

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0030

NPDES NO. CA0081787

WASTE DISCHARGE REQUIREMENTS
FOR
SPX CORPORATION
MARLEY COOLING TOWER COMPANY
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SAN JOAQUIN COUNTY

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

1. The Marley Cooling Tower Company (MCTC), a wholly owned subsidiary of SPX Corporation (hereafter Discharger) submitted a Report of Waste discharge, dated 24 December 1997, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Discharger's groundwater treatment plant.
2. The Discharger owns and operates a groundwater extraction and treatment system in the East Stockton Area of San Joaquin County. The Discharger previously operated a cooling tower fabrication plant at the site which included a wood preservation process using solutions containing copper, chromium and arsenic. Wood preserving was discontinued at this facility in January 1991, however past operational practices have resulted in contamination of soils and groundwater underlying the site. Soils have been contaminated with copper, chromium, and arsenic; groundwater has been contaminated with chromium and copper. The site is in Section 32, T2N, R7E, MDB&M, as shown on Attachment A, a part of this Order.
3. On 28 November 1984 the Regional Board ratified a Settlement Agreement between the Department of Health Services (now Department of Toxic Substances Control (DTSC)), the Discharger, and the Regional Board. This Settlement Agreement required the Discharger to conduct a Remedial Investigation/Feasibility Study (RI/FS) to define the extent of contamination, to develop a Remedial Action Plan (RAP), and to implement all measures necessary to remediate existing site contamination. Following discussions with Regional Board staff, DTSC formally adopted the RAP on 29 August 1990. The RAP included the conceptual design of the groundwater remediation project. The recommended groundwater remedial action in the RAP includes the extraction, treatment, and discharge of contaminated groundwater.

4. To minimize dewatering of the local aquifer and to aid in flushing of contaminants, approximately 5% of the treated water may be reinjected into shallow soils in the area of a closed retort pit at 37 degrees, 58 minutes, 11 seconds latitude and 121 degrees, 14 minutes, 00 seconds longitude. The injected water is then recaptured by the groundwater extraction system. The discharge of treated water to groundwater is regulated by Discharge Specification C, a part of this Order, which requires total recapture of groundwater.
5. The discharge of treated groundwater to the Stockton Diverting Canal was previously regulated by Waste Discharge Requirements (WDR) Order No. 93-221, NPDES Permit No. CA0081787, which was adopted by the Regional Board on 22 October 1993. Under this Order, the Discharger was permitted to extract groundwater and discharge a maximum of 0.94 million gallons per day (mgd) of treated groundwater and storm water runoff to the Stockton Diverting Canal, a water of the United States and a tributary to the Calaveras River, at 37 degrees, 58 minutes, 19 seconds latitude and 121 degrees, 13 minutes, and 34 seconds longitude. The discharge pipeline and discharge point (Outfall 001) are shown on Attachment B.
6. The groundwater treatment system at the plant includes an electrochemical reduction and precipitation unit operating in parallel to an ion exchange treatment system.
7. The ion exchange system consists of two anion exchange vessels and a cation exchange vessel. In the anion exchange vessels, hexavalent chromium in the water is adsorbed onto the ion exchange resins. In the cation exchange vessel, trivalent chromium and copper are adsorbed. The exchange process continues until the resin's exchange sites are filled and exchange capacity is exhausted. The adsorbed wood treating chemicals are stripped from the ion exchange resins and the resins are conditioned for additional water treatment in a process called regeneration. During regeneration, which occurs approximately every 2.5 days, 15,000 gallons of solution containing the stripped chemicals is removed from the ion exchange system and processed through the electrochemical unit.
8. The electrochemical unit consists of an electrochemical reduction (Andco) and precipitation process which uses iron as the reducing agent for the hexavalent chromium followed by iron co-precipitation using pH adjustments. The addition of polymers and further pH adjustments are used to optimize settling. The effluent is then filtered prior to discharge. The solids from the clarifier are pumped and accumulated in a filter press. The filter press filtrate and mixed media filter backwash are returned to the treatment plant for further treatment. Filter press cake has been characterized as a California hazardous waste, and is collected in roll off bins for off-site disposal.
9. The site is divided into two areas, the North Yard and the South Yard. All past wood treatment activities were conducted on the North Yard. Rain falling on the North Yard becomes contaminated after contact with treated cooling tower components. This contaminated rainwater is collected in a storm drain system and is passed through the treatment plant in the northeast portion of the site. Due to the past practice of storing treated wood products on the MCTC South

Yard, some wood treating chemicals had been detected in the storm water runoff from the South Yard. The South Yard surface has been cleaned and residual contamination in pipes and ditches removed as part of the remedial actions undertaken by the Discharger. Runoff from the South Yard is not regulated.

10. The groundwater treatment facility is designed to treat a maximum flow up to 0.94 mgd. Groundwater is extracted from approximately 17 extraction wells on and off-site. The groundwater extraction system can operate in a cyclical fashion with each of the two cycles lasting 56 hours or on a continuous basis with all extraction wells pumping at rates varying from 10-90 gallons per minute depending on effective capture of the groundwater contamination plume. When cycling, primary groundwater extraction is alternated between the north zone and the area south of the site. Water extracted from the north zone has higher contaminant concentrations. During south zone pumping, the capacity of the treatment plant is not fully utilized unless supplemental waste sources are added. Flushing water may be added to supplement the groundwater contaminant concentrations. Additionally, when sufficient storm water is accumulated on the North Yard to justify treatment, the operator will manually initiate storm water treatment through the Andco system. Groundwater from selected wells will simultaneously be delivered to the ion exchange treatment system.
11. On 16/17 September 2002, a system malfunction resulted in discharge of a high pH water and fish-kill in the Stockton Diverting Canal. This Order includes a provision that the Discharger submit and implement a release prevention plan and a contingency plan to minimize the potential for future accidental discharges.
12. The Report of Waste Discharge (RWD) and previous information submitted by the Discharger describes the combined storm water and groundwater characteristics and the treatment system performance characteristics as follows:

Monthly Average Flow:	0.72 million gallons per day (mgd)
Daily Maximum Flow, Treatment Plant Capacity:	0.94 mgd
Average Temperature:	68° F (groundwater)
pH:	7.0 – 7.5 (groundwater)

<u>Constituent</u>	<u>Storm Water (mg/L¹, ppm²)</u>	<u>Groundwater (mg/L, ppm)</u>
Total Chromium	1.0 – 3.0	0.16 – 14
Chromium VI	0.5 – 2.5	0.16 – 14
Copper	0.50 – 2.5	< 0.01
Arsenic	0.05 – 0.20	<0.1
<u>Total Dissolved Solids (TDS)</u>		500 - 650

¹ milligrams per Liter.

² parts per million

13. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.
14. 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 water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.
15. The Upper Mormon Slough drainage course originates from the Calveras River near Bellota. The Upper Mormon Slough drainage course then flows west-southwest from Bellota, south of the Calaveras River. The **Stockton Diverting Canal**, which receives the discharge from Outfall 001, is an engineered drainage course which re-connects Upper Mormon Slough to the Calaveras River on the east side of Stockton. From approximately October to April each year, the East Stockton Water District dams the Calaveras River at its fork with Upper Mormon Slough, diverting flows through Upper Mormon Slough and subsequently to the Stockton Diverting Canal.

From approximately April to October each year, flows are split between the Calaveras River and Upper Mormon Slough. A series of check dams are installed along the Calaveras River, Upper Mormon Slough, and the Stockton Diverting Canal to provide irrigation water for adjacent farmers. During this time, there are periods of limited or no flow in the Stockton Diverting Canal.

16. The Basin Plan at page II-2.00 states that: "Existing and potential beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for the Stockton Diverting Canal, but the Basin Plan does identify present and potential uses for the Calaveras River, to which the Stockton Diverting Canal is tributary.

The Basin Plan identifies the following existing **beneficial uses** of the Calaveras River, from New Hogan Reservoir to the Delta: municipal and domestic supply (MUN), agricultural supply (AGR) including both irrigation and stock watering; body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD), warm and cold migration of aquatic organisms (MIGR), warm and cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Industrial process supply (PRO) and industrial service supply (IND) are identified as a potential beneficial uses. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

The Basin Plan on page II-1.00 states: “Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...” and with respect to disposal of wastewaters states that “... disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.”

In reviewing whether the existing and/or potential beneficial uses of the Calaveras River apply to the Stockton Diverting Canal, the Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to the Stockton Diverting Canal based on State Board Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, the State Water Resources Control Board (SWRCB) has issued water rights to existing water users along Stockton Diverting Canal and the Calaveras River downstream of the discharge for domestic and irrigation uses. As noted above, municipal and domestic supply are identified as an existing beneficial use of the Calaveras River, with which the Stockton Diverting Canal exchanges water.

b. *Water Contact and Non-Contact Recreation and Esthetic Enjoyment*

The Board finds that the discharge flows through residential areas, and there is ready public access to the Stockton Diverting Canal and the Calaveras River. Exclusion of the public is unrealistic and contact recreational activities currently exist along the Stockton Diverting Canal, the Calaveras River, and downstream waters and these uses are likely to increase as the population in the area grows.

c. *Groundwater Recharge*

In areas or at times when groundwater elevations are below the Stockton Diverting Canal and/or Calaveras River bottom, water from the river will percolate to groundwater. Since flow in the Stockton Diverting Canal and/or Calaveras River is at times minimal, it is reasonable to assume that the stream water originating from the Stockton Diverting Canal is lost by evaporation, flow downstream and percolation to groundwater providing a source of municipal and irrigation water supply.

d. *Freshwater Replenishment*

There are periods of hydraulic continuity between the Stockton Diverting Canal and the Calaveras River. During periods of hydraulic continuity, the Stockton Diverting Canal contributes some or all of the water quantity and may impact the quality of water flowing down stream in the Calaveras River.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

The Basin Plan (Table II-1) designates the Calaveras River as being a cold freshwater habitat. The Stockton Diverting Canal exchanges water with the Calaveras River, diverting water from Morman Slough, which originates from the Calaveras River, back into the Calaveras River. There is aquatic habitat in the Stockton Diverting Canal and hydraulic continuity between the Canal and Calaveras River from the point of discharge from Outfall 001 to where the Canal discharges into the Calaveras River. Pursuant to the Basin Plan (Table II-1, Footnote (2)), and the presence of cold water aquatic habitat in the Stockton Diverting Canal, the cold designation is applicable to the Stockton Diverting Canal. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/L (ppm). This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/L (ppm), the Discharger is not required to improve the naturally occurring level.

Upon review of the flow conditions, habitat values, existing and potential beneficial uses of the Calaveras River, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Calaveras River are applicable to the Stockton Diverting Canal.

The Regional Board also finds that based on the available information and on the Discharger's application, that the Stockton Diverting Canal, absent the discharge, is at times a seasonal and/or ephemeral waterbody. This seasonal and/or ephemeral nature of the Stockton Diverting Canal means that the designated beneficial uses must be protected, but that no year-round credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, flows within the Stockton Diverting Canal help support the cold-water aquatic life. Both conditions may exist within a short time span, where the Stockton Diverting Canal would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Calaveras River. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during the irrigation season, and immediately following high rainfall events.

The Discharger may conduct flow monitoring of the Stockton Diverting Canal to determine the actual flow regime. To the extent seasonal assimilative capacity is available in the receiving water to accommodate constituents in the effluent which exceed reasonable potential criteria, this permit contains a re-opener to consider final effluent limitations based upon demonstrated assimilative capacity. However, effluent limitations contained in this permit do not account for the receiving waters having assimilative capacity. The Discharger may submit additional receiving water characterization to demonstrate the flow regime and pollutant assimilative capacity and ask the Regional Board to re-open the permit to consider this new information.

17. 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 (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP), which contains guidance on implementation of the NTR and the CTR.
18. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. The absence of a limitation for a constituent indicates either a lack of information is available for evaluation, or the constituent does not have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. As a means of collecting additional information necessary to conduct a complete reasonable potential analysis, this Order contains provisions that:
 - a. Require the Discharger to conduct a study and provide information as to whether the levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and NTR and CTR pollutants;
 - b. If pollutants in the discharge have 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 pollutants; and
 - c. Allow the Regional Board to reopen this Order and include effluent limitations for those pollutants.

On 10 September 2001, the Executive Officer issued a letter, in conformance with Section 13267 of the California Water Code, requiring the Discharger to prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its Attachments I through IV, are incorporated into this Order as Attachment E. This Order includes a Provision which is intended to be consistent with the requirements of Attachment E in requiring sampling and reporting of NTR, CTR, and additional constituents to determine if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard.

19. Sufficient effluent and receiving water flow data are available to determine that several constituents are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. These constituents and/or parameters include; copper, hexavalent chromium, total chromium, arsenic, total dissolved solids (TDS), chlorine residual, and toxicity. Effluent

limitations have been established or retained for these constituents as discussed in the following Findings of this Order.

20. Previous Order No. 93-221 included daily maximum and monthly average effluent limitations for **copper** based upon water quality objectives established by the California Inland Surface Waters Plan. Order No. 93-221 included a daily maximum limitation for copper of 6.5 micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb), and a monthly average limitation for copper of 6.5 $\mu\text{g/L}$ (ppb), which were adjusted based upon the observed receiving water hardness. New effluent limitations for copper have been established in this new Order based upon the reasonable potential to exceed freshwater aquatic life criteria in the CTR (new information). These new water quality based effluent limitations have been calculated based upon methodologies in the SIP. The specific calculations are further described in the attached Information Sheet.

Results of final effluent monitoring indicate maximum effluent concentrations (MEC's) of total copper concentrations as high as 23 $\mu\text{g/L}$ (ppb) (8/15/01) and 80 $\mu\text{g/L}$ (ppb) (10/19/01). Without regard to dilution, these MEC's exceed the acute aquatic life Criterion Maximum Concentration (CMC) and the chronic aquatic life Continuous Criterion Concentration (CCC) for copper (total), adjusted using the minimum observed receiving water hardness (6.5 $\mu\text{g/L}$ (ppb) and 4.6 $\mu\text{g/L}$ (ppb) respectively @ 44 mg/L (ppm) hardness as CaCO_3 (12/20/01)). Since the Stockton Diverting Canal provides, at times, little or no dilution, there is a reasonable potential for the discharge to cause or contribute to an excursion above water quality standards. Section 1.3 of the SIP requires a water quality based effluent limitation when the MEC exceeds appropriate pollutant criterion.

When required, Section 1.4 of the SIP provides four methods that may be used to develop effluent limitations. These four methods include: (1) assigning a loading allocation based upon a completed TMDL; (2) use of a steady state model; (3) use of a dynamic model; or, (4) establishing effluent limitations that consider intake water pollutants. Considering that the Stockton Diverting Canal may at times provide little or no assimilative capacity for copper, final water quality based effluent limitations have been developed using the steady state model, with no credit provided for dilution. Since a site-specific translator has not been developed for copper as described in the SIP Section 1.4.1, the USEPA conversion factor was used in expressing the dissolved copper criterion as total recoverable. Acute and chronic effluent concentration allowance's (ECA's) were set equal to the adjusted acute and chronic copper criterion, and the most limiting long-term average (LTA) discharge condition for copper was determined from Table 1 of the SIP, using a coefficient of variation of 0.6. The average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) were then calculated using multipliers in Table 2 of the SIP.

New final average monthly (3.3 $\mu\text{g/L}$ (ppb) @ 44 mg/L (ppm) hardness as CaCO_3) and daily maximum (6.5 $\mu\text{g/L}$ (ppb) @ 44 mg/L (ppm) hardness as CaCO_3) effluent limitations for copper (total) have been established in this Order in accordance with Sections 1.3 and 1.4 of the SIP

using the adjusted copper criteria. These limitations will be adjusted accordingly with results of corresponding receiving water monitoring for hardness. The Discharger operates treatment processes specific to the removal of copper. With proper operation of the existing treatment facilities, results of monitoring indicate the Discharger is capable of meeting the new daily maximum effluent limitation, therefore a time schedule for compliance with this limitation is not included in this new Order. However, results of monitoring are not sufficient to determine if the Discharger can meet the new monthly average effluent limitations for copper of 3.3 µg/L (ppb) (0.02 pounds per day) @ 44 mg/L (ppm) hardness as CaCO₃. Data submitted by the Discharger indicates that, when the facility is properly operated, final effluent concentrations of copper are reported to be less than the detection limit of 5 µg/L (ppb). Historical data are not of sufficient quality to determine compliance with the new monthly average limitation. Detection of copper to 0.5 µg/L (ppb) is feasible in accordance with the SIP. This Order includes a Provision which requires the Discharger to collect data sufficient to determine compliance with this new monthly average effluent limitation for copper.

As provided in Section 2.1 of the SIP, a time schedule is included in this Order to allow the Discharger to achieve compliance with the new monthly average effluent limitations for copper. In accordance with the SIP, Sections 2.2, a numeric monthly average interim limitation for copper is established in this Order based upon current treatment facility performance. Since the treatment facilities can, when properly operated, produce and effluent with copper concentrations less than 5 µg/L (ppb), this Order includes a performance based interim average monthly effluent limitation for copper set at this historical limit of detection of 5 µg/L (ppb). If a compliance schedule justification is submitted by 31 May 2003, this interim limitation shall be an enforceable limitation until the final monthly average effluent limitation becomes effective on **1 February 2008**.

21. Previous Order No. 93-221 included daily maximum and monthly average effluent limitations for **hexavalent chromium** based upon water quality objectives established by the California Inland Surface Waters Plan. Order No. 93-221 included a daily maximum limitation for hexavalent chromium of 11 µg/L (ppb), and a monthly average limitation for hexavalent chromium of 11 µg/L (ppb). New limits for hexavalent chromium have been established in this new Order based upon the reasonable potential to exceed the chronic freshwater aquatic life criterion in the CTR (new information). Results of final effluent monitoring indicate maximum effluent concentrations (MEC's) of hexavalent chromium have been high as 17 µg/L (ppb) (9/15/00). Without regard to dilution, this MEC exceeds the acute aquatic life Criterion Maximum Concentration (CMC) and the chronic aquatic life Continuous Criterion Concentration (CCC) for hexavalent chromium (16 µg/L (ppb) and 11 µg/L (ppb) respectively). New water quality based effluent limitations have been calculated based upon methodologies in the SIP. The specific calculations are further described in the attached Information Sheet.

Considering that the Stockton Diverting Canal may at times have little or no flow and provide little or no assimilative capacity for hexavalent chromium, final water quality based effluent limitations have been developed using the steady state model in the SIP, with no credit provided

for dilution. The acute and chronic effluent concentration allowance's (ECA's) were set equal to the aquatic life criterion for hexavalent chromium, and the most limiting long-term average (LTA) discharge condition was determined using Table 1 of the SIP, using a default coefficient of variation of 0.6. The average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) were then calculated using multipliers in Table 2 of the SIP.

New final average monthly (8.0 µg/L (ppb)) and daily maximum (16 µg/L (ppb)) effluent limitations for hexavalent chromium have been established in this Order in accordance with Sections 1.3 and 1.4 of the SIP. With proper operation of the existing treatment facilities, the Discharger is capable of meeting these new limitations, therefore a time schedule for compliance is not included in this new Order.

22. Previous Order No. 93-221 included effluent limitations for **total chromium** based upon the protection of human health. For Chemical Constituents at page III-3.00, the Basin Plan states '*At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations...*' As a result, and considering the fact that the Stockton Diverting Canal provides little or no dilution, this Order retains the 50 µg/L (ppb) monthly average effluent limitation for total chromium which is necessary to comply with the primary California MCL contained in Title 22, California Code of Regulations (CCR) and incorporated as chemical constituent water quality objectives in the Basin Plan. The Discharger operates treatment facilities specific to the removal of chromium. Results of effluent monitoring indicate the treatment facilities, when properly operated, are capable of reducing concentrations of total chromium below this existing limitation.
23. Previous Order No. 93-221 included effluent limitations for **arsenic** based upon the protection of human health. The Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, water designated for use as domestic and/or municipal supply shall not contain concentrations of chemical constituents in excess of maximum contaminant levels (MCL's). The new USEPA primary MCL for arsenic is 10 µg/L (ppb). Federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allow the state to establish effluent limitations using an explicit state policy interpreting its narrative objectives. Use of the USEPA Primary MCL is appropriate to implement the narrative chemical constituent objective. Results of effluent monitoring indicate concentrations of arsenic in the final effluent are below this existing limitation. Therefore, the existing monthly effluent limitation of 10 µg/L (ppb) for arsenic is retained in this new Order.
24. Previous Order No. 93-221 included a daily maximum and monthly average effluent limitation of 1000 mg/L (ppm) for Total Dissolved Solids (TDS). Concentrations of **Total Dissolved Solids** (TDS) in extracted groundwater range from 330 to 860 mg/L (ppm). As a result of the treatment process, final effluent concentrations of TDS at Outfall 001 have been reported as high as 976 mg/L (ppm) (10/15/01). For Chemical Constituents at page III-3.00, the Basin Plan states

‘At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations...’
As a result, and considering the fact that the Stockton Diverting Canal has, at times, little or no flow and therefore provides little or no dilution, this Order includes a new 500 mg/L (ppm) monthly average effluent limitation for TDS applied at the point of discharge which is necessary to comply with the secondary California MCLs contained in Title 22, California Code of Regulations (CCR) and incorporated as chemical constituent water quality objectives in the Basin Plan. There are no USEPA TDS water quality criteria for protection of aquatic organisms. However, its presence can be growth limiting to certain agricultural crops and TDS affects the taste of water for human consumption.

The Regional Board has considered the factors specified in California Water Code (CWC) Section 13263, including considering the provisions of CWC Section 13241 where appropriate. The Regional Board is not required to consider the factors in CWC Section 13241 in applying existing water quality objectives of the Basin Plan, including adopting the new monthly average TDS effluent limitation in this Order.

The Regional Board must implement the CWC consistent with the Clean Water Act (CWA). The CWA precludes the consideration of costs when developing effluent limitations for NPDES permits necessary to implement water quality standards (See *Ackels v. EPA* (9th Cir. 1993) 7 F.3d 862, 865-66). The Regional Board may consider costs in developing compliance schedules. The Regional Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the Stockton Diverting Canal and the Calaveras River. This Order provides for time schedules for meeting this new average monthly effluent limitation. Time schedules are authorized to be included in this Order based upon 40 CFR Section 122.47.

Currently, monthly average concentrations of TDS in the final effluent exceed the new effluent limitation established in this Order. The Regional Board, however, does not have sufficient information to determine if there is reasonable potential to violate the narrative water quality objective as it pertains to the AGR beneficial use. Preliminary data provided by the Discharger indicate the SDC may provide some dilution and have some limited assimilative capacity for TDS, however, the receiving water characteristics have not been fully evaluated with respect to TDS. The Discharger may elect to further study the characteristics and potential assimilative capacity of the SDC, consider the appropriateness of the MUN and/or AGR beneficial use designation of the SDC, and/or consider disposal and treatment alternatives. As this is a new effluent limitation, the Discharger has not had an opportunity to conduct additional studies, undertake a Basin Plan amendment study, or provide a cost estimate for additional treatment or alternative disposal methods which may be necessary to comply with this limitation. A time schedule for compliance with this new TDS effluent limitation is provided in a Provision of this Order. In the interim, this Order retains the average monthly limitation for TDS in the previous Order of 1000 mg/L (ppm), as results of monitoring indicate the Discharger is capable of meeting this existing limitation.

The new final effluent limitation for TDS effective 1 February 2008 may not be fully protective of the SDC for unlimited AGR use under all conditions. The TDS water quality criteria concentration for unrestricted AGR use, considering application of water to the most sensitive crops, is lower than the MUN water quality protective criteria (450 mg/L, ppm). This TDS concentration also corresponds to the SWRCB's Salinity Plan's promulgated standards of 700 umhos/cm EC during summer months (April through August) and 1000 umhos/cm EC during the remainder of the year. As noted previously, the summer months coincide with the lowest reported flows in the SDC, when limited or no water is available due to the diversion for AGR use upstream of the SDC. The appropriate TDS water quality criteria concentration for AGR in the SDC downstream of the discharge may be influenced by other conditions including site specific soil types and precipitation patterns. Evaluation of these factors may result in the protective water quality criteria for the AGR beneficial remaining below, or adjusted above the criteria concentration protective of the MUN beneficial use. At this time it is not known whether the criteria for MUN or AGR is controlling. Provisions of this Order allow the Discharger time to; study the hydrologic characteristics of the SDC, consider the Basin Plan amendment process and de-designation of beneficial uses, study site specific conditions that affect the AGR water quality criteria concentration, and/or, evaluate alternative treatment or disposal options. Without new information concerning site specific conditions and water quality criteria concentrations protective of the AGR beneficial use, it may be necessary to reduce the current final effluent limitation from 500 mg/l to 450 mg/l during the summer months. Upon conclusion of the studies, this Order may be reopened to consider any new information and modification of the effluent limitation.

25. Results of monitoring submitted by the Discharger for the period of January 2001 through May 2002 indicate effluent **chlorine residual** concentrations have ranged from less than detectable concentrations to 0.2 milligrams per liter (ppm) (13 June 2001).

The Basin Plan does not provide a numeric water quality objective for chlorine, but the Basin Plan does contain a narrative toxicity objective. At p.III-9.00 the Basin Plan provides that relative to toxicity: *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* At page 1, the USEPA's Technical Support Document for Water Quality-based Toxics Control (TSD) provides that *"Where States have not developed chemical specific numeric criteria, States may interpret their narrative standards for specific chemicals by using EPA criteria updated with current quantitative risk values."* The TSD further states on page 1 *"The integrated approach must include the control of toxics through implementation of the "no toxics" criterion and/or numeric criteria for the parameter of toxicity, the control of individual pollutants for which specific chemical water quality criteria exist in a state's standard, as well as the use of biological criteria. Reliance solely on the chemical specific numeric criteria or the narrative criterion or biological criteria would result in only a partially effective State toxics control program."*

For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for

determining reasonable potential, which relies on USEPA criteria and other information. The Regional Board chose this method because USEPA's recommended ambient water quality criteria for chlorine have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/L (ppb) as a 4-day average (chronic) concentration, and 19 µg/L (ppb) as a 1-hour average (acute) concentration for total residual chlorine. Based upon results of monitoring, the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. This Order includes new maximum daily (0.02 mg/L (ppm)) and average monthly (0.01 mg/l (ppm)) effluent limitations for residual chlorine based upon the USEPA criteria. Previous Orders did not include effluent limitations for chlorine. The source of chlorine is unknown, therefore it is unknown whether the Discharger can immediately comply with these new limitations. Dechlorination techniques are readily available for interim treatment to maintain compliance with these new limitations.

26. In the past, results of effluent chronic **toxicity** testing using EPA/600/4-91/002 have indicated sporadic instances of sub lethal test organism impacts. Also, previous Order No. 93-221 included an effluent limitation for acute toxicity. This new Order retains an effluent limitation for acute toxicity, and includes continued monitoring of effluent and receiving water for chronic toxicity.
27. The beneficial uses of the underlying groundwater are municipal and domestic, industrial, and agricultural supply.
28. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and SWRCB Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.
29. 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), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.
30. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Relations Code Section 21000, et. Seq.), in accordance with Section 13389 of the California Water Code.
31. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order. Attachments A, B, C, D, and E are also a part of this Order.

32. 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.
33. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
34. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect 50 days following permit adoption (effective 3 May 2003), provided EPA has no objections.
35. Any person adversely affected by this action of the Regional Board may petition the SWRCB to review the action. The petition must be received by the State Board Office of the Chief Counsel, P.O. Box 100, Sacramento, CA 95812-0100, within 30 days of the date the action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.

IT IS HEREBY ORDERED that Order No. 93-221 is rescinded and that the SPX Corporation, Marley Cooling Tower Company, 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. Discharge of treated wastewater at a location or in a manner different from that described in Findings No. 3-10 is prohibited.
2. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.
3. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13 [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)].

B. Effluent Limitations: (Discharge from Outfall 001 to the Stockton Diverting Canal)

1. The discharge shall not have a pH less than 6.5 nor greater than 8.5.
2. The daily maximum discharge flow shall not exceed 0.94 million gallons per day (mgd).
3. The monthly average discharge flow shall not exceed 0.72 mgd.
4. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay - - - - - 70%
 Median for any three or more consecutive bioassays - - - - 90%

5. Effluent shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>
Copper (Total)	µg/L (ppb)	6.5 ³	5.0 ⁵
	lbs/day	0.51 ^{1,3}	0.03 ^{2,5}
	µg/L (ppb)	---	3.3 ^{3,4}
	lbs/day	---	0.02 ^{2,3,4}
Total Chromium	µg/L (ppb)	---	50
	lbs/day	---	0.3 ²
Hexavalent Chromium	µg/L (ppb)	16	8.0
	lbs/day	0.13 ¹	0.05 ²
Arsenic (Total)	µg/L (ppb)	---	10
	lbs/day	---	0.06 ²
Total Dissolved Solids	mg/L (ppm)	1000	500 ⁶
	lbs/day	7840 ¹	3002 ^{2,6}
Total Residual Chlorine	mg/L (ppm)	0.02	0.01
	lbs/day	0.08 ¹	0.12 ²

¹ Based upon maximum daily design treatment capacity of 0.94 mgd.

² Based upon monthly average flow limitation of 0.72 mgd.

³ At 44 mg/l hardness as CaCO₃ upstream in the Stockton Diverting Canal (SDC). At other hardness values, use Attachment D or adjust copper criterion from CTR in accordance with 40 CFR 131.38(b)(2). If there is no flow in the SDC, use effluent hardness valuse. Use adjusted criterion as Effluent Concentration Allowance (ECA) and calculate the average monthly and daily maximum effluent limitations in accordance with the SIP Section 1.4.

⁴ Final effluent limitations effective 1 June 2003, unless compliance schedule justification is submitted. Otherwise, these final limits become effective 1 February 2008.

⁵ Interim limits effective until 31 May 2003 unless compliance schedule justification is submitted. Otherwise, these interim limitations are effective until 31 January 2008.

⁶ This effluent limitation shall become effective 1 February 2008.

C. Discharge Specifications (Soil Flushing): Full capture of reinjected soil flushing water shall be maintained at all times.

D. Sludge Disposal:

1. Collected screenings, sludges, 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, CCR, Division 2, Subdivision 1, Section 20005, et seq.
2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer and EPA Regional Administrator at least **90 days** in advance of the change.

E. 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. 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 (ppm). The monthly median of the mean daily dissolved oxygen concentration at this location shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation.
2. Any individual pesticide or combination of pesticides to be present in concentrations that adversely affect beneficial uses, and total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.
3. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
4. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

5. Aesthetically undesirable discoloration.
6. Fungi, slimes, or other objectionable growths.
7. The turbidity to increase as follows:
 - 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.
8. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 pH units.
9. Deposition of material that causes nuisance or adversely affects beneficial uses.
10. The normal ambient temperature to increase more than 5°F.
11. 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.
12. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
13. 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.
14. Violations 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.
15. 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.

F. Groundwater Limitation: The discharge of treated water to the soil flushing area shall not degrade groundwater quality outside of the recapture zone.

G. Provisions:

1. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0030, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
2. The discharge may contain constituents that have reasonable potential to cause or contribute to an exceedance of NTR, CTR water quality criteria, or other constituents that could exceed narrative or numeric water quality objectives in the Basin Plan. The specific constituents of concern are listed in the *Requirement to Submit Monitoring Data* letter issued by the Executive Officer on 10 September 2001. A copy of that letter, including its Attachments I through IV, are incorporated into this Order as Attachment E. The results of this effluent and receiving water study were submitted in March 2003. 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 objective this Order will be reopened and effluent limitations added for the subject constituents.
3. **TDS, Effluent Limitation Time Schedule:** Effluent Limitation B.5 requires the Discharger to comply with a new monthly average effluent limitation for TDS of 500 mg/L (ppm) by **1 February 2008**. The Discharger shall comply with the following time schedule in order to study and implement measures necessary to comply with this new limitation:

<u>Task</u>	<u>Compliance Date</u>
Submit Compliance Alternatives Study Workplan	1 September 2003
Submit Compliance Alternatives Study Report	1 January 2005
Submit Implementation Plan and Time Schedule for Selected Alternative(s)	1 July 2005
Submit Progress Report	1 January 2006
Submit Progress Report	1 January 2007
Achieve Full Compliance	1 February 2008

The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus 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.

4. **Copper, Effluent Limitation Time Schedule:** Effluent Limitation B.5 requires the Discharger to comply with new monthly average effluent limitations for total copper. It is unknown if the Discharger can comply with these new limitations. Additional copper data

must be provided with a minimum detection level below the controlling water quality criterion concentration. Within **eighty (80) days** of adoption of this Order the Discharger shall complete and submit a compliance schedule justification for copper. The compliance schedule justification shall include all applicable items specified by the SIP Section 2.1, Paragraph 3 (items (a) through (d)). Implementation of the new water quality based effluent limitations for copper become effective on **1 June 2003** if a compliance schedule justification meeting the requirements of Section 2.1 of the SIP is not completed and submitted by the Discharger. Otherwise the new final water quality based effluent limitations for copper required by this Order shall become effective on **1 February 2008**. As this schedule is greater than one year, the Discharger shall submit semi-annual progress reports on **15 January** and **15 July** each year until the Discharger achieves compliance with the final water quality based effluent limitations for copper.

5. **Dilution/Assimilative Capacity Study:** Effluent limitations contained in this permit do not account for assimilative capacity in the receiving water. The Discharger may elect to conduct a study of the flow conditions in the Stockton Diverting Canal and submit additional receiving water characterization to demonstrate the flow regime and pollutant assimilative capacity, and may request the Regional Board to re-open the permit to consider this new information.
6. **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, 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 will 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 SWRCB, this Order may be reopened and a limitation based on that objective included.
7. **Reopeners:** This Order may be reopened and effluent and/or receiving water limitations modified based on information supplied as required above.
8. **Release Prevention/Contingency Measures Plans:** The Discharger shall, by **1 May 2003**, submit and implement release prevention and contingency measures plans for minimizing and controlling potential accidental discharges and for minimizing the effects of such events. These Plans shall include proposed modifications to the treatment system and describe implementation of additional monitoring and inspections in the event of an accidental discharge or spill.

9. The Discharger shall comply with all 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 Provisions.”
10. The Discharger shall use the best practicable control to limit mineralization to no more than a reasonable increment.
11. This Order expires on **1 March 2008** 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.
12. 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 SWRCB (Division of Water Rights).
13. In the event of any change in control or ownership of land or waste discharge facilities recently 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.
14. 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, 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, 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 13 March 2003.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0030

NPDES NO. CA0081787
FOR
SPX CORPORATION
MARLEY COOLING TOWER COMPANY
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SAN JOAQUIN COUNTY

For purposes of evaluating compliance with the limitations of Order No. R5-2003-0030, the Discharger shall conduct monitoring and submit reports as specified below. To evaluate compliance with the limitations of this Order, monitoring should occur within a brief enough period to be able to evaluate the effect of the effluent on the ambient water quality. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program.

INFLUENT MONITORING

Influent samples shall be collected from each of the two treatment systems (ion-exchange and electrochemical reduction and precipitation) and should be representative of the influent to each system for the period sampled. Where applicable, the influent shall be collected at approximately the same time as effluent samples.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Total Dissolved Solids	mg/L ¹ , ppm ²	Grab	<u>Quarterly</u>
Total Chromium	µg/L ³ , ppb ⁴	Grab	Quarterly
Copper (Total)	µg/L ³ , ppb ⁴	Grab	Quarterly
<u>Arsenic (Total)</u>	µg/L ³ , ppb ⁴	Grab	Quarterly

¹ milligrams per Liter.

² parts per million.

³ micrograms per Liter.

⁴ parts per billion.

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Time of collection of samples shall be recorded. The Effluent monitoring shall include at least the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Flow	mgd	Cumulative/Meter	Continuous
pH ³	pH units	Grab	Monthly

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Electrical Conductivity @25°C ³	µmhos/cm	Grab	Monthly
Temperature ³	°F	Grab	Monthly
Dissolved Oxygen ³	mg/L (ppm)	Grab	Monthly
Chlorine Residual	mg/L (ppm) lbs/day	Grab	Monthly
Hardness (as CaCO ₃) ¹	mg/L (ppm)	Grab	Monthly
Total Dissolved Solids	mg/L (ppm)	Grab	Monthly
Total Suspended Solids	mg/L (ppm)	Grab	Monthly
Total Chromium ²	µg/l (ppb) lbs/day	Grab	Monthly
Hexavalent Chromium ²	µg/l (ppb) lbs/day	Grab	Monthly
Copper (Total) ²	µg/l (ppb) lbs/day	Grab	Monthly
Arsenic (Total) ²	µg/l (ppb) lbs/day	Grab	Monthly
Iron (Total)	µg/l (ppb)	Grab	Quarterly
Turbidity	NTU	Grab	Monthly
<u>Acute Toxicity</u> ⁴	% Survival	Grab	Quarterly

¹ Concurrent with metals monitoring.

² At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), adopted 2 March 2000 by the State Water Resources Control Board. For each priority pollutant use an analytical method from the SIP, Appendix 4 with a Minimum Level (ML) below all applicable pollutant criteria. In accordance with Section 2.4.2 of the SIP, the Discharger is to instruct the laboratory analyzing samples for priority pollutants to establish calibration standards so that the ML is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve. Report all peaks identified by the EPA test methods.

³ Field measurements.

⁴ The acute bioassays samples shall be analyzed using EPA-821-R-02-012, Fifth Edition, or later amendment with Board staff approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be fathead minnows (*Pimephales promelas*).

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.

RECEIVING WATER MONITORING

During periods of flow in the Stockton Diverting Canal monitoring of receiving water quality is to be included in the Monitoring and Reporting Program. All receiving water samples shall be grab samples. Receiving water monitoring shall include at least the following:

<u>Station</u>	<u>Description</u>
Main Street Bridge, R-1	7500 feet upstream from the point of discharge
Fremont Street Bridge, R-2	1450 feet downstream from the point of discharge

<u>Constituents</u>	<u>Units</u>	<u>Station</u>	<u>Sampling Frequency</u>
Flow ³	cfs	R-1	Monthly
pH ⁴	pH Units	R-1, R-2	Monthly
Electrical Conductivity @25°C ⁴	µmhos/cm	R-1, R-2	Monthly
Dissolved Oxygen ⁴	mg/L (ppm)	R-1, R-2	Monthly
Temperature ⁴	°F	R-1, R-2	Monthly
Total Chromium ¹	µg/L (ppb)	R-1, R-2	Quarterly
Hexavalent Chromium ¹	µg/L (ppb)	R-1, R-2	Quarterly
Copper (Total) ¹	µg/L (ppb)	R-1, R-2	Quarterly
Arsenic (Total) ¹	µg/L (ppb)	R-1, R-2	Quarterly
Total Dissolved Solids	mg/L (ppm)	R-1, R-2	Quarterly
Hardness (as CaCO ₃) ²	mg/L (ppm)	R-1, R-2	Quarterly
Total Suspended Solids	mg/L (ppm)	R-1, R-2	Quarterly
Total Organic Carbon	mg/L (ppm)	R-1, R-2	Quarterly
<u>Turbidity</u>	NTU	R-1, R-2	Quarterly

¹ At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), adopted 2 March 2000 by the State Water Resources Control Board. For each priority pollutant use an analytical method from the SIP, Appendix 4 with a Minimum Level (ML) below all applicable pollutant criteria. In accordance with Section 2.4.2 of the SIP, the Discharger is to instruct the laboratory analyzing samples for priority pollutants to establish calibration standards so that the ML is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve. Report all peaks identified by the EPA test methods.

² Concurrent with priority pollutant metals analyses.

- ³ Estimate of receiving water flow, recorded for each day of sample collection. Use nearby gauging station if available.
- ⁴ Field measurements.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 and R-2. Attention shall be given to the presence 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 reports.

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the Stockton Diverting Canal (SDC). The testing shall be conducted as specified in USEPA Method EPA-821-R-02-013, Fourth Edition, or later amendment. Chronic toxicity samples shall be collected at the discharge of the Marley Cooling Tower Company treatment system prior to its entering Stockton Diverting Canal. Grab samples shall be representative of the volume and quality of the discharge. Time of collection samples 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, Ceriodaphnia dubia, and Selenastrum capricornutum*
 Frequency: Quarterly

The Discharger shall conduct the chronic toxicity test using 100% effluent and 2 controls. If no toxicity is found in any of the tests during the first year of quarterly testing, the frequency of testing shall be reduced to annually. If toxicity is found in any of the effluent tests, the Discharger must immediately retest using the full sampling protocol of 5 dilutions listed below, and quarterly testing must be conducted for the duration of the permit.

Dilution Series:	Dilutions (%)					Controls	
	100	50	25	12.5	6.25	SDC Water	Lab Water
% GWTP Effluent	100	50	25	12.5	6.25	0	0
% Dilution Water*	0	50	75	87.5	93.75	100	0
% Lab Water	0	0	0	0	0	0	100

* Dilution water shall be receiving water from Stockton Diverting Canal taken upstream from the discharge point.

REPORTING

Monitoring reports shall be submitted to the Regional Board by the **first day** of the second month following sample collection. Semi-annual and annual monitoring results shall be submitted by the **first day of the second month following each calendar semi-annual period, 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, monthly and weekly averages, and medians, and 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 **1 February** 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).
- c. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the groundwater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for accuracy.

The Discharger may also be requested to submit an annual report to the 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.

The Discharger shall submit, in addition to the groundwater monitoring report for the last sampling event of the year, an annual evaluation report of the groundwater quality beneath the site and surroundings, hydraulic capture analysis, cleanup progress, discussion of any data gaps and potential deficiencies in the monitoring system, treatment system performance, and any recommendations to potentially accelerate site cleanup progress or any modifications to enhance cleanup.

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, Executive Officer

13 March 2003

(Date)

SRT/JME/ksa

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2003-0030
SPX CORPORATION
MARLEY COOLING TOWER COMPANY
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SAN JOAQUIN COUNTY

Site Description and Background

The Marley Cooling Tower Company (MCTC), a wholly owned subsidiary of SPX Corporation (hereafter Discharger) owns and operates a groundwater extraction and treatment system in the East Stockton Area of San Joaquin County. The Discharger previously operated a cooling tower fabrication plant at the site which included a wood preservation process using solutions containing copper, chromium and arsenic. Wood preserving was discontinued at this facility in January 1991, however past operational practices have resulted in contamination of soils and groundwater underlying the site. Soils have been contaminated with copper, chromium, and arsenic; groundwater has been contaminated with chromium and copper.

On 28 November 1984 the Regional Board ratified a Settlement Agreement between the Department of Health Services (now Department of Toxic Substances Control (DTSC)), the Discharger, and the Regional Board. This Settlement Agreement required the Discharger to conduct a Remedial Investigation/Feasibility Study (RI/FS) to define the extent of contamination, to develop a Remedial Action Plan (RAP), and to implement all measures necessary to remediate existing site contamination. Following discussions with Regional Board staff, DTSC formally adopted the RAP on 29 August 1990. The RAP included the conceptual design of the groundwater remediation project. The recommended groundwater remedial action in the RAP includes the extraction, treatment, and discharge of contaminated groundwater.

To minimize dewatering of the local aquifer and to aid in flushing of contaminants, approximately 5% of the treated water is reinjected into shallow soils in the area of a closed retort pit. The injected water is then recaptured by the groundwater extraction system.

The discharge of treated groundwater to the Stockton Diverting Canal was previously regulated by Waste Discharge Requirements (WDR) Order No. 93-221, NPDES Permit No. CA0081787, which was adopted by the Regional Board on 22 October 1993. Under this Order, the Discharger was permitted to extract groundwater and discharge a maximum of 0.94 million gallons per day (mgd) of treated groundwater and storm water runoff to the Stockton Diverting Canal, a water of the United States and a tributary to the Calaveras River.

Groundwater Treatment Processes

The groundwater treatment system at the plant includes an electrochemical reduction and precipitation unit operating in parallel to an ion exchange treatment system.

The ion exchange system consists of two anion exchange vessels and a cation exchange vessel. In the anion exchange vessels, hexavalent chromium in the water is adsorbed onto the ion exchange resins. In the cation exchange vessel, trivalent chromium and copper are adsorbed. The exchange process continues until the resin's exchange sites are filled and exchange capacity is exhausted. The adsorbed wood treating chemicals are stripped from the ion exchange resins and the resins are

conditioned for additional water treatment in a process called regeneration. During regeneration, which occurs approximately every 2.5 days, 15,000 gallons of solution containing the stripped chemicals is removed from the ion exchange system and processed through the electrochemical unit.

The electrochemical unit consists of an electrochemical reduction (Andco) and precipitation process which uses iron as the reducing agent for the hexavalent chromium followed by iron co-precipitation using pH adjustments. The addition of polymers and further pH adjustments are used to optimize settling. The effluent is then filtered prior to discharge. The solids from the clarifier are pumped and accumulated in a filter press. The filter press filtrate and mixed media filter backwash are returned to the treatment plant for further treatment. Filter press cake has been characterized as a California hazardous waste, and is collected in roll off bins for off-site disposal.

The site is divided into two areas, the North Yard and the South Yard. All past wood treatment activities were conducted on the North Yard. Rain falling on the North Yard becomes contaminated after contact with treated cooling tower components. This contaminated rainwater is collected in a storm drain system and is passed through the treatment plant in the northeast portion of the site. Due to the past practice of storing treated wood products on the MCTC South Yard, some wood treating chemicals had been detected in the storm water runoff from the South Yard. The South Yard surface has been cleaned and residual contamination in pipes and ditches removed as part of the remedial actions undertaken by the Discharger.

The groundwater treatment facility is designed to treat a maximum flow up to 0.94 mgd. Groundwater is extracted from approximately 17 extraction wells on and off-site. The groundwater extraction system can operate in a cyclical fashion with each of the two cycles lasting 56 hours or on a continuous basis with all extraction wells pumping at rates varying from 10-90 gallons per minute depending on effective capture of the groundwater contamination plume. When cycling, primary groundwater extraction is alternated between the north zone and the area south of the site. Water extracted from the north zone has higher contaminant concentrations. During south zone pumping, the capacity of the treatment plant is not fully utilized unless supplemental waste sources are added. Flushing water may be added to supplement the groundwater contaminant concentrations. Additionally, when sufficient storm water is accumulated on the North Yard to justify treatment, the operator will manually initiate storm water treatment through the Andco system. Groundwater from selected wells will simultaneously be delivered to the ion exchange treatment system.

On 16/17 September 2002, a system malfunction resulted in discharge of a high pH water and fish-kill in the Stockton Diverting Canal. This Order includes a provision that the Discharger submit and implement a release preventive plan and a contingency plan to minimize the potential for future accidental discharges.

The Report of Waste Discharge (RWD) and previous information submitted by the Discharger describes the combined storm water and groundwater characteristics and the treatment system

performance characteristics as follows:

Monthly Average Flow:	0.72 mgd
Daily Maximum Flow, Treatment Plant Capacity:	0.94 mgd
Average Temperature:	68° F (groundwater)
pH:	7.0 – 7.5 (groundwater)

<u>Constituent</u>	<u>Storm Water (mg/L, ppm)</u>	<u>Groundwater (mg/L, ppm)</u>
Total Chromium	1.0 – 3.0	0.16 – 14
Chromium VI	0.5 – 2.5	0.16 – 14
Copper	0.50 – 2.5	< 0.01
Arsenic	0.05 – 0.20	<0.1
Total Dissolved Solids (TDS)		500 - 650

Receiving Water

The Upper Mormon Slough drainage course originates from the Calaveras River near Bellota. The Upper Mormon Slough drainage course then flows west-southwest from Bellota, south of the Calaveras River. The **Stockton Diverting Canal**, which receives the discharge from Outfall 001, is an engineered drainage which re-connects Upper Mormon Slough to the Calaveras River on the east side of Stockton. From approximately October to April each year, the East Stockton Water District dams the Calaveras River at its fork with Upper Mormon Slough, diverting flows through Upper Mormon Slough and the Stockton Diverting Canal.

From approximately April to October each year, flows are split between the Calaveras River and Upper Mormon Slough. A series of check dams are installed along the Calaveras River, Upper Mormon Slough, and the Stockton Diverting Canal to provide irrigation water for adjacent farmers. During this time, there are periods of limited or no flow in the Stockton Diverting Canal.

Beneficial Uses

The Basin Plan at page II-2.00 states that: “Existing and potential beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams.” The Basin Plan does not specifically identify beneficial uses for the Stockton Diverting Canal, but the Basin Plan does identify present and potential uses for the Calaveras River, to which the Stockton Diverting Canal is tributary.

The Basin Plan identifies the following existing **beneficial uses** of the Calaveras River, from New Hogan Reservoir to the Delta: municipal and domestic supply (MUN), agricultural supply (AGR) including both irrigation and stock watering; body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD), warm and cold migration of aquatic organisms (MIGR), warm and

cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Industrial process supply (PRO) and industrial service supply (IND) are identified as a potential beneficial uses. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

The Basin Plan on page II-1.00 states: "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning..." and with respect to disposal of wastewaters states that "... disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."

In reviewing whether the existing and/or potential beneficial uses of the Calaveras River apply to the Stockton Diverting Canal, the Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to the Stockton Diverting Canal based on State Board Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, the State Water Resources Control Board (SWRCB) has issued water rights to existing water users along Stockton Diverting Canal and the Calaveras River downstream of the discharge for domestic and irrigation uses. As noted above, municipal and domestic supply are identified as an existing beneficial use of the Calaveras River, with which the Stockton Diverting Canal exchanges water.

b. *Water Contact and Non-Contact Recreation and Esthetic Enjoyment*

The Board finds that the discharge flows through residential areas, and there is ready public access to the Stockton Diverting Canal and the Calaveras River. Exclusion of the public is unrealistic and contact recreational activities currently exist along the Stockton Diverting Canal, the Calaveras River, and downstream waters and these uses are likely to increase as the population in the area grows.

c. *Groundwater Recharge*

In areas or at times when groundwater elevations are below the Stockton Diverting Canal and/or Calaveras River bottom, water from the river will percolate to groundwater. Since flow in the Stockton Diverting Canal and/or Calaveras River is at times minimal, it is reasonable to assume that the stream water originating from the Stockton Diverting Canal is lost by evaporation, flow downstream and percolation to groundwater providing a source of municipal and irrigation water supply.

d. *Freshwater Replenishment*

There are periods of hydraulic continuity between the Stockton Diverting Canal and the Calaveras River. During periods of hydraulic continuity, the Stockton Diverting Canal contributes some or all of the water quantity and may impact the quality of water flowing down stream in the Calaveras River.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

The Basin Plan (Table II-1) designates the Calaveras River as being a cold freshwater habitat. The Stockton Diverting Canal exchanges water with the Calaveras River, diverting water from Mormon Slough, which originates from the Calaveras River, back into the Calaveras River. There is aquatic habitat in the Stockton Diverting Canal and hydraulic continuity between the Canal and Calaveras River from the point of discharger from Outfall 001 to where the Canal discharges into the Calaveras River. Pursuant to the tributary rule and Basin Plan (Table II-1, Footnote (2)), and the presence of cold water aquatic habitat in the Stockton Diverting Canal, the cold designation is applicable to the Stockton Diverting Canal. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/L (ppm). This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/L (ppm), the Discharger is not required to improve the naturally occurring level.

Upon review of the flow conditions, habitat values, existing and potential beneficial uses of the Calaveras River, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Calaveras River are applicable to the Stockton Diverting Canal.

The Regional Board also finds that based on the available information and on the Discharger's application, that the Stockton Diverting Canal, absent the discharge, is at times a seasonal and/or ephemeral waterbody. This seasonal and/or ephemeral nature of the Stockton Diverting Canal means that the designated beneficial uses must be protected, but that no year-round credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, flows within the Stockton Diverting Canal help support the cold-water aquatic life. Both conditions may exist within a short time span, where the Stockton Diverting Canal would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Calaveras River. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during the irrigation season, and immediately following high rainfall events.

The Discharger may conduct flow monitoring of the Stockton Diverting Canal to determine the actual flow regime. To the extent seasonal assimilative capacity is available in the receiving water

to accommodate constituents in the effluent which exceed reasonable potential criteria, this permit contains a re-opener to consider final effluent limitations based upon demonstrated assimilative capacity. However, effluent limitations contained in this permit do not account for the receiving waters having assimilative capacity. The Discharger may submit additional receiving water characterization to demonstrate the flow regime and pollutant assimilative capacity and ask the Regional Board to re-open the permit to consider this new information.

CTR, NTR, and SIP

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 (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP), which contains guidance on implementation of the NTR and the CTR.

Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. The absence of a limitation for a constituent indicates either a lack of information is available for evaluation, or the constituent does not have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. As a means of collecting additional information necessary to conduct a complete reasonable potential analysis, this Order contains provisions that:

Require the Discharger to conduct a study and provide information as to whether the levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and NTR and CTR pollutants;

If pollutants in the discharge have 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 pollutants; and

Allow the Regional Board to reopen this Order and include effluent limitations for those pollutants.

On 10 September 2001, the Executive Officer issued a letter, in conformance with Section 13267 of the California Water Code, requiring the Discharger to prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its Attachments I through IV, are incorporated into this Order as Attachment E. This Order includes a Provision which is intended to be consistent with the requirements of Attachment E in requiring sampling and reporting of NTR, CTR, and additional constituents to determine if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard.

Reasonable Potential

Sufficient effluent and receiving water flow data are available to determine that several constituents are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. These constituents and/or parameters include; copper, hexavalent chromium, total chromium, arsenic, total dissolved solids (TDS), chlorine residual, and toxicity. Effluent limitations have been established or retained for these constituents as discussed in the following Findings of this Order

Copper

Previous Order No. 93-221 included daily maximum and monthly average effluent limitations for copper based upon water quality objectives established by the California Inland Surface Waters Plan. Order No. 93-221 included a daily maximum limitation for copper of 6.5 µg/L (ppb), and a monthly average limitation for copper of 6.5 µg/L (ppb), which were adjusted based upon the observed receiving water hardness. New limits for copper have been established in this new Order based upon the reasonable potential to exceed freshwater aquatic life criteria in the CTR (new information). These new water quality based effluent limitations have been calculated based upon methodologies in the SIP.

Results of final effluent monitoring indicate maximum effluent concentrations (MEC's) of total copper concentrations as high as 23 µg/L (ppb) (8/15/01) and 80 µg/L (ppb) (10/19/01). Without regard to dilution, these MEC's exceed the acute aquatic life Criterion Maximum Concentration (CMC) and the chronic aquatic life Continuous Criterion Concentration (CCC) for copper (total), adjusted using the minimum observed receiving water hardness (6.5 µg/L (ppb) and 4.6 µg/L (ppb) respectively @ 44 mg/L (ppm) hardness as CaCO₃ (12/20/01)). Since the Stockton Diverting Canal provides, at times, little or no dilution, there is a reasonable potential for the discharge to cause or contribute to an excursion above water quality standards. Section 1.3 of the SIP requires a water quality based effluent limitation when the MEC exceeds appropriate pollutant criterion.

When required, Section 1.4 of the SIP provides four methods that may be used to develop effluent limitations. These four methods include: (1) assigning a loading allocation based upon a completed TMDL; (2) use of a steady state model; (3) use of a dynamic model; or, (4) establishing effluent limitations that consider intake water pollutants. Considering that the Stockton Diverting Canal may at times provide little or no assimilative capacity for copper, final water quality based effluent limitations have been developed using the steady state model, with no credit provided for dilution. Since a site-specific translator has not been developed for copper as described in the SIP Section 1.4.1, the USEPA conversion factor was used in expressing the dissolved copper criterion as total recoverable. Acute and chronic effluent concentration allowance's (ECA's) were set equal to the adjusted acute and chronic copper criterion, and the most limiting long-term average (LTA) discharge condition for copper was determined using Table 1 of the SIP, using a coefficient of variation of 0.6. The average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) were then calculated using multipliers in Table 2 of the SIP as shown below:

WATER QUALITY BASED EFFLUENT LIMITATIONS	
<u>Copper (Total)</u>	
Number of Observations	>20
Effluent Maximum	80.0
Dilution Credit	0
ECA acute (@ 44 mg/L (ppm) hardness as CaCO ₃)	6.5 µg/L
Percent of Observations Below Detection	>90%
Coefficient of Variation (Default)	0.6
Limiting LTA (acute) = (ECA acute *Table 1 Acute Multiplier)	2.1
Sampling Frequency (n)	≤ 4/mo
AMEL (LTA*Table 2 AMEL Multiplier)	3.3 µg/L (ppb)
MDEL (LTA*Table 2 MDEL Multiplier)	6.5 µg/L (ppb)

New final average monthly (3.3 µg/L (ppb) (0.02 pounds per day) @ 44 mg/L (ppm) hardness as CaCO₃) and daily maximum (6.5 µg/L (ppb) @ 44 mg/L (ppm) hardness as CaCO₃) effluent limitations for copper (total) have been established in this Order in accordance with Sections 1.3 and 1.4 of the SIP using the adjusted copper criteria. These limitations will be adjusted accordingly with results of corresponding receiving water monitoring for hardness. The Discharger operates treatment processes specific to the removal of copper. With proper operation of the existing treatment facilities, results of monitoring indicate the Discharger is capable of meeting the new daily maximum effluent limitation, therefore a time schedule for compliance with this limitation is not included in this new Order. However, results of monitoring are not sufficient to determine if the Discharger can meet the new monthly average effluent limitation for copper of 3.3 µg/L (ppb) @ 44 mg/L (ppm) hardness as CaCO₃. Data submitted by the Discharger indicates that, when the facility is properly operated, effluent concentrations of copper are less than 5 µg/L (ppb). Historical data are not of sufficient quality to determine compliance with the monthly average limitation. Detection of copper to 0.5 µg/L (ppb) is feasible in accordance with the SIP. This Order includes a Provision which requires the Discharger to collect data sufficient to determine compliance with this new monthly average effluent limitation for copper.

As provided in Section 2.1 of the SIP, a time schedule is included in this Order to allow the Discharger to achieve compliance with the new monthly average effluent limitations for copper. In accordance with the SIP, Sections 2.2, a numeric monthly average interim limitation for copper is established in this Order based upon current treatment facility performance. Since the treatment facilities can, when properly operated, produce and effluent with copper concentrations less than 5 µg/L (ppb), this Order includes a performance based interim average monthly effluent limitation for copper set at this historical limit of detection of 5 µg/L (ppb). If a compliance schedule justification is submitted by 31 May 2003, this interim limitation shall be an enforceable limitation until the final monthly average effluent limitation becomes effective on 1 February 2008.

Hexavalent Chromium

Previous Order No. 93-221 included daily maximum and monthly average effluent limitations for hexavalent chromium based upon water quality objectives established by the California Inland Surface Waters Plan. Order No. 93-221 included a daily maximum limitation for hexavalent

chromium of 11 µg/L (ppb), and a monthly average limitation for hexavalent chromium of 11 µg/L (ppb). New limits for hexavalent chromium have been established in this new Order based upon the reasonable potential to exceed the chronic freshwater aquatic life criterion in the CTR (new information). Results of final effluent monitoring indicate maximum effluent concentrations (MEC's) of hexavalent chromium have been high as 17 µg/L (ppb) (9/15/00). Without regard to dilution, this MEC exceeds the acute aquatic life Criterion Maximum Concentration (CMC) and the chronic aquatic life Continuous Criterion Concentration (CCC) for hexavalent chromium (16 µg/L (ppb) and 11 µg/L (ppb) respectively). New water quality based effluent limitations have been calculated based upon methodologies in the SIP.

Considering that the Stockton Diverting Canal may at times have little or no flow and provide little or no assimilative capacity for hexavalent chromium, final water quality based effluent limitations have been developed using the steady state model in the SIP, with no credit provided for dilution. The acute and chronic effluent concentration allowance's (ECA's) were set equal to the aquatic life criterion for hexavalent chromium, and the most limiting long-term average (LTA) discharge condition was determined using Table 1 of the SIP, using a default coefficient of variation of 0.6. The average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) were then calculated using multipliers in Table 2 of the SIP as shown below:

<u>WATER QUALITY BASED EFFLUENT LIMITATIONS</u>	
<u>Hexavalent Chromium</u>	
Number of Observations	>20
Effluent Maximum	17
Dilution Credit	0
ECA acute	16 µg/L
Percent of Observations Below Detection	>90%
Coefficient of Variation (Default)	0.6
Limiting LTA (acute) = (ECA acute *Table 1 Acute Multiplier)	5.1
Sampling Frequency (n)	≤ 4/mo
AMEL (LTA*Table 2 AMEL Multiplier)	8.0 µg/L (ppb)
MDEL (LTA*Table 2 MDEL Multiplier)	16.0 µg/L (ppb)

New final average monthly (8.0 µg/L (ppb)) and daily maximum (16 µg/L (ppb)) effluent limitations for hexavalent chromium have been established in this Order in accordance with Sections 1.3 and 1.4 of the SIP. With proper operation of the existing treatment facilities, the Discharger is capable of meeting these new limitations, therefore a time schedule for compliance is not included in this new Order.

Total Chromium

Previous Order No. 93-221 included effluent limitations for **total chromium** based upon the protection of human health. For Chemical Constituents at page III-3.00, the Basin Plan states 'At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations...' As a result, and considering the fact that the Stockton Diverting Canal provides little or no dilution, this

Order retains the 50 µg/L (ppb) monthly average effluent limitation for total chromium which is necessary to comply with the primary California MCL contained in Title 22, California Code of Regulations (CCR) and incorporated as chemical constituent water quality objectives in the Basin Plan. The Discharger operates treatment facilities specific to the removal of chromium. Results of effluent monitoring indicate the treatment facilities, when properly operated, are capable of reducing concentrations of total chromium below this existing limitation

Arsenic

Previous Order No. 93-221 included effluent limitations for **arsenic** based upon the protection of human health. The Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, water designated for use as domestic and/or municipal supply shall not contain concentrations of chemical constituents in excess of maximum contaminant levels (MCL's). The new USEPA primary MCL for arsenic is 10 µg/L (ppb). Federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allow the state to establish effluent limitations using an explicit state policy interpreting its narrative objectives. Use of the USEPA Primary MCL is appropriate to implement the narrative chemical constituent objective. Results of effluent monitoring indicate concentrations of arsenic in the final effluent are below this existing limitation. Therefore, the existing monthly average effluent limitation of 10 µg/L (ppb) for arsenic is retained in this new Order.

Total Dissolved Solids

Previous Order No. 93-221 included a daily maximum and monthly average effluent limitation of 1000 mg/L (ppm) for Total Dissolved Solids (TDS). Concentrations of Total Dissolved Solids (TDS) in extracted groundwater range from 330 to 860 mg/L (ppm). As a result of the treatment process, final effluent concentrations of TDS at Outfall 001 have been reported as high as 976 mg/L (ppm) (10/15/01). For Chemical Constituents at page III-3.00, the Basin Plan states '*At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations...*' As a result, and considering the fact that the Stockton Diverting Canal provides little or no dilution, this Order includes a new 500 mg/L (ppm) monthly average effluent limitation for TDS applied at the point of discharge which is necessary to comply with the secondary California MCLs contained in Title 22, California Code of Regulations (CCR) and incorporated as chemical constituent water quality objectives in the Basin Plan. This Order retains the average monthly limitation for TDS of 1000 mg/L (ppm), as results of monitoring indicate the Discharger is capable of meeting this existing limitation. There are no USEPA TDS water quality criteria for protection of aquatic organisms. However, its presence can be growth limiting to certain agricultural crops and TDS affects the taste of water for human consumption.

The Regional Board has considered the factors specified in California Water Code (CWC) Section 13263, including considering the provisions of CWC Section 13241 where appropriate. The Regional Board is not required to consider the factors in CWC Section 13241 in applying existing

water quality objectives, including adopting the new monthly average TDS effluent limitation in this Order.

The Regional Board must implement the CWC consistent with the Clean Water Act (CWA). The CWA precludes the consideration of costs when developing effluent limitations for NPDES permits necessary to implement water quality standards (See *Ackels v. EPA* (9th Cir. 1993) 7 F.3d 862, 865-66). The Regional Board may consider costs in developing compliance schedules. The Regional Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the Stockton Diverting Canal and the Calaveras River. This Order provides for time schedules for meeting this new average monthly effluent limitation. Time schedules are authorized to be included in this Order based upon 40 CFR Section 122.47.

Currently, monthly average concentrations of TDS in the final effluent exceed the new effluent limitation established in this Order. Preliminary data provided by the Discharger indicate the SDC may provide some dilution and have some limited assimilative capacity for TDS, however, the receiving water characteristics have not been fully evaluated with respect to TDS. The Discharger may elect to further study the characteristics and potential assimilative capacity of the SDC, consider the appropriateness of the MUN and AGR beneficial use designation of the SDC, and/or consider disposal and treatment alternatives. As this is a new effluent limitation, the Discharger has not had an opportunity to conduct additional studies, undertake a Basin Plan amendment study, or provide a cost estimate for additional treatment or alternative disposal methods which may be necessary to comply with this limitation. A time schedule for compliance with this new TDS effluent limitation is provided in a Provision of this Order.

Chlorine

Results of monitoring submitted by the Discharger for the period of January 2001 through May 2002 indicate effluent **chlorine residual** concentrations have ranged from less than detectable concentrations to 0.2 milligrams per liter (mg/L, ppm) (13 June 2001).

The Basin Plan does not provide a numeric water quality objective for chlorine, but the Basin Plan does contain a narrative toxicity objective. At p.III-9.00 the Basin Plan provides that relative to toxicity: *“All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.”* At page 1, the USEPA’s Technical Support Document for Water Quality-based Toxics Control (TSD) provides that *“Where States have not developed chemical specific numeric criteria, States may interpret their narrative standards for specific chemicals by using EPA criteria updated with current quantitative risk values.”* The TSD further states on page 1 *“The integrated approach must include the control of toxics through implementation of the “no toxics” criterion and/or numeric criteria for the parameter of toxicity, the control of individual pollutants for which specific chemical water quality criteria exist in a state’s standard, as well as the use of biological criteria. Reliance solely on the chemical specific numeric criteria or the narrative criterion or biological criteria would result in only a partially effective State toxics control program.”*

For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for determining reasonable potential, which relies on USEPA criteria and other information. The Regional Board chose this method because USEPA's recommended ambient water quality criteria for chlorine have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/L (ppb) as a 4-day average (chronic) concentration, and 19 µg/L (ppb) as a 1-hour average (acute) concentration for total residual chlorine. Based upon results of monitoring, the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. This Order includes new maximum daily (0.02 mg/L (ppm)) and average monthly (0.01 mg/L (ppm)) effluent limitations for residual chlorine based upon the USEPA criteria. Previous Orders did not include effluent limitations for chlorine, and it is unknown whether the Discharger can immediately comply with these new limitations.

Toxicity

In the past, results of effluent chronic **toxicity** testing using EPA/600/4-91/002 have indicated sporadic instances of sub lethal test organism impacts. Also, previous Order No. 93-221 included an effluent limitation for acute toxicity. This new Order retains an effluent limitation for acute toxicity, and includes continued monitoring of effluent and receiving water for chronic toxicity.