CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.R5-2002-0155

NPDES NO. CA 0082309

WASTE DISCHARGE REQUIREMENTS FOR GWF POWER SYSTEMS, L.P. WILBUR AVENUE EAST POWER PLANT ANTIOCH (SITE IV) CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. GWF Power Systems L.P., hereafter (Discharger) submitted a Report of Waste Discharge (RWD), dated 13 August 1996, and applied for a permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES) for its Wilbur Avenue East Power Plant in Antioch (Site IV). Supplemental information to complete filing of the application included: (1) A dilution study (9 April 1997), (2) An amended Report of Waste Discharge (3 April 1997), followed up by an updated Report of Waste Discharge (30 April 1999), (3) Ground water data (23 December 1997, 2 September 1998, 8 October 1998, and 30 April 1999), (4) Groundwater three species chronic toxicity testing results (23 December 1997) and a Toxicity Identification Evaluation report (30 June 1998), (5) Additional priority pollutants analyses report (25 May 2001), and (6) Amendment to Report of Waste Discharge (5 July 2002).

2. The discharge is presently governed by Waste Discharge Requirements Order No. 95-218 adopted by the Regional Board on 22 September 1995. The Order was adopted for the GWF Power System Company, Inc. (Discharger's former name) to discharge waste under the NPDES permit to the San Joaquin River. Under Order No. 95-218, the source of supply water is the City of Antioch. In the 3 April 1997 Report of Waste Discharge, the Discharger proposed using a new source of supply water, groundwater from an existing on-site well, instead of water from the City. In the 30 April 1999 Report of Waste Discharge, the Discharger proposed to maintain the flexibility of using city water in addition to the new groundwater source. However, due to major local opposition, the Discharger opted as indicated on its 30 November 1999 letter to continue to use the higher quality City of Antioch water as their only source of water supply. However, GWF owns and operates a second power plant in Antioch, its Wilbur Avenue West Plant, Site III, which discharges up to 50,000 gallons per day of effluent to Gaylord Container Corporation (neighboring facility) as makeup water, and because Gaylord Container Corporation is closing its paper making process in October 2002, Site III will no longer have a means of disposal of its effluent. Therefore, per its 5 July 2002 RWD amendment, GWF is proposing to use Site III's effluent as a secondary water supply for cooling tower make-up at Site IV in addition to City of Antioch's water. GWF's Site III power plant also uses Antioch City Water as its water supply, operates in the same manner and has the same units of process as Site IV. GWF proposes to transport effluent from Site III to Site IV via trucks.

3. From 1988 to 1993 the Discharger discharged process wastewater from cooling tower blowdown, boiler blowdown, gland steam condensate, plant drains, reverse osmosis reject water and storm water to on-site evaporation/percolation basins. The Discharger was regulated under an NPDES permit, Order No. 88-177, but never utilized the surface water discharge option and an outfall was not constructed. The Discharger did not renew the permit and continued to operate the facility utilizing the basins for disposal of the generated wastewater under waste discharge requirements specified in Order No. 93-239. The evaporation/percolation basins did not provide adequate disposal capacity and there was no additional area for new basins at the facility. Thus, the Discharger requested issuance of an NPDES permit to allow discharge to an adjacent storm drain. The storm drain discharges to the San Joaquin River, a water of the United States, approximately 1.5 miles east of the Antioch city limits, at a point Latitude 38°01'30" North, Longitude 121°45'30" West. The facility is located in the NW ¼ of the NE ¼ of Section 21, T2N, R2E, MDB&M, as shown on **Attachment A**, a part of this Order. Because of the poor performance of the evaporation/percolation basins, the Discharger decided to clean and close the existing basins, except for one, which is used solely for storm water retention. The Discharger submitted pond bottom sediments analyses on 30 April 1999, demonstrating waste is no longer contained in surface impoundments. The Regional Board's staff has reviewed the closure information and concurs the ponds have been properly closed. Therefore, the groundwater monitoring required by previous orders has been deleted.

4. The facility generates up to 18.5 megawatts of net electrical power from the burning of petroleum coke as its primary fuel. The fluid bed combustor is started up on natural gas and number-2 fuel oil. Coal is a potential alternative fuel. Water is used for cooling purposes and also for the production of steam. The source of water is the City of Antioch water supply as its primary source, and Site III's effluent as a secondary source (as cooling tower makeup only). As shown in **Attachment B**, the water used for steam first enters a Reverse Osmosis System for purification, and then is fed into a deaerator. Water is then pumped to a heater followed by a fluidized bed combustor and finally a super heater where steam is produced. The intake water (City of Antioch) is recycled 6 to 8 times (or less) through the cooling tower before being discharged. However, at times when it also uses Site III's effluent as intake water in the cooling tower, the number of recycles will be reduced to ensure compliance with effluent limitations. The cooling tower blowdown results in a discharge of up to 100,000 gallons per day of wastewater. However, due to use of Site III's effluent, GWF is requesting an increase in the blowdown flows to 125,000 gallons per day. The Report of Waste Discharge describes the current discharge as follows:

Monthly Average Dry Weather Flow	56,720 gallons per day (gpd)
Maximum 30-day average Daily Flows	125,000 gpd
Average Temperature	28 °C (summer), 26 °C (winter)
pH ranges	(6.9 – 7.5)

Constituent	Concentration[3]
BOD	<3.4 mg/l
COD	8.0 mg/l
TOC	2.0 mg/l
TSS	3.0 mg/l
TDS	(250-4200)[1] mg/l
Hardness as $CaCO_3$	(69-830)[1] mg/l
Ammonia (as N)	0.06 mg/l
Chlorine Residual	<2.0 mg/l
Oil & Grease	<1 mg/l
Sulfate (as SO_4)	(660-1100)[1] mg/l
Aluminum	120 µg/l
Boron	390 µg/l
Barium	80 µg/l
Chloride	(77-830)[4] mg/l
Fluoride	3.4[2] mg/l
Iron	(210-1050)[1] µg/l
Manganese	<10 µg/l
Molybdenum	12[2] µg/l
Antimony	(<10-2)[1] µg/l
Arsenic	(0.5-9.0)[1] µg/l
Beryllium	2.0[2] µg/l
Cadmium	<1.0 µg/l
Copper	(20-42)[1] µg/l
Lead	(<2.0-6)[1] µg/l
Mercury	0.002[2] µg/l
Nickel	(6-14)[1] µg/l
Selenium	(<6.0-50)[1] µg/l
Silver	(<2-<5.0)[1] µg/l
Thallium	6[2] µg/l
Zinc	(60-480)[1] µg/l
Cyanide	(<5-<25)[1] µg/l

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1 Range from 1998-2001 data.
2 Results from 2001 data only.
3 Results from 30 April 1999 RWD, unless otherwise indicated.
4 Range from 1994-2001 data.

5. An Information Sheet containing information regarding the facility and the regulatory basis for these requirements is included as a part of this Order.

6. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.

7. Domestic waste is disposed to an on-site septic tank/leachfield system.

8. The Regional Board adopted a Water Quality Control Plan; Fourth Edition, for the Sacramento and San Joaquin River Basins (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters of the Basin. Requirements in this order implement the Basin Plan.

9. USEPA adopted the National Toxics Rule (NTR) on 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (known as the State Implementation Policy-SIP), which contains guidance on implementation of the NTR, CTR, and other priority toxic pollutants

10. Clean Water Act Section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Board Basin Plan beneficial uses and narrative and numeric water quality objectives, SWRCB-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan contains numeric water quality objectives and contains a narrative toxicity objective that states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00.) For determining whether there is reasonable potential for an excursion above a narrative objective, the regulations prescribe three discrete methods (40 CFR 122.44 (d)(vi)). The Regional Board often relies on the second method because the USEPA's water quality criteria have been developed using methodologies that are subject to public review, as are the individual recommended criteria guidance documents. USEPA's ambient water quality criteria are used as means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative toxicity objective. In addition, when determining effluent limitations for a discharger, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality standard which are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream exceedance of water quality standards established to protect the beneficial uses.

Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for **aluminum, chloride, chromium, copper, fluoride, iron, lead, mercury, molybdenum, nickel, oil & grease, selenium, salinity (EC/TDS), sulfate, total suspended solids, thallium, and zinc**. Effluent limitations for these constituents are included in this Order. In addition, this Order contains provisions that:

a. Require the Discharger to conduct a study to provide information as to whether the levels of priority pollutants, including CTR and NTR constituents, constituents for which drinking water maximum contaminant levels (MCLs) are prescribed in the California Code of Regulations (CCR), or other pollutants in the discharge cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric or narrative objectives;

b. If the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, requires the Discharger to submit information to calculate effluent limitations for those constituents; and

c. Allows the Regional Board to reopen this Order and include effluent limitations for those constituents.

On 10 September 2001 the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its attachments is incorporated into this Order as **Attachments D through D-4**. The study/provision contained in this Order is intended to be consistent with the requirements of the technical report (**Attachment D**) in requiring sampling for NTR, CTR, and additional constituents to determine if the discharge has a reasonable potential to cause or contribute to water quality impacts. The technical report requirements contained in Attachment D list specific constituents, detection levels, acceptable time frames and report requirements. **Provision G3** contained in this Order is intended to be consistent with the requirements of the technical report request.

11. Section 1.3 of the SIP requires the Regional Board to follow specific procedures for each priority pollutant with an applicable criterion or objective to determine if a water quality based effluent limitation is required. In evaluating compliance with the CTR and SIP for this new Order, Regional Board staff utilized ambient surface water quality data from the San Francisco Regional Monitoring Program (SFRMP) conducted under the oversight of the San Francisco Bay Regional Water Quality Control Board, Region 2. Monitoring data evaluated came from SFRMP Station BG30, located approximately 3.5 miles downstream of GWF's discharge point in the San Joaquin River, at latitude 38^{o} 01.40' and longitude 121^{o} 48.45', at a depth of 7 meters, and 0.1 nautical miles east of channel marker "8". **Attachment C** summarizes receiving water data, maximum effluent concentrations (MECs) and includes aquatic life and human health criteria and Basin Plan objectives for each priority pollutant and other constituents.

12. The State Water Resources Control Board adopted Order No. 97-03-DWQ (NPDES General Permit No. CAS000001), *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities,* on 17 April 1997. All storm water runoff at this facility will be retained on-site. The Report of Waste Discharge states that during normal storm events, storm water will be collected and used for cooling tower makeup water. The discharge of storm water to the storm water evaporation/percolation basin will only occur when storm events exceed the on-site storage and pump capacity of the storm water drainage system. Therefore, since storm water will not leave the facility, a separate storm water permit is not required. If, in the future, there is a need to discharge off site, the Discharger must file a Notice of Intent (NOI) with the State Water Resources Control Board in order to be covered under the General Storm Water Permit.

13. In May 1995, the State Water Resources Control Board (SWRCB) adopted a revised Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). This plan establishes water quality control measures which contribute to the protection of beneficial uses in the Bay-Delta Estuary. The Bay-Delta Plan consists of: (1) beneficial uses to be protected; (2) water quality objectives for the reasonable protection of beneficial uses; and (3) a program of implementation for achieving the water quality objectives. This plan supplements other water quality control plans adopted by the SWRCB and regional water quality control boards (RWQCBs), and State policies for water quality control adopted by the SWRCB, relevant to the Bay-Delta Estuary watershed. The water quality objectives in the 1995 Bay-Delta Plan apply to the waters of the San Francisco Bay system waters within the legal boundary of the Sacramento-San Joaquin Delta, as specified by the objectives. Tables 1, 2, and 3 in the plan contain the water quality objectives for the protection of municipal and industrial, agricultural, and fish and wildlife beneficial uses, respectively, and have been incorporated into the Basin Plan as Tables III-5 A, B, and C.

14. The beneficial uses of the Sacramento–San Joaquin River Delta (which includes the San Joaquin River section at the point of discharge), as defined in the Basin Plan, include: municipal and domestic water supply (MUN), irrigation and stock watering (AGR), industry process (PRO) and service supply (IND), contact (REC-1) and non-contact (REC-2) water recreation, freshwater habitat for both warm (WARM) and cold water species (COLD), serves as migration (MIGR) waters for three warm water species (striped bass, sturgeon, and shad) and two cold freshwater species (salmon and steelhead), allows for spawning of three warm water species (striped bass, sturgeon, and shad) (SPWN), serves as wildlife habitat (WILD), and allows for navigation (NAV).

15. Thermal water quality objectives for the San Joaquin River are outlined in the *Water Quality Control Plan for Control of Temperature in Coastal Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan), last amended by the SWRCB on 18 September 1975. Based on the water body definitions in the plan, the San Joaquin River near GWF's discharge point is included as an estuary (waters extending from a bay or the open ocean to the upstream limit of tidal action).

16. The cooling system blowdown water is classified as an elevated temperature waste in the Thermal Plan because there is no direct discharge of cooling water other than blowdown and demineralizer wastewater to the river; the main cooling system consists of cooling towers; and less than five

percent of the waste heat added to the evaporative system is dissipated through blowdown. Effluent limitations and receiving water limitations have been established in this permit in compliance with the Thermal Plan.

17. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), 307 (Toxic and Pretreatment Effluent Standards), and 316 (Thermal Discharges) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge. Effluent limitation guidelines for Steam Electric Power Generating Point Source Category are contained in 40 CFR 423.15 (New Source performance standards). Effluent limitations contained in this Order are based on these guidelines, the Basin Plan, other State plans and policies, and Best Professional Judgment. The requirements of Part 423.15 (j)(1) with regards to the 126 priority pollutants in Appendix A contained in chemicals added for cooling tower maintenance (except for chromium and zinc) are applicable in the cooling tower blowdown. However, since in this case the cooling tower blowdown is the effluent, to determine compliance with the applicable technology-based limit of non detectable concentrations for the 126 priority pollutants, the corrosion inhibiting substances and biocides themselves will have to be analyzed for the 126 priority pollutants. The monitoring shall be on an annual basis. However, if after first analyses the results are non-detect then only repeat the test when changing chemicals.

18. In April 1997, GWF Power Systems L.P., submitted an Outfall Dilution Study. The study modeled a range of combinations of discharge and receiving water conditions, including high and low river currents, high and low tides, and high and low effluent and receiving water densities. The Study assumed a 400,000 gpd effluent flow. Therefore, the dilution ratios are still very conservative despite the increase in blowdown flows from 100,000 gpd to 125,000 gpd. The Discharger's outfall is immediately adjacent to the 440 mgd Mirant Power Plant outfall 002. The study did not take into account the flows from the Mirant discharge. The results of the study predict that the plume may move into the river during periods of low current, but will typically move along the shoreline in a fairly narrow band during periods the current is flooding or ebbing. The study using the RDIFF model, an advection-diffusion model predicts that under worst scenarios, the discharge will achieve a dilution of 20:1 or greater within 388 feet from the discharge point, a dilution of 10:1 within 228 feet from the discharge point and a dilution of 5:1 within 126 feet from the discharge point. For the majority of the constituents a mixing zone where there is 10:1 dilution is sufficient enough. However due to the nature of the SJ river in the Antioch area, where it is a mixture of freshwater and saltwater at various times of the year due to its proximity with the San Francisco Bay and tidal influence, a much larger mixing zone is being considered for specific constituents such as EC/TDS, and chloride only. The mixing zone is approximately a length of 2000 feet from the discharge point with dilutions greater than 100:1. The edge of the mixing zone will be monitored by the new receiving water monitoring station R3.

19. Chemicals are added to inhibit corrosion, algae, and scale formation in the boiler and cooling tower. Sulfuric acid is added to the cooling tower to control pH. The Discharger adds a microbiocide, dispersant, corrosion inhibitor, and water conditioners to the cooling tower and a water conditioner to

the boiler. For the microbiocide (Stabrex ST40), the Material Safety Data Sheet states that the 96-hour static acute LC_{50} for rainbow trout is 4.5 ppm, the 96-hour static acute LC_{50} for fathead minnow is 8.3 ppm, and the 48-hour static acute LC_{50} for *Ceriodaphnia dubia* is 1.6 ppm. The Discharger adds this chemical to maintain a dosage of 0.2 ppm in the cooling tower. The concentration is assumed to be lower when the effluent is discharged to the river, due to natural dissipation in the cooling tower. The Material Safety Data Sheet for the corrosion inhibitor (Phosperse-Plus 8309 Inhibitor) states that the 96-hour static acute LC_{50} for rainbow trout is 450 ppm, the 48-hour static acute LC_{50} for fathead minnow is 750 ppm, and the 48-hour static acute LC_{50} for *Daphnia magna* is greater than 1,000 ppm. The discharger adds 30 ppm of this chemical to the cooling tower.

The Discharger adds these chemicals at much lower concentrations than the LC_{50} levels mentioned in the MSDS. However, to confirm that the chemicals added do not cause toxicity in the effluent, the Discharger will be required in the Monitoring and Reporting Program to perform three species toxicity testing on the effluent when chemical additives are being used, to determine if the effluent causes toxicity. The three species chronic toxicity test will be conducted using the species *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* (3rd edition EPA-600-4-91-002). However, if the levels of salinity in the effluent are greater than 5ppt or Electrical Conductivity is greater than 8750 µmhos/cm, or when TDS levels are greater than 5,600 mg/l, then the discharger may use a combination of estuarine and freshwater species, namely *Mysidopsis bahia* (2nd editions EPA 600-4-91-003), *Pimephales promelas* and *Selenastrum capricornutum* (3rd edition EPA-600-4-91-002). The freshwater species may also be substituted if the source of any toxicity is determined, by a TIE, to be salinity related. The three species chronic toxicity test will be repeated periodically and whenever the Discharger changes chemical additives or their concentrations.

NONPRIORITY POLLUTANTS

20. **Aluminum** concentrations in the effluent were detected at 120 µg/l from a sample collected in April 1999. Based on data obtained from a neighboring downstream discharger, Gaylord Container Corporation, aluminum has been detected in the San Joaquin River with a concentration of 360 µg/l on a sample taken in November 2001. The Primary and Secondary MCLs for aluminum are 1000 µg/l and 200 µg/l respectively. USEPA's ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum expressed as total recoverable are 750 µg/l (1-hour average, acute) and 87 µg/l (4-day average, chronic). This Order and the Basin Plan prohibit the discharge of toxic constituents in toxic amounts and USEPA's criteria for prevention of acute and chronic toxicity are numerical criteria, which are protective of the Basin Plan's narrative toxicity objective. Since both the receiving water and the effluent exceed USEPA's ambient water quality criteria of chronic toxicity, and the secondary MCL, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for aluminum. Therefore, this Order includes effluent limitations for aluminum of 87 µg/l as a 4-day average and 200 µg/l as the daily maximum. Based on a single effluent concentration, the limits appear to put the discharger in immediate non-compliance. In addition, although the discharge

consists of water that has been recycled 6 to 8 times, it is difficult to determine if simple control measures such as reducing the number of cycles can be sufficient to comply with the effluent limitations. Other new or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for aluminum is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the aluminum effluent limits is established in a Time Schedule Order (TSO) in accordance with Water Code Section 13300. In addition, the TSO also requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3, and establishes interim effluent limits based on plant performance until full compliance can be achieved.

21. **Electrical Conductivity (EC) and Total Dissolved Solids (TDS)** concentrations in the effluent ranged from 2300-4700 µmhos/cm and 250-4200 mg/l respectively based on results from samples collected between 1998 and 2001. Data from SFRMP Station BG30 show that EC levels in the San Joaquin River ranged from 110-9770 µmhos/cm between 1993 and 1999. Additional data from samples taken by the discharger between 1998 and 2001 show that EC levels in the San Joaquin River range between 196 µmhos/cm and 3440 µmhos/cm. Although the Sacramento–San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act due to EC, the section impaired by EC only applies to 16,000 acres out of a total of 48,000 acres, known as the South Delta. The South Delta does not include the section of the San Joaquin (SJ) River in the vicinity of the discharge. For EC (TDS), the secondary MCL recommended range is 900 µmhos/cm (500 mg/l), the upper range is 1600 µmhos/cm (1000 mg/l) and the short term range is 2200 µmhos/cm (1500 mg/l). The Agricultural Water Quality Goal is 700 µmhos/cm for EC and 450 mg/l for TDS. However more restrictive water quality objectives for the protection of agricultural uses are included in Table 2 of the 1995 Bay Delta Plan (incorporated as table III-5B in the Basin Plan), the most restrictive being the maximum 14-day running average of mean daily for EC in the San Joaquin River at Jersey Point set at 450 µmhos/cm between 1 April and 20 June. The SJ River in the Antioch area is a mixture of freshwater and saltwater at various times of the year. This area of the River is brackish due to its proximity with the San Francisco Bay, tidal influence, and during most of the year a lack of freshwater outflow to mitigate saltwater intrusion. Therefore, at those times when the San Joaquin River is primarily saltwater, discharges of EC and TDS in concentrations equal to concentration in the San Joaquin River should not cause a significant water quality impact to native species and beneficial uses. In addition, the discharge is further mitigated by considering a 2000 ft mixing zone, where dilution can reach a ratio of 100:1 based on the dilution study specified in Finding No. 18. Furthermore, the City of Antioch's drinking water intake structure is about 2 miles downstream of the discharge. This intake is commonly utilized when the water quality of the SJ River is of high quality, typically in late winter and early spring when the River flows are sufficiently high, due to the stormwater flow events and spring snow melts runoff. During this period of good SJ River water quality, the dilution of the discharge with the SJ River flows is much greater than the dilution identified in Finding No. 18.

Based on these conditions, the following methods are used in this permit to protect the beneficial uses of the River.

1) If the SJ River TDS (EC) concentration is less than 450 mg/l (700 µmhos/cm), then:
   a) taking into account a dilution of 100:1 within a 2000 ft mixing zone, protection of the beneficial uses of the receiving water will be maintained by continuation of the previous TDS limitation. Therefore, this Order shall continue to include the TDS limitation of 3,500 mg/l as a daily maximum, while the EC effluent limitation shall be established as 5450 µmhos/cm as a daily maximum.

2) If the SJ River TDS (EC) concentration is higher than 450 mg/l (700 µmhos/cm) then:
   a) the discharge shall not cause an increase by more than 10% in TDS and in EC between receiving water monitoring stations R1 and R3 (this limit is provided as a receiving water limitation).

To determine compliance with the effluent limitations concurrent monitoring of the receiving water (San Joaquin River water at the R1 station) and effluent will be required. Compliance with the receiving water limitations will be verified by the receiving water monitoring, which will only be required when Mirant Power Plant is not discharging.

22. **Chloride** concentrations in the effluent ranged from 350-830 mg/l based on results from samples collected between 1994 and 2001. There were no data from station BG30 on chlorides. Samples taken by the neighboring downstream discharger, Gaylord Container Corporation between 1998 and 2001 show that chloride concentrations in the San Joaquin River ranged from 16-480 mg/l. The secondary MCL recommended range for chloride is 250 mg/l, the upper range is 500 mg/l, and the short term range is 600 mg/l. USEPA's National Ambient Water Quality Criteria for chloride for the Protection of Freshwater Aquatic Life is 230 mg/l, as a 4-day average, and 860 mg/l as a 1-hour average. The 1995 Bay Delta Plan Table 1 (incorporated as table III-5A in the Basin Plan) includes a water quality objective for chloride in the San Joaquin River at the Antioch Waterworks intake of 150 mg/l. The Agricultural Water Quality goal for chloride is 106 mg/l.

As indicated for TDS and EC previously, at those times when the San Joaquin River is primarily saltwater, discharges of chlorides in concentrations equal to concentrations in the San Joaquin River should not cause a significant water quality impact to native species and beneficial uses. In addition, the same methods will be applied with regards to chloride in order to protect the beneficial uses of the River.

1) If the SJ River chloride concentration is less than 250 mg/l, then:
   a) taking into account a dilution of 100:1 within the 2000 ft mixing zone, then the discharge shall not be more than 830 mg/l in chloride as a daily maximum based on past performance of the facility.

2) If the SJ River chloride concentration is higher than 250 mg/l then:
   a) the discharge shall not cause an increase in chloride concentrations by more than 10% between receiving water monitoring stations R1 and R3 (this limit is provided as a receiving water limitation).

To determine compliance with the effluent limitations concurrent monitoring of the receiving water (San Joaquin River water at the R1 station) and effluent will be required. Compliance with the receiving water limitations will be verified by the receiving water monitoring, which will only be required when Mirant Power Plant is not discharging.

23. **Fluoride** concentrations in the effluent were detected at 3400 µg/l from a sample collected in April 2001. Fluoride was not detected (<100 µg/l) in the San Joaquin River on a sample taken in April 2001. The State's Primary MCLs for fluoride is 2000 µg/l. The Agricultural Water Quality Goal for fluoride is 1000 µg/l. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal of 1000 µg/l. Therefore, an effluent limitation for fluoride is included in this Order based on the agricultural water quality goal and a conservative dilution of 10:1 within a mixing zone of 228 feet and is established as 10 mg/l as a daily maximum.

24. **Iron** concentrations in the effluent ranged from 210-1050 µg/l based on results from samples collected between 1999 and 2001. Iron was found in the San Joaquin River to range between 120 µg/l and 820 µg/l based on samples taken in 1998 and 2001. The Basin Plan includes a site specific (San Joaquin River within the Delta) receiving water objective for iron of 300 µg/l. The secondary MCL for iron is also 300 µg/l. USEPA's National Ambient Water Quality criteria instantaneous maximum for the protection of freshwater aquatic life for iron is 1000 µg/l. Since it appears that both the receiving water and the effluent exceed the Basin Plan site specific objective or the secondary MCL, no dilution can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for iron. Therefore, this Order includes an effluent limitation for iron of 300 µg/l as a daily maximum. The limitation puts the discharger in immediate noncompliance. New or modified control measures may be necessary in order to comply with the effluent limitation, and new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for iron is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the iron effluent limit is established in a Time Schedule Order (TSO) in accordance with Water Code Section 13300. In addition, the TSO also requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3, and establishes interim effluent limits based on plant performance until full compliance can be achieved.

25. **Molybdenum** was detected in the effluent with a concentration of 12 µg/l from a sample collected in April 2001. Molybdenum was detected in the San Joaquin River on a sample taken in April 2001 with a concentration of 2 µg/l. The Agricultural Water Quality Goal for molybdenum is 10 µg/l.

Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal of 10 µg/l. Therefore, an effluent limitation for molybdenum is included in this Order based on the agricultural water quality goal and a conservative available dilution of 10:1 within a mixing zone of 228 feet and is established as 90 µg /l as a daily maximum.

26. **Sulfate** concentrations in the effluent ranged from 660-1100 mg/l based on results from four samples collected between 1998 and 2001. Sulfate was found in the San Joaquin River at a concentration of 13 mg/l of a sample collected on October 1998. The Secondary MCL for sulfate is 250 mg/l. In addition, the discharger uses sulfuric acid in the cooling tower to control pH. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL of 250 mg/l. Therefore, an effluent limitation for sulfate is included in this Order based on the drinking water MCL and a conservative available dilution of 10:1 within a mixing zone of 228 feet and is established as 2620 mg/l as a daily maximum.

PRIORITY POLLUTANTS

27. **Arsenic** concentrations in the effluent ranged from <2 to 9 µg/l in samples collected between 1998 and 2001. The available maximum background concentration for arsenic at the San Joaquin River SFRMP Station BG30 was 2.63 µg/l. The State's MCL for arsenic is 50 mg/l. However, on 22 January 2001, USEPA adopted a new primary MCL for arsenic of 10 µg/l (total recoverable). The CTR chronic and acute freshwater criteria for total arsenic concentrations are 150 µg/l and 340 µg/l, respectively. The Basin Plan includes a receiving water limit of 10 µg/l, and the Narrative Toxicity Objective. In the past the Basin Plan narrative toxicity objective with regards to arsenic was implemented by applying the Proposition 65 level of 5 µg/l, which is the reason the previous permit included an effluent limitation for arsenic of 5 µg/l as a monthly average. The Regional Board will utilize the promulgated drinking water MCL of 10 µg/l to implement the narrative toxicity objective. Based on this information, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic, and therefore, this Order no longer includes an effluent limitation for arsenic.

28. **Copper** concentrations in the effluent ranged from 8 to 66 µg/l in samples collected between 1998 and 2001. The maximum background concentration for total copper at the San Joaquin River SFRMP Station BG30 was 5.31 µg/l, while the maximum dissolved concentration was 2.94 µg/l. The Basin Plan includes a site specific receiving water objective for dissolved copper of 10 µg/l (independent of hardness), which translates to a total recoverable concentration of 10.4 µg/l (using the default USEPA conversion factor of 0.96). The CTR Water Quality Criteria for copper expressed as total concentrations for the protection of freshwater aquatic life for acute and chronic scenarios are 6.3 µg/l and 4.5 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for copper expressed as total concentrations (using conversion factor of 0.83) for the protection of saltwater aquatic life for acute and chronic scenarios are 5.8 µg/l and 3.7 µg/l respectively. Based on available data, both the receiving water and the effluent, at times, exceed the CTR water quality criteria for saltwater and freshwater aquatic life.

Therefore, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for both saltwater and freshwater species, saltwater criteria being the most stringent. This Order includes two effluent limitations for copper, one for the protection of saltwater aquatic life, and the other one for the protection of freshwater aquatic life. The effluent limitation for total copper for the protection of saltwater species was calculated using SIP procedures (see information sheet) as 2.9 µg/l as a monthly average and 5.8 µg/l as a daily maximum, and is only applicable under saltwater conditions (when EC is greater than 8750 µmhos/cm). The final effluent limitations for the protection of freshwater species are hardness dependent and were calculated using SIP procedures as shown in **Attachment E**. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. **Provision G5** of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established (see information sheet) and are in effect through 31 August 2007.

29. **Lead** was detected in 1 of 2 effluent samples collected between 1999 and 2001 with a maximum total concentration of 6 µg/l. The maximum background concentration for total lead at the San Joaquin River SFRMP Station BG30 was 1.21 µg/l. However, a receiving water sample taken by the discharger in April 2001 resulted in a higher background concentration for total lead of 2 µg/l. The CTR Water Quality Criteria for lead expressed as total recoverable concentrations (using conversion factor of 0.914) for the protection of freshwater aquatic life for acute and chronic scenarios are 28 µg/l and 1.1 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for lead expressed as total recoverable concentrations (using conversion factor of 0.951) for the protection of saltwater aquatic life for acute and chronic scenarios are 221 µg/l and 8.5 µg/l respectively. Based on available data, both the receiving water and the effluent, exceed the CTR chronic water quality criteria for the protection of freshwater aquatic life. Therefore, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for freshwater species. Therefore, this Order includes hardness dependent effluent limitations for lead calculated using SIP procedures as shown in **Attachment F** based on the CTR criteria for the protection of freshwater aquatic life. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. **Provision G5** of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established (see information sheet) and are in effect through 31 August 2007.

30. **Nickel** was detected in 2 effluent samples taken between 1999 and 2001 with a maximum total concentration of 14 µg/l. The available maximum background concentration for nickel at the San Joaquin River is 6.52 µg/l. The USEPA primary MCL for nickel is set at 100 µg/l (total recoverable). The CTR chronic and acute freshwater criteria for total nickel concentrations (using conversion factors of 0.997 and 0.998) based on worst case receiving water hardness of 43 mg/l are 26 µg/l and 230 µg/l, respectively. The CTR chronic and acute saltwater criteria for total nickel concentrations (using conversion factor of 0.990 for both chronic and acute) are 8.3 µg/l and 74.7 µg/l, respectively. Based on available data, the effluent does not have reasonable potential to cause or contribute to an in-stream excursion above the CTR water quality criteria for the protection of freshwater aquatic life, but does have the reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for saltwater species of 8.3 µg/l. Therefore, effluent limitations for nickel are included in this Order based on the CTR chronic and acute saltwater criteria and a conservative available dilution of 10:1 within a mixing zone of 228 feet. These effluent limitations are only applicable under saltwater conditions (when EC levels are greater than 8750 µmhos/cm) and are calculated using SIP procedures (see information sheet) as 43 µg/l as a daily maximum and 21.3 µg/l as the monthly average.

31. **Selenium** was detected in 1 of 2 effluent samples collected between 1998 and 2001 with a maximum total concentration of 50 µg/l. The maximum background concentration for total selenium at the San Joaquin River SFRMP Station BG30 was 0.43 µg/l. However, selenium was not detected (<1 µg/l) in the San Joaquin River on a sample taken in April 2001 upstream of the discharge point. The CTR Water Quality Criteria for selenium expressed as total recoverable concentrations for the protection of freshwater aquatic life for acute and chronic scenarios are 20 µg/l and 5 µg/l respectively. The CTR Water Quality Criteria for selenium expressed as total recoverable concentrations (using conversion factor of 0.998) for the protection of saltwater aquatic life for acute and chronic scenarios are 291 µg/l and 71 µg/l respectively. Based on available data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life. Therefore, this Order includes effluent limitations for selenium, based on the CTR criteria for the protection of freshwater aquatic life, granting a dilution credit of 10:1 for the chronic criteria, but no dilution for the acute criteria. The effluent limitations are calculated using SIP procedures (see information sheet) as 20 µg/l as a daily maximum and 10 µg/l as a monthly average. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. **Provision G5** of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established (see information sheet) and are in effect through 31 August 2007.

32. **Thallium** was detected in 1 of 2 effluent samples collected between 1998 and 2001 with a maximum total concentration of 6 µg/l. There were no data from SFRMP station BG30 on thallium. However, thallium was detected in the San Joaquin River upstream of the discharge point on a sample taken in April 2001 with a concentration of 2 µg/l. The State and U.S. EPA primary MCL is set at 2 µg/l. The CTR's criteria for human health protection for consumption of water and aquatic organisms is

set at 1.7 µg/l and for consumption of aquatic organisms only is set at 6.3 µg/l. Based on available data, both the receiving water and the effluent, exceed the CTR water quality criteria for human health protection for consumption of water and aquatic organisms. Therefore, **no dilution** can be granted and this Order includes effluent limitations for thallium based on the CTR criteria for human health protection. The effluent limitations were calculated using SIP procedures (see information sheet) and resulted in 1.7 µg/l as a monthly average and 3.4 µg/l as a daily maximum. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. **Provision G5** of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established (see information sheet) and are in effect through 31 August 2007.

33. **Zinc** concentrations in the effluent ranged from 26 to 120 µg/l in samples collected between 1998 and 2001.The maximum background concentration for total zinc at the San Joaquin River SFRMP Station BG30 was 9.4 µg/l. However, receiving water samples taken by the discharger between 1998 and 2001 resulted in a higher background concentration for total zinc of 36 µg/l. The CTR Water Quality Criteria for zinc expressed as total recoverable concentrations (using conversion factors of 0.978 for acute and 0.986 for chronic) for the protection of freshwater aquatic life for acute and chronic scenarios are 59 µg/l and 59 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for zinc expressed as total recoverable concentrations (using conversion factor of 0.946) for the protection of saltwater aquatic life for acute and chronic scenarios are 95 µg/l and 86 µg/l respectively. Based on available data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for both saltwater and freshwater species, freshwater criteria being the most stringent. Therefore, this Order includes hardness dependent effluent limitations for zinc calculated using SIP procedures as shown in **Attachment G**, based on the CTR criteria for the protection of freshwater aquatic life, granting a dilution credit of 10:1 for the chronic criteria, but no dilution for the acute criteria. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. **Provision G5** of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established (see information sheet) and are in effect through 31 August 2007.

34. The Sacramento–San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act because of: (1) diazinon and chlorpyrifos (organophosphate pesticides), (2) Group A-organochlorine pesticides {aldrin, chlordane, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, 4,4'DDT, heptachlor, heptachlor epoxide, hexachlorocyclohexane (alpha, beta, delta and lindane), and toxaphene}, and (3) unknown toxicity. The Basin Plan objectives regarding pesticides include:

a). no individual pesticides shall be present in concentrations that adversely affect beneficial uses,
b). discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affects beneficial uses,
c). total chlorinated hydrocarbon pesticide concentrations shall not be present in the water column at detectable concentrations, and
d). pesticide concentrations shall not exceed those allowable by applicable antidegradation policies.

Organophosphate pesticides, diazinon and chlorpyrifos, are commonly-used insecticides found in many domestic wastewater discharges at concentrations which can cause toxicity in both the effluent and in the receiving water. These pesticides are not expected to be found in industrial discharges. In addition, these pesticides are not "priority pollutants" and so are not part of the analytical methods routinely performed for NPDES discharges. The Discharger will not be required to monitor for diazinon or chlorpyrifos. The Basin Plan's requirement that persistent chlorinated hydrocarbon pesticides shall not be present in the water column in detectable concentrations is the most stringent criterion for the regulation of the Group A-**organochlorine pesticides (OPs)**. The Organochlorine pesticides were analyzed in the effluent and receiving water on samples taken in April 2001. The results were non-detect in both the effluent and receiving water. Although, these constituents are listed under the California 303(d) list as pollutants causing impairment in the Sacramento-San Joaquin Delta, and an effluent limitation for Group A-organochlorine pesticides is required according to the SIP, this Order does not include an effluent limitation for OPs because of the site specific results of non-detect.

35. **Mercury** was detected in the effluent on a sample taken in April 2001 using a "clean technique" USEPA Method 1631 with a concentration of 0.002 µg/l. Mercury was also detected in July 2001 in the San Joaquin River water, upstream of the discharge point, with a concentration of 0.026 µg/l. The current USEPA's ambient water quality criterion (expressed as dissolved concentrations) for continuous concentration of mercury is 0.77 µg/l (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is 0.050 µg/l. Mercury is listed under the California 303(d) list as a pollutant causing impairment in the Sacramento-San Joaquin Delta. This listing is based partly on elevated levels of mercury in fish tissue. Because the Sacramento-San Joaquin Delta has been listed as an impaired water body for mercury based on fish tissue impairment, the discharge must not cause or contribute to increased mercury levels in fish tissue.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Sacramento-San Joaquin Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP recommends that mass loading of the bioaccumulative pollutant should be limited in the interim to representative, current levels pending development of applicable water quality standards. Furthermore, the SIP allows for compliance schedules of up to

15 years. Until the TMDL is completed and water quality based effluent limits are prescribed, an interim, performance based, mass loading limit will be prescribed.

The single analysis of mercury is sufficient to determine reasonable potential but is not a sufficient database to determine an annual interim mass effluent limitation, therefore this permit does not contain an interim performance-based effluent limit for mercury until additional data are obtained. **Provision G4** of this Order requires the Discharger to conduct 1 year of monthly monitoring for mercury in the effluent, using a "clean technique" USEPA Method 1631, with monthly mass loadings being calculated for each calendar month, and allows the Regional Board to reopen the permit to establish an interim effluent mass limit for mercury. The final effluent limit for mercury will be determined from an approved TMDL.

36. **Chromium** total concentrations in the effluent ranged from 2 to 10 µg/l in samples collected between 1998 and 2001. The maximum background concentration for total chromium at the San Joaquin River SFRMP Station BG30 was 8.2 µg/l. However, receiving water samples taken by the discharger between 1998 and 2001 showed background concentration for total chromium ranging between 2.1 and 3.9 µg/l. The state MCL for total chromium is 50 µg/l while the USEPA MCL is 100 µg/l. Based on this information, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for total chromium. However, a technology-based effluent limitation for total chromium of 200 µg/l as a daily maximum is required to be included in this permit based on the effluent limitation guidelines for the Steam Electric Power Generating Point Source Category. The previous order included an effluent limitation for total chromium of 50 µg/l (based on the state MCL) as a daily maximum. The Discharger has been able to meet this limitation, and to comply with the technology-based requirements, this Order shall continue to include the chromium limitation of 50 µg/l as a daily maximum.

37. The effluent limitation guidelines for the Steam Electric Power Generating Point Source Category representing the degree of effluent reduction attainable by the application of the best available technology (BAT) economically achievable include effluent limitations for copper, chromium, iron, zinc, total suspended solids (TSS), and Oil & Grease. However, as described in previous findings, the chromium limitation shall continue to be the same as in the previous permit, and with respect to iron, copper, and zinc, more stringent effluent limits based upon applicable water quality criteria to protect the beneficial uses of the receiving water is imposed in this Order. This Order, therefore, includes technology based effluent limitations for **TSS and Oil & Grease**.

38. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. This Order provides for an increase in the permitted volume and mass of pollutants discharged. The increase may cause a violation of water quality objectives for CTR constituents (copper, lead, selenium, thallium, and zinc) and non-CTR constituents (aluminum and iron) without further treatment. However, this Order and TSO Order R5-2002-0156 require the discharger, in accordance with specified compliance schedules, to meet requirements that will result in the use of best practicable treatment or control of the discharge and will result in compliance with water quality objectives. In addition, the discharger is required to

attain technology-based standards established in the federal Clean Water Act. The only beneficial use that may be affected by this discharge is aquatic life, which is the beneficial use most likely affected by the pollutants discharged (aluminum, copper, lead, nickel, selenium, zinc, suspended solids, oil & grease, and temperature). This Order specifically allows chronic aquatic toxicity within a small mixing zone (228 feet based on a 1997 dilution study) and the initial zone of dilution for selenium and zinc. No acute toxicity within the mixing zone is allowed. The 9 April 1997 dilution study submitted by the Discharger describes the plume, in general, as narrow and hugging the bank. The dilution study was a very conservative model based strictly on the plant discharge from the outfall pipe. It did not include any mixing affect resulting from the discharge (440 Million gallons per day) immediately downstream and adjacent Mirant Power Plant. Allowing the increased proposed discharge allows GWF Power Systems L.P to provide a service necessary to the production of electricity, and is consistent with the maximum benefit to the people of the state by providing important social and economic benefit to the Dischager and the communities in Eastern Contra Costa County.

39. The beneficial and potential beneficial uses of the underlying groundwater are municipal and domestic, industrial service and process, and agricultural supply.

40. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

41. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

42. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

43. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

IT IS HEREBY ORDERED that Order No. 95-218 is rescinded and that GWF Power Systems, L.P., its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Other than the cooling water blowdown, boiler blowdown, demineralizer-neutralization wastewater and gland steam condensate, the direct discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Other than storm water, the direct discharge of wastes to the storm water evaporation/percolation basin is prohibited.

3. The addition of materials that have metals as an active ingredient including chemicals added to inhibit corrosion, scale, or algal formation in the boiler or cooling tower is prohibited.

4. By-pass or overflow of untreated or partially treated waste, including domestic waste, or direct discharge of storm water to surface waters or surface water drainage courses is prohibited, except as allowed by the attached Standard Provisions and Reporting Requirements A.13.

5. Neither the discharge nor its treatment shall create a condition of pollution or nuisance as defined in Section 13050 of the California Water Code.

B. Effluent Limitations:

1. The discharge of an effluent in excess of the following limits is prohibited:

Constituents	Units	Monthly Average	Daily Maximum
Total Suspended Solids[1]	mg/l	30	100
	lbs/day[3]	31	104
Oil & Grease[1]	mg/l	15	20
	lbs/day[3]	15.6	20.9
Chloride	mg/l		830
	lbs/day[3]		866
Chromium	µg/l		50
	lbs/day[3]		0.052
Copper (saltwater)[2,5]	µg/l	2.9	5.8
	lbs/day[3]	0.003	0.006
Copper (freshwater)[5]	µg/l	Att E[4]	Att E[4]
	lbs/day[3]		
Electrical Conductivity @ 25°C	µmhos/cm		5450
Iron[6]	µg/l		300
	lbs/day[3]		0.31
Fluoride	mg/l		10
	lbs/day[3]		10.4
Lead[5]	µg/l	Att F[4]	Att F[4]
	lbs/day[3]		
Molybdenum	µg/l		90
	lbs/day[3]		0.09
Nickel[2]	µg/l	21.3	43
	lbs/day[3]	0.022	0.045
Selenium[5]	µg/l	10	20

Constituents	Units	Monthly Average	Daily Maximum
	lbs/day[3]	0.01	0.02
Sulfate	mg/l		2620
	lbs/day[3]		2733
Total Dissolved Solids	mg/l		3500
	lbs/day[3]		3651
Thallium[5]	µg/l	1.7	3.4
	lbs/day[3]	0.0018	0.0036
Zinc[5]	µg/l	Att G	Att G
	lbs/day[3]	[4]	[4]

[1] Effluent limits prescribed in 40 CFR, Part 423.15.
[2] This limit only applicable when EC levels in the receiving water are above 8750 µmhos/cm.
[3] Based on a maximum 30-day average daily flow of 0.125 mgd (125,000 gallons per day).
[4] Using the value, in µg/l, determined from attachments E, F and G, calculate the lbs per day limit by using the formula: 1/1000 x µg/l x 8.345 x 0.125 mgd = lbs/day.
[5] Full compliance with this limit is not required by this Order until **1 September 2007**.
[6] A compliance time schedule and interim limits have been established in a Time Schedule Order.

Constituents	Units	4-day Average	1-Hour Average	Daily Maximum
Aluminum[2]	µg/l	87	___	200
	lbs/day[1]	0.091	___	0.21

[1] Based on a maximum 30-day average daily flow of 0.125 mgd (125,000 gallons per day).
[2] A compliance time schedule and interim limits have been established in a Time Schedule Order.

2. The following Copper, Lead, Selenium, Thallium, and Zinc effluent limits shall be in effect through 31 August 2007. The interim effluent limits are as follows:

Constituents	Units	Daily Maximum
Copper	µg/l	310
	lbs/day[1]	0.32
Lead	µg/l	28
	lbs/day[1]	0.03
Selenium	µg/l	235
	lbs/day[1]	0.25
Thallium	µg/l	28

Constituents	Units	Daily Maximum
	lbs/day[1]	0.03
Zinc	µg/l	564
	lbs/day[1]	0.59

[1] Based on a maximum 30-day average daily flow of 0.125 mgd (125,000 gallons per day)

3. Chemicals added as corrosion inhibitors and biocides in the cooling tower shall not cause the effluent to exceed the indicated limits:

Constituents	Units	Monthly Average	Daily Maximum
Priority Pollutants[1]	mg/l	ND	ND
Chromium	mg/l	0.2	0.2
Zinc	mg/l	1.0	1.0
Free available chlorine	mg/l	0.2	0.5

[1] The 126 priority pollutants (Appendix A to 40 CFR Part 423) contained in chemicals added for cooling tower maintenance, except chromium and zinc. Compliance will be determined by sampling chemical additives and providing engineering calculations which demonstrate that the regulated pollutants are not detectable in the final cooling tower blowdown discharge by the analytical methods in 40 CFR part 136.

4. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

5. The maximum temperature of the discharge shall not exceed the ambient water temperature by more than 20 ^{o}F nor shall it exceed 86 ^{o}F.

6. The 30-day average daily discharge during a normal year shall not exceed 125,000 gallons per day. This value may be exceeded by up to 15% when necessary to increase cooling tower blowdown to maintain water quality during a drought year, when influent water presents increased minerals and metals content.

7. Survival of aquatic organism in 96-hour bioassays of undiluted waste shall be not less than:
   Minimum for any one bioassay----------70%
   Median for any three or more consecutive bioassays------90%

C. Discharge Specifications: (Discharge of storm water to evaporation/ infiltration basin)

1. The pH in the evaporation/percolation basin shall not be less than 6.5 nor greater than 8.5.

2. The dissolved oxygen concentration of the storm water contained in the evaporation/percolation basin shall not be less than 1.0 mg/l for 8 hours in any 24-hour period.

3. Two feet (2') of freeboard shall be maintained in the evaporation/percolation basin at all times.

4. Storm water that is not used as cooling tower makeup water or for dust control shall remain within the designated disposal area at all times.

D. Solids Disposal:

1. Collected screenings, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, California Code of Regulations, Division 2, Subdivision 1, Section 20005, et seq.

2. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.

E. Ash Disposal:

1. Ash which is not sold as a product shall be disposed of in a manner approved by the Executive Officer.

F. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. However, a receiving water condition not in conformance with the limitation is not necessarily a violation of this Order. The Regional Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred. The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l.

2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

4. Esthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. Increases in turbidity over background levels shall not exceed the following limits:

   a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

   b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

   c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

   d. More than 10 percent where natural turbidity is greater than 100 NTUs.

7. The ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units.

8. Deposition of material that causes nuisance or adversely affects beneficial uses.

9. A zone, either individually or combined with other discharges, defined by water temperatures of more than $1^{o}F$ above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the main river channel at any point.

10. An area of surface water temperature rise greater than $4\ ^{O}F$ above the natural temperature of the receiving waters at any time or place.

11. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

12. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

13. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

14. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

15. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder. If more stringent applicable water quality standards are approved pursuant

to Section 303 of the CWA, or amendments thereto, the Regional Board will revise and modify this Order in accordance with such more stringent standards.

16. Concentrations of TDS to increase more than 10% as defined in Finding No. 21, when upstream concentrations are above 450 mg/l.

17. Levels of EC to increase more than 10% as defined in Finding No. 21, when upstream levels are above 700 μmhos/cm.

18. Concentrations of chloride to increase more than 10% as defined in Finding No. 22, when upstream concentrations are above 250 mg/l.

G. Provisions:

1. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

2. **Chronic Toxicity Testing:** The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity (other than salinity), the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order may be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

3. **Summary Pollutant Data and Receiving Water Characterization Report**: There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of NTR, CTR water quality objectives, or supplemental constituents that could exceed Basin Plan numeric or narrative water quality objectives. The constituents are specifically listed in a letter for submission of a technical report requirement issued by the Executive Officer on 10 September 2001. A copy of that letter, including its attachments is incorporated into this Order as Attachments D through D4, and include NTR, CTR and additional constituents, which could exceed water quality standards, including Basin Plan numeric or narrative water quality objectives. The Discharger shall comply with the following time schedule in conducting a study of these constituents potential effect in surface waters:

Task	Compliance Date
Submit Interim Status Report	**1 November 2002**
Submit Study Report	**1 March 2003**
Submit Study Report for Dioxins	**1 November 2004**

This Provision is intended to be consistent with the requirements of the 10 September 2001 technical report request. The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality standard this Order will be reopened and effluent limitations added for the subject constituents.

4. **Mercury Evaluation:** Due to the listing of mercury on the California 303 (d) list as a pollutant causing impairment of the Sacramento-San Joaquin Delta, the discharge must not cause or contribute to increased mercury levels in fish tissue to meet the requirements of the anti-degradation policy described in SWRCB Resolution No. 68-16 and the anti-degradation provision in 40 CFR 131.12 (a) (1). Therefore, the Discharger shall develop a mercury evaluation workplan acceptable to the Executive Officer within **six (6) months** after adoption of this Order. The purpose of the workplan is to determine to what extent the Discharger may be contributing additional mass loadings of mercury into the San Joaquin River. The workplan shall include 1 year of monthly monitoring for mercury using a "clean technique" USEPA Method 1631, with a final report due 4 months after the 1 year of monitoring with monthly mass loadings being calculated for each calendar month, and this Order may be reopened to establish an interim mass effluent limitation for mercury.

5. **Corrective Action Plant/Implementation schedule:** The Discharger's effluent contains Copper, Lead, Selenium, Thallium, and Zinc at concentrations that exceed water quality objectives contained in the CTR. Sampling indicates the existing effluent is not capable of consistently meeting the effluent limitations for these constituents. The Discharger shall develop a corrective action plan, which evaluates reasonable measures to achieve full compliance with final limitations by 1 September 2007 in accordance with the following time schedule:

Task	Date Due .
Submit Corrective Action Plan and Time Schedule	**1 March 2003**
Progress Report	**1 July, annually**
Full Compliance	**1 September 2007**

The Progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, evaluate the effectiveness of the implemented measures and assess whether additional measures are necessary to meet the time schedule.

6. **Receiving Water limitations compliance confirmation:** For the times when Mirant Power Plant is not discharging and when monitoring results indicate that the discharge may not be in compliance with receiving water limitations for TDS/EC, chloride, and temperature, the Discharger shall immediately (at the time of receiving water monitoring) conduct stratification analyses (using EC as an indicator) within the mixing zone from the point of discharge to monitoring station R3 to determine whether saltwater intrusion, and tidal movement, may have had an affect on the Discharger's plume (125,000 gpd) and may be influencing the levels of these constituents, or whether the increase in discharge parameters are present in the downstream monitoring station. The confirmation report shall be submitted with each monitoring Report.

7. The Discharger shall use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment.

8. The Discharger shall comply with all of the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s)."

9. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2002-0155, which is part of this Order, and any revisions thereto, as ordered by the Executive Officer.

   When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

10. This Order expires on **1 September 2007** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

11. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of or clearance from the State Water Resources Control Board (Division of Water Rights).

12. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

    To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name, address, and telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Acting Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 September 2002.

_____
THOMAS R. PINKOS, Acting Executive Officer

RDJ

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2002-0155

NPDES NO. CA0082309

FOR
GWF POWER SYSTEMS, L.P.
WILBUR AVENUE EAST POWER PLANT, ANTIOCH (SITE IV)
CONTRA COSTA COUNTY

The Discharger shall not implement any changes to this Program unless and until the Regional Board issues a revised Monitoring and Reporting Program. For purposes of evaluating compliance with the limitations of Order No. R5-2002-0155, the Discharger shall conduct monitoring and submit reports as specified below. Specific sample station locations have been established under direction of the Regional Board's staff, and a description of the stations is attached to this Order.

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the total volume and quality of the discharge. Date and time of collection of samples shall be recorded and reported. Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	gpd	Cumulative	Daily
pH	PH units	Grab	Daily
Temperature	°C/°F	Grab	Daily
Hardness (as $CaCO_3$)	mg/l	Grab	Twice Monthly
Total Suspended Solids	mg/l, lbs/day	Grab	Twice Monthly
Total Dissolved Solids[1]	mg/l, lbs/day	Grab	Twice Monthly
Oil & Grease	mg/l, lbs/day	Grab	Twice Monthly
Electrical Conductivity @25°C[1]	µmhos/cm	Grab	Twice Monthly
Aluminum	µg/l, lbs/day	Grab	Monthly
Chloride[1]	mg/l, lbs/day	Grab	Monthly
Chromium	µg/l, lbs/day	Grab	Monthly
Copper[3]	µg/l, lbs/day	Grab	Monthly
Iron	µg/l, lbs/day	Grab	Monthly
Fluoride	mg/l, lbs/day	Grab	Monthly
Lead[3]	µg/l, lbs/day	Grab	Monthly
Molybdenum	µg/l, lbs/day	Grab	Monthly
Nickel	µg/l, lbs/day	Grab	Monthly

Constituents	Units	Type of Sample	Sampling Frequency
Selenium	µg/l, lbs/day	Grab	Monthly
Sulfate	mg/l, lbs/day	Grab	Monthly
Thallium	µg/l, lbs/day	Grab	Monthly
Zinc[3]	µg/l, lbs/day	Grab	Monthly
Mercury[4]	µg/l, lbs/day	Grab	Monthly/Quarterly
Acute Toxicity[5]	% Survival	Grab	Quarterly
Standard Minerals[1,2]	mg/l	Grab	Annually
Priority Pollutants[1]	µg/l	Grab	Annually

[1] Also to be collected concurrently with San Joaquin River water monitoring for these constituents.
[2] Standard minerals shall include calcium, magnesium, hardness, sodium, potassium, alkalinity, sulfate, chloride, boron, and nitrate, and include verification that the analysis is complete (i.e., cation/anion balance).
[3] To be collected concurrently with San Joaquin River water monitoring for hardness.
[4] Requires use of "clean technique" (EPA Method 1631) for sampling, handling and analysis, or later amendment. Monthly for 1 year/Quarterly thereafter.
[5] The bioassay shall be 96-hour acute toxicity test in accordance with EPA 600/4-90/027F or later amendment approved by Regional Board staff. Species shall be fathead minnows (Pimephales promelas). Temperature and pH shall be recorded each day of the test. No pH adjustment.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

CHEMICALS ADDED AS CORROSION INHIBITORS & BIOCIDES

A representative sample (based on maximum dosages used), of a mixture of all chemicals used as corrosion inhibitors and biocides in the cooling tower, or sampled individually shall be collected. Monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Priority Pollutants[1]	µg/l	Grab	Annual[2]
Chromium	µg/l	Grab	Annual
Zinc	µg/l	Grab	Annual
Free chlorine	mg/l	Grab	Annual

[1] The 126 priority pollutants (Appendix A to 40 CFR Part 423). Using analytical methods in 40 CFR Part 136.
[2] Annually, each August. However, if after first analyses the results are non-detect then only repeat test when changing chemicals

STORMWATER EVAPORATION/PERCOLATION BASIN MONITORING

Storm water samples shall be collected of two storm events per year that result in a storm water discharge to the evaporation/percolation basin. The following shall constitute the stormwater evaporation/percolation basin monitoring program:

Constituents	Units	Type of Sample	Frequency
Freeboard Depth	Feet	Staff gauge	Monthly
pH	pH units	Grab	Monthly
Specific Conductivity	µmhos/cm	Grab	Twice a year[1]
Iron	µg/l	Grab	Twice a year[1]
Total Suspended Solids	mg/L	Grab	Twice a year[1]
Oil & Grease	mg/L	Grab	Twice a year[1]

[1] Storm water samples shall be collected during the first hour of discharge from the first storm event of the wet season (October 1 through May 30) and at least one other storm event in the wet season that results in a storm water discharge to the evaporation/percolation basin.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples, and with the exception for hardness, all samples shall be taken only when the neighboring discharger Mirant Power Plant has ceased to discharge for 48 hours or more. The Discharger shall coordinate with Mirant Power Plant to determine an appropriate schedule for sampling and allow enough time to make the necessary arrangements. Receiving water samples shall be taken from the following:

Station	Description
R-1	328 feet (100 meters) East of the point of discharge
R-2	328 feet West of the point of discharge
R-3	2000 feet West of the point of discharge

Constituents	Units	Sampling Station	Sampling Frequency
Electrical Conductivity @25°C[1,3]	µmhos/cm	R-1, R-2, R-3	Monthly
TDS[1,3]	mg/l	R-1, R-2, R-3	Monthly
Chloride[1,3]	mg/l	R-1, R-2, R-3	Monthly
Hardness (as $CaCO_3$)[2]	mg/l	R-1	Monthly
Dissolved Oxygen[5]	mg/l	R-1, R-2	Quarterly

Constituents	Units	Sampling Station	Sampling Frequency
pH[5]	pH units	R-1, R-2	Quarterly
Turbidity[5]	NTU	R-1, R-2	Quarterly
Temperature[5]	°C/°F	R-1, R-2	Quarterly
Specific Constituents[4,5]	µg/l	R-1, R-2	Quarterly

1 To be collected concurrently with effluent monitoring for these constituents and to be collected only in the case that Mirant Power plant has ceased discharging for a period of 48 hours or more.

2 To be collected concurrently with effluent monitoring for copper, lead, and zinc. A bank sample approximately 200 ft east of the point of discharge would also be considered adequate.

3 If needed, to determine compliance with receiving water limitations for EC, TDS, and chloride, and only when Mirant Power Plant has not discharged for a period of 48 hours or more, immediately (at time of sampling collection) conduct stratification analyses (using EC as an indicator) within the mixing zone from the point of discharge to monitoring station R3 to determine if tidal movement, and saltwater intrusion may be influencing the levels of these constituents.

4 Specific constituents include aluminum, chromium, copper, fluoride, iron, lead, molybdenum, nickel, selenium, sulfate, thallium, and zinc.

5 Monitoring only required when Mirant Power Plant has ceased discharging for a period of 48 hours or more.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-l and R-3. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens or coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the River. Chronic toxicity samples shall be collected at the last point prior to entering the effluent discharge pipe. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of sample collection shall be recorded. The effluent tests must be conducted with concurrent reference toxicant tests. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days.

Chronic toxicity monitoring shall include the following:

Species: Pimephales promelas (larval stage), Ceriodaphnia dubia, and Selenastrum capricornutum

Frequency: Semiannual (even years on July and October, odd years on January and April), and conduct test again within 30 days of a change in use of microbiocides.

Dilution Series:

	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Lab Water
% WWTP Effluent	100	75	50	25	12.5	0	0
% Dilution Water*	0	25	50	75	87.5	100	0
% Lab Water	0	0	0	0	0	0	100

* Dilution water shall be receiving water from the San Joaquin River taken upstream from the discharge point. The dilution series may be altered upon approval of Regional Board staff.

The fresh water species may be substituted with marine species, namely *Mysidopsis bahia* (2nd editions EPA 600-4-91-003), *Pimephales promelas* and *Selenastrum capricornutum* (3rd edition EPA-600-4-91-002) if:

1. The EC levels in the effluent are above 8750 µmhos/cm greater than 75% of the time, or
2. The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the water supply (City of Antioch) can be obtained. The following shall constitute the water supply monitoring program:

Constituents[1]	Units	Sampling Frequency
Electrical Conductivity @25°C	µmhos/cm	Monthly
Total Dissolved Solids	mg/l	Monthly
Chloride	mg/l	Monthly
Aluminum	µg/l	Quarterly
Copper	µg/l	Quarterly
Fluoride	mg/l	Quarterly
Iron	µg/l	Quarterly
Lead	µg/l	Quarterly
Molybdenum	µg/l	Quarterly

Constituents[1]	Units	Sampling Frequency
Selenium	µg/l	Quarterly
Sulfate	mg/l	Quarterly
Thallium	µg/l	Quarterly
Zinc	µg/l	Quarterly
Standard Minerals[2]	mg/l	Yearly

[1] Samples shall be collected concurrently with effluent monitoring.

[2] Standard minerals shall include calcium, magnesium, hardness, sodium, potassium, alkalinity, sulfate, chloride, boron, and nitrate, and include verification that the analysis is complete (i.e., cation/anion balance).

ASH MONITORING

If ash is to be disposed of in a monofill or at a location in a landfill where the ash is not subject to contact with leachate from putrescible wastes, a representative composite sample of that ash shall be analyzed for soluble metals, TDS and minerals by the Waste Extraction Test set forth in Title 22, California Code of Regulations 66700 using a distilled water extract solution. Otherwise, the Waste Extraction Test should be run using the citric acid buffer extract. Ash disposed of in a landfill shall be sampled twice per year (composite sample) for the above constituents.

REPORTING

Monitoring results shall be submitted to the Regional Board by the **1st day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **1st day of the second month following each calendar quarter and year**, respectively. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, and monthly averages should be determined and recorded.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

a. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

b. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).

The Discharger may also be requested to submit an annual report to the Regional Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Acting Executive Officer

6 September 2002

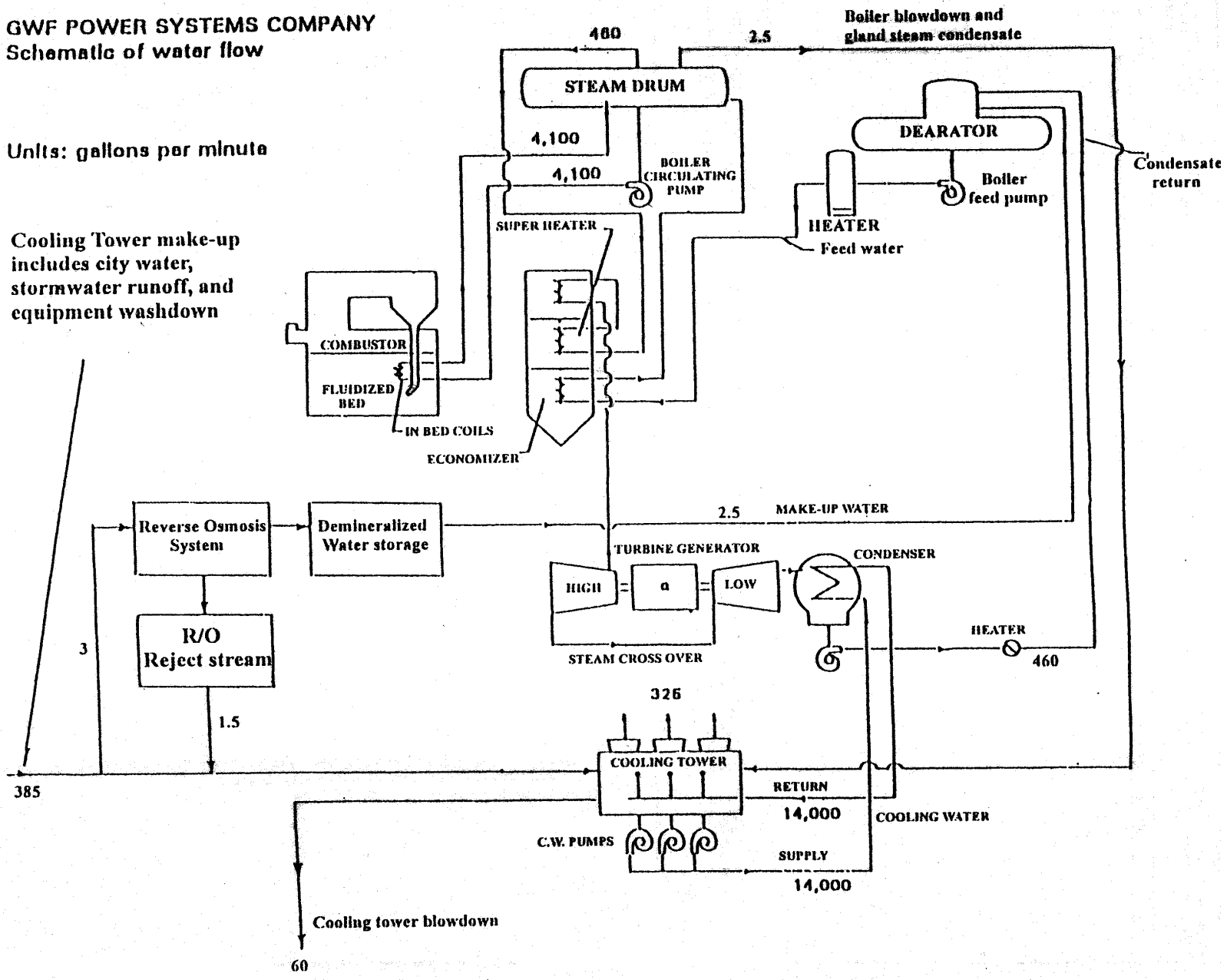
RDJ

ATTACHMENT A

GWF WILBUR AVE. EAST POWER PLANT
ANTIOCH (SITE IV)

Contra Costa County

NW ¼ of NE ¼ of Section 21, T2N, R2E, MDB&
Antioch North 7.5 Min. USGS QUAD
Approximate Scale 1" = 4000'


GWF POWER SYSTEMS COMPANY
Schematic of water flow
Units: gallons per minute
Cooling Tower make-up includes city water, stormwater runoff, and equipment washdown
460
2.5
Boiler blowdown and gland steam condensate
STEAM DRUM
4,100
4,100
BOILER CIRCULATING PUMP
SUPER HEATER
DEARATOR
Boiler feed pump
Condensate return
HEATER
Feed water
COMBUSTOR
FLUIDIZED BED
IN BED COILS
ECONOMIZER
Reverse Osmosis System
Demineralized Water storage
2.5
MAKE-UP WATER
TURBINE GENERATOR
HIGH
LOW
CONDENSER
HEATER
460
STEAM CROSS OVER
R/O Reject stream
3
1.5
326
COOLING TOWER
385
RETURN
14,000
COOLING WATER
C.W. PUMPS
SUPPLY
14,000
Cooling tower blowdown
60

ATTACHMENT C

GWF POWER SYSTEMS, L.P RECEIVING WATER AND EFFLUENT DATA

Results of RMP conventional water quality parameter data collected in the San Joaquin River, Station BG30, 5 March 1993 through 21 July 1999

Date	Conductivity (µmhos)	Salinity	DO (mg/l)	pH	Temp (ºC)	TSS (mg/l)	Hardness (mg/l)	Ammonia (mg/l)	Nitrate as N (mg/l)
3/5/93	N/A	0	9.4	7.7	14	42.5	N/A	0.13	0.5
5/27/93	N/A	0	9.9	7.9	20	43.9	N/A	**0.0012**	**0.0014**
9/16/93	850	**0.02**	8.8	7.6	21.5	37.5	N/A	0.03	0.24
2/8/94	950	0.0	N/A	7.6	11.5	13.8	170	0.165	0.45
4/28/94	700	0.0	N/A	8	17.4	30.4	150	0.03	0.44
8/24/94	3610	**1.8**	N/A	7.9	23	17.5	**530**	0.04	0.24
02/15/95	131	0.0	9.6	7.5	11.1	23	64	0.09	0.57
04/18/95	134	0.0	9.6	7.7	13.7	24	68	0.06	0.22
08/23/95	190	0.0	8.0	7.7	**23.3**	26.5	76	0.03	0.17
2/14/96	140	0.0	9	**6.3**	12.5	24.6	170	0.14	**0.62**
4/23/96	147	0.0	9.9	7.8	16.1	**11.1**	96	0.03	0.26
7/22/96	N/A	0.0	8.3	7.8	22.7	29	84	0.04	0.21
1/29/97	**110**	0.0	8.4	7.1	12.1	**70**	**43**	**0.2**	0.7
4/23/97	200	0.0	8.4	7.8	18.3	22	70	0.0	0.4
8/6/97	810	0.3	**7.3**	**8.1**	23.2	32	110	N/A	0.2
2/4/98	**9770**	0.0	9.8	7.6	10.8	50	N/A	0.10	0.6
4/16/98	223	0.0	8.4	7.4	14.3	23	67	0.05	N/A
7/29/98	140	0.0	7.6	7.7	22.4	28	47	0.04	0.3
2/10/99	193	0.0	**11.2**	7.1	**9.6**	19.5	58	0.14	0.53
4/21/99	191	0.0	9.2	7.7	16.6	21.5	62	0.04	0.22
7/21/99	675	0.0	8.6	7.9	20.5	42.7	101	0.06	0.26
# of Observations	18	21	18	21	21	21	18	21	20
Maximum	9770	1.8	11.2	8.1	23.3	70	530	0.2	0.62
Minimum	110	0.02	7.3	6.3	9.6	11.1	43	0.0012	0.0014
Average									

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS

Constituent CTR # Date	Sb µg/L #1	As µg/L #2	Be µg/L #3	Cd µg/L #4	Cr Total µg/l	Cr (III) µg/L # 5a	Cr (VI) µg/L # 5b	Cu µg/L #6 Tot/Di	Pb µg/L #7 Tot/Dis	Hg µg/L #8	Ni µg/ #9	Seleniu µg/L #10	Silve µg/L #11	Thallium µ #12	Zinc µg #13	Cyanid µg/L #14	Asb MF/L #15
3/5/93	N/A	1.85	N/A	0.022	8.8	N/A	N/A	**5.31/2.9**	0.85/0.2	0.010	**6.5**	0.159	0.00	N/A	7.5	N/A	N/A
5/27/93	N/A	1.71	N/A	0.027	4.81	N/A	N/A	3.9/1.7	0.788/0.0	0.008	3.4	0.204	**0.04**	N/A	5.41	N/A	N/A
9/16/93	N/A	1.99	N/A	0.024	4.94	N/A	N/A	4.12/1.7	1.07/0.0	0.011	4.0	0.265	0.01	N/A	**9.4**	N/A	N/A
2/8/94	N/A	1.78	N/A	0.0184	1.68	N/A	N/A	3.01/2.2	0.50/0.0	0.005	2.4	0.25	0.01	N/A	3.62	N/A	N/A
4/28/94	N/A	2.15	N/A	0.0266	3.69	N/A	N/A	3.82/2.2	0.81/0.0	0.014	3.8	0.22	0.01	N/A	4.04	N/A	N/A
8/24/94	N/A	2.54	N/A	0.0280	2.63	N/A	N/A	3.28/2.1	0.41/0.0	0.004	2.1	0.06	0.002	N/A	2.40	N/A	N/A
2/15/95	N/A	1.88	N/A	0.0170	3.72	N/A	N/A	4.16/2.3	0.54/0.0	0.007	4.7	0.13	0.006	N/A	5.04	N/A	N/A
4/18/95	N/A	1.48	N/A	0.0170	4.18	N/A	N/A	3.14/1.6	0.67/0.1	0.007	3.1	0.33	0.006	N/A	3.62	N/A	N/A
8/23/95	N/A	2.32	N/A	0.020	3.8	N/A	N/A	2.77/1.5	0.63/0.0	0.006	2.5	0.06	0.007	N/A	3.37	N/A	N/A
2/14/96	N/A	1.78	N/A	0.02	6.5	N/A	N/A	3.5/2.2	0.60/0.1	0.006	4.6	0.18	0.00	N/A	4.8	N/A	N/A
4/23/96	N/A	1.30	N/A	0.01	1.5	N/A	N/A	2.1/1.2	0.30/0.0	0.002	1.8	0.18		N/A	2.0	N/A	N/A
7/22/96	N/A	2.16	N/A	0.02	4.1	N/A	N/A	3.3/1.7	1.1/0.06	0.007	3.8	0.10	0.00	N/A	3.9	N/A	N/A
1/29/97	N/A	2.43	N/A	0.02	**8.92**	N/A	N/A	4.8/1.9	**1.21/0.4**	**0.015**	4.8	0.17	N/A	N/A	7.6	N/A	N/A
4/23/97	N/A	1.89	N/A	0.02	2.78	N/A	N/A	2.8/1.7	N/A/0.08	0.005	2.7	0.20	N/A	N/A	3.6	N/A	N/A
8/6/97	N/A	**2.63**	N/A	0.02	4.4	N/A	N/A	2.4/1.5	N/A	0.007	3.2	0.09	N/A	N/A	3.9	N/A	N/A
2/4/98	N/A	2.38	N/A	**0.03**	8.34	N/A	N/A	4.1/1.9	0.82/0.2	0.009	5.2	0.20	0.01	N/A	7.6	N/A	N/A
4/16/98	N/A	1.45	N/A	0.01	2.65	N/A	N/A	2.5/1.4	0.38/0.0	0.004	3.0	**0.43**	0.00	N/A	3.3	N/A	N/A
7/29/98	N/A	2.23	N/A	0.02	4.08	N/A	N/A	2.1/1.4	0.32/0.0	0.002	1.8	0.19	0.00	N/A	3.4	N/A	N/A
2/10/99	N/A	1.32	N/A	N/A	N/A	N/A	N/A	3.0/1.5	0.56/0.1	0.005	5.3	0.13	0.00	N/A	3.9	N/A	N/A
4/21/99	N/A	1.37	N/A	N/A	N/A	N/A	N/A	2.9/1.6	0.46/0.0	0.006	3.0	0.06	0.01	N/A	3.3	N/A	N/A
7/21/99	N/A	2.36	N/A	N/A	N/A	N/A	N/A	4.1/1.8	0.91/0.0	0.008	5.2	0.12	0.00	N/A	5.8	N/A	N/A
Observed Maximum SIP Section 1.4.3.1	N/A	**2.63**	N/A	**0.03**	**8.92**	N/A	N/A	**Total 5.31 Diss 2.94**	**Total 1.21 Diss 0.415**	**0.015**	**6.5**	**0.43**	**0.04**	N/A	**9.4**	N/A	N/A
Arithmetic Mean SIP Section 1.4.3.2	N/A		N/A			N/A	N/A							N/A		N/A	N/A

SUMMARY GWF EFFLUENT DATA AND CRITERIA, PRIORITY POLLUTANTS

CTR Constituent Sample Date	Sb µg/L #1	As µg/L #2	Be µg/L #3	Cd µg/L #4	Cr Total µg/l	Cr (III) µg/L # 5a	Cr (VI) µg/L # 5b	Cu µg/L #6	Pb µg/L #7	Hg** µg/L #8	Ni µg/L #9	Se µg/L #10	Silver µg/L #11	Thallium µg/L #12	Zinc µg/L #13	Cyanide µg/L #14	Asb MF/l #15
4/99	<10	6	2	<1	10			42	<2	<0.5	6	<6	<5	<50	480	<25	N/A
5/99								66									
4/26/01	2	2	<2	<2	4	4	<5	20	6	0.002	14	50	<2	6	60	<5	<0.2
MEC, total (ug/L)	2	6	2	<1	10	4	<5	66	6	0.002	14	50	<2	6	480	<5	<0.2
MEC, Diss (ug/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Background, Tot	<1*	2.63	<2*	0.03	8.92	1*	<5*	5.31	2*	0.026*	6.52	0.43	0.044	2*	25*	<5*	<0.2*
Max Background, Diss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.94	0.415	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CMC (µg/l)Freshwater (Saltwater) Diss.@43mg/l Hardness		340 i,m,w (69 i,m)		1.7 e,i,m,w,x (42 i,m)		275 e,i,m,o	16 i,m,w (1100),	6 e,i,m,w,x (4.8 i,m)	25 e,i,m (210)		229 e,i,m,w (74 i,m)	P (290 i,m)	**0.81** e,i,m (1.9 i,m)		**57** e,i,m,w, (90 i,m)	22 o (1.0 r)	
CMC (µg/l)Freshwater **Total** @ 43mg/l Hardness				1.7		870		6.3	28		230 (75)	20	0.95		59		
CCC (µg/l) Freshwater (Saltwater) Diss.@43mg/l Hardness		150 i,m,w (36 i,m)		1.2 e,i,m,w (9.3 i,m)		**89** e,i,m,o	**11** i,m,w (50)	**4.3** e,i,m,w (3.1)	**1.0** e,i,m (8.1)		**25** e,i,m,w (**8.2** i,m)	(71 i,m)			58 e,i,m,w (81 i,m)	**5.2** o (**1.0** r)	
CCC (µg/l)Freshwater **Total** @ 43mg/l Hardness				1.3		104		4.5	1.1		26 (8.3)	**5**			59		
HHealth (µg/l) Water+Org	14 a,s		n	N		n	n	1300	n	0.050 a	610 a	n		**1.7** a,s		700 a	**7Mil** f/l k,s
HHealth (µg/l) Org Only	4300 a,t		n	N		n	n		n	0.051 a	4600 a	n		6.3 a,t		220,000 a,j	
Numeric Basin Plan Objective (µg/l) (MCL, site specific)	MCL **6**	Site Sp 10	MCL **4**		MCL **50**			Site Sp 10		303d **0**	MCL 100	MCL 50	Site Sp 10	MCL 2	Site Sp 100	Site Sp 10	MCL 7 Mil f/l
Narrative Basin Plan Objective (µg/l) USEPA criteria at 43mg/l Hardness		MCL **10**		USEPA **0.14** CC **0.93** CMC					AL 15								
Reasonable Potential	N	N	N	N	N	N	N	**Y**	**Y**	**Y**	**Y**	**Y**	N	**Y**	**Y**	N	N

Notes: Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97/Thursday, May 18, 2000/Rules and Regulations I = Inconclusive * Results from GWF's 2001 Sampling ** 303d Listed Constituent, Sac-SJ Delta

GWF EFFLUENT DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent CTR #	2, 3, 7, 8-TCDD (Dioxin) # 16	Acrolein # 17	Acrylonitril # 18	Benzen # 19	Bromoform # 20	Carbon Tetrachloride # 21	Chlorobenzen # 22	Chlorodibrom methan # 23	Chloroethar # 24	2-Chloro-ethylvinyl Ether # 25
4/26/01	N/A	<2.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MEC, ug										
Background, ug/	N/A	<2.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BP Obj (ug/L)				MCL 1			MCL 70			
CMC (ug/L)										
CCC (ug/L)										
HHealth (ug/L) Water +Org Only	0.000000013 c	320 s	0.059 a,c,s	1.2 a,c	4.3 a,c	0.25 a,c,s	680 a,s	0.41 a,c		
HHealth (µg/l) Org Only	0.000000014 c	780 t	0.66 a,c,t	71 a,c	360 a,c	4.4 a,c,t	21,000 a,j,t	34 a,c		
Reasonable Potent	I	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	Chloroform # 26	Dichloro-bromomethane # 27	1,1-Dichlorc ethan # 28	1,2-Dichlorc ethan # 29	1,1-Dichloro-ethylen # 30	1,2-Dichlor prop # 31	1,3-Dichloro-propylen # 32	Ethyl benzene # 33	Methyl Bror (Bromomethar # 34	Methyl Chloride (Chloromethane # 35
4/26/01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MEC, ug/L										
Background, ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BP Obj, (ug/L)	5.7 HH(w + org) 470 HH(org only)		MCL 5	MCL 5			MCL 0.5	MCL 700		
CMC (ug/L)										
CCC (ug/L)										
HHealth (ug/L) Water +Org Only	Reserved	0.56 a,c		0.38 a,c,s	0.057 a,c,s	0.52 a	10 a,s	3,100 a,s	48 a	n
HHealth (µg/l) Org Only	Reserved	46 a,c		99 a,c,t	3.2 a,c,t	39 a	1,700 a,t	29,000 a,t	4,000 a	n
Reasonable Potential	**N**	**N**	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	**Methylene Chloride (Dichloromethane) # 36**	**1,1,2,2-Tetra-chloroethane # 37**	**Tetrachloro-ethylene # 38**	**Toluene # 39**	**1,2-Trans-Dichloro ethylene # 40**	**1,1,1 - Trichloro-ethane # 41**	**1,1,2-Trichloro-ethane # 42**	**Trichloro-ethylene # 43**	**Vinyl Chloride # 44**	**2-Chloro-phenol # 45**
4/26/01	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
MEC, ug/L										
Background, ug/L	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1
BP Obj, (ug/L)	MCL 5	MCL 1.0	MCL 5	MCL 150	MCL 10	MCL 200	MCL 5	MCL 5	MCL 0.5	
CMC (ug/L)										
CCC (ug/L)										
Hhealth (ug/L) Water +Org Only	4.7 a,c	0.17 a,c,s	0.8 c,s	6,800 a	700 a	n	0.60 a,c,s	2.7 c,s	2 c,s	120 a
Hhealth (µg/l) Org Only	1,600 a,c	11 a,c,t	8.85 c,t	200,000 a	140,000 a	n	42 a,c,t	81 c,t	525 c,t	400 a
Reasonable Potential	N	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	**2, 4 Dichlorophenol # 46**	**2,4-Dimethyl – phenol # 47**	**2-Methyl 4,6-Di-nitrophenol # 48**	**2,4-Dinitrophenol # 49**	**2-Nitrophenol # 50**	**4-Nitro – phenol # 51**	**4-chloro-3-methyl- phenol # 52**	**Pentachloro - phenol # 53**	**Phenol # 54**
4/26/01	<1	<1	<1	<2	<1	<2	<0.5	<1	<0.5
MEC, ug/L									
Background, ug/L	<1	<1	<1	<2	<1	<2	<0.5	<1	<0.5
BP Obj, (ug/L)								MCL 1.0	
CMC (ug/L) (Saltwater) Freshwater @ pH=6.5								(13) 4 f,w	
CCC (ug/L) (Saltwater) Freshwater @ pH=6.5								(7.9) 5.3 f,w	
HHealth (ug/L) Water +Org Only	93 a,s	540 a	13.4 s	70 a,s				0.28 a,c	21,000 a
HHealth (µg/l) Org Only	790 a,t	2,300 a	765 t	14,000 a,t				8.2 a,c,j	4,600,000 a,j,t
Reasonable Potential	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent TR #	**2, 4, 6 Trichloro phenol # 55**	**Acenaphthen # 56**	**Acenaphthyler # 57**	**Anthracene # 58**	**Benzidin # 59**	**Benzo(a) anthrac # 60**	**Benzo(a) Pyr # 61**	**Benzo(b) fluorant e # 62**	**Benzo (ghi) peryle # 63**
4/26/01	<1	<0.5	<1	<1	<1	<1	<1	<1	<1
MEC, ug/L									
Background, ug/L	<1	<0.5	<1	<1	<1	<1	<1	<1	<1
BP Obj, (ug/L)	P65 5								
CMC (ug/L)									
CCC (ug/L)									
HHealth (ug/L) Water +Org Only	2.1 a,c	1,200 a		9,600 a	0.00012 a,c,s	0.0044 a,c	0.0044 a,c	0.0044 a,c	
HHealth (µg/l) Org Only	6.5 a,c	2,700 a		110,000 a	0.00054 a,c,t	0.049 a,c	0.049 a,c	0.049 a,c	
Reasonable Potential	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	**Benzo(k) fluoranth # 64**	**Bis (2-Chloro- eth Methane # 65**	**Bis (2-Chlor ethyl) E # 66**	**Bis (2-Chloro propy Ethe # 67**	**Bis (2-Ethyl- he Phthala # 68**	**4-Bromo- phe Pheny Ethe # 69**	**Butyl- benz Phtha # 70**	**2-Chloro- naphtha # 71**	**4-Chloro- pheny Phenyl Eth # 72**
4/26/01	<2	<1	<0.5	<0.5	<2	<1	<1		<1
MEC, ug/L									
Background, ug/L	<2	<1	<0.5	<0.5	<2	<1	<1		<1
BP Obj, (ug/L)			P65 0.15		MCL 4				
CMC (ug/L)									
CCC (ug/L)									
HHealth (ug/L) Water +Org Only	0.0044 a,c		0.031 a,c,s	1,400 a	1.8 a,c,s		3,000 a	1,700 a	
HHealth (µg/l) Org Only	0.049 a,c		1.4 a,c,t	170,000 a,t	5.9 a,c,t		5,200 a	4,300 a	
Reasonable Potentia	N	N	N	N	**N**	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	Chrysene # 73	Dibenzo (ah) anthracen # 74	1,2 Dichlor benze # 75	1, 3 Dichlor benzer # 76	1, 4 Dichloro- benzen # 77	3,3-Dichlor benzid # 78	Diethyl Phtha # 79	Dimethy Phtha # 80	Di-n-Butyl Phthal # 81
4/26/01	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	<1
MEC, ug/L									
Background, ug/L	<1	<1	<0.5	<0.5	<0.5	<1	<1	<1	<1
BP Obj, (ug/L)	P65 0.1	P65 0.1	MCL 600		MCL 5	P65 0.3			
CMC (ug/L)									
CCC (ug/L)									
HHealth (ug/L) Water +Org Only	0.0044 a,c	0.0044 a,c	2,700 a	400	400	0.04 a,c,s	23,000 a,s	313,000 s	2,700 a,s
HHealth (µg/l) Org Only	0.049 a,c	0.049 a,c	17,000 a	2,600	2,600	0.077 a,c,t	120,000 a,t	2,900,000 t	12,000 a,t
Reasonable Potentia	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituen CTR #	2,4-Dinitro – tolu # 82	2,6-Dinito- tolu # 83	Di-n-Octyl Phtha # 84	1,2-Diphenyl - hydrazi # 85	Fluoranther # 86	Fluorene # 87	Hexachloro benzer # 88	Hexachloro butadi # 89	Hexachloro - cyclopentad # 90
4/26/01		<1	<1	<0.5	<0.5	<2	<0.5	<0.5	
MEC, ug/L									
Background, ug/L		<1	<1	<0.5	<0.5	<2	<0.5	<0.5	
BP Obj, (ug/L)	P65 1.0			P65 0.4			P65 0.2		MCL 50
CMC (ug/L)									
CCC (ug/L)									
HHealth (ug/L) Water +Org Only	0.11 c,s			0.040 a,c,s	300 a	1,300 a	0.00075 a,c	0.44 a,c,s	240 a,s
HHealth (µg/l) Org Only	9.1 c,t			0.54 a,c,t	370 a	14,000 a	0.00077 a,c	50 a,c,t	17,000 a,j,t
Reasonable Potentia	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	Hexachloro – eth # 91	Indeno (1,2,3-cd pyrene # 92	Isophorone # 93	Naphthalen # 94	Nitrobenzene # 95	N-Nitrosodimethyl- Amine # 96	N-Nitrosodi-N- Propylamin # 97	N-Nitrosodiphen amine # 98
4/26/01	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5
MEC, ug/								
Background, ug/l	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5
BP Obj, (ug/L)	P65 10					P65 0.02	P65 0.05	P65 40
CMC (ug/L)								
CCC (ug/L)								
HHealth (ug/L) Water +Org Only	1.9 a,c,s	0.0044 a,c	8.4 c,s		17 a,s	0.00069 a,c,s	0.005 a	5.0 a,c,s
HHealth (µg/l) Org Only	8.9 a,c,t	0.049 a,c	600 c,t		1,900 a,j,t	8.1 a,c,t	1.4 a	16 a,c,t
Reasonable Potenti	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	Phenanthrer # 99	Pyrene # 100	1,2,4-Trichloro- benz # 101	Aldrin # 102	α-BHC # 103	β-BHC # 104	γ-BHC (Lind # 105	δ-BHC # 106	Chlordan # 107	4,4' DDT # 108
4/26/01	<1	<1		<0.002	<0.005	<0.002	<0.005	<0.002	<0.01	<0.005
MEC, ug/L										
Background, ug/L	<1	<1		<0.002	<0.005	<0.002	<0.005	<0.002	<0.01	<0.005
BP Obj, (ug/L)			MCL 70	303d/OCPes <0.005	303d/OCPe <0.01	303d/OCPe <0.005	303d/OCPe <0.019	303d/OCPe <0.005	303d/OCPe <0.1	303d/OCPe <0.01
CMC (ug/L) freshwater (Saltwater)				3 g (1.3 g)			0.95 w (0.16 g)		2.4 g (0.09 g)	1.1 g (0.13 g)
CCC (ug/L) freshwater (Saltwater)									0.0043 g (0.004 g)	0.001 g (0.001 g)
HHealth (ug/L) Water +Org Only		960 a		0.00013 a,c	0.0039 a,c	0.014 a,c	0.019 c		0.00057 a,c	0.00059 a,c
HHealth (µg/l) Org Only		11,000 a		0.00014 a,c	0.013 a,c	0.046 a,c	0.063 c		0.00059 a,c	0.00059 a,c
Reasonable Potential	N	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	4, 4'- DD # 109	4,4'-DDD # 110	Dieldrin # 111	alpha-End sulfa # 112	beta- Endo- su # 113	Endosulfar Sulfat # 114	Endrin # 115	Endrin Aldeh # 116	Heptachlor # 117	Heptachlor Epoxi # 118
4/26/01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005
MEC, ug/L										
Background, ug/L	<0.005	<0.01	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005
BP Obj, (ug/L)	OCPest <0.05	OCPest <0.05	303d/OCPe <0.01	303d/OCPe <0.02	303d/OCPes <0.01	303d/OCPes <0.05	303d/OCPe <0.01	303d/OCPe <0.01	303d/OCPes <0.01	303d/OCPest <0.01
CMC (ug/L) freshwat (Saltwater)			0.24 w (0.71 g)	0.22 g (0.034 g)	0.22 g (0.034 g)		0.086 w (0.037 g)		0.52 g (0.053 g)	0.52 g (0.053 g)
CCC (ug/L) freshwat (Saltwater)			0.056 w (0.0019 g)	0.056 g (0.0087 g)	0.056 g (0.0087 g)		0.036 w (0.0023 g)		0.0038 g (0.0036 g)	0.0038 g (0.0036 g)
HHealth (ug/L) Water +Org Only	0.00059 a,c	0.00083 a,c	0.00014 a,c	110 a	110 a	110 a	0.76 a	0.76 a	0.00021 a,c	0.00010 a,c
HHealth (µg/l) Org Only	0.00059 a,c	0.00084 a,c	0.00014 a,c	240 a	240 a	240 a	0.81 a,j	0.81 a,j	0.00021 a,c	0.00011 a,c
Reasonable Potentia	N	N	N	N	N	N	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

GWF EFFLUENT DATA, PRIORITY POLLUTANTS

Constituent CTR #	PCBs # 119	PCBs # 120	PCBs # 121 - 1	Toxapher # 126
4/26/01	<0.1	<0.1	<0.1	<0.1
MEC, ug/L				
Background, ug/L	<0.1	<0.1	<0.1	<0.1
Basin Plan Objective (ug/L)	P65 0.045	P65 0.045	P65 0.045	303d/OCPest <0.5
CMC (ug/L) freshwater (Saltwater)				0.73 (0.21)
CCC (ug/L) freshwater (Saltwater)	0.014u (0.03 u)	0.014u (0.03 u)	0.014u (0.03 u)	0.0002 (0.0002)
HHealth (ug/L)Water +Org Onl	0.00017c,v	0.00017c,v	0.00017c,v	0.00073a,c
HHealth (µg/l)Org Only	0.00017c,v	0.00017c,v	0.00017c,v	0.00075a,c
Reasonable Potential	N	N	N	N

Footnotes from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California

SUMMARY GWF EFFLUENT DATA AND CRITERIA, OTHER CONSTITUENTS

Constituent Date	**Al µg/L**	**NH_3 mg**	**Ba µg/L**	**Bo µg/L**	**Co µg**	**Cl mg/L**	**F µg/L**	**Fe µg/**	**Mn µg/L**	**Mo µg/L**	**Sulfate mg**	**TDS mg/L**	**V µg/L**
1/98						550					1100	4200	
4/99	120	0.06	80	390	<5			340	<10			1900	
4/26/01						77	3400	210		12			
11/06/01													
MEC, total (ug/L)	120	0.06	80	390	<5	550	3400	340	<10	12	1100	4200	
MEC, Diss (ug/L)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Max Background, T						34	<100	820	27	2	13		
Max Background, Di	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Numeric Basin Plan Objective (µg/l) (MCL, site specific)	MCL **200**		Site S 100	Ag WQ C B **750**	Ag WQ R P **50**	Site S **150**	Ag WC Rome Pa 1	Site **300**	Site S **50**	Ag WC Rome Pa 10	2ry MCL **250/500**	Ag WQ Rome Pa **450**	AL 50
Narrative Basin Plan Objective (µg/l)	USEP **87** CC **750** CM	USEP 0.4 CC 2.1 CM											
Reasonable Potentia	**Y**	N	N	N	N	**Y**	**Y**	**Y**	N	**Y**	**Y**	**Y**	I

10 September 2001

REQUIREMENT TO SUBMIT MONITORING DATA

The Regional Water Quality Control Board (Board) is required to protect and enhance the beneficial uses of surface and ground waters in the Region. As part of that effort, National Pollutant Discharge Elimination System (NPDES) Permits are adopted which prescribe effluent limits for the types and concentrations of chemical and physical constituents which can be safely discharged. In order to prepare appropriate NPDES Permits, it is necessary to have adequate characterization of the discharged effluent and the receiving water.

The following is a requirement that you collect effluent and receiving water samples and have them analyzed for a variety of potential waste constituents. In most cases this monitoring will be in addition to monitoring required in your NPDES Permit. To the extent that there is overlap between this request and monitoring already being done under your Permit, the monitoring need not be duplicated. This requirement is brought on by a number of factors:

1. On 2 March 2000, the State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, also known as the State Implementation Policy (SIP). The SIP established methods of evaluating receiving water criteria and developing effluent limitation in NPDES Permits for the priority pollutants contained in the US Environmental Protection Agency's (USEPA) *California Toxics Rule* and portions of USEPA's *National Toxics Rule*. Section 1.2 of the SIP directs the Board to issue Water Code Section 13267 letters to all NPDES dischargers requiring submittal of data sufficient to (1) determine if priority pollutants require effluent limitations (Reasonable Potential Analysis) and (2) calculate water quality-based effluent limitations. Further, Section 2.4 of the SIP requires that each discharger submit to the Regional Boards reports necessary to determine compliance with effluent limitations for priority pollutants in permits. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf.) To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such a heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners.

2. In addition to the specific requirements of the SIP, the Board is requiring the following monitoring needed for permit development:

a. Organophosphorous pesticides, principally diazinon and chlorpyrifos, are commonly-used insecticides found in many domestic wastewater discharges at concentrations which can cause toxicity both in effluent and in receiving water. These pesticides are not "priority pollutants" and so are not part of the analytical methods routinely performed for NPDES discharges. **This monitoring is required of domestic wastewater dischargers only.**

b. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

c. Effluent and receiving water temperature. This is both a concern for application of certain temperature sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

d. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness or pH dependent.

e. Receiving water flow is needed to determine possible dilution available in the receiving water. The receiving water flows, in combination with the receiving water pollutant concentrations, will be used to determine if there is assimilative capacity in the receiving water for each pollutant, and whether dilution credits can be granted. Dilution credits can increase the concentrations of pollutants allowed in your effluent discharge if assimilative capacity is available in the receiving water.

Pursuant to Section 13267 of the California Water Code, you are required to submit monitoring data for your effluent and receiving water as described in Attachments I through IV.

Attachment I – Sampling frequency and number of samples.

Attachment II – Constituents to be monitored. This list identifies the constituents to be monitored. It is organized into groupings (Volatile Organics, Semi-Volatile Organics, Inorganics, Pesticides/Polychlorinated Biphenyls (PCBs), Other Constituents, and Discharge & Receiving Water Flows), which correspond to groupings in Attachment I. Also listed are the Controlling Water Quality Criteria and their concentrations. The criteria concentrations are compiled in the Central Valley Regional Water Board's staff report, *A Compilation of Water Quality Goals.*[1] Minimum quantitation levels for the analysis of the listed constituents will be equal to or less than the Minimum Levels (ML) listed in Appendix 4 of the SIP or the Detection Limits for Reporting Purposes (DLRs) published by the Department of Health Services which are below the controlling water quality criteria concentrations listed in Attachment II of this letter. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest of the MLs

and DLR. Also listed are suggested analytical procedures. You are not required to use these specific procedures as long as the procedure you select achieves the desired minimum detection level. All analyses must be performed by a California certified environmental analytical laboratory.

Attachment III – Dioxin and furan sampling. Section 3 of the SIP has specific requirements for the collection of samples for analysis of dioxin and furan congeners, which are detailed in Attachment III. Briefly, dischargers classified as major must collect and analyze two samples per year (one collected in the wet season and one collected in the dry season) for congeners in each of the next three years. For dischargers classified as minor, one wet season and one dry season sample must be collected and analyzed at some time during the next three years.

Attachment IV – Reporting Requirements. This attachment provides laboratory and reporting requirements including a recommended data reporting format.

With the exception of dioxin and furan congener sampling which is due by **1 November 2004** (see Attachment III), all samples shall be collected, analyses completed, and monitoring data shall be submitted to the Regional Board by **1 March 2003**. Any NPDES permit application submitted after **1 March 2002** shall include with the application at least one set of data for the constituents listed in Attachment II.

In the interest of generating and submitting data by the required dates, a schedule for compliance with this data request shall be prepared and submitted to the Executive Officer by **16 November 2001**. This schedule shall include the requirements of Attachment I and Attachment III. The schedule will also include the data submission requirements for applications submitted after **1 March 2002**.

Failure or refusal to submit technical or monitoring data as required by Section 13267, California Water Code, or falsifying any information provided is guilty of a misdemeanor and is subject to an administrative civil liability of up to $1,000 per day of violation, in accordance with Section 13268, California Water Code.[i]

If you have any questions, please contact your Regional Board staff representative.

GARY M. CARLTON
Executive Officer

Attachments (4)

[i] Available on the internet at http://www.swrcb.ca.gov/rwqcb5/wq_goals.

Attachment I – Sampling Frequency and Number of Samples (Minor Industrial)

Samples shall be collected from the effluent and upstream receiving water and analyzed for the constituents listed in Attachment II to provide the indicated number of valid sample results by the submittal due date. Sampling frequency shall be adjusted so that the appropriate number of samples is collected by the due date and so that the sampling is representative of the wastewater discharge.

Constituent/Sample Type[ii]	Frequency	Timeframe (years)	Total Number of Samples
Volatile Organics/grab	Quarterly	1	4
Semi-Volatile Organics/grab or composite	Quarterly	1	4
Inorganics/grab or composite	Quarterly	1	4
Pesticides[iii] & PCBs/grab or composite	Quarterly	1	4
Other Constituents[iv]/grab or composite	Quarterly	1	4
Discharge & Receiving Water Flow[v]	Monthly	1	12
Dioxins/grab or composite	Semi-annual	1	2

[ii] The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used.

[iii] OP pesticides (diazinon, chlorpyrifos) are not required of industrial facilities.

[iv] See list in Attachment II.

[v] Discharge and Receiving Water Flow. Discharge flow should be recorded and reported for each day of sample collection. All NPDES dischargers should have a means of measuring the volume of discharge as part of their monitoring already required by the NPDES Permit Monitoring and Reporting Program. Receiving Water Flow, however, is not generally required by NPDES Permit Monitoring Programs. For facilities that already conduct receiving water flow monitoring, the receiving water flow should be recorded and reported for each day in which sampling occurs. For facilities that do not routinely conduct receiving water flow monitoring, provide the best estimate of flow reasonably obtainable. It may be possible to obtain flow data from an existing nearby gauging station.

Attachment III -Dioxin and Furan Sampling

Section 3 of the State Implementation Plan requires that each NPDES discharger conduct sampling and analysis of dioxin and dibenzofuran congeners. The required number and frequency of sampling are as follows:

- Major NPDES Dischargers – once during dry weather and once during wet weather for each of three years, for a total of six samples.
- **Minor NPDES Dischargers** – once during dry weather and once during wet weather for one year during the three-year period, for a total of two samples.

Each sample shall be analyzed for the seventeen congeners listed in the table below. High Resolution GCMS Method 8290, or another method capable of individually quantifying the congeners to an equivalent detection level, shall be used for the analyses.

Sampling shall start during winter 2001/2002 and all analyses shall be completed and submitted by 1 November 2004. Sample results shall be submitted along with routine monitoring reports as soon as the laboratory results are available.

For each sample the discharger shall report:

- The measured or estimated concentration of each of the seventeen congeners
- The quantifiable limit of the test (as determined by procedures in Section 2.4.3, No. 5 of the SIP)
- The Method Detection Level (MDL) for the test
- The TCDD equivalent concentration for each analysis calculated by multiplying the concentration of each congener by the Toxicity Equivalency Factor (TEF) in the following table, and summing the resultant products to determine the equivalent toxicity of the sample expressed as 2,3,7,8-TCDD.

Congener	TEF
2,3,7,8TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

Attachment IV – Reporting Requirements

1. **Laboratory Requirements**. The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code Section 13176 and must include quality assurance/quality control data with their reports.

2. **Criterion Quantitation Limit (CQL)**. The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf) or the detection limits for purposes of reporting (DLRs) published by the Department of Health Services (http://www.dhs.ca.gov/ps/ddwem/chemicals/DLR/dlrindex.htm) which is below the controlling water quality criterion concentrations summarized in attachment II of this letter.

3. **Method Detection Limit (MDL)**. The method detection limit for the laboratory shall be determined by the procedure found in 40 Code of Federal Regulations (CFR) Part 136, Appendix B (revised as of May 14, 1999).

4. **Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.

5. **Reporting Protocols**. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

   a. Sample results greater than or equal to the reported RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
   b. Sample results less than the report RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
   c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
   d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

6. **Data Format**. The monitoring report shall contain the following information for each pollutant:

   a. The name of the constituent.
   b. Sampling location.
   c. The date the sample was collected.

d. The time the sample was collected.
e. The date the sample was analyzed. For organic analyses, the extraction date will also be indicated to assure that hold times are not exceeded for prepared samples.
f. The analytical method utilized.
g. The measured or estimated concentration.
h. The required Criterion Quantitation Limit (CQL).
i. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
j. The laboratory's lowest reporting limit (RL).
k. Any additional comments.

6. **Example of Data Format**.

Discharger: _____ Name of
Laboratory: _____
Contact Name: _____ Laboratory
Contact: _____
Phone Number: _____ Phone
Number: _____

Name of Constituent and CTR #	Sampling Location*	Date Sample Collected	Time Sample Collected	Date Sample Analyzed	USEPA Method Used	Analytical Results (ug/L)	CQL (ug/L)	MDL (ug/L)	RL (ug/L)
(See Attachment II)									

*The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used. Other sampling locations must be approved by Regional Board staff. Include longitude and latitude coordinates for the receiving water sampling stations.

ATTACHMENT E

GWF Effluent limit for Copper using CTR Water Quality
Hardness-Dependent Values of the CCC (Chronic Criterion) and CMC (Acute Criterion)
for the Protection of Freshwater Aquatic Life

Copper expressed as total recoverable, µg/l						
Hardness (mg/l as $CaCO_3$)	CCC[1] 4-Day Avg (µg/l)	CMC[2] 1-hr Avg (µg/l)	LTA[3] (chronic) (µg/l)	LTA[4] (acute) (µg/l)	AMEL[5] (µg/l)	MDEL[6] (µg/l)
<25	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	
25	**2.8**	**3.8**	**1.476**	**1.22**	**1.9**	**3.8**
43	**4.5**	**6.3**	**2.372**	**2.02**	**3.1**	**6.3**
50	**5.1**	**7.3**	**2.688**	**2.34**	**3.6**	**7.3**
75	**7.3**	**10.7**	**3.847**	**3.44**	**5.3**	**10.7**
100	**9.3**	**14.0**	**4.901**	**4.49**	**7.0**	**14**
110	**10.1**	**15.3**	**5.323**	**4.91**	**7.6**	**15.3**
117	**11**	**16**	**5.797**	**5.14**	**8.0**	**16**
120	**11**	**17**	**5.797**	**5.46**	**8.5**	**17**
130	**12**	**18**	**6.324**	**5.78**	**9.0**	**18**
140	**12**	**19**	**6.324**	**6.10**	**9.5**	**19**
150	**13**	**21**	**6.851**	**6.74**	**10.4**	**21**
160	**14**	**22**	**7.378**	**7.06**	**10.9**	**22**
170	**15**	**23**	**7.905**	**7.38**	**11.4**	**23**
180	**15**	**24**	**7.905**	**7.70**	**11.9**	**24**
190	**16**	**26**	**8.432**	**8.35**	**12.9**	**26**
200	**17**	**27**	**8.959**	**8.67**	**13.4**	**27**
210	**18**	**28**	**9.486**	**8.99**	**13.9**	**28**
220	**18**	**29**	**9.486**	**9.31**	**14.4**	**29**
240	**20**	**32**	**10.540**	**10.27**	**15.9**	**32**
246	**20**	**33**	**10.540**	**10.59**	**16.3**	**32.8**
250	**20**	**33**	**10.540**	**10.59**	**16.3**	**32.8**
270	**21.8**	**35.7**	**11.482**	**11.46**	**17.8**	**35.6**
280	**22.5**	**36.9**	**11.851**	**11.84**	**18.4**	**36.8**
700	**49.2**	**87.6**	**25.92**	**28.12**	**43.6**	**87.5**

The effluent limit has been calculated per established procedures described in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP):

[1]CCC (4-day average) = e{0.8545[ln(hardness)] – 1.702}
[2]CMC (1-hr average) = e{0.9422[ln(hardness)] – 1.700}
[3]LTA_c (Long-Term Average chronic) = CCC x 0.527
[4]LTA_a (Long-Term Average acute) = CMC x 0.321
[5]AMEL (Average monthly effluent limitation) = LTA (lowest) x 1.55
[6]MDEL (Maximum Daily effluent limitation) = LTA (lowest) x 3.11

ATTACHMENT F

GWF Effluent limit for Lead using CTR Water Quality
Hardness-Dependent Values of the CCC (Chronic Criterion) and CMC (Acute Criterion)
for the Protection of Freshwater Aquatic Life

Lead expressed as total recoverable, µg/l						
Hardness (mg/l as $CaCO_3$)	CCC[1] 4-Day Avg (µg/l)	CMC[2] 1-hr Avg (µg/l)	LTA[3] (chronic) (µg/l)	LTA[4] (acute) (µg/l)	AMEL[5] (µg/l)[5]	MDEL[6] (µg/l)
<25	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	
25	**0.5**	**14**	**0.264**	**4.49**	**0.4**	**0.8**
43	**1.1**	**28**	**0.579**	**8.99**	**0.9**	**1.8**
50	**1.3**	**34**	**0.685**	**10.9**	**1.1**	**2.1**
75	**2.2**	**57**	**1.16**	**18.3**	**1.8**	**3.6**
100	**3.2**	**82**	**1.69**	**26.3**	**2.6**	**5.3**
110	**3.6**	**92**	**1.90**	**29.5**	**2.9**	**5.9**
120	**4.0**	**103**	**2.11**	**33.1**	**3.3**	**6.6**
130	**4.4**	**114**	**2.32**	**36.6**	**3.6**	**7.2**
140	**4.9**	**125**	**2.58**	**40.1**	**4.0**	**8.0**
150	**5.3**	**137**	**2.79**	**44.0**	**4.3**	**8.7**
160	**5.8**	**149**	**3.06**	**47.8**	**4.7**	**9.5**
170	**6.3**	**160**	**3.32**	**51.4**	**5.1**	**10.3**
180	**6.7**	**173**	**3.53**	**55.5**	**5.5**	**11.0**
190	**7.2**	**185**	**3.79**	**59.4**	**5.9**	**11.8**
200	**7.7**	**197**	**4.06**	**63.2**	**6.3**	**12.6**
210	**8.2**	**210**	**4.32**	**67.4**	**6.7**	**13.4**
220	**8.7**	**223**	**4.58**	**71.6**	**7.1**	**14.2**
240	**9.7**	**249**	**5.11**	**79.9**	**7.9**	**15.9**
250	**10.2**	**262**	**5.38**	**84.1**	**8.3**	**16.7**
270	**11.3**	**289**	**5.96**	**92.8**	**9.2**	**18.5**
280	**11.8**	**303**	**6.22**	**97.3**	**9.6**	**19.3**
700	**37.9**	**972**	**19.98**	**312**	**31**	**62**

The effluent limit has been calculated per established procedures described in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP):

[1]CCC (4-day average) = e{1.273[ln(hardness)] – 4.705}
[2]CMC (1-hr average) = e{1.273[ln(hardness)] – 1.460}
[3]LTA_c (Long-Term Average chronic) = CCC x 0.527
[4]LTA_a (Long-Term Average acute) = CMC x 0.321
[5]AMEL (Average monthly effluent limitation) = LTA (lowest) x 1.55
[6]MDEL (Maximum Daily effluent limitation) = LTA (lowest) x 3.11

ATTACHMENT G

GWF Effluent limit for Zinc using CTR Water Quality
Hardness-Dependent Values of the CCC (Chronic Criterion) and CMC (Acute Criterion)
for the Protection of Freshwater Aquatic Life

Zinc expressed as total recoverable, µg/l						
Hardness (mg/l as $CaCO_3$)	CCC[1] 4-Day Avg (µg/l)	CMC[2] 1-hr Avg (µg/l)	LTA[3] (chronic) (µg/l)	LTA[4] (acute) (µg/l)	AMEL[5] (µg/l)[5]	MDEL[6] (µg/l)
<25	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	**Must calculate**	
25	**37**	**37**	**24.8**	**11.9**	**18**	**37**
43	**59**	**59**	**152.3**	**18.9**	**29**	**59**
50	**67**	**67**	**198.7**	**21.5**	**33**	**67**
75	**94**	**94**	**355.2**	**30.2**	**47**	**94**
100	**120**	**120**	**505.9**	**38.5**	**60**	**120**
110	**130**	**130**	**563.9**	**41.7**	**65**	**130**
120	**140**	**140**	**621.9**	**45**	**70**	**140**
130	**150**	**150**	**679.8**	**48.1**	**75**	**150**
140	**159**	**159**	**732**	**51**	**79**	**159**
150	**169**	**169**	**790**	**54.2**	**84**	**169**
160	**178**	**178**	**842.1**	**57.1**	**89**	**178**
170	**188**	**188**	**900**	**60.3**	**93**	**188**
180	**197**	**197**	**952.3**	**63.2**	**98**	**197**
190	**206**	**206**	**1004.5**	**66.1**	**102**	**206**
200	**216**	**216**	**1062.4**	**69.3**	**107**	**216**
210	**225**	**225**	**1114.6**	**72.2**	**112**	**225**
220	**234**	**234**	**1166.8**	**75.1**	**116**	**234**
240	**252**	**252**	**1271.1**	**80.9**	**125**	**252**
250	**260**	**260**	**1317.5**	**83.5**	**129**	**260**
270	**278**	**278**	**1421.8**	**89.2**	**138**	**277**
280	**287**	**287**	**1474**	**92.1**	**143**	**286**
700	**623**	**623**	**3421**	**200**	**310**	**622**

The effluent limit has been calculated per established procedures described in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP):

[1]CCC (4-day average) = e{0.8473[ln(hardness)] + 0.884}
[2]CMC (1-hr average) = e{0.8473[ln(hardness)] + 0.884}
[3]LTA_c (Long-Term Avg chronic/with dilution) = 0.527 x {CCC + 10 (CCC-36)}
[4]LTA_a (Long-Term Average acute/no dilution allowed) = CMC x 0.321
[5]AMEL (Average monthly effluent limitation) = LTA (lowest) x 1.55
[6]MDEL (Maximum Daily effluent limitation) = LTA (lowest) x 3.11

ATTACHMENT H

INFORMATION SHEET

GWF POWER SYSTEMS, L.P.
WILBUR AVENUE EAST POWER PLANT ANTIOCH (SITE IV)
CONTRA COSTA COUNTY

Status of Permit

On 22 September 1995, Order No. 95-218 was adopted by the Regional Board for the GWF Power System Company, Inc. (GWF's former name) to discharge waste under the NPDES to the San Joaquin River. Under Order No. 95-218, approximately 57,000 - 100,000 gallons of wastewater was generated per day during power production with the discharge going to on-site evaporation/percolation basins and/or the San Joaquin River via a nearby storm drain. The source of supply water was the City of Antioch.

On 13 August 1996, GWF submitted a Report of Waste Discharge (RWD) and applied for a permit to discharge waste under the National Pollutant Discharge Elimination System (NPDES) for its Wilbur Avenue East Power Plant in Antioch (Site IV). GWF proposed to change the supply water from the City of Antioch to an on-site well. According to the Report of Waste Discharge, the primary reason for changing water supplies was economics. GWF projected a cost savings of $150,000 annually, roughly 50% of the current water cost. Because of the poorer quality of the new supply water source, GWF requested an increase in the effluent flow rate from 100,000 to 400,000 gallons per day on the worst-case scenario. Concentrations of constituents such as arsenic and total dissolved solids (TDS) in water from the proposed supply well are higher than from the current city water supply.

On 3 April 1997, GWF submitted an amended Report of Waste Discharge, followed up by a complete Report of Waste Discharge on 30 April, 1999 indicating that GWF intends to continue using water from the City of Antioch as a backup water supply to supplement the ground water from the well or to comply with discharge limitations. However, because of strong public opposition in the usage of the groundwater, GWF submitted a letter on 30 November 1999 requesting the use groundwater as the source of water for the Wilbur East Power Plant no longer be considered and instead continue to use existing water supply from the City of Antioch only. However, GWF owns and operates a second power plant in Antioch, its Wilbur Avenue West Plant, Site III, which discharges up to 50,000 gallons per day effluent to Gaylord Container Corporation (neighboring facility) as makeup water, and because Gaylord Container Corporation is closing its paper making process in October 2002, Site III will no longer have a means of disposal of its effluent. Therefore, GWF is proposing to use Site III's effluent as secondary water supply for cooling tower make-up at Site IV in addition to City of Antioch's water. GWF's Site III power plant also uses Antioch City Water as its water supply, operates in the same manner and has the same units of process as Site IV. GWF proposes to transport effluent from Site III to Site IV via trucks.

Additional information to complete filing of the application included a 9 April 1997 dilution study, ground water data (23 December 1997, 2 September 1998, 8 October 1998, and 30 April 1999), groundwater three species chronic toxicity testing results (23 December 1997), a Toxicity Identification Evaluation report (30 June 1998), additional priority pollutants analyses report (25 May 2001), and final amendment to RWD proposing use of Site III's effluent (5 July 2002).

Facility Description

GWF Power Systems L.P. (GWF) owns and operates an 18.5-megawatt power generating facility in the City of Antioch near the San Joaquin River. The power is generated by the burning of petroleum coke as its primary fuel with coal as a potential alternative fuel. The fluid bed combustor is started up on natural gas and number-2 fuel oil. Currently, GWF uses water from the City of Antioch as its water supply. Water is used for cooling purposes and for the production of steam. The water used for steam first enters a Reverse Osmosis System for purification, and then is fed into a deaerator. Water is then pumped to a heater followed by a fluidized bed combustor and finally a super heater where steam is produced. Recycling of cooling water 6 to 8 times through the cooling tower concentrates constituents found in the supply water. The power generation process produces approximately 50,000 to 100,000 gallons per day of wastewater effluent. However, due to the use of Site III's effluent, GWF is requesting an increase in the blowdown flows to 125,000 gallons per day. The effluent is discharged to the San Joaquin River via a 48-inch stormwater drain and consists of cooling tower blowdown, boiler blowdown, gland steam condensate, and Reverse Osmosis reject water.

GWF decided to clean and close the existing process water evaporation/percolation basins at the facility, because of poor performance, except for one that is used solely for storm water retention. Under this permit, GWF will discharge effluent solely to the San Joaquin River. Domestic wastes are disposed of by an on-site septic tank/leachfield system. Minor amounts of cooling water are reclaimed for dust control.

The residual material from the combustion process at GWF's facility consists of calcium rich co-products, synthetic lime and synthetic gypsum. Both co-products are placed to beneficial use in cement manufacturing, sewage sludge stabilization, and engineered soils stabilization. The co-products are marketed by GWF.

Description of Discharge

The power generating process wastewater effluent is discharged to the San Joaquin River, a water of the United States at the point, latitude 38°01'30" North, longitude 121°45'30" West.

Existing discharge water quality data supplied by GWF is as follows:

Monthly Average Dry Weather Flow	56,720 gallons per day (gpd)
Maximum 30-day average Daily Flows	125,000 gpd
Average Temperature	28 °C (summer), 26 °C (winter)
pH ranges	(6.9 – 7.5)

Constituent	Concentration[3]
BOD	<3.4 mg/l
COD	8.0 mg/l
TOC	2.0 mg/l
TSS	3.0 mg/l
TDS	(250-4200)[1] mg/l
Hardness as $CaCO_3$	(69-830)[1] mg/l
Ammonia (as N)	0.06 mg/l
Chlorine Residual	<2.0 mg/l
Oil & Grease	<1 mg/l
Sulfate (as SO_4)	(660-1100)[1] mg/l
Aluminum	120 µg/l
Boron	390 µg/l
Barium	80 µg/l
Chloride	(77-830)[4] mg/l
Fluoride	3.4[2] mg/l
Iron	(210-1050)[1] µg/l
Manganese	<10 µg/l
Molybdenum	12[2] µg/l
Antimony	(<10-2)[1] µg/l
Arsenic	(0.5-9.0)[1] µg/l
Beryllium	2.0[2] µg/l
Cadmium	<1.0 µg/l
Copper	(20-42)[1] µg/l
Lead	(<2.0-6)[1] µg/l
Mercury	0.002[2] µg/l
Nickel	(6-14)[1] µg/l
Selenium	(<6.0-50)[1] µg/l
Silver	(<2-<5.0)[1] µg/l
Thallium	6[2] µg/l
Zinc	(60-480)[1] µg/l
Cyanide	(<5-<25)[1] µg/l

[1] Range from 1998-2001 data.
[2] Results from 2001 data only.
[3] Results from 30 April 1999 RWD, unless otherwise indicated.
[4] Range from 1994-2001 data.

Receiving Water

San Joaquin River

GWF discharges to a section of the San Joaquin River that is within the boundaries of the Sacramento San Joaquin River Delta (hereafter Delta). The San Joaquin River in the vicinity of the discharge point is strongly influenced by both tidal and river flows. The magnitude of tidal influence in the area fluctuates with gravitational influences (solar and lunar) and with freshwater outflow from the Delta. Freshwater outflow varies seasonally as well as in extended cycles. Low levels of inflow are considered to be 3.5 to 5 million cubic feet per second (cfs), while higher levels may range from 7.5 to 15 million cfs. Water diversions by the State Water Project (SWP) and the Central Valley Project (CVP) have had increasingly pronounced effects on freshwater outflows in the Delta, especially during years with below average precipitation. Salinity levels in the vicinity of the discharge point increase under such conditions. Saltwater intrusion and influence in the area increases during periods of low freshwater flow. As more water is diverted from the San Joaquin River for human use, the zone of saltwater intrusion extends farther upstream. Prior to 1984, this zone, termed the transition, entrapment, or null zone, was typically located in Suisun Bay during much of the year (October through March). Since 1984, the transition zone has shifted more or less permanently to the channels of the Sacramento and San Joaquin rivers.

Receiving Water Considerations

For constituents for which receiving water limitations have been established, a percentage increase over background conditions is being applied in order to account for the variances in the receiving water, analytical measures and inability to get real-time data. For constituents in the parts per million (mg/l) range the percentage increase is set as 10%.

Beneficial Uses

The Regional Board adopted a Water Quality Control Plan; Fourth Edition, for the Sacramento River and San Joaquin River Basins (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. The requirements in this Order implement the Basin Plan. The Basin Plan at page II-1.00 states that: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning*".

The beneficial uses of the Sacramento–San Joaquin River Delta (which includes the San Joaquin River section at the point of discharge), as defined in the Basin Plan, include: municipal and domestic water supply (MUN), irrigation and stock watering (AGR), industry process (PRO) and service supply (IND), contact (REC-1) and non-contact (REC-2) water recreation, freshwater habitat for both warm (WARM) and cold water species (COLD), serves as migration (MIGR) waters for three warm water species (striped bass, sturgeon, and shad) and two cold freshwater species (salmon and steelhead), allows for spawning of three warm water species (striped bass, sturgeon, and shad) (SPWN), serves as wildlife habitat (WILD), and allows for navigation (NAV).

Dissolved Oxygen

The Basin Plan at page III-5.00 states that "*Within the legal boundaries of the Delta, the dissolved oxygen concentration shall not be reduced below: 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; ……..*". The Discharger's effluent enters the San Joaquin River at a location within the Delta and west of the Antioch Bridge and therefore this Order applies a 7.0 mg/l as the receiving water limit for DO in the San Joaquin River.

Temperature

Thermal water quality objectives for the San Joaquin River are outlined in the *Water Quality Control Plan for Control of Temperature in Coastal Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan), last amended by the State Water Resources Control Board (State Board) on 18 September 1975. Based on the water body definitions in the plan, the San Joaquin River near the discharge point is included as an estuary (waters extending from a bay or the open ocean to the upstream limit of tidal action). For Estuaries, the Thermal Plan provides:

"*5. <u>Estuaries</u>*
A. Existing discharges
(1) Elevated temperature waste discharges shall comply with the following:

a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

b. Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.

d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

(2) Thermal waste discharges shall comply with the provisions of 5A (1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F."

The cooling system blowdown water is classified as an elevated temperature waste in the Thermal Plan because there is no direct discharge of cooling water other than blowdown and demineralizer wastewater to the river; the main cooling system consists of cooling towers; and less than five percent of the waste heat added to the evaporative system is dissipated through blowdown. Effluent limitations and receiving water limitations have been established in this permit in compliance with the Thermal Plan.

Dilution Study

Effluent limitations are based on the 3 April 1997 GWF Power Outfall Dilution Study, submitted by GWF. The study modeled a range of combinations of discharge and receiving water conditions, including high and low river currents, high and low tides, and high and low effluent and receiving water densities. The study did not take into account the flows from the neighboring Mirant Power Plant discharge. The Study assumed a 400,000 gpd effluent flow. Therefore, the dilution ratios are still very conservative despite the increase in blowdown flows from 100,000 gpd to 125,000 gpd. The results of the study predict that the plume may move into the river during periods of low current, but will typically move along the shoreline in a fairly narrow band during periods the current is flooding or ebbing. The study predicts that under most scenarios, the discharge will achieve a dilution of 10:1 or greater within 100 feet from the discharge point. With the exception of four scenarios, the results of the models indicate that the dilution of the plume will be greater than 20:1 within 328 feet of the discharge point. GWF has concluded, based on the Dilution Study, that the worst-case conditions are for the outfall operating at a 1/4 full water level in the discharge pipe with a 10%-tile (0.05 m/s) ambient current. The following is a correlation of dilution available and the size of the mixing zone according to the worst case conditions.

Dilution Available	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Mixing Zone (ft)	0	50	78	104	126	148	170	190	208	228
Dilution Available	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Mixing Zone (ft)	246	262	280	296	312	328	344	358	374	388

For the majority of the constituents a mixing zone where there is 10:1 dilution is sufficient enough. However, because the SJ River in the Antioch area is brackish due to its proximity with the San Francisco Bay, tidal influence, and during most of the year a lack of freshwater outflow to mitigate saltwater intrusion, a dilution of 100:1 within a mixing zone of 2000 ft (approximated based on the dilution ratios of the study) is more appropriate for the specific constituents of EC/TDS, and chloride.

Three Species Chronic Toxicity

Chemicals are added to inhibit corrosion and scale in the cooling tower. GWF adds a microbiocide, dispersant, corrosion inhibitor, and water conditioners to the cooling tower and a water conditioner to the boiler. The addition of materials that include metals as an active ingredient is prohibited. The Material Safety Data Sheet for the microbiocide (Stabrex ST40-an alkaline liquid bromine antimicrobial aqueous

solution) states that the 96-hour static acute LC_{50} for rainbow trout is 4.5 mg/l, the 96-hour static acute LC_{50} for fathead minnow is 8.3 mg/l, and the 48-hour static acute LC_{50} for ceriodaphnia dubia is 1.6 mg/l. GWF adds this chemical to maintain a dosage of 0.2 mg/l in the cooling tower. Due to natural dissipation in the cooling tower, the concentration is expected to be lower when it is discharged to the river. The Material Safety Data Sheet for the corrosion inhibitor (Phosperse-Plus 8309 Inhibitor) states that the 96-hour static acute LC_{50} for rainbow trout is 450 mg/l, the 48-hour static acute LC_{50} for fathead minnow is 750 mg/l, and the 48-hour static acute LC_{50} for *daphnia magna* is greater than 1,000 mg/l. GWF adds 30 mg/l of this chemical to the cooling tower.

To confirm that the chemicals added do not cause toxicity in the effluent, GWF is required in the Monitoring and Reporting Program to perform three species toxicity testing on the effluent to determine if there are any other constituents in the effluent that cause toxicity. For future chronic toxicity tests, the discharger will conduct a three species chronic toxicity test using the species *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selenastrum capricornutum* (3rd edition EPA-600-4-91-002), and depending on the levels of salinity in the effluent, the discharger may then use a combination of estuarine and freshwater species, namely *Mysidopsis bahia* (2nd editions EPA 600-4-91-003), *Pimephales promelas* and *Selenastrum capricornutum* (3rd edition EPA-600-4-91-002). . The test must be repeated if GWF changes the chemical additives. If the effluent results in toxicity to the test species, other than salinity, then GWF will be required to determine the cause of the toxicity through a TIE and eliminate the cause of the toxicity through a toxicity reduction evaluation (TRE).

Permit Effluent Limitations

Clean Water Act Section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Board Basin Plan beneficial uses and narrative and numeric water quality objectives, SWRCB-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan contains many numeric water quality objectives and contains a narrative toxicity objective that states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00.) For determining whether there is reasonable potential for an excursion above a narrative objective, the regulations prescribe three discrete methods (40 CFR 122.44 (d)(vi)). The Regional Board often relies on the second method because the USEPA's water quality criteria have been developed using methodologies that are subject to public review, as are the individual recommended criteria guidance documents. USEPA's ambient water quality criteria are used as means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative toxicity objective. In addition, when determining effluent limitations for a discharger, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria which are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream exceedance of water quality standards established to protect the beneficial uses.

Section 1.3 of the SIP requires the Regional Board to follow specific procedures for each priority pollutant with an applicable criterion or objective to determine if a water quality based effluent limitation is required. In evaluating compliance with the CTR and SIP for this new Order, Regional Board staff utilized ambient surface water quality data submitted by the Discharger and from the San Francisco Regional Monitoring Program (SFRMP) conducted under the oversight of the San Francisco Bay Regional Water Quality Control Board. Monitoring data evaluated came from SFRMP Station BG30, located approximately 3.5 miles downstream of GWF's outfall in the San Joaquin River, at latitude 38^{o} 01.40' and longitude 121^{o} 48.45', at a depth of 7 meters, and 0.1 nautical miles east of channel marker "8". **Attachment C** summarizes receiving water data, maximum effluent concentrations (MECs) and includes aquatic life and human health criteria and Basin Plan objectives for each priority pollutant and other constituents.

In addition, on 10 September 2001 the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger to prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its attachments is incorporated into this Order as **Attachments D through D-4**. A provision contained in this Order is intended to be consistent with the requirements of the technical report (**Attachment D**) in requiring sampling for National Toxics Rule (NTR), California Toxics Rule (CTR) and additional constituents to determine if the discharge has a reasonable potential to cause or contribute to water quality impacts.

Based on the available information the following effluent limitations were included in this Order:

Technology Based

Technology-based treatment requirements under section 301 (b) of the CWA represent the minimum level of control that must be imposed in a permit issued under section 402 of the CWA. Regulations promulgated at 40 CFR 122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on national effluent limitations guidelines and standards, best professional judgement (BPJ), or a combination of the two. National effluent limitation guidelines for Steam Electric Power Generating Point Source Category are contained in 40 CFR 423.15. Based on these guidelines technology-based limitations for TSS, and Oil & Grease in the effluent, and for the 126 priority pollutants, in the chemical additives used for cooling tower maintenance are included in this Order.

Water Quality Based

Aluminum

Aluminum concentrations in the effluent were detected at 120 µg/l from a sample collected in April 1999. Based on data obtained from a neighboring downstream discharger, Gaylord Container Corporation, aluminum has been detected in the San Joaquin River with a concentration of 360 µg/l on a sample taken in November 2001. The Primary and Secondary MCLs for aluminum are 1000 µg/l and 200 µg/l respectively. USEPA's ambient Water Quality Criteria for protection of freshwater aquatic life for

aluminum expressed as total recoverable are 750 µg/l (1-hour average, acute) and 87 µg/l (4-day average, chronic). This Order and the Basin Plan prohibit the discharge of toxic constituents in toxic amounts and USEPA's criteria for prevention of acute and chronic toxicity are numerical criteria, which are protective of the Basin Plan's narrative toxicity objective. Since both the receiving water and the effluent exceed USEPA's ambient water quality criteria of chronic toxicity, and the secondary MCL, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above water quality criteria for aluminum. Therefore, this Order includes effluent limitations for Aluminum of 87 µg/l as a 4-day average and 200 µg/l as a daily maximum. Based on a single effluent concentration, the limits appear to put the discharger in immediate non-compliance, and although the discharge consists of water that has been recycled, it is difficult to determine if simple control measures such as reducing the number of recycles can be sufficient to comply with the effluent limitations. Other new or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for aluminum is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, interim effluent limitations and a compliance time schedule is established in a Time Schedule Order in accordance with Water Code Section 13300, which also requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

Electrical Conductivity (EC) and Total Dissolved Solids (TDS)

EC and TDS concentrations in the effluent ranged from 2300-4700 µmhos/cm and 250-4200 mg/l respectively based on results from samples collected between 1998 and 2001. Data from SFRMP Station BG30 show that EC levels in the San Joaquin River ranged from 110-9770 µmhos/cm between 1993 and 1999. Additional data from samples taken by the discharger between 1998 and 2001 show that EC levels in the San Joaquin River range between 196 µmhos/cm and 3440 µmhos/cm. Although the Sacramento-San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act due to EC, the section impaired by EC only applies to 16,000 acres out of a total of 48,000 acres, known as the South Delta. The South Delta does not include the section of the San Joaquin (SJ) River in the vicinity of the discharge. For EC (TDS), the secondary MCL recommended range is 900 µmhos/cm (500 mg/l), the upper range is 1600 µmhos/cm (1000 mg/l) and the short term range is 2200 µmhos/cm (1500 mg/l). The Agricultural Water Quality Goal is 700 µmhos/cm for EC and 450 mg/l for TDS. However more restrictive water quality objectives for the protection of agricultural uses are included in Table 2 of the 1995 Bay Delta Plan (incorporated as table III-5B in the Basin Plan), the most restrictive being the maximum 14-day running average of mean daily for EC in the San Joaquin River at Jersey Point set at 450 µmhos/cm between 1 April and 20 June. The SJ River in the Antioch area is a mixture of freshwater and saltwater at various times of the year. This area of the River is brackish due to its proximity with the San Francisco Bay, tidal influence, and during most of the year a lack of freshwater outflow to mitigate saltwater intrusion. Therefore, at those times when the San Joaquin River is primarily saltwater, discharges of EC and TDS in concentrations equal to concentration in the San Joaquin River should not cause a significant water quality impact to native species and beneficial uses. In addition, the discharge is further mitigated by considering a river to effluent dilution factor of 100:1 within a 2000 ft mixing zone, based on the April 1997 dilution study results. However, the City of Antioch maintains a

water intake structure about 2 miles downstream of the discharge. This intake is commonly utilized when the water quality of the SJ River is of high quality, typically in late winter and early spring when the River flows are sufficiently high, due to the stormwater flow events and spring snow melts runoff. During this period of good SJ River water quality, the dilution of the discharge with the SJ River flows is much greater than the dilution identified in Finding No. 18.

Based on these conditions, the following methods are used in this permit to protect the beneficial uses of the River.

1) If the SJ River TDS (EC) concentration is less than 450 mg/l (700 µmhos/cm), then:
   a) Based on the available dilution, of 100:1 within an approximate mixing zone of 2000 feet, protection of the beneficial uses of the receiving water will be maintained by continuation of the previous TDS limitation. Therefore, this Order shall continue to include the TDS limitation of 3,500 mg/l as a daily maximum, while the EC effluent limitation shall be established as 5450 µmhos/cm as a daily maximum.

2) If the SJ River TDS (EC) concentration is higher than 450 mg/l (700 µmhos/cm) then:
   a) the discharge shall not cause an increase by more than 10% in TDS and EC levels between receiving water monitoring stations R1 and R3 (this limit is provided as a receiving water limitation).

To determine compliance with the effluent limitations concurrent monitoring of the receiving water (San Joaquin River water at the R1 station) and effluent will be required. Compliance with the receiving water limitations will be verified by the receiving water monitoring, which will only be required when Mirant Power Plant is not discharging. In addition, a Provision of this Order requires the Discharger at times when not in compliance with the receiving water limitations to conduct a stratification of analyses (using EC as an indicator) from the point of discharge to monitoring station R3 to determine that there is salt intrusion that may be affecting the Discharger's plume. Analytical results for EC in the effluent and receiving water, and TDS in the effluent are summarized below:

Sample Date	EC in effluent (µmhos/cm)	Sample Date	EC in SJ River at R1 (µmhos/cm)
11/3/98	4700	4/28/98	196
9/11/99	2600	10/23/98	410
9/5/00	2300	4/27/99	231
9/4/01	3200	11/24/99	2501
		3/24/00	239
		11/27/00	3440
		4/23/01	310
		8/20/01	1910

Sample Date	TDS (mg/l)	Sample Date	TDS (mg/l)	Sample Date	TDS (mg/l)	Sample Date	TDS (mg/l)
1/20/98	4200	1/19/99	1700	1/18/00	1700	1/16/01	2100
2/2/98	2800	2/4/99	1900	2/3/00	1900	2/20/01	2400
3/24/98	2900	3/23/99	2300	3/7/00	1400	3/6/01	2600
4/7/98	2500	4/20/99	1900	4/4/00	1700	4/17/01	2800
5/18/98	1700	5/19/99	1800	5/2/00	1700	5/1/01	2600
6/30/98	1600	6/23/99	250	6/14/00	1900	6/6/01	2200
7/21/98	2500	7/6/99	2000	7/5/00	1900	7/3/01	1700
8/18/98	3500	8/3/99	2000	8/1/00	2200	8/20/01	2300
9/1/98	3000	9/11/99	2100	9/5/00	1900	9/4/01	2300
10/6/98	2700	10/19/99	2500	10/3/00	2000	10/16/01	2100
11/3/98	3000	11/16/99	2100	11/7/00	2000	11/6/01	2100
12/4/98	2400	12/7/99	2100			12/4/01	1700

Chloride

Chloride concentrations in the effluent ranged from 350-830 mg/l based on results from samples collected between 1994 and 2001. There was no data from station BG30 on chlorides. Samples taken by the neighboring downstream discharger, Gaylord Container Corporation between 1998 and 2001 show that chloride concentrations in the San Joaquin River ranged from 16-480 mg/l. The secondary MCL recommended range for chloride is 250 mg/l, the upper range is 500 mg/l, and the short term range is 600 mg/l. USEPA's National Ambient Water Quality Criteria for chloride for the Protection of Freshwater Aquatic Life is 230 mg/l, as a 4-day average, and 860 mg/l as a 1-hour average. The 1995 Bay Delta Plan Table 1 (incorporated as table III-5A in the Basin Plan) includes a water quality objective for chloride in the San Joaquin River at the Antioch Waterworks intake of 150 mg/l. The Agricultural Water Quality goal for chloride is 106 mg/l.

As indicated for TDS and EC previously, at those times when the San Joaquin River is primarily saltwater, discharges of chlorides in concentrations equal to concentrations in the San Joaquin River should not cause a significant water quality impact to native species and beneficial uses. In addition, the same methods will be applied with regards to chloride in order to protect the beneficial uses of the River.

1) If the SJ River chloride concentration is less than 250 mg/l, then:
   a) taking into account a dilution of 100:1 within the 2000 ft mixing zone, the discharge shall not be more than 830 mg/l in chloride as a daily maximum based on past performance of the facility.

2) If the SJ River chloride concentration is higher than 250 mg/l then:
   a) the discharge shall not cause an increase in chloride concentrations by more than 10%l between receiving water monitoring stations R1 and R3 (this limit is provided as a receiving water limitation).

To determine compliance with the effluent limitations concurrent monitoring of the receiving water (San Joaquin River water at the R1 station) and effluent will be required. Compliance with the receiving water limitations will be verified by the receiving water monitoring, which will only be required when Mirant Power Plant is not discharging. In addition, a Provision of this Order requires the Discharger at times when not in compliance with the receiving water limitations to conduct a stratification of analyses (using EC as an indicator) from the point of discharge to monitoring station R3 to determine that there is salt intrusion that may be affecting the Discharger's plume. Analytical results for chloride in the effluent and in the receiving water at a downstream location at neighboring discharger Gaylord's intake are summarized below:

Sample Date	Chloride (mg/l)	Sample Date	Chloride in San Joaquin River at Gaylord intake (mg/l)
12/27/94	830	--	--
11/3/98	550	5/12/98	26
9/10/99	350	4/23/99	16
9/5/00	390	6/15/00	110
9/4/01	470	7/12/01	480

Fluoride

Fluoride concentrations in the effluent were detected at 3400 µg/l from a sample collected in April 2001. Fluoride was not detected (<100 µg/l) in the San Joaquin River on a sample taken in April 2001. The State's Primary MCLs for fluoride is 2000 µg/l. The Agricultural Water Quality Goal for fluoride is 1000 µg/l. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal of 1000 µg/l. Therefore, an effluent limitation for fluoride is included in this Order based on the agricultural water quality goal and a conservative dilution of 10:1 within a mixing zone of 228 feet and is established as 10 mg/l as a daily maximum. Calculation of the effluent limitation is as follows:
(B = $\leq$100 µg/l and MEC = 3400 µg/l as total fluoride concentrations, C = 1000 µg/l and D = 10)

Assuming a concentration in the River of 100 µg/l (equal to the detection limit), the effluent concentration allowance is calculated as follows:
ECA = C + D (C-B)
ECA = 1000 + 10 (1000-100) = 10,000 µg/l
Therefore, the effluent limitation for fluoride is established as 10 mg/l as a daily maximum.
Iron

Iron concentrations in the effluent ranged from 210-1050 µg/l based on results from three samples collected between 1999 and 2001. Iron was found in the San Joaquin River to range between 120 µg/l and 820 µg/l based on samples taken in 1998 and 2001. The Basin Plan includes a site specific (San Joaquin River within the Delta) receiving water objective for iron of 300 µg/l. The secondary MCL for iron is also 300 µg/l. USEPA's National Ambient Water Quality criteria instantaneous maximum for the protection of freshwater aquatic life for iron is 1000 µg/l. Since, it appears that both the receiving water and the effluent exceed the Basin Plan site specific objective or the secondary MCL, no dilution can be granted and the

effluent has the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for iron. Therefore, this Order includes an effluent limitation for iron of 300 µg/l as a daily maximum. The limitation puts the discharger in immediate noncompliance. New or modified control measures may be necessary in order to comply with the effluent limitation, and new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for iron is a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, interim effluent limitations and a compliance time schedule for compliance with the iron effluent limit is established in a Time Schedule Order in accordance with Water Code Section 13300, which also requires preparation of a pollution prevention plan in compliance with Water Code Section 13263.3.

Molybdenum

Molybdenum was detected in the effluent with a concentration of 12 µg/l from a sample collected in April 2001. Molybdenum was detected in the San Joaquin River on a sample taken in April 2001 with a concentration of 2 µg/l. The Agricultural Water Quality Goal for molybdenum is 10 µg/l. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal of 10 µg/l. Therefore, an effluent limitation for molybdenum is included in this Order based on the agricultural water quality goal and a conservative available dilution of 10:1 within a mixing zone of 228 feet and is established as
90 µg /l as a daily maximum.

Calculation of the effluent limitation is as follows:
(B = 2 µg/l and MEC = 12 µg/l as total molybdenum concentrations, C = 10 µg/l and D = 10)
The effluent concentration allowance is calculated as follows:
ECA = C + D (C-B)
ECA = 10 + 10 (10-2) = 90 µg/l
Therefore, the effluent limitation for molybdenum is established as 90 µg/l as a daily maximum.

Sulfate

Sulfate concentrations in the effluent ranged from 660-1100 mg/l based on results from four samples collected between 1998 and 2001. Sulfate was found in the San Joaquin River at a concentration of 13 mg/l of a sample collected on October 1998. The Secondary MCL for sulfate is 250 mg/l. In addition, the discharger uses sulfuric acid in the cooling tower to control pH. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL of 250 mg/l. Therefore, an effluent limitation for sulfate is included in this Order based on the drinking water MCL and a conservative available dilution of 10:1 within a mixing zone of 228 feet and is established as 2620 mg/l as a daily maximum. Analytical results for sulfate in the effluent are summarized below:

Sample Date	Sulfate (mg/l)
11/3/98	1100
9/10/99	830
9/5/00	660
9/4/01	980

Calculation of the effluent limitation is as follows:
(B = 13 mg/l and MEC = 1100 mg/l as total molybdenum concentrations, C = 250 mg/l and D = 10)
The effluent concentration allowance is calculated as follows:
ECA = C + D (C-B)
ECA = 250 + 10 (250-13) = 2620 mg/l.
Therefore, the effluent limitation for sulfate is established as 2620 mg/l as a daily maximum.

Copper

Copper concentrations in the effluent ranged from 8 to 66 µg/l in samples collected between 1998 and 2001. The maximum background concentration for total copper at the San Joaquin River SFRMP Station BG30 was 5.31 µg/l, while the maximum dissolved concentration was 2.94 µg/l. The Basin Plan includes a site specific receiving water objective for dissolved copper of 10 µg/l (independent of hardness), which translates to a total recoverable concentration of 10.4 µg/l (using the default USEPA conversion factor of 0.96). The CTR Water Quality Criteria for copper expressed as total concentrations for the protection of freshwater aquatic life for acute and chronic scenarios are 6.3 µg/l and 4.5 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for copper expressed as total concentrations (using conversion factor of 0.83) for the protection of saltwater aquatic life for acute and chronic scenarios are 5.8 µg/l and 3.7 µg/l respectively. Based on available data, both the receiving water and the effluent, at times, exceed the CTR water quality criteria for saltwater and freshwater aquatic life. Therefore, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for both saltwater and freshwater species, saltwater criteria being the most stringent. This Order includes two effluent limitations for copper, one for the protection of saltwater aquatic life, and the other one for the protection of freshwater aquatic life. The effluent limitation for total copper for the protection of saltwater species is set to 2.9 µg/l as a monthly average and 5.8 µg/l as a daily maximum, and is only applicable under saltwater conditions (when EC is greater than 8750 µmhos/cm). The final effluent limitations for the protection of freshwater species are hardness dependent as shown in **Attachment E**. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. A Provision of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, an interim effluent limit based on plant performance is established and is in effect through 31 August 2007. Analytical results for total copper in the effluent are summarized below:

Sample Date	Copper (µg/l)	Sample Date	Copper (µg/l)	Sample Date	Copper (µg/l))	Sample Date	Copper (µg/l))
1/6/98	14	1/19/99	19	1/18/00	13	1/3/01	25
2/2/98	34	2/19/99	20	2/3/00	14	2/20/01	24
3/17/98	10	3/2/99	15	3/21/00	15	3/6/01	28
4/21/98	8	4/20/99	14	4/4/00	15	4/3/01	21
5/18/98	42	5/19/99	**66**	5/2/00	15	5/18/01	25
6/30/98	14	6/23/99	9	6/14/00	27	6/6/01	20
7/7/98	14	7/27/99	20	7/18/00	13	7/3/01	14
8/18/98	17	8/3/99	19	8/1/00	14	8/20/01	14
9/1/98	14	9/10/99	21	9/5/00	14	9/4/01	15
10/6/98	17	10/5/99	19	10/3/00	18	10/4/01	15
11/17/98	18	11/16/99	15	11/7/00	22	11/6/01	15
12/4/98	20	12/7/99	15			12/4/01	22

Calculating Final Effluent Limits:

(B = 5.31 µg/l and MEC = 66 µg/l as total copper concentrations)
Multipliers to calculate LTA, MDEL (Maximum Daily effluent limit), and AMEL (Average monthly effluent limit) came from the State Implementation Policy (SIP) Tables 1 and 2.

Saltwater limitation:

No dilution can be allowed since both the effluent and background exceed criteria:
ECA (acute aquatic life) = 4.8 µg/l / 0.83 (conversion factor) = 5.8 µg/l (Total Copper)
ECA (chronic aquatic life) = 3.1 µg/l / 0.83 (conversion factor) = 3.7 µg/l (Total Copper)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value).
Therefore:

LTA (acute) = 5.8 x 0.321 = **1.86**
LTA (chronic) = 3.7 x 0.527 = 1.95
Choosing the lowest of the two, the effluent limitations are calculated as follows:
MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 1.86 x 3.11 = **5.8** µg/l as Total Copper.
AMEL = 1.86 x 1.55 = **2.9** µg/l as Total Copper.

Therefore, the effluent limitations for the protection of saltwater species are 5.8 µg/l as the daily maximum and 2.9 µg/l as the monthly average.

Freshwater limitation:

(example of limitation under worst case condition of river hardness of 43 mg/l)
No dilution can be allowed since both the effluent and background exceed criteria (under worst case condition of receiving water hardness of 43 mg/l):
ECA (acute aquatic life) = 6.3 µg/l (Total Copper)
ECA (chronic aquatic life) = 4.5 µg/l (Total Copper)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value)
Therefore:

LTA (acute) = 6.3 x 0.321 = **2.02**
LTA (chronic) = 4.5 x 0.527 = 2.37
Choosing the lowest of the two, the effluent limitations are calculated as follows:
MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 2.02 x 3.11 = **6.3** µg/l as Total Copper.
AMEL = 2.02 x 1.55 = **3.1** µg/l as Total Copper.

Therefore, the effluent limitations for the protection of freshwater species under the worst case receiving water hardness of 43 mg/l would be 5.8 µg/l as the daily maximum and 2.9 µg/l as the monthly average. However, since the criteria are dependent on hardness, then the effluent limitations will also change based on hardness. Attachment E includes calculated limitations for monthly and daily maximums at different hardness values.

Calculating the Interim Effluent Limit:

It is based on plant performance and it is calculated statistically by multiplying the maximum observed concentration of 66 µg/l by a factor of 4.7 from a 99% confidence level and 99% probability basis table, using a default coefficient of variation (CV= σ/μ) of 0.6 and n= 4 due to minimal sampling data**.** Therefore, based on Plant performance the MDEL = 66 x 4.7 = 310 µg/l as a daily maximum.

Lead

Lead was detected in 1 of 2 effluent samples collected between 1999 and 2001 with a maximum total concentration of 6 µg/l. The maximum background concentration for total lead at the San Joaquin River SFRMP Station BG30 was 1.21 µg/l. However, a receiving water sample taken by the discharger in April 2001 resulted in a higher background concentration for total lead of 2 µg/l. The CTR Water Quality Criteria for lead expressed as total recoverable concentrations (using conversion factor of 0.914) for the protection of freshwater aquatic life for acute and chronic scenarios are 28 µg/l and 1.1 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for lead expressed as total recoverable concentrations (using conversion factor of 0.951) for the protection of saltwater aquatic life for acute and chronic scenarios are 221 µg/l and 8.5 µg/l respectively. Based on

available data, both the receiving water and the effluent, exceed the CTR chronic water quality criteria for the protection of freshwater aquatic life. Therefore, **no dilution** can be granted and the effluent has the reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for freshwater species. Therefore, this Order includes hardness dependent effluent limitations for lead as shown in **Attachment F** based on the CTR criteria for the protection of freshwater aquatic life. For example under the worst case condition of receiving water hardness of 43 mg/l, the limits would be 0.9 µg/l as a monthly average and 1.8 µg/l as a daily maximum. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. A Provision of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established and are in effect through 31 August 2007.

Calculating Final Effluent Limits:

(B = 1.21 µg/l and MEC = 6 µg/l as total lead concentrations)
Multipliers to calculate LTA, MDEL, and AMEL came from the State Implementation Policy (SIP) Tables 1 and 2.

Freshwater limitation:
No dilution can be allowed since the background exceeds criteria (under worst case condition of receiving water hardness of 43 mg/l):
ECA (acute aquatic life) = 28 µg/l (Total Lead)
ECA (chronic aquatic life) = 1.1 µg/l (Total Lead)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value)
Therefore:

LTA (acute) = 28 x 0.321 = 8.99
LTA (chronic) = 1.1 x 0.527 = 0.58
Choosing the lowest of the two, the effluent limitations are calculated as follows:
MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 0.58 x 3.11 = **1.8** µg/l as Total Lead.
AMEL = 0.58 x 1.55 = **0.9** µg/l as Total Lead.

Therefore, the effluent limitations for the protection of freshwater species under the worst case receiving water hardness of 43 mg/l would be 1.8 µg/l as the daily maximum and 0.9 µg/l as the monthly average. However, since the criteria are dependent on hardness, then the effluent limitations will also change based on hardness. Attachment F includes calculated limitations for monthly and daily maximums at different hardness values.

Calculating the Interim Effluent Limit:

It is based on plant performance and it is calculated statistically by multiplying the maximum observed concentration of 6 µg/l by a factor of 4.7 from a 99% confidence level and 99% probability basis table, using a default coefficient of variation (CV= σ/µ) of 0.6 and n=4 due to minimal sampling data**.** Therefore, based on Plant performance the MDEL = 6 x 4.7 = 28 µg/l as a daily maximum.

Nickel

Nickel was detected in 2 effluent samples taken between 1999 and 2001 with a maximum total concentration of 14 µg/l. The available maximum background concentration for nickel at the San Joaquin River is 6.52 µg/l. The USEPA primary MCL for nickel is set at 100 µg/l (total recoverable). The CTR chronic and acute freshwater criteria for total nickel concentrations (using conversion factors of 0.997 and 0.998) based on worst case receiving water hardness of 43 mg/l are 26 µg/l and 230 µg/l, respectively. The CTR chronic and acute saltwater criteria for total nickel concentrations (using conversion factor of 0.990 for both chronic and acute) are 8.3 µg/l and 74.7 µg/l, respectively. Based on available data, the effluent does not have reasonable potential to cause or contribute to an in-stream excursion above the CTR water quality criteria for the protection of freshwater aquatic life, but does have the reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion for saltwater species of 8.3 µg/l. Therefore, effluent limitations for nickel are included in this Order based on the CTR chronic and acute saltwater criteria and a conservative available dilution of 10:1 within a mixing zone of 228 feet. These effluent limitations are only applicable under saltwater conditions (when EC levels are greater than 8750 µmhos/cm) and are established as 43 µg/l as a daily maximum and 21.5 µg/l as the monthly average. The effluent limitations were calculated as follows:

Calculating Effluent Limits:

(B = 6.52 µg/l and MEC = 14 µg/l as total nickel concentrations)
Multipliers to calculate LTA, MDEL, and AMEL came from the State Implementation Policy (SIP) Tables 1 and 2.

Saltwater limitation only:
No dilution can be allowed for the acute criterion, but a dilution of 10:1 is allowed for the chronic criterion:
ECA (acute) = 74 µg/l / 0.99 (conversion factor) = 74.7 µg/l (Total Nickel)
ECA (chronic) = 8.2 µg/l / 0.99 (conversion factor) = 8.3 + 10 (8.3-6.52) = 26.1 µg/l (Total Nickel)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value).
Therefore:

LTA (acute) = 74.7 x 0.321 = 24
LTA (chronic) = 26.1 x 0.527 = **13.8**
Choosing the lowest of the two, the effluent limitations are calculated as follows:

MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 13.8 x 3.11 = 43 µg/l as Total Nickel.
AMEL = 13.8 x 1.55 = 21.3 µg/l as Total Nickel.

Therefore, the effluent limitations for nickel for the protection of saltwater species are 43 µg/l as the daily maximum and 21.3 µg/l as the monthly average.

Selenium

Selenium was detected in 1 of 2 effluent samples collected between 1998 and 2001 with a maximum total concentration of 50 µg/l. The maximum background concentration for total selenium at the San Joaquin River SFRMP Station BG30 was 0.43 µg/l. However, selenium was not detected (<1 µg/l) in the San Joaquin River on a sample taken in April 2001 upstream of the discharge point. The CTR Water Quality Criteria for selenium expressed as total recoverable concentrations for the protection of freshwater aquatic life for acute and chronic scenarios are 20 µg/l and 5 µg/l respectively. The CTR Water Quality Criteria for selenium expressed as total recoverable concentrations (using conversion factor of 0.998) for the protection of saltwater aquatic life for acute and chronic scenarios are 291 µg/l and 71 µg/l respectively. Based on available data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life. Therefore, this Order includes effluent limitations for selenium, based on the CTR criteria for the protection of freshwater aquatic life, granting a dilution credit of 10:1 for the chronic criteria, but no dilution for the acute criteria. The effluent limitations are established as 20 µg/l as a daily maximum and 10 µg/l as a monthly average. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. A Provision of this Order requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established and are in effect through 31 August 2007.

Calculating Final Effluent Limits:

(B = 0.43 µg/l, MEC = 50 µg/l, acute C = 20 µg/l, and chronic C = 5 µg/l as total selenium concentrations)
Multipliers to calculate LTA, MDEL, and AMEL came from the State Implementation Policy (SIP) Tables 1 and 2.

Freshwater limitation only:
No dilution is allowed for the acute criteria, but a dilution of 10:1 is allowed for the chronic criteria.
ECA (acute aquatic life) = 20 µg/l (Total Selenium)
ECA (chronic aquatic life) = 5 + 10 (5-0.43) = 50.7 µg/l (Total Selenium)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value).
Therefore:

LTA (acute) = 20 x 0.321 = **6.42**
LTA (chronic) = 50.7 x 0.527 = 26.7
Choosing the lowest of the two, the effluent limitations are calculated as follows:
MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 6.42 x 3.11 = **20** µg/l as Total Selenium.
AMEL = 6.42 x 1.55 = **10** µg/l as Total Selenium.

Therefore, the effluent limitations for selenium for the protection of freshwater species are 20 µg/l as the daily maximum and 10 µg/l as the monthly average.

Calculating the Interim Effluent Limit:

Based on plant performance, the effluent interim limit is calculated statistically by multiplying the maximum observed concentration of 50 µg/l by a factor of 4.7 from a 99% confidence level and 99% probability basis table, using a default coefficient of variation (CV= σ/μ) of 0.6 and n=4 due to minimal sampling data**.** Therefore, based on Plant performance the MDEL = 50 x 4.7 = 235 µg/l as a daily maximum.

Thallium

Thallium was detected in 1 of 2 effluent samples collected between 1998 and 2001 with a maximum total concentration of 6 µg/l. There were no data from SFRMP station BG30 on thallium. However, thallium was detected in the San Joaquin River upstream of the discharge point on a sample taken in April 2001 with a concentration of 2 µg/l. The State and U.S. EPA primary MCL is set at 2 µg/l. The CTR's criteria for Human health protection for consumption of water and aquatic organisms is set at 1.7 µg/l and for consumption of aquatic organisms only is set at 6.3 µg/l. Based on available data, both the receiving water and the effluent, exceed the CTR water quality criteria for human health protection for consumption of water and aquatic organisms. Therefore, **no dilution** can be granted and this Order includes effluent limitations for thallium based on the CTR criteria for human health protection. The effluent limitations are established as 1.7 µg/l as a monthly average and 3.4 µg/l as a daily maximum. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. A Provision of this Order requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established and are in effect through 31 August 2007.

Calculating Final Effluent Limits:

(B = 2 µg/l and MEC = 6 µg/l as total thallium concentrations, C= 1.7 µg/l)
Multipliers to calculate LTA, MDEL, and AMEL came from the State Implementation Policy (SIP) Tables 1 and 2.

No dilution is allowed since both MEC and B exceed the criteria C, therefore:
ECA = C = 1.7 µg/l and since this is a human health criterions then,
AMEL = ECA = 1.7 µg/l as the monthly average.
MDEL = 1.7 x 2.01 = 3.4 µg/l as the daily maximum.

Calculating the Interim Effluent Limit:

Based on plant performance, the interim effluent limit is calculated statistically by multiplying the maximum observed concentration of 6 µg/l by a factor of 4.7 from a 99% confidence level and 99% probability basis table, using a default coefficient of variation (CV= σ/μ) of 0.6 and n=4 due to minimal sampling data**.** Therefore, based on Plant performance the MDEL = 6 x 4.7 = 28 µg/l as a daily maximum.

Zinc

Zinc concentrations in the effluent ranged from 26 to 120 µg/l in samples collected between 1998 and 2001.The maximum background concentration for total zinc at the San Joaquin River SFRMP Station BG30 was 9.4 µg/l. However, receiving water samples taken by the discharger between 1998 and 2001 resulted in a higher background concentration for total zinc of 36 µg/l. The CTR Water Quality Criteria for zinc expressed as total recoverable concentrations (using conversion factors of 0.978 for acute and 0.986 for chronic) for the protection of freshwater aquatic life for acute and chronic scenarios are 59 µg/l and 59 µg/l respectively based on the worst case receiving water hardness of 43 mg/l as $CaCO_3$. The CTR Water Quality Criteria for zinc expressed as total recoverable concentrations (using conversion factor of 0.946) for the protection of saltwater aquatic life for acute and chronic scenarios are 95 µg/l and 86 µg/l respectively. Based on available data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for both saltwater and freshwater species, freshwater criteria being the most stringent. Therefore, this Order includes hardness dependent effluent limitations for zinc as shown in Attachment G, based on the CTR criteria for the protection of freshwater aquatic life, granting a dilution credit of 10:1 for the chronic criteria, but no dilution for the acute criteria. For example under the worst case condition of receiving water hardness of 43 mg/l, the limits would be 29 µg/l as a monthly average and 59 µg/l as a daily maximum. To determine compliance with this limitation, the applicable hardness will be the average between the effluent hardness and the receiving water hardness at R1. Since these limits appear to put the Discharger in immediate non-compliance, in accordance with the SIP Section 2.1, a compliance schedule is included in the permit. A Provision of this permit requires the discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limits. Full compliance with these final limitations is not required by this Order until 1 September 2007. In the meantime, interim effluent limits based on plant performance are established and are in effect through 31 August 2007. Analytical results for total zinc in the effluent are summarized below:

Sample Date	Zinc (µg/l)	Sample Date	Zinc (µg/l)	Sample Date	Zinc (µg/l))	Sample Date	Zinc (µg/l))
1/20/98	90	1/19/99		1/18/00	41	1/3/01	31
2/2/98	70	2/19/99	90	2/3/00	72	2/20/01	35
3/17/98	40	3/2/99	70	3/21/00	38	3/6/01	48
4/7/98	40	4/20/99	70	4/4/00	49	4/3/01	50
5/18/98	50	5/19/99	**120**	5/16/00	41	5/1/01	50
6/30/98	40	6/23/99	26	6/14/00	62	6/6/01	43
7/21/98	40	7/20/99	59	7/5/00	43	7/17/01	46
8/18/98	60	8/3/99	57	8/15/00	38	8/20/01	30
9/1/98	50	9/21/99	60	9/5/00	39	9/4/01	36
10/6/98	70	10/5/99	**120**	10/3/00	35	10/4/01	37
11/3/98	70	11/16/99	55	11/7/00	30	11/20/01	32
12/4/98	60	12/21/99	46	12/5/00	28	12/4/01	73

Calculating Final Effluent Limits:

(B = 36 µg/l and MEC = 120 µg/l as total zinc concentrations)
Multipliers to calculate LTA, MDEL, and AMEL came from the State Implementation Policy (SIP) Tables 1 and 2.

Freshwater limitation:
No dilution can be allowed for the acute criteria, but a dilution of 10:1 is allowed for the chronic criteria
ECA (acute aquatic life) = 59 µg/l (Total Zinc)
ECA (chronic aquatic life) = 59 + 10 (59-36) = 289 µg/l (Total Zinc)
Because of the number of data available, the applicable coefficient of variation is CV = 0.6
LTA = ECA x ECA multiplier (based on the CV value)
Therefore:

LTA (acute) = 59 x 0.321 = **18.9**
LTA (chronic) = 289 x 0.527 = 152
Choosing the lowest of the two, the effluent limitations are calculated as follows:
MDEL = Lowest LTA x MDEL multiplier (99 percentile)
AMEL = Lowest LTA x AMEL multiplier (95 percentile)
MDEL = 18.9 x 3.11 = **59** µg/l as Total Zinc.
AMEL = 18.9 x 1.55 = **29** µg/l as Total Zinc.

Therefore, the effluent limitations for the protection of freshwater species under the worst case receiving water hardness of 43 mg/l would be 59 µg/l as the daily maximum and 29 µg/l as the monthly average. However, since the criteria are dependent on hardness, then the effluent limitations will also change based on hardness. Attachment G has calculated limitations for monthly and daily maximums at different hardness values.

Calculating the Interim Effluent Limit:

Based on plant performance it is calculated statistically by multiplying the maximum observed concentration of 120 µg/l by a factor of 4.7 from a 99% confidence level and 99% probability basis table, using a default coefficient of variation (CV= σ/μ) of 0.6 and n=4 due to minimal sampling data**.** Therefore, based on Plant performance the MDEL = 120 x 4.7 = 564 µg/l as a daily maximum.

303 (d) Pesticides (Organochlorine and Organophosphate)

The Sacramento–San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act because of: (1) diazinon and chlorpyrifos (organophosphate pesticides), (2) Group A-organochlorine pesticides {aldrin, chlordane, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, 4,4'DDT, heptachlor, heptachlor epoxide, hexachlorocyclohexane (alpha, beta, delta and lindane), and toxaphene}, and (3) unknown toxicity. The Basin Plan objectives regarding pesticides include:

a) no individual pesticides shall be present in concentrations that adversely affect beneficial uses,
b) discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affects beneficial uses,
c) total chlorinated hydrocarbon pesticide concentrations shall not be present in the water column at detectable concentrations, and
d) pesticide concentrations shall not exceed those allowable by applicable antidegradation policies.

Organophosphate pesticides, diazinon and chlorpyrifos, are commonly-used insecticides found in many domestic wastewater discharges at concentrations which can cause toxicity in both the effluent and in the receiving water. These pesticides are not expected to be found in industrial discharges. In addition, these pesticides are not "priority pollutants" and so are not part of the analytical methods routinely performed for NPDES discharges. The Discharger will not be required to monitor for diazinon or chlorpyrifos. The Basin Plan's requirement that persistent chlorinated hydrocarbon pesticides shall not be present in the water column in detectable concentrations is the most stringent criterion for the regulation of the Group A-organochlorine pesticides (OPs). The Organochlorine pesticides were analyzed in the effluent and receiving water on samples taken in July 2001. The results were non-detect in both the effluent and receiving water. Although, these constituents are listed under the California 303(d) list as pollutants causing impairment in the Sacramento-San Joaquin Delta, and an effluent limitation for Group A-organochlorine pesticides is required according to the SIP, this Order does not include an effluent limitation for OPs because of the site specific results of non-detect. .

Mercury

Mercury was detected in the effluent on a sample taken in April 2001 using a "clean technique" USEPA Method 1631 with a concentration of 0.002 µg/l. Mercury was also detected in July 2001 in the San

Joaquin River water, upstream of the discharge point, with a concentration of 0.026 µg/l. The current USEPA's ambient water quality criterion (expressed as dissolved concentrations) for continuous concentration of mercury is 0.77 µg/l (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is 0.050 µg/l. Mercury is listed under the California 303(d) list as a pollutant causing impairment in the Sacramento-San Joaquin Delta. This listing is based partly on elevated levels of mercury in fish tissue. Because the Sacramento-San Joaquin Delta has been listed as an impaired water body for mercury based on fish tissue impairment, the discharge must not cause or contribute to increased mercury levels in fish tissue.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Sacramento-San Joaquin Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP recommends that mass loading of the bioaccumulative pollutant should be limited in the interim to representative, current levels pending development of applicable water quality standards. Furthermore, the SIP allows for compliance schedules of up to 15 years. Until the TMDL is completed and water quality based effluent limits are prescribed, an interim, performance based, mass loading limit will be prescribed.

The single analysis of mercury is sufficient to determine reasonable potential but is not a sufficient database to determine an annual interim mass effluent limitation, therefore this permit does not contain an interim performance-based effluent limit for mercury until additional data are obtained. A Provision of this Order requires the Discharger to conduct 1 year of monthly monitoring for mercury in the effluent, using a "clean technique" USEPA Method 1631, with monthly mass loadings being calculated for each calendar month, and allows the Regional Board to reopen the permit to establish an interim effluent mass limit for mercury. The final effluent limit for mercury will be determined from an approved TMDL.

Chromium

Chromium total concentrations in the effluent ranged from 2 to 10 µg/l in samples collected between 1998 and 2001. The maximum background concentration for total chromium at the San Joaquin River SFRMP Station BG30 was 8.2 µg/l. However, receiving water samples taken by the discharger between 1998 and 2001 showed background concentration for total chromium ranging between 2.1 and 3.9 µg/l. The state MCL for total chromium is 50 µg/l while the USEPA MCL is 100 µg/l. Based on this information, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for total chromium. However, a technology-based effluent limitation for total chromium of 200 µg/l as a daily maximum is required to be included in this permit based on the effluent limitation guidelines for the Steam Electric Power Generating Point Source Category. The previous order included an effluent limitation for total chromium of 50 µg/l (based on the state MCL) as a daily maximum. The Discharger has been able to meet this limitation, and to comply with the technology-based requirements, this Order shall continue to include the chromium limitation of 50 µg/l as a daily maximum. Analytical results for total copper in the effluent are summarized below:

Sample Date	Chromium (µg/l)	Sample Date	Chromium (µg/l)	Sample Date	Chromium (µg/l)	Sample Date	Chromium (µg/l)
1/20/98	<5	1/26/99	<5	1/18/00	4	1/16/01	4.7
2/24/98	<5	2/4/99	5	2/3/00	2.6	2/6/01	5.5
3/3/98	<5	3/23/99	<5	3/21/00	3	3/6/01	6.9
4/7/98	<5	4/20/99	8	4/18/00	3.1	4/17/01	4.3
5/18/98	9	5/19/99	10	5/2/00	4	5/18/01	6
6/30/98	<5	6/29/99	<5	6/14/00	3	6/6/01	3
7/28/98	<5	7/20/99	<5	7/5/00	4	7/3/01	7
8/25/98	<5	8/31/99	<5	8/1/00	3	8/7/01	2.6
9/1/98	<5	9/21/99	<5	9/5/00	<5	9/4/01	2.4
10/27/98	<5	10/5/99	<5	10/13/00	<5	10/4/01	2
11/10/98	<5	11/16/99	<10	11/21/00	3	11/28/01	3.3
12/15/98	<5	12/7/99	3		3	12/4/01	7

No Reasonable Potential

There were several constituents which were detected in the effluent that do not pose a reasonable potential to cause an exceedance of a water quality standard and effluent limits were not included in the proposed Order:

Arsenic

Arsenic concentrations in the effluent ranged from <2 to 9 µg/l in samples collected between 1998 and 2001. The available maximum background concentration for arsenic at the San Joaquin River SFRMP Station BG30 was 2.63 µg/l. The State's MCL for arsenic is 50 mg/l. However, on 22 January 2001, USEPA adopted a new primary MCL for arsenic of 10 µg/l (total recoverable). The CTR chronic and acute freshwater criteria for total arsenic concentrations are 150 µg/l and 340 µg/l, respectively. The Basin Plan includes a receiving water limit of 10 µg/l, and the Narrative Toxicity Objective. In the past the Basin Plan narrative toxicity objective was implemented by applying the Proposition 65 level of 5 µg/l, which is the reason the previous permit included an effluent limitation for arsenic of 5 µg/l as a monthly average. The Regional Board will utilize the promulgated drinking water MCL of 10 µg/l to implement the narrative toxicity objective. Based on this information, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic, and therefore, this Order no longer includes an effluent limitation for arsenic. Analytical results for arsenic in the effluent are summarized below:

Sample Date	Arsenic (µg/l)	Sample Date	Arsenic (µg/l)	Sample Date	Arsenic (µg/l))	Sample Date	Arsenic (µg/l))
1/20/98	3.2	1/26/99	3.9	1/11/00	4.9	1/3/01	4.0
2/24/98	4.3	2/4/99	3.9	2/3/00	4.9	2/20/01	<2
3/3/98	4.4	3/23/99	3.5	3/7/00	3.0	3/20/01	2
4/7/98	4.9	4/13/99	4.3	4/25/00	5.0	4/17/01	3.0
5/18/98	3.6	5/19/99	5.0	5/2/00	5.0	5/18/01	**9.0**
6/30/98	0.5	6/29/99	2.4	6/27/00	5.0	6/5/01	6.0
7/28/98	2.5	7/6/99	2.1	7/18/00	5.0	7/31/01	4.0
8/25/98	4.4	8/31/99	3.8	8/15/00	6.0	8/14/01	5.0
9/1/98	4.5	9/21/99	4.6	9/5/00	6.0	9/4/01	4.0
10/27/98	4.4	10/5/99	4.0	10/24/00	4.0	10/4/01	6.0
11/10/98	5.5	11/16/99	5.9	11/14/00	4.0	11/6/01	3.0
12/15/98	3.1	12/21/99	6.0			12/25/01	4.0

Barium

It was detected in the effluent with a total concentration of 80 µg/l as indicated in the April 1999 RWD. The only available background data is based on a sample taken by the neighboring downstream discharger, Gaylord Container Corporation on 12 July 2001 resulting in a concentration of barium of 41µg/l. The most stringent criterion is the site-specific Basin Plan water quality objective of 100 µg/l. Since both the effluent and receiving water concentrations are lower than the Basin Plan objective, then there is no reasonable potential and an effluent limitation for barium is not necessary.

Boron

It was detected in the effluent with a concentration of 390 µg/l as indicated in the April 1999 RWD. The only available background data is based on a sample taken by the neighboring downstream discharger, Gaylord Container Corporation on 6 November 2001 resulting in a concentration of boron of 400 µg/l. The recommended concentration to protect the agricultural beneficial use is 750 µg/l. Since both the effluent and receiving water concentrations are lower than the agricultural water quality goal, then there is no reasonable potential and an effluent limitation for boron is not necessary

Beryllium

It was detected in the effluent with a concentration of 2 µg/l as indicated in the April 1999 RWD. There were no data from station BG30 on beryllium. A receiving water sample taken on 12 July 2001 resulted in non-detection (<2 µg/l) of beryllium at the San Joaquin River. The State and USEPA primary MCL for beryllium is 4 µg/l (total recoverable). Since the effluent and receiving water concentrations are lower than the drinking water MCL, then there is no reasonable potential and an effluent limitation for beryllium is not necessary.

Ammonia

It was detected in the effluent with a concentration of 0.06 mg/l as indicated in the April 1999 RWD. The available maximum background concentration for ammonia at the San Joaquin River from the SFRMP station BG30 is 0.2 mg/l. The USEPA has published revised ambient water quality criteria for Ammonia (1999 Ammonia Update), superseding all previous USEPA recommended freshwater criteria for ammonia. The 1999 Ammonia Update pertains only to fresh waters. The new criteria incorporates revisions where the acute criterion (1-hour average) for ammonia is now dependent on pH and fish species and the chronic criterion (30-day average) is dependent on pH and temperature, and at temperatures lower than 15^{o}C is also dependent on fish species. The worst-case scenarios would be when the pH of the receiving water is 8.5 and the temperature is 30^{o}C. Under these conditions, the USEPA's ambient water quality criteria for ammonia are 2.14 mg/l (Salmonids Present) and 3.20 mg/l (Salmonids Absent) as a 1-hour average (acute) and 0.401 mg/l as a 30-day average (chronic). Since the effluent and receiving water concentrations are lower that the ambient water quality criteria, then there is no reasonable potential and an effluent limitation for ammonia is not necessary.

Stormwater

Storm water will be completely contained on the GWF facility and will be used as makeup water during normal periods of rainfall. At that point, it will become process wastewater and will be discharged under this permit to the river. Discharge of storm water to the storm water evaporation/percolation basin will only occur during heavy rain events, when storm water exceeds the on-site storage and pump capacity of the storm water drainage system. Since non-contact storm water will not leave the site, a storm water permit is not required. If, in the future, there is a need to discharge non-contact storm water off-site, GWF must file a Notice of Intent (NOI) with the State Water Resources Control Board in order to be covered under the General Storm Water Permit.

RDJ