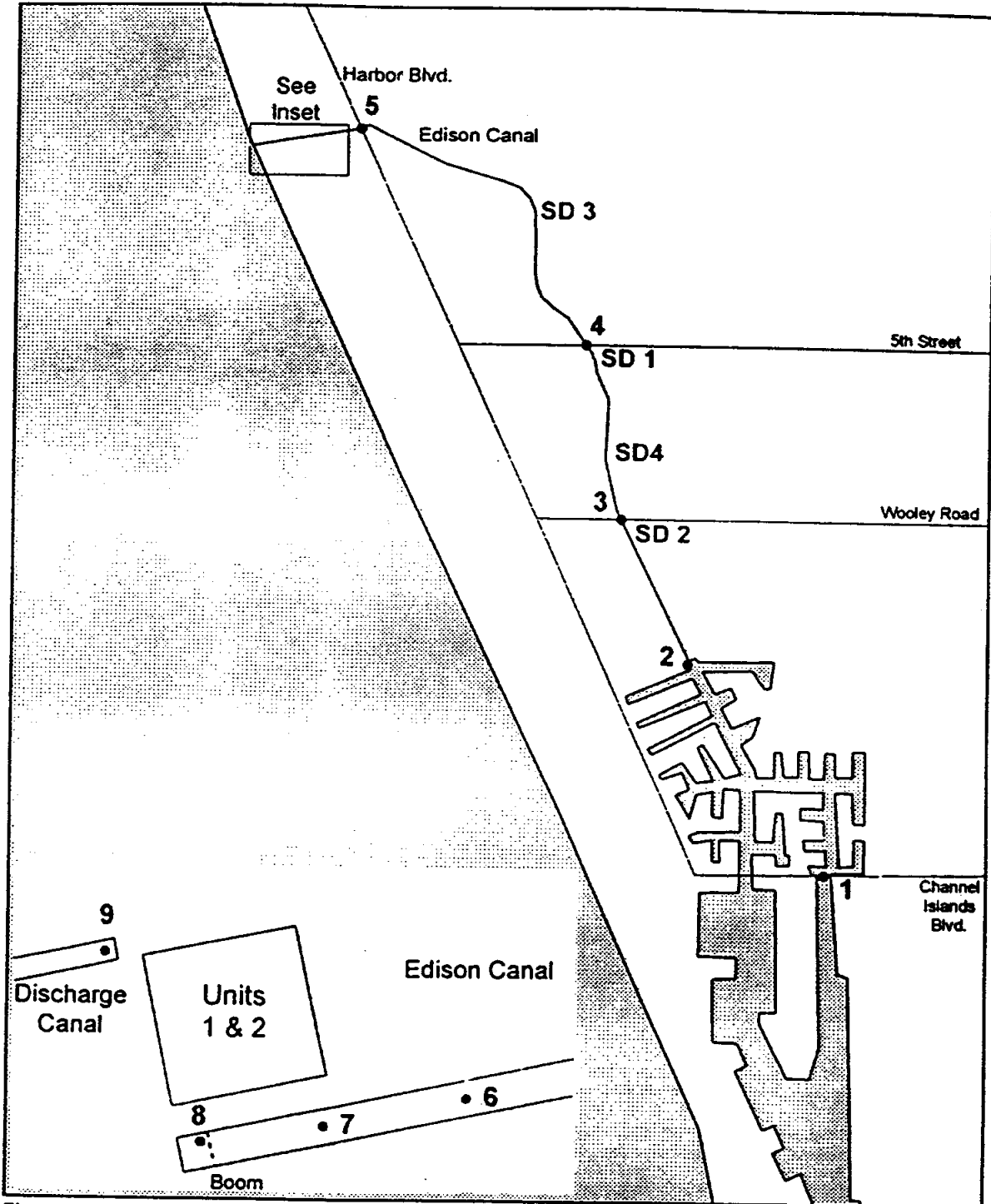


Figure 1. Map of Edison Canal from Reliant Energy Mandalay generating station to Channel Island Harbor with water, sediment, and storm drain station locations.

Station 1 was sampled from the center of the eastern bridge of Channel Islands Boulevard as it crosses Channel Islands Harbor. Station 2 was sampled from a private dock at the foot of Eastbourne Bay Road near the entrance of the Edison Canal as it exits Channel Islands Harbor. Stations 3 through 8 were sampled in the Edison Canal in mid-channel at locations noted in Table 1. Storm drains from adjacent agricultural fields were actively discharging into the canal. Storm drain samples were collected at Station 4 (SD1), Station 3 (SD2), midway between Stations 4 and 5 (SD 3), and approximately 1/3 of the distance between Stations 3 and 4 (SD4). Station 9 was collected at the point the discharge water exits the plant at the beach.

## ANALYTICAL CHEMISTRY METHODS

Low concentrations of metals and trace elements are masked in a marine matrix (water or sediment). Special analytical preparation techniques and methodologies for samples in a marine matrix are required to obtain results at the part per billion ( $\mu\text{g/l}$  or  $\mu\text{g/kg}$ ) levels required by the current regulatory permit. Results at these low detection and reporting levels often can not be achieved and must be reported as not detected (ND) at the reportable limit for the specified analytical methods. Anticipating this problem, duplicate samples were collected to provide samples for analysis using standard and special analytical methodologies.

Samples were delivered to two different analytical laboratories for copper analysis. Calscience Environmental Laboratories located in Garden Grove, California performed the standard analysis for copper in a marine matrix using EPA Method 6010B. Complete analytical results are presented in Appendix A. Duplicate samples were sent via Federal Express to Battelle Marine Sciences Laboratory (MSL) located in Sequim, Washington. The duplicate samples were analyzed utilizing MSL-I-025 (Seawater) and MSL-I-027-02 (Sediment), specialized methodologies developed by MSL for determining low levels of metals and trace elements. Complete analytical results and a QA/QC narrative of the methods are presented in Appendix B.

## RESULTS

The results of the water and sediment sampling indicated that the samples from the Edison Canal at Reliant Energy's Mandalay Generating Station still exceeded the copper concentration levels permitted to be discharged into the ocean (Table 1). Water sample copper concentrations ranged from  $3.47 \mu\text{g/l}$  (Station 3 at high tide) located approximately mid-way between the Channel Islands Harbor and the plant to  $9.83 \mu\text{g/l}$  (Station 5 at mid-tide) at the Harbor Boulevard bridge. The average concentration of copper sampled in the canal was  $5.87 \mu\text{g/l}$  (less than one half the concentration measured in the April 2001 sample period, but still greater than the permitted discharge level of  $5.6 \mu\text{g/l}$ ). The copper concentration at the discharge averaged  $5.53 \mu\text{g/l}$  (slightly below the permitted discharge level of  $5.6 \mu\text{g/l}$ ).

Four of the storm drains actively discharging into the canal were sampled for copper (Figure 1). Only one storm drain (SD1 near Station 4) was accessible at all three tidal stages. Copper concentrations ranged from  $2.39 \mu\text{g/l}$  at high tide to  $4.87 \mu\text{g/l}$  at mid tide at SD 1 (Table 1). The other three storm drains were sampled when accessible based upon the tidal stage. Results from the discharge from the storm drain at SD4 exhibited the lowest copper concentration ( $3.61 \mu\text{g/l}$ ) and the storm drain at SD2 the highest concentration ( $23.7 \mu\text{g/l}$ ). Copper concentrations being discharged from all storm drains sampled averaged  $11.0 \mu\text{g/l}$  (almost double the permitted discharge level of  $5.6 \mu\text{g/l}$ ).

Copper concentrations in the sediments as analyzed by MSL-I-027-02 ranged from  $1.97$  to  $150 \text{ mg/kg}$ . Concentrations of copper in sediments were very high at the back of Channel Islands Harbor ( $150 \text{ mg/kg}$ ) and generally decreased with distance from the harbor along the canal to the Harbor Boulevard overcross ( $5.5 \text{ mg/kg}$ ), then increased at the two stations nearest the intake (Stations 7 and 8 with concentrations of  $27.1$  and  $37.3 \text{ mg/kg}$ , respectively). The sediment directly in front of the discharge was not sampled due to sediment scouring during the April 2001 survey.



but values measured in August 2001 were 5.2 mg/l (EPA 6010B) and 1.97 mg/l (MSL-I-027-02) well below the copper concentrations measured in the canal sediments.

Table 1. Station locations and copper concentrations in water (mg/l) and sediment (mg/kg) samples. Reliant Energy Mandalay generating station.

|               |                                      | CANAL SEAWATER |         |        |         |        |         | BOTTOM SEDIMENT |      |
|---------------|--------------------------------------|----------------|---------|--------|---------|--------|---------|-----------------|------|
|               |                                      | Tide Height    |         |        |         |        |         | 6010B           | MSL* |
|               |                                      | LOW            |         | MID    |         | HIGH   |         |                 |      |
|               |                                      | 6010B          | MSL*    | 6010B  | MSL*    | 6010B  | MSL*    | 6010B           | MSL* |
| Station 1     | Channel Islands Blvd. east bridge    | ND             | 0.00910 | ND     | 0.00402 | ND     | 0.00375 | 20.5            | 22.2 |
| Station 2     | Private dock, Eastbourne Bay Rd.     | 0.0144         | 0.00587 | ND     | 0.00490 | ND     | 0.00444 | 79.5            | 150  |
| Station 3     | Wooley Road bridge                   | ND             | 0.00544 | ND     | 0.00586 | 0.0095 | 0.00347 | 27.6            | 84.4 |
| Station 4     | W. 5th Street bridge                 | 0.0071         | 0.00803 | ND     | 0.00487 | ND     | 0.00399 | 63.2            | 71.3 |
| Station 5     | Harbor Blvd. Bridge                  | 0.0072         | 0.00983 | ND     | 0.00491 | ND     | 0.00446 | 2.7             | 5.5  |
| Station 6     | 1/3 distance from Sta. 5 to Sta. 8   | ND             | 0.00547 | ND     | 0.00433 | ND     | 0.00404 | 17.1            | 41.9 |
| Station 7     | 2/3 distance from Sta. 5 to Sta. 8   | ND             | 0.00584 | ND     | 0.00373 | ND     | 0.00408 | 14.2            | 27.1 |
| Station 8     | Intake structure in front of screens | ND             | 0.00588 | 0.0074 | 0.00413 | ND     | 0.00426 | 22.5            | 37.3 |
| Station 9     | Discharge channel at fence           | 0.0057         | 0.00472 | ND     | 0.00600 | ND     | 0.00568 | 5.2             | 1.97 |
| Storm Drain 1 | Near Sta. 4                          | ND             | 0.00435 | ND     | 0.00487 | ND     | 0.0239  | -               | -    |
| Storm Drain 2 | Near Sta. 3                          | 0.0121         | 0.0237  | -      | -       | ND     | -       | -               | -    |
| Storm Drain 3 | 1/2 distance from Sta. 4 to Sta. 5   | 0.0123         | 0.0155  | 0.0103 | 0.0166  | -      | -       | -               | -    |
| Storm Drain 4 | 1/3 distance from Sta. 3 to Sta. 4   | -              | -       | J      | 0.00361 | -      | -       | -               | -    |

ND = Not Detected - less than 0.00500 mg/l  
 J = trace value  
 - = not sampled

\*MSL - I - 025 for Seawater  
 \*MSL - I - 027-02 for Sediment

DISCUSSION

The results of water and sediment sampling collected during the August 2001 sample period exhibited similar copper concentrations to those collected approximately six months earlier in April 2001. As anticipated, all samples analyzed using MSL methodologies were above the method detection limit and discrete values were obtained for all samples submitted. The majority of the samples analyzed with EPA 6010B were below the reporting limit of 0.0050 mg/l. The EPA 6010B data indicated the copper concentrations were below the 0.0056 mg/l discharge level as required by the permit. While data reported from the more sensitive MSL test method yielded a different interpretation of the water mass. Data from this method indicated that all stations in the Edison Canal, with the exception of Station 6, had copper concentrations that exceeded the levels permitted to be discharged to the ocean (Table 1). In general, the copper concentrations were lower in the water column and higher in the sediments during the August 2001 sample period regardless of the analysis method.

The results indicate that the copper concentrations measured in the water column were influenced by the tidal stage. Samples collected during the highest tidal stage demonstrated the lowest concentrations and those collected at the lowest tidal stage were the highest in reportable copper concentrations. Copper concentrations measured in the water being discharged into the canal from the storm drains located at SD3 and SD4 were two to four times the permit discharge limit for the plant.

Sediment samples collected in the canal during this study period had copper concentrations that were two to six times higher than the concentrations reported in the previous study. Copper concentrations in the canal sediments ranged from 5.5 mg/kg at Station 5 (lowest in April 2001) to 150 mg/kg at Station 2 (highest in April 2001). The copper concentrations reported from the April 2001 study did not exceed the ERL ("Effects Range Low") levels for copper (34 mg/kg) developed by NOAA (1991) and later updated by Long et. al (1995). This is the level where chemical concentrations are believed to be associated with adverse biological effects. From various studies, the level where 10% or less of the organisms experienced problems was designated the ERL, and the median was designated ERM ("Effects Range Median"). The ERL was exceeded at five of the eight stations during this sample period.

Pollutants such as metals like copper come from a variety of sources of industrial, agricultural, and domestic origin. Historically, Channel Islands Harbor has been an area with a large number of berthed boats, a potential source of metal contamination to the marine environment. The past use of copper in bottom paint and other protective coatings on commercial and recreational boats may significantly contribute to the local levels of these metals. In addition, oil and gasoline combustion releases many substances including copper. Agricultural land use is a diffuse and potentially large source of contaminants derived from soil additives and pesticides, and may include metals and other contaminants. As these contaminants accumulate on the ground, they are washed into storm drains by rainfall and irrigation, and are eventually deposited in the canal.

The values reported from samples collected in Channel Islands Harbor and the agricultural runoff being discharged into the canal from the storm drains sampled exceed the discharge limitations in the generating stations permit. The data from both studies appear to indicate that inputs to the canal from the Channel Islands Harbor and agricultural runoff may be the primary source of the copper contamination in the canal.

Data collected from both study periods demonstrates the intake of the generating station is entraining water that exceeds the discharge limit required by the permit and passing it through the station with little or no addition to the total copper concentration. It is unlikely that the operation of the generating station is causing a further decline in the ocean water quality. The same ocean water being discharged at Mandalay would eventually make its way back to the ocean by tidal means in the absence of the strong flow through Edison Canal

Differences in metal concentrations are often directly related to the proportion of fine-grained material; sediments consisting of finer particles may contain higher amounts of metals due to the greater available surface area (Ackermann 1980; de Groot et al. 1982). Sediments are generally finer where currents in the overlaying water are slower, such as the generating station's forebay area, and coarser in channels where currents are stronger. The slower currents (the forebay) allow settling of fine particles, while strong currents (in the canal) suspend and move the small particles.

## CONCLUSIONS

Based on the data from both studies, it appears that Mandalay Generating Station is not the source of the high levels of copper found in the effluent. Therefore, the operation of the Mandalay Generating Station is not causing a reduction in the beneficial uses of the receiving water. The power plant only relocates ocean water from one location to another. In the absence of the generating station, the high copper levels would be discharged tidally to the biota offshore of the Channel Islands Harbor. The discharge is, in effect, diluting and thereby reducing the potential effect of the copper concentrations offshore of the harbor.

## LITERATURE CITED

- Ackerman, F. 1980. A procedure for correcting the grain size effect in heavy metal analysis of estuarine and coastal sediments. *Environmental Technology Letters* 1:518-527.
- De Groot, A.J., K.H. Zschuppe, and W. Salomons. 1982. Standardization of methods of analysis for heavy metals in sediments. *Hydrobiologica* 92:689-695.
- Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environ. Management* 19(1):81-97.
- National Oceanic and Atmospheric Administration. 1991. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Tech. Mem. NOS OMA 52, Seattle, WA, 175p. Plus appendices.

## **APPENDIX A**

**Copper Analysis EPA Method 6010B**

---

**Calscience  
Environmental  
Laboratories, Inc.**

August 28, 2001

M. Mancuso  
MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Subject: **Calscience Work Order No.:** 01-08-1037  
**Client Reference:** Reliant Energy Mandalay/01204C


Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 08/23/2001 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

  
Calscience Environmental  
Laboratories, Inc.  
Robert Stearns  
Project Manager

  
Michael J. Crisostomo  
Quality Assurance Manager

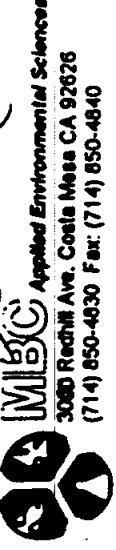
CHAIN OF CUSTODY RECORD

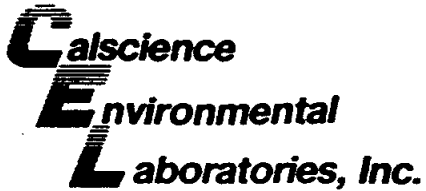
(1037)

Log Number

| Client name             |              | Job number                |                        | Analyses requires                          |                      | Remarks  |       |
|-------------------------|--------------|---------------------------|------------------------|--|----------------------|--|-------|
| MBC                     |              | 01204C                    |                        | * 221(QA) CORR                             |                      |  |       |
| Project name            |              | Sample(s)                 |                        | Hazardous samples require special handling |                      | Remarks  |       |
| RELIANT ENERGY MANDALAY |              | R. MOORE, E. ELSTAD       |                        | Hazardous samples require special handling |                      |  |       |
| Project manager         |              | Sample description        |                        | Number of containers                       |                      | Remarks  |       |
| M. MANUISO              |              | CHANNEL SEAWATER - LOW    |                        | 1  |                      |  |       |
| Sample number           | Date emptied | Time emptied              | Type Composite or Grab | Sample description                         | Number of containers | Remarks  |       |
| STA. 1                  | 22 AUG 01    |                           | GRAB                   | CHANNEL SEAWATER - LOW                     | 1                    |  |       |
| STA. 2                  |              |                           |                        |  | 1                    | * SPECIAL HANDLING REQUESTED - SEAWATER SAMPLES. |       |
| STA. 3                  |              |                           |                        |  | 1                    |  |       |
| STA. 4                  |              |                           |                        |  | 1                    |  |       |
| STA. 5                  |              |                           |                        |  | 1                    | 24HR TURN AROUND                                 |       |
| STA. 6                  |              |                           |                        |  | 1                    |  |       |
| STA. 7                  |              |                           |                        |  | 1                    |  |       |
| STA. 8                  |              |                           |                        |  | 1                    |  |       |
| STA. 9                  |              |                           |                        |  | 1                    |  |       |
| SD 1                    | 22 AUG 01    |                           | GRAB                   | STORM DRAIN - LOW                          | 1                    |  |       |
| SD 2                    |              |                           |                        |  | 1                    |  |       |
| SD 3                    |              |                           |                        |  | 1                    |  |       |
| Retrieved by            |              | Signature                 |                        | Company                                    |                      | Date   | Time  |
|                         |              | <i>Michael J. Manuiso</i> |                        | MBC  |                      | 8/23/01  | 11:00 |
| Received by             |              | <i>[Signature]</i>        |                        | CEL  |                      | 8/23/01  | 1435  |
| Retrieved by            |              | <i>[Signature]</i>        |                        | CEL  |                      | 8/23/01  | 1515  |
| Received by             |              | <i>[Signature]</i>        |                        | CEL  |                      | 8/23/01  | 15:15 |

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client.





# ANALYTICAL REPORT

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1037  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 1 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 1                 | 01-08-1037-1       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs4   |

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 2 | 01-08-1037-2 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.0144        | 0.0050    | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 3 | 01-08-1037-3 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 4 | 01-08-1037-4 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.00710       | 0.00500   | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 5 | 01-08-1037-5 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.00720       | 0.00500   | 1         |             | mg/L         |

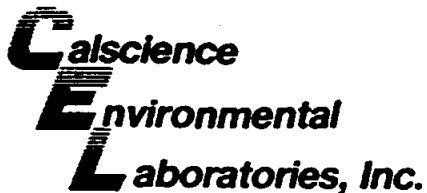
|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 6 | 01-08-1037-6 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 7 | 01-08-1037-7 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers



# ANALYTICAL REPORT

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received:  
 Work Order No:  
 Preparation:  
 Method:

08/23/01  
 01-08-1037  
 Total Digestion  
 EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 2 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 8                 | 01-08-1037-8       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs4   |

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

|       |              |         |          |          |          |            |
|-------|--------------|---------|----------|----------|----------|------------|
| STA 9 | 01-08-1037-9 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|-------|--------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.00570       | 0.00500   | 1         |             | mg/L         |

|      |               |         |          |          |          |            |
|------|---------------|---------|----------|----------|----------|------------|
| SD 1 | 01-08-1037-10 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|------|---------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

|      |               |         |          |          |          |            |
|------|---------------|---------|----------|----------|----------|------------|
| SD 2 | 01-08-1037-11 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|------|---------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.0121        | 0.0050    | 1         |             | mg/L         |

|      |               |         |          |          |          |            |
|------|---------------|---------|----------|----------|----------|------------|
| SD 3 | 01-08-1037-12 | Aqueous | 08/22/01 | 08/27/01 | 08/27/01 | 010827lcs4 |
|------|---------------|---------|----------|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | 0.0123        | 0.0050    | 1         |             | mg/L         |

|              |                  |         |     |          |          |            |
|--------------|------------------|---------|-----|----------|----------|------------|
| Method Blank | 097-01-003-1,902 | Aqueous | N/A | 08/27/01 | 08/27/01 | 010827lcs4 |
|--------------|------------------|---------|-----|----------|----------|------------|

| <u>Parameter</u> | <u>Result</u> | <u>RL</u> | <u>DF</u> | <u>Qual</u> | <u>Units</u> |
|------------------|---------------|-----------|-----------|-------------|--------------|
| Copper           | ND            | 0.00500   | 1         |             | mg/L         |

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

**Quality Control - Spike/Spike Duplicate**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1037  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

| Spiked Sample ID | Matrix  | Instrument | Date Prepared | Date Analyzed | MS/MSD Batch Number |
|------------------|---------|------------|---------------|---------------|---------------------|
| STA 1            | Aqueous | ICP 3300   | 08/27/01      | 08/27/01      | 082701ms4           |

| Parameter | MS %REC | MSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|-----------|---------|----------|---------|-----|--------|------------|
| Copper    | 118     | 123      | 80-120  | 4   | 0-20   | 3          |



MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received:  
 Work Order No:  
 Preparation:  
 Method:

08/23/01  
 01-08-1037  
 Total Digestion  
 EPA 6010B

Project: Reliant Energy Mandalay/01204C

| LCS Sample Number | Matrix  | Instrument | Date Analyzed | Lab File ID | LCS Batch Number |
|-------------------|---------|------------|---------------|-------------|------------------|
| 097-01-003-1,902  | Aqueous | ICP 3300   | 08/27/01      | 010827-1    | 010827lcs4       |

| Parameter | Conc Added | Conc Recovered | %Rec | %Rec CL | Qualifiers |
|-----------|------------|----------------|------|---------|------------|
| Copper    | 1.00       | 1.03           | 103  | 80-120  |            |

## GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 01-08-1037

---

| <u>Qualifier</u> | <u>Definition</u>  |
|------------------|--|
| 3                | Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification. |
| ND               | Not detected at indicated reporting limit.   |

**Calscience  
Environmental  
Laboratories, Inc.**

August 28, 2001

M. Mancuso  
MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Subject: **Calscience Work Order No.:** 01-08-1036  
**Client Reference:** Reliant Energy Mandalay/01204C

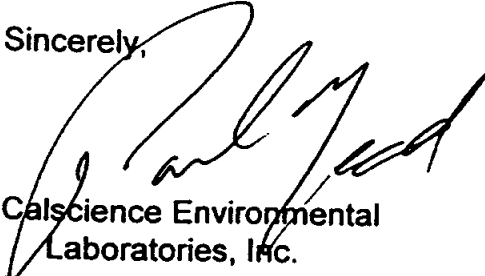
Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 08/23/2001 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

  
Calscience Environmental  
Laboratories, Inc.  
Robert Stearns  
Project Manager

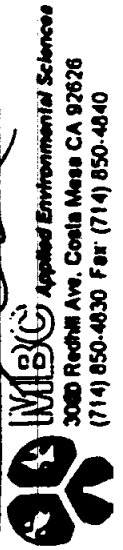
  
Michael J. Crisostomo  
Quality Assurance Manager

# CHAIN OF CUSTODY RECORD

Log Number

| Client name             |              | Job number             |                        | Analytes require   |                      | Remarks   |       |
|-------------------------|--------------|------------------------|------------------------|--|----------------------|---|-------|
| MBC                     |              | 01204C                 |                        | * TRILLI (AA) COPPER                                       |                      |   |       |
| Project name            |              | Sampler(s)             |                        | Hazardous samples require special handling and/or labeling |                      | Remarks   |       |
| RELIANT ENERGY MANDALAY |              | R. MOORE, E. ELSTAD    |                        |  |                      |   |       |
| Project manager         |              | Sample description     |                        | Number of containers                                       |                      | Remarks   |       |
| M. MANCUSO              |              | CHANNEL SEAWATER - MID |                        | 1  |                      |   |       |
| Sample number           | Date sampled | Time sampled           | Type Composite or Grab | Sample description   | Number of containers | Remarks   |       |
| STA. 1                  | 22AUG01      |                        | GRAB                   | CHANNEL SEAWATER - MID                                     | 1                    | * SPECIAL HANDLING REQUIRED - SEAWATER SAMPLES. |       |
| STA. 2                  |              |                        |                        |  | 1                    |   |       |
| STA. 3                  |              |                        |                        |  | 1                    |   |       |
| STA. 4                  |              |                        |                        |  | 1                    |   |       |
| STA. 5                  |              |                        |                        |  | 1                    | 24 HOUR TURN AROUND                             |       |
| STA. 6                  |              |                        |                        |  | 1                    |   |       |
| STA. 7                  |              |                        |                        |  | 1                    |   |       |
| STA. 8                  |              |                        |                        |  | 1                    |   |       |
| STA. 9                  |              |                        |                        |  | 1                    |   |       |
| SD 1                    | 22AUG01      |                        | GRAB                   | STORM DRAIN MID  | 1                    |   |       |
| SD 3                    |              |                        |                        |  | 1                    |   |       |
| SD 4                    |              |                        |                        |  | 1                    |   |       |
| Retransmitted by        |              | Signature              |                        | Company  |                      | Date  | Time  |
|                         |              | <i>[Signature]</i>     |                        | MBC  |                      | 8/23/01   | 11:00 |
| Received by             |              | Signature              |                        | Company  |                      | Date  | Time  |
|                         |              | <i>[Signature]</i>     |                        | CEL  |                      | 8/23/01   | 14:25 |
| Retransmitted by        |              | Signature              |                        | Company  |                      | Date  | Time  |
|                         |              | <i>[Signature]</i>     |                        | CEL  |                      | 8/23/01   | 15:15 |
| Received by             |              | Signature              |                        | Company  |                      | Date  | Time  |
|                         |              | <i>[Signature]</i>     |                        | CEL  |                      | 8/23/01   | 15:15 |

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client.





**ANALYTICAL REPORT**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1036  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 1 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 1                 | 01-08-1036-1       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 2                 | 01-08-1036-2       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 3                 | 01-08-1036-3       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 4                 | 01-08-1036-4       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 5                 | 01-08-1036-5       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 6                 | 01-08-1036-6       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 7                 | 01-08-1036-7       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers



**ANALYTICAL REPORT**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1036  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 2 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 8                 | 01-08-1036-8       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result  | RL      | DF | Qual | Units |
|-----------|---------|---------|----|------|-------|
| Copper    | 0.00740 | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 9                 | 01-08-1036-9       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| SD 1                  | 01-08-1036-10      | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| SD 3                  | 01-08-1036-11      | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics4   |

| Parameter | Result | RL     | DF | Qual | Units |
|-----------|--------|--------|----|------|-------|
| Copper    | 0.0103 | 0.0050 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| SD 4                  | 01-08-1036-12      | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827ics4   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | 0.00   | 0.00500 | 1  | J    | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| Method Blank          | 097-01-003-1,901   | Aqueous | N/A             | 08/27/01       | 08/27/01       | 010827ics3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| Method Blank          | 097-01-003-1,902   | Aqueous | N/A             | 08/27/01       | 08/27/01       | 010827ics4   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers



**Quality Control - Spike/Spike Duplicate**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1036  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

| Spiked Sample ID | Matrix  | Instrument | Date Prepared | Date Analyzed | MS/MSD Batch Number |
|------------------|---------|------------|---------------|---------------|---------------------|
| 01-08-1035-1     | Aqueous | ICP 3300   | 08/27/01      | 08/27/01      | 082701ms3           |

| Parameter | MS %REC | MSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|-----------|---------|----------|---------|-----|--------|------------|
| Copper    | 111     | 122      | 80-120  | 10  | 0-20   | 3          |

**Quality Control - Spike/Spike Duplicate**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1036  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

| Spiked Sample ID | Matrix  | Instrument | Date Prepared | Date Analyzed | MS/MSD Batch Number |
|------------------|---------|------------|---------------|---------------|---------------------|
| 01-08-1037-1     | Aqueous | ICP 3300   | 08/27/01      | 08/27/01      | 082701ms4           |

| Parameter | MS %REC | MSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|-----------|---------|----------|---------|-----|--------|------------|
| Copper    | 118     | 123      | 80-120  | 4   | 0-20   | 3          |





Quality Control - Laboratory Control Sample

MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Date Received:  
Work Order No:  
Preparation:  
Method:

08/23/01  
01-08-1036  
Total Digestion  
EPA 6010B

Project: Reliant Energy Mandalay/01204C

| LCS Sample Number | Matrix  | Instrument | Date Analyzed | Lab File ID | LCS Batch Number |
|-------------------|---------|------------|---------------|-------------|------------------|
| 097-01-003-1,901  | Aqueous | ICP 3300   | 08/27/01      | 010827-I    | 010827ics3       |

| <u>Parameter</u> | <u>Conc Added</u> | <u>Conc Recovered</u> | <u>%Rec</u> | <u>%Rec CL</u> | <u>Qualifiers</u> |
|------------------|-------------------|-----------------------|-------------|----------------|-------------------|
| Copper           | 1.00              | 1.04                  | 104         | 80-120         |                   |



**Quality Control - Laboratory Control Sample**

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1036  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

| LCS Sample Number | Matrix  | Instrument | Date Analyzed | Lab File ID | LCS Batch Number |
|-------------------|---------|------------|---------------|-------------|------------------|
| 097-01-003-1,902  | Aqueous | ICP 3300   | 08/27/01      | 010827-I    | 010827ics4       |

| Parameter | Conc Added | Conc Recovered | %Rec | %Rec CL | Qualifiers |
|-----------|------------|----------------|------|---------|------------|
| Copper    | 1.00       | 1.03           | 103  | 80-120  |            |

## GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 01-08-1036

---

| <u>Qualifier</u> | <u>Definition</u>  |
|------------------|--|
| 3                | Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification. |
| J                | Analyte was detected at a concentration below the reporting limit. Reported value is estimated.  |
| ND               | Not detected at indicated reporting limit.   |

**Calscience  
Environmental  
Laboratories, Inc.**

August 28, 2001

M. Mancuso  
MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Subject: **Calscience Work Order No.: 01-08-1035**  
Client Reference: **Reliant Energy Mandalay/01204C**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 08/23/2001 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,



Calscience Environmental  
Laboratories, Inc.  
Robert Stearns  
Project Manager



Michael J. Crisostomo  
Quality Assurance Manager



**ANALYTICAL REPORT**

MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Date Received:  
Work Order No:  
Preparation:  
Method:

08/23/01  
01-08-1035  
Total Digestion  
EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 1 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 1                 | 01-08-1035-1       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 2                 | 01-08-1035-2       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 3                 | 01-08-1035-3       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result  | RL      | DF | Qual | Units |
|-----------|---------|---------|----|------|-------|
| Copper    | 0.00950 | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 4                 | 01-08-1035-4       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 5                 | 01-08-1035-5       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 6                 | 01-08-1035-6       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 7                 | 01-08-1035-7       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 010827lcs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers

**ANALYTICAL REPORT**

MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
Work Order No: 01-08-1035  
Preparation: Total Digestion  
Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

Page 2 of 2

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 8                 | 01-08-1035-8       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 0108271cs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| STA 9                 | 01-08-1035-9       | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 0108271cs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| SD 1                  | 01-08-1035-10      | Aqueous | 08/22/01        | 08/27/01       | 08/27/01       | 0108271cs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

| Client Sample Number: | Lab Sample Number: | Matrix: | Date Collected: | Date Prepared: | Date Analyzed: | QC Batch ID: |
|-----------------------|--------------------|---------|-----------------|----------------|----------------|--------------|
| Method Blank          | 097-01-003-1,901   | Aqueous | N/A             | 08/27/01       | 08/27/01       | 0108271cs3   |

| Parameter | Result | RL      | DF | Qual | Units |
|-----------|--------|---------|----|------|-------|
| Copper    | ND     | 0.00500 | 1  |      | mg/L  |

Quality Control - Spike/Spike Duplicate

MBC Applied Environmental Sciences  
 3000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Received: 08/23/01  
 Work Order No: 01-08-1035  
 Preparation: Total Digestion  
 Method: EPA 6010B

Project: Reliant Energy Mandalay/01204C

| Spiked Sample ID | Matrix  | Instrument | Date Prepared | Date Analyzed | MS/MSD Batch Number |
|------------------|---------|------------|---------------|---------------|---------------------|
| STA 1            | Aqueous | ICP 3300   | 08/27/01      | 08/27/01      | 082701ms3           |

| Parameter | MS %REC | MSD %REC | %REC CL | RPD | RPD CL | Qualifiers |
|-----------|---------|----------|---------|-----|--------|------------|
| Copper    | 111     | 122      | 80-120  | 10  | 0-20   | 3          |





Quality Control - Laboratory Control Sample

MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Date Received:  
Work Order No:  
Preparation:  
Method:

08/23/01  
01-08-1035  
Total Digestion  
EPA 6010B

Project: Reliant Energy Mandalay/01204C

| LCS Sample Number | Matrix  | Instrument | Date Analyzed | Lab File ID | LCS Batch Number |
|-------------------|---------|------------|---------------|-------------|------------------|
| 097-01-003-1,901  | Aqueous | ICP 3300   | 08/27/01      | 010827-I    | 010827ics3       |

| <u>Parameter</u> | <u>Conc Added</u> | <u>Conc Recovered</u> | <u>%Rec</u> | <u>%Rec CL</u> | <u>Qualifiers</u> |
|------------------|-------------------|-----------------------|-------------|----------------|-------------------|
| Copper           | 1.00              | 1.04                  | 104         | 80-120         |                   |

## GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 01-08-1035

---

| <u>Qualifier</u> | <u>Definition</u>  |
|------------------|--|
| 3                | Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification. |
| ND               | Not detected at indicated reporting limit.   |

**Calscience**  
**E**nvironmental  
**L**aboratories, Inc.

August 28, 2001

M. Mancuso  
MBC Applied Environmental Sciences  
3000 Redhill Avenue  
Costa Mesa, CA 92626-4524

Subject: Calscience Work Order No.: 01-08-1034  
Client Reference: Reliant Energy Mandalay/01204C


Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 08/23/2001 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

  
Calscience Environmental  
Laboratories, Inc.  
Robert Stearns  
Project Manager

  
Michael J. Crisostomo  
Quality Assurance Manager

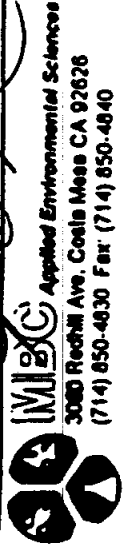
# CHAIN OF CUSTODY RECORD

UIC

Log Number

| Client name             |              | Job number          |                        | Analysis requires                           |                      | Remarks             |
|-------------------------|--------------|---------------------|------------------------|---|----------------------|---------------------|
| Project name            |              | Sample(s)           |                        | Hazardous sample requiring special handling |                      |                     |
| MBC                     |              | 01204C              |                        | * 7211(AA) CORRECT                          |                      |                     |
| REVIENT ENERGY MANDALAY |              | R. MOORE, E. ELSTAD |                        |   |                      |                     |
| M. MANUISO              |              |                     |                        |   |                      |                     |
| Sample number           | Date sampled | Time sampled        | Type Composite or Grab | Sample description                          | Number of containers |                     |
| STA 1                   | 2/20/01      |                     | GRAB                   | CHANNEL SEDIMENT X                          | 1                    | * FROM MARINE       |
| STA 2                   |              |                     |                        |   | 1                    | SEDIMENT SOURCE     |
| STA 3                   |              |                     |                        |   | 1                    | SPECIAL HANDLING    |
| STA 4                   |              |                     |                        |   | 1                    | REQUESTED.          |
| STA 5                   |              |                     |                        |   | 1                    |                     |
| STA 6                   |              |                     |                        |   | 1                    | 24 HOUR TURN AROUND |
| STA 7                   |              |                     |                        |   | 1                    |                     |
| STA 8                   |              |                     |                        |   | 1                    |                     |
| STA 9                   |              |                     |                        |   | 1                    |                     |
| Requested by            |              | Signature           |                        | Company                                     |                      | Date                |
| Requested by            |              | Signature           |                        | MBC   |                      | 8/23/01 11:00       |
| Requested by            |              | Signature           |                        | CEL   |                      | 8/23/01 1435        |
| Requested by            |              | Signature           |                        | CEL   |                      | 8/23/01 1518        |
| Requested by            |              | Signature           |                        | CEL   |                      | 8/23/01 15:35       |

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client.



**ANALYTICAL REPORT**

MBC Applied Environmental Sciences  
 1000 Redhill Avenue  
 Costa Mesa, CA 92626-4524

Date Sampled: 08/23/2001  
 Date Received: 08/23/2001  
 Work Order No.: 01-08-0108  
 Method: EPA 7211  
 Technique: AA, Furnace Technique  
 Sample Matrix: Solid  
 Analyte: COPPER  
 Type (TTLC, STLC, TCLP): TTLC

Attn.: Mike Mancuso  
 RE: Reliant Energy Mandalay/012014C

All concentrations herein for COPPER are reported in mg/kg (ppm).

|               |           | Moisture Adjusted |               |                 |               |               |               |                      |               |
|---------------|-----------|-------------------|---------------|-----------------|---------------|---------------|---------------|----------------------|---------------|
|               |           | COPPER (ppm)      |               |                 |               |               |               |                      |               |
| Laboratory ID | Sample ID | Result (mg/kg)    | Limit (mg/kg) | Dilution Factor | Date Digested | Date Analyzed | Cell Batch ID | Moisture Content (%) | Date Analyzed |
| 1-08-0108-1   | STA.1     | 20.5              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 20.4                 | 08/28/01      |
| 1-08-0108-2   | STA.2     | 79.5              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 63.9                 | 08/28/01      |
| 1-08-0108-3   | STA.3     | 27.6              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 54.0                 | 08/28/01      |
| 1-08-0108-4   | STA.4     | 63.2              | 5.1           | 34              | 08/23/01      | 08/24/01      | 0823LCS81     | 54.3                 | 08/28/01      |
| 1-08-0108-5   | STA.5     | 2.7               | 0.75          | 5               | 08/23/01      | 08/24/01      | 0823LCS81     | 19.8                 | 08/28/01      |
| 1-08-0108-6   | STA.6     | 17.1              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 37.5                 | 08/28/01      |
| 1-08-0108-7   | STA.7     | 14.2              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 31.3                 | 08/28/01      |
| 1-08-0108-8   | STA.8     | 22.5              | 3             | 20              | 08/23/01      | 08/24/01      | 0823LCS81     | 38.6                 | 08/28/01      |
| 1-08-0108-9   | STA.9     | 5.2               | 0.3           | 2               | 08/23/01      | 08/24/01      | 0823LCS81     | 22.0                 | 08/28/01      |
| Method Blank  | NA        | ND                | 0.15          | 1               | 08/23/01      | 08/24/01      | 0823LCS81     | NA                   | 08/28/01      |

TTLC = Sample analyses were conducted on a total digest (Title {26} Sec.22-66261.24).  
 ND denotes not detected at indicated reportable limit.  
 Each sample was received by CEL chilled, intact, and with chain-of custody attached.

## **APPENDIX B**

**Copper Analysis Battelle MSL**

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**BATTELLE MARINE SCIENCES LABORATORY**

1529 West Sequim Bay Road

Sequim, Washington 98382-9099

**MBC/ Reliant Energy Mandalay****Copper in Sediment****(concentrations in  $\mu\text{g/g}$  - not blank corrected)**

| <u>Sponser Code</u> | <u>Sample ID</u> | <u>Cu</u> |
|---------------------|------------------|-----------|
| STA 1               | 1700-1           | 22.2      |
| STA 2               | 1700-2 R1        | 152       |
| STA 2               | 1700-2 R2        | 147       |
| STA 3               | 1700-3           | 84.4      |
| STA 4               | 1700-4           | 71.3      |
| STA 5               | 1700-5           | 5.51      |
| STA 6               | 1700-6           | 41.9      |
| STA 7               | 1700-7           | 27.1      |
| STA 8               | 1700-8           | 37.3      |
| STA 9               | 1700-9           | 1.97      |

**Detection Limit** 0.08

**METHOD BLANKS**

Blank 0.080 U.

**LABORATORY CONTROL SAMPLE RESULTS**

Concentration spiked 100  
LCS 104  
Percent recovery 104%

**MATRIX SPIKE RESULTS**

Concentration Spiked 97.7  
1700-3 84.4  
1700-3 MS 178  
Concentration Recovered 93.6  
Percent recovery 96%

**Duplicate Precision**

1700-2 R1 152  
1700-2 R2 147  
RPD 3%

**SRM RESULTS**

MESS-2 37.6  
Certified Value 39.3  
Range  $\pm 2.0$   
Percent difference 4%

## QA/QC NARRATIVE

**PROJECT:** MBC/ Reliant Energy  
**PARAMETER:** Cu in Sediments  
**LABORATORY:** Battelle, Sequim, Washington  
**MATRIX:** Sediments

**SAMPLE CUSTODY:** Nine sediment samples were received on 8/24/01. Two samples were received broken; they were transferred into clean spex jars. The rest of the samples were received in good condition. The cooler temperature on arrival was 5.4 °C. Samples were assigned a Battelle Central File (CF) identification number (1700) and were entered into Battelle's log-in system.

### QA/QC DATA QUALITY OBJECTIVES:

| <u>Analyte</u> | <u>Analytical Method</u> | <u>Recovery Accuracy</u> | <u>Replicate Precision</u> | <u>Achieved DL</u><br><u>µg/g</u> |
|----------------|--------------------------|--------------------------|----------------------------|-----------------------------------|
| Copper         | ICP-AES                  | 75-125%                  | ≤25%                       | 0.08                              |

**METHOD:** Cu was analyzed in the sediments. To prepare the sediments for analysis, they were first freeze-dried then blended in a Spex mixer-mill. Prior to instrumental analyses samples were digested using an aqua regia digestion and a nitric digestion according to Battelle SOP MSL-I-006-00 *Mixed Acid Sediment Digestion*. Approximately 0.25 g aliquot of each dried, homogeneous sample was combined with the appropriate acid mixture in a Teflon bomb and heated in an oven at 130 °C (±10 °C) for 8 hours. After heating and cooling, deionized water was added to the acid-digested sediment to achieve analysis volume and the digestates were submitted for analysis. Cu was analyzed using inductively coupled plasma atomic emission spectrometry (ICP-AES) according to Battelle SOP MSL-I-027-02 *Determination of Metals in Aqueous and Digestate Samples by ICP-AES*. This procedure is derived from EPA Method 200.7 *Determination of Metals and Trace Elements by Inductively Coupled Plasma-Atomic Emission Spectrometry* (EPA 1994) and SW-846 Method 6010B *Inductively Coupled Plasma-Atomic Emission Spectrometry* (update 12/96).

**METHOD BLANKS:** One method blank was prepared and analyzed with the set of samples. Cu was not detected in the blank. The data were not blank-corrected.

**DUPLICATE PRECISION:** One sediment sample was processed in duplicate. Precision of duplicate analyses, expressed as the relative percent difference (RPD) between the duplicate results, was 3%, and was within the QC limits of ±25

**MATRIX SPIKE:** One sample was selected as a matrix spike sample and was spiked at 100 µg/g. Recovery of Cu in the MS was 95%, and was within the QC limits of 75% to 125%



## QA/QC NARRATIVE

**LABORATORY  
CONTROL SAMPLE:**

One laboratory control sample (LCS) was prepared and analyzed with the samples. The concentration of the LCS was 100  $\mu\text{g/g}$ . Recovery of Cu was 104% and was within the QC limits of  $\pm 25\%$ .

**STANDARD  
REFERENCE  
MATERIAL  
ACCURACY:**

MESS-2 was analyzed with the set of samples. SRM recovery result of 4% difference was within the QC limit for accuracy of  $\pm 25\%$ .

**REFERENCES:**

EPA. 1994. Methods for the Determination of Metals in Environmental Samples. EPA-600/R-94/111. EPA Method 200.7: Determination of Metals and Trace Elements by Inductively Coupled Plasma-Atomic Emission Spectrometry Environmental Protection Agency, Environmental Services Division, Monitoring Management Branch. Cincinnati, Ohio

MBC/ Reliant Energy  
 Copper in Seawater  
 (concentrations in  $\mu\text{g/L}$  - not blank corrected)

| Sponser Code |                  | Sample ID  | Cu   |
|--------------|------------------|------------|------|
| STA 1 Low    | Channel Seawater | 1700-10 R1 | 8.89 |
| STA 1 Low    | Channel Seawater | 1700-10 R2 | 9.30 |
| STA 2 Low    | Channel Seawater | 1700-11    | 5.87 |
| STA 3 Low    | Channel Seawater | 1700-12    | 5.44 |
| STA 4 Low    | Channel Seawater | 1700-13    | 8.03 |
| STA 5 Low    | Channel Seawater | 1700-14    | 9.83 |
| STA 6 Low    | Channel Seawater | 1700-15    | 5.47 |
| STA 7 Low    | Channel Seawater | 1700-16    | 5.64 |
| STA 8 Low    | Channel Seawater | 1700-17    | 5.88 |
| STA 9 Low    | Channel Seawater | 1700-18    | 4.72 |
| SD 1 Low     | Storm Drain      | 1700-19    | 4.35 |
| SD 2 Low     | Storm Drain      | 1700-20    | 23.7 |
| SD 3 Low     | Storm Drain      | 1700-21    | 15.5 |
| STA 1 Mid    | Channel Seawater | 1700-22    | 4.02 |
| STA 2 Mid    | Channel Seawater | 1700-23    | 4.90 |
| STA 3 Mid    | Channel Seawater | 1700-24    | 5.86 |
| STA 4 Mid    | Channel Seawater | 1700-25    | 4.87 |
| STA 5 Mid    | Channel Seawater | 1700-26    | 4.91 |
| STA 6 Mid    | Channel Seawater | 1700-27    | 4.33 |
| STA 7 Mid    | Channel Seawater | 1700-28 R1 | 3.77 |
| STA 7 Mid    | Channel Seawater | 1700-28 R2 | 3.69 |
| STA 8 Mid    | Channel Seawater | 1700-29    | 4.13 |
| STA 9 Mid    | Channel Seawater | 1700-30    | 6.00 |
| SD 1 Mid     | Storm Drain      | 1700-31    | 4.37 |
| SD 3 Mid     | Storm Drain      | 1700-32    | 16.6 |
| SD 4 Mid     | Storm Drain      | 1700-33    | 3.61 |
| STA 1 High   | Channel Seawater | 1700-34    | 3.75 |
| STA 2 High   | Channel Seawater | 1700-35    | 4.44 |
| STA 3 High   | Channel Seawater | 1700-36    | 3.47 |
| STA 4 High   | Channel Seawater | 1700-37    | 3.99 |
| STA 5 High   | Channel Seawater | 1700-38    | 4.46 |
| STA 6 High   | Channel Seawater | 1700-39    | 4.04 |
| STA 7 High   | Channel Seawater | 1700-40    | 4.08 |
| STA 8 High   | Channel Seawater | 1700-41    | 4.26 |
| STA 9 High   | Channel Seawater | 1700-42    | 5.68 |
| SD 1 High    | Storm Drain      | 1700-43    | 23.9 |

**METHOD BLANKS**

|          |       |
|----------|-------|
| Blank R1 | 0.098 |
| Blank R2 | 0.148 |
| mean     | 0.123 |

**LABORATORY CONTROL SAMPLE RESULTS**

|                       |      |
|-----------------------|------|
| Concentration spiked  | 10   |
| LCS R1                | 7.65 |
| LCS R2                | 7.50 |
| Percent recovery Rep1 | 77%  |
| Percent recovery Rep2 | 75%  |

| Sponser Code                       | Sample ID                | Cu          |
|------------------------------------|--------------------------|-------------|
| <b><u>MATRIX SPIKE RESULTS</u></b> |                          |             |
| Concentration Spiked               |                          | 10.0        |
| 1700-11                            |                          | 5.87        |
| 1700-11 MS                         |                          | 14.5        |
| Concentration Recovered            |                          | 8.63        |
| Percent recovery                   |                          | 86%         |
| Concentration Spiked               |                          | 10.0        |
| 1700-11                            |                          | 5.87        |
| 1700-11 MSD                        |                          | 14.4        |
| Concentration Recovered            |                          | 8.53        |
| Percent recovery                   |                          | 85%         |
|                                    | RPD                      | 1%          |
| Concentration Spiked               |                          | 10.0        |
| 1700-29                            |                          | 4.13        |
| 1700-29 MS                         |                          | 12.4        |
| Concentration Recovered            |                          | 8.27        |
| Percent recovery                   |                          | 83%         |
| Concentration Spiked               |                          | 10.0        |
| 1700-29                            |                          | 4.13        |
| 1700-29 MSD                        |                          | 12.5        |
| Concentration Recovered            |                          | 8.37        |
| Percent recovery                   |                          | 84%         |
|                                    | RPD                      | 1%          |
| <b><u>Duplicate Precision</u></b>  |                          |             |
| 1700-10 R1                         |                          | 8.89        |
| 1700-10 R2                         |                          | 9.30        |
|                                    | RPD                      | 5%          |
| 1700-28 R1                         |                          | 3.77        |
| 1700-28 R2                         |                          | 3.69        |
|                                    | RPD                      | 2%          |
| <b><u>SRM RESULTS</u></b>          |                          |             |
| CASS-4 R1                          |                          | 0.775       |
| CASS-4 R2                          |                          | 0.783       |
|                                    | Certified Value          | 0.592       |
|                                    | Range                    | $\pm 0.055$ |
|                                    | Percent difference Rep 1 | 31% &       |
|                                    | Percent difference Rep 2 | 32% &       |
| <b>Matrix corrected</b>            |                          |             |
| CASS-4 R1                          |                          | 0.652       |
| CASS-4 R2                          |                          | 0.659       |
|                                    | Certified Value          | 0.592       |
|                                    | Range                    | $\pm 0.055$ |
|                                    | Percent difference Rep 1 | 10%         |
|                                    | Percent difference Rep 2 | 11%         |

& QC value outside the accuracy or precision criteria goal: SRM accuracy  $\pm 25\%$  difference

## QA/QC NARRATIVE

**PROJECT:** MBC/ Reliant Energy  
**PARAMETER:** Cu in Seawater  
**LABORATORY:** Battelle, Sequim, Washington  
**MATRIX:** Seawater

**SAMPLE CUSTODY:** Thirty-four samples were received on 8/24/01. Samples were received in good condition. The cooler temperature on arrival was 5.4 °C. Samples were assigned a Battelle Central File (CF) identification number (1700) and were entered into Battelle's log-in system.

### QA/QC DATA QUALITY OBJECTIVES:

| <u>Analyte</u> | <u>Analytical Method</u> | <u>Recovery Accuracy</u> | <u>Replicate Precision</u> | <u>Achieved DL</u><br><u>µg/L</u> |
|----------------|--------------------------|--------------------------|----------------------------|-----------------------------------|
| Copper         | Fe-Pd/GFAA               | 75-125%                  | ≤25%                       | 0.125                             |

**METHOD:** The samples were analyzed for Copper (Cu). All the samples were preconcentrated using iron (Fe) and palladium (Pd) according to Battelle SOP MSL-I-025, *Methods of Sample Preconcentration*, which is derived from EPA Method 1640 (EPA 1996) and were analyzed by graphite furnace atomic absorption (GFAA) following Battelle SOP MSL-I-022, *Determination of Metals in Aqueous and Digestate Samples by GFAA*, which is based on EPA Method 200.9 (EPA 1994).

**METHOD BLANKS:** Two method blanks were analyzed with the set of samples. Cu was detected in the blanks at a concentration less than 3 times the MDL. The data were not blank-corrected.

**DUPLICATE PRECISION:** Two seawater samples were processed in duplicate. Precision of duplicate analyses, expressed as the relative percent difference (RPD) between the duplicate results, ranged from 2-5%, and were within the QC limits of ±25

**MATRIX SPIKE: MATRIX SPIKE DUPLICATE** Two samples were selected as matrix spike samples and were spiked in duplicate at 10.0 µg/L. Recoveries of Cu in the MS and MSD ranged from 83-86% for the seawater samples, and were within the QC limits of 75% to 125%

Duplicate precision for the matrix spikes was 1%. This is within the QC limit of 25% for Cu.

**LABORATORY CONTROL SAMPLE:** Two laboratory control samples (LCS) were prepared and analyzed with the samples. The concentration of the LCS was 10 µg/L. Recoveries of Cu were 75-77% and were within the QC limits of ±25%.

**STANDARD REFERENCE MATERIAL ACCURACY:** SRM CASS-4 was analyzed with the set of samples. SRM recovery results of 31% and 32% difference exceeded the QC limit for accuracy of ±25% for Cu.

When matrix-corrected CASS-4 recovery results ranged from 10-11% and were within the QC limits of accuracy of ±25%.

There are trace amounts of Cu in the reagents used in the Fe/Pd processing that is seen in the Certificates of Analysis of the reagents.

## QA/QC NARRATIVE

### REFERENCES:

EPA. 1996. Method 1640. Determination of Trace Elements in Ambient Waters by On-Line Chelation Preconcentration and Inductively Coupled Plasma-Mass Spectrometry. (Draft). Environmental Protection Agency, Office of Science and Technology, Engineering and Analysis Division. Washington, DC.

EPA. 1994. Methods for the Determination of Metals in Environmental Samples. EPA-600/R-94/111. Method 200.9: Determination of Trace Elements by Stabilized Temperature Graphite Furnace Atomic Absorption Spectrometry. Environmental Protection Agency, Environmental Services Division, Monitoring Management Branch. Cincinnati, Ohio

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 1700

Project Manager:

**TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)**

Matrix: \_\_\_\_\_ WP# \_\_\_\_\_

Yes No

Navy-type Project (requires high-level sample tracking procedures)

Filter Samples: Amount:  Entire sample  Half of sample

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

Special instructions: \_\_\_\_\_

Sample Preservation Instructions: \_\_\_\_\_

Date To Archive: \_\_\_\_\_ Date To Dispose: 6 mo.

**TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN**

Yes No N/A Indicate in Appropriate Box

Was a custody seal present?

Was the custody seal intact?

Was cooler(s) temperature(s) within acceptable range of 4±2°C? 5.4 °C  
(if multiple coolers, note temp. of each) \_\_\_\_\_ °C

Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?  
Comment/Remedy: \_\_\_\_\_

Were all chain of custody forms signed and dated?

Were samples filtered at MSL?

Sample condition(s): Acceptable Other (explain): \_\_\_\_\_

Container type: water sed.  
Teflon Poly Glass Spex Other: \_\_\_\_\_

Notes: 2 glass jars of sed broken shipping & transferred to plastic at MSL

Completed By: C. Rubin Date/Time: 8-24-01 13:50

**SAMPLE PRESERVATION**

Sample(s) were preserved at MSL

Sample(s) were preserved upon arrival at MSL (noted on CoC / Sample / per PM Instruction)

Random pH checked for 10% of samples (use dip paper) Sample IDs: one checked STAL high < pH 2

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:  0.2% HNO3 Notes: \_\_\_\_\_

0.5% HCl (Hg samples) Notes: \_\_\_\_\_

Refrigerator/Freeze Notes: Sediment Lab 223 frag.

Other Notes: \_\_\_\_\_

Completed By: C. Rubin Date/Time: 8-24-01 13:50

**Attachment D**

**Consideration of Intake Concentrations Prior to Enforcement**  
**Moss Landing Power Plant- Central Coast Regional Water Quality Board**  
**Encina Power Plant - San Diego Regional Water Quality Board**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION  
81 South Higuera Street, Suite 200  
San Luis Obispo, California 93401-5427**

**MONITORING AND REPORTING PROGRAM NO. 00-041  
NPDES NO. CA0006254**

For

**DUKE ENERGY NORTH AMERICA  
MOSS LANDING POWER PLANT, UNITS 1, 2, 6 AND 7  
Monterey County**

This monitoring program is required to:

- Assess compliance with the California Ocean Plan.
- Determine compliance with NPDES terms and conditions.

**INFLUENT AND EFFLUENT MONITORING**

Representative samples of each waste stream discharge to the Pacific Ocean shall be collected and analyzed in accordance with the following schedule\*:

| Constituent            | Units | Discharge <sup>1</sup> | Sample Type                     | Frequency                                    |
|------------------------|-------|------------------------|---------------------------------|--|
| Average Daily Flow     | MGD   | 002                    | Record from Pump Operating Data | Daily  |
| Average Daily Flow     | GPD   | 002B,D,E,E4<br>E5,E6   | Estimate                        | Daily  |
| Temperature            | °F    | 002, and intakes       | —                               | Daily/Instantaneous                          |
| pH                     | —     | 002, and intakes       | Grab                            | Weekly during chlorination                   |
| Total Suspended Solids | mg/l  | 002B,D,E,E4            | Grab <sup>1</sup>               | Monthly                                      |
| Oil and Grease         | mg/l  | 002B,D,E,E4            | Grab <sup>1</sup>               | Monthly                                      |
| Total Suspended Solids | mg/l  | 002E3,E5,E6            | Grab                            | During each discharge                        |
| Oil and Grease         | mg/l  | 002E3,E5,E6            | Grab                            | " "  |
| Copper                 | mg/l  | 002E3**,E6             | Grab                            | " "  |
| Iron                   | mg/l  | 002E3**,E6             | Grab                            | " "  |
| Settleable Solids      | ml/l  | 002, and intakes       | Grab                            | Quarterly (May, August, November & February) |
| Dissolved Oxygen       | mg/l  | 002                    | Grab                            | " "  |



February 16, 2000

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN DIEGO REGION

ORDER NO. 2000-03  
NPDES PERMIT NO. CA0001350

WASTE DISCHARGE REQUIREMENTS  
FOR  
CABRILLO POWER E. LLC  
ENCINA POWER PLANT  
SAN DIEGO COUNTY

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Order No. 2000-03

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February 16, 2000

information was needed to determine the location, design, construction, and capacity of the cooling water intake structures at the Encina Power Plant reflect the best technology available (BTA) for minimizing adverse environmental impacts and protecting beneficial uses of the receiving water. Order 94-59 required that SDG&E conduct an additional study to supplement its demonstration of compliance with Section 316(b) of the CWA. SDG&E conducted the study and on August 6, 1997 submitted this study to the RWQCB. This study concludes that the assessment demonstrates that the cooling water intake is not having an adverse environmental impact as defined under Section 316(b) of the Clean Water Act and, therefore, the existing intake constitutes BTA. As with the 316(a) studies, the consultant hired by USEPA to help with the study review has not submitted a final draft analysis, nor is Regional Board staff prepared to make recommendations in this regard. It should be noted that by next year, the USEPA is expected to develop the regulations that specify how a 316(b) review will be performed.

67. Because of the configuration of the cooling water intake and discharge structures of the Encina Power Plant, waste constituents and pollutants may be present in the intake water as a result of spills or other discharges beyond the control of the discharger at concentrations that could cause the cooling water discharge from the Encina Power Plant to violate the effluent limits contained in this Order or to exceed the concentrations set forth in Table A and Table B of the Ocean Plan. Prior to initiating enforcement action for such violations under this Order, the Regional Board will take into consideration the source of the waste constituents or pollutants causing the violation(s) and any affirmative actions of the discharger to mitigate the impact of pollutants upon waters of the state and of the United States and to assist in abatement of any pollution or nuisance associated with discharges that violate the requirements of this Order under such circumstances (e.g., development and implementation of contingency plans, actions to eliminate or minimize impacts, avoidance of actions that would exacerbate the problem, etc.).
68. On April 17, 1997, the State Board adopted a renewed General Industrial Storm Water Permit, Order 97-03-DWQ. Cabrillo became the owner and operator of the Encina Power Plant effective May 22, 1999. Therefore, SDG&E terminated its coverage under the General Industrial Storm Water Permit Order 97-03-DWQ. On March 15, 1999, Cabrillo submitted a Notice of Intent to obtain coverage, effective May 22, 1999, for Encina under the General Industrial Storm Water Permit Order 97-03-DWQ. The Best Management Practices (BMPs) contained in Encina's Storm Water Pollution Prevention Plan represent the BMPs required pursuant to Provision 3.