ATTACHMENT F – FACT SHEET

Table of Contents

List of Tables

ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table 1. Facility Information

WDID	**6B360109001**
Discharger	**Victor Valley Wastewater Reclamation Authority**
Name of Facility	**Victor Valley Regional Wastewater Treatment Plant**
Facility Address	**20111 Shay Road** **Victorville, CA 92394** **San Bernardino County**
Facility Contact, Title and Phone	**Logan Olds, Plant Manager, 760-246-8638**
Authorized Person to Sign and Submit Reports	**Logan Olds, Plant Manager, 760-246-8638**
Mailing Address	**Victor Valley Wastewater Reclamation Authority** **15776 Main St Ste 3** **Hesperia, CA 92345**
Billing Address	**Victor Valley Wastewater Reclamation Authority** **15776 Main St Ste 3** **Hesperia, CA 92345**
Type of Facility	**Regional POTW**
Major or Minor Facility	**Major**
Threat to Water Quality	**Category 1**
Complexity	**Category A**
Pretreatment Program	**Y**
Reclamation Requirements	**Producer: VVWRA** **End User: Westwinds Golf Course at the Southern California Logistics Airport (SCLA) (Formerly George Air Force Base)**
Facility Permitted Flow	**14.0 million gallons per day (mgd) in this Order (discharge to surface water)**
Facility Design Flow	**14.5 (underway); 18.0 mgd (planned) and 22.0 (planned) following completion of Phase II and Phase III expansions; 14.0 mgd discharged to surface water and regulated under this Order**
Watershed	**Mojave River Basin**
Receiving Water	**Mojave River; Upper Mojave River Valley Groundwater Basin (discharge to Mojave River regulated in this Order)**
Receiving Water Type	**Surface Water and Groundwater**

A. Victor Valley Wastewater Reclamation Authority (hereinafter Discharger) is the owner and operator of Victor Valley Wastewater Reclamation Facility (hereinafter Facility), a regional Publicly Owned Treatment Works (POTW).

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Mojave River, a Water of the United States and a Water of the State, and to a series of percolation ponds. In addition, recycled water from the facility is reused onsite and for landscaping and turf irrigation at the City of Victorville Westwinds Golf Course. The Facility currently is regulated by: Order No. 6-99-58, which was adopted on November 17, 1999, and expired on November 17, 2004 and Order No. R6V-2003-028, which was adopted on June 11, 2003 and regulates recycled water used offsite. Those portions of Order No. 6-99-58 which regulate land disposal percolation ponds and recycled water used onsite remain in effect. The terms and conditions of Order No. 6-99-58 were automatically continued and remain in effect until new or revised Waste Discharge Requirements in the form of a National Pollutant Discharge Elimination System Permit are adopted in this Order..

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on May 19, 2004. In addition, the Discharger filed subsequent Reports of Waste Discharge on June 28, 2006 and August 13, 2007 (as discussed below).

D. A compliance inspection was last conducted on June 11, 2007. The most recent Pretreatment Compliance Inspection was conducted on September 10, 2007. These inspections and audits were to observe operations and collect additional data used to develop effluent limitations and other requirements.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment or Controls

VVWRA is a four-member joint power authority established in 1977. The treatment Facility receives wastewater from three cities (Town of Apple Valley, City of Hesperia and City of Victorville) and two San Bernardino County Service Areas (No. 42 - Oro Grande and No. 64 - Spring Valley Lakes). VVWRA also receives septage tank cleaning flow. Currently VVWRA has no restrictions on where septage comes from, but preference is given to sources within the VVWRA service area.

The Facility is in the high desert, approximately 80 miles northeast of Los Angeles. Interstate 15 passes through Victorville, which is a major transportation corridor between Southern California and Las Vegas, Nevada. The region is arid. Summer temperatures frequently exceed 100 °F, and rainfall averages 5 inches annually. Attachment B to this Order is a topographic map of the area surrounding the Facility.

The VVWRA service area includes both sewered and unsewered customers. Sewered customers discharge to the Facility through a raw sewage collection system that includes gravity sewers, sewage sump stations and sewage force mains from the City of Victorville, Spring Valley Lake (San Bernardino County Service Area No. 64), Southern California Logistics Airport (formerly George Air Force Base), Town of Apple Valley, and Oro Grande (San Bernardino County Service Area No. 42), and City of Hesperia. The permit renewal application states that VVWRA serves a population of 112,921 from these communities. Unsewered customers are on private septic tanks with leach fields.

VVWRA maintains approximately 40 miles of trunk interceptor lines that receive sewage from an approximately 216 square mile service area. The VVWRA /Year 2005 Amendment to the Sewerage Facilities Plan indicates that the 2005 sewered pollution is 141,071 with a projected 2025 sewered population of 320,576. The 2005 wastewater influent flow averaged 2.19 mgd according to the 2005 Annual Report. The projected average flow in 2025 is 31.81 mgd based on the Year 2005 Amendment to the Sewerage Facilities Plan. In December 2005 design work began to increase the Interceptor Sewerage System Capacity. The discharger obtained coverage for the sewer collection system under the State General Permit for Sanitary Sewers (Order 2006-0003-DWQ).

The Discharger's Facility has undergone a series of upgrades after its initial startup in 1980. The Facility was first designed with an average dry weather flow (ADWF) of 4.5 mgd. The original construction included the activated sludge process with secondary effluent discharge to percolation ponds and sludge subjected to anaerobic digestion with storage in lagoons. The Facility has gone through six upgrades since the initial construction.

The current treatment system consists, in part, of headworks, primary clarifiers, flow equalization, aeration basins, secondary clarifiers, and percolation ponds. The Facility uses the activated sludge process to provide secondary treatment and, in addition, uses gravity filters with chlorination and dechlorination to provide tertiary treatment to a portion of the wastewater. Effluent from the secondary treatment process is discharged to the percolation ponds. Effluent that receives tertiary treatment is directed to the Mojave River (after dechlorination) or is used for on and off-site irrigation and landscaping purposes or fire protection. Effluent that receives disinfected secondary-level treatment may be used for on-site dust control, construction grading, or facility washdown. Sludge is delivered to a series of sludge drying beds for solar drying. After drying the biosolids are stockpiled onsite and hauled offsite for disposal. The treatment processes are described in more detail below.

According to the permit renewal application that was submitted to the Water Board on May 19, 2004, EPA Form 2A, VVWRA proposed a design flow rate for the Facility at 11.0 mgd, with an annual average daily flow rate of 9.6 mgd. On July 26, 2004, VVWRA submitted a *Basis of Design Report: Upgrades to Regional Wastewater Reclamation Facility Project.* A supplemental report was provided on August 13, 2004 noting that the treatment and disposal capacity of the treatment Facility had reached 12.5 mgd. The Discharger is upgrading and expanding its capacity to 14.5 mgd (Phase

I) and, subsequently, to 18.0 mgd (Phase II) and 22.0 mgd (Phase III) as discussed below. On January 7, 2008, VVWRA submitted a revised NPDES permit application and *Addendum to Anti-degradation Analysis for Expansion of the Regional Wastewater Treatment Plant, River Discharge* proposing an increased Mojave River discharge to 14 mgd when the Phase III-A expansion is complete. When Phase III-B is completed the facility will have an overall capacity of 22 mgd, but Mojave River discharges will be limited to 14 mgd.

Headworks

Raw wastewater is first metered through a structure equipped with a magnetic flow meter. Wet weather flows in excess of 21 mgd are diverted to an emergency storage basin. This basin has a capacity of approximately 4 million gallons.

Raw wastewater is first subject to screening. Two aquascreens are used with a manually-cleaned bar rack. Cutthroat flumes exist in the channels downstream from the bar screen to regulate water heights to ensure that screen velocities are kept between two and four feet per second. Screenings are compacted and discharged to a dumpster for landfill disposal.

Two aerated grit tanks (e.g., Grit Tank No. 1 and No. 2) are used for removing sand and other heavy, inert particles. Sewage from the service area is discharged to Grit Tank No. 1. Septage waste from tankers is discharged to Grit Tank No. 2 through a small bar rack. Agitation air is supplied by the aeration air blowers in both tanks. Grit is rolled into hoppers for collection by recessed impeller pumps. Grit is then routed through a cyclone separator and classifier for dewatering prior to discharge to a dumpster for landfill disposal.

Storm water runoff from the operation is rerouted to the headworks of the Facility for treatment. Under rare high flow conditions, excessive volumes of storm water may be directed to the storm water outfall to the Mojave River. The proposed Order does not address this potential storm water discharge. The Discharger has obtained coverage under the State's General Permit for Discharges of Storm Water Associated with Industrial Activities (CAS000001).

Primary Clarifiers

Four primary clarifiers reduce the load of suspended solids and biochemical oxygen demand (BOD) to the secondary treatment process by removing gross organic solids. Wastewater flows by gravity from the headworks to the primary clarifiers' influent channel. Two small entrance gates on each clarifier enhance equalization of flow into the clarifier.

Once in the clarifier, solids precipitate out of the wastewater and sink to the bottom of the clarifier tank. These precipitated solids are referred to as sludge. Chain and sprocket sludge collectors move the primary sludge to the influent end of the clarifier tanks. The primary sludge is then removed by progressive cavity sludge pumps and transferred to Digesters No. 1 and No. 2.

The sludge collector removes primary scum from the surface of primary wastewater and sends it to tipping trough collectors. The scum is then routed to a decant tank. Decanted fluid is recycled to the primary clarifiers. The dewatered scum is then hauled to a specially-classified landfill.

Primary effluent leaves the primary clarifiers via V-notch weirs and moves to the secondary treatment process. Fluctuating flows are equalized prior to introduction to the aeration tanks, which are part of the secondary treatment process.

Flow Equalization

Daily flows fluctuate between daytime and evenings. Surges in flows also occur during storm events. The equalization basins are used to eliminate the need to oversize downstream units to handle peak flows. The equalization basins absorb the instantaneous peak flows that are common during the afternoons, evenings, and rainstorms. The basins then release the excess fluids later when flows are lower. This equalization process allows the secondary and tertiary processes to treat nearly constant flows.

There are two, 1.5 million gallon basins at the Facility that provide flow equalization for primary effluent. Each basin is lined, uncovered and equipped with surface aerators. Primary effluent is routed to one of three places:

- The Flow Equalization Basins;
- Aeration Tanks 1-4 (Small); or
- Aeration Tanks 5-8 (Large).

Splitter boxes proportion flow between the large and small aeration tanks through a magnetic flow meter and modulating valve. Flow in excess of present values triggers a diversion gate to open slowly; primary effluent is then directed to the flow equalization basins. Equalized flow is returned to the primary effluent proportioning structures during low flow periods via pumps.

Aeration Basins

Over 90% of the treatment process takes place in the aeration basins. The size and capacity of the aeration system was doubled in 1999 to provide reliable and complete nitrification of the waste stream, year round. Eight (8) aerated basins are used to grow bacteria that in turn digest waste materials and remove contaminants from the wastewater stream (e.g., activated sludge).

The aeration basins form part of the secondary treatment system that greatly reduces the ammonia, total suspended solids (TSS) and BOD levels in the wastewater. Equalized and proportioned primary effluent is introduced to an anoxic zone in the aeration basins. This zone promotes nitrogen removal.

Fine bubble diffusers disperse aeration air to the remainder of the basins. Aeration air is supplied by three centrifugal blowers which are powered by gas-driven engines. A fourth, motor-driven blower is available for emergency standby. The air rate is modulated to maintain a dissolved oxygen level in the tank.

Secondary Clarifiers

Eight (8) secondary clarifiers are used to separate the activated sludge from the water. An aerated mixed liquor channel introduces the aerated biomass to eight (8) secondary clarifiers (five at 55 feet diameter and three at 80 feet diameter). Flow is manually equalized through influent sluice gates. Clarified effluent leaves the units via peripheral V-notched weirs and is routed to the tertiary treatment system via V-notched weirs in the clarifiers.

A sludge collector moves settled materials to a center hopper in the circular tanks. A portion of the sludge is returned to the aeration tanks via the return activated sludge (RAS) pumps. RAS can be introduced to the aeration tanks at multiple locations.

A portion of the settled material (i.e., waste activated sludge or WAS) is removed from the secondary clarifiers via pumps. WAS is routed to the dissolved air flotation thickeners and then to Digester No. 3.

Coagulation/Flocculation

Secondary effluent flows from the secondary clarifiers to the tertiary filtration and disinfection system. Prior to filtration, the secondary effluent is treated with alum or polymer to assist in the coagulation of the remaining solids. The secondary effluent with alum or polymer is then flocculated. The flocculated secondary effluent is then directed to the Traveling Bridge Filters or the Dynasand Filters (e.g., moving bed filters).

Filtration Systems

The two filter systems that exist at VVWRA use essentially the same technology and achieve similar results. At the Traveling Bridge Filter, water enters a tank and flows down through 12 inches of sand and 12 inches of anthracite coal, where tertiary filtration takes place. At the Dynasand Filter, water flows up through finely graded sand, where tertiary filtration takes place. Backwash from both filter systems is pumped to the beginning of the treatment process for full treatment. Effluent from the filters flows to the chlorine contact tanks for disinfection.

Percolation Ponds

Secondary effluent is routed to a collection structure that distributes the secondary effluent to the tertiary treatment system or to a structure that provides for disposal via the percolation ponds. Secondary effluent is typically pumped to the three South Percolation Ponds (Nos. 7-9). (Former Pond No. 9 has been filled and former Pond No. 10 is now Pond No. 9). In addition, the Discharger has constructed four new South Percolation Ponds (Nos. 10-13), which will increase the overall capacity of the Facility. The North Percolation Ponds (Nos. 1-6) receive secondary effluent but are typically limited to operation during the summer months at a capacity of less than 1.2 mgd.

Chlorine Contact Disinfection Tanks

There are three chlorine contact tanks at VVWRA. The disinfected effluent from the chlorine contact tanks is then dechlorinated using sodium bisulfite to remove any residual chlorine. The disinfected and dechlorinated effluent is either recycled for

Facility washdown, on-site and off-site irrigation and landscaping purposes, or is discharged directly to the Mojave River.

Dissolved Air Flotation Thickeners

Two (2) dissolved air flotation (DAF) thickeners are used to thicken primary clarifier and waste activated sludges. The thickened sludge is skimmed off and pumped to the anaerobic digesters for further treatment. The water that is removed from the sludge is then returned back to the beginning of the plant for full treatment.

Biosolids Handling

VVWRA has three (3) anaerobic digesters that are used to reduce the concentration of organic waste in the thickened sludge. After treatment in the digesters, the sludge is dried on solar drying beds and used for offsite agricultural fertilizer. The sludge is also composted offsite.

Recycled Water Use

The existing Order includes requirements for in-plant use of recycled wastewater. For purposes of this Order, "recycled water" as defined in Section 13050 (CWC) and "recycled water" as used in Section 13523 (CWC), are synonymous and refer to treated domestic wastewater that is suitable for reuse.

Use of recycled wastewater is permitted in the existing Order for nonpotable in-plant uses such as landscape irrigation and facility washdown. Recycled water used for landscape irrigation or fire protection must have received the level of treatment required for the final effluent discharge to surface waters as required in the proposed Order (e.g., tertiary-level treatment). Recycled water used for dust control, construction grading, or facility washdown must be at least disinfected secondary-23 recycled wastewater as defined in Section 60301.225, title 22, California Code of Regulations. Recycled water used for in-plant purposes must not be allowed to pond on or be discharged from the Facility.

Order No. R6V-2003-028, adopted on June 11, 2003, also includes recycled wastewater requirements for off-site irrigation uses at the City of Victorville Westwinds Golf Course. The 9-hole, 100-acre golf course is located at the Southern California Logistics Airport (SCLA), which was formerly George Air Force Base. In accordance with Order No. R6V-2003-028[1], tertiary-level treated effluent from VVWRA is reused for irrigation of the landscaping and turf at the golf course. Order R6V-2003-028 specifies acceptable end-uses of recycled water and includes producer effluent specifications. The golf course is located on the bluffs approximately one mile west of the Mojave River. A 3-mile long pipeline delivers tertiary-treated effluent from a recycled water pump station at VVWRA to a 600,000 gallon storage pond at the Westwinds Golf Course. VVWRA can supply a maximum rate of 1.5 mgd of recycled water to the golf course. However, existing seasonal golf course irrigation needs require an annual average of 0.446 mgd of recycled water.

[1] Item 5 of this Order references Order No. 6-99-58 and describes the treatment process.

Expansions and Upgrades

As noted above, the Discharger is upgrading and expanding its capacity to 14.5 mgd (Phase I) and, subsequently, to 18.0 mgd (Phase II) and 22.0 mgd (Phase III).

Order No. 6-99-58 discussed a phased expansion planned between permit issuance on November 17, 1999 and June 30, 2007. On July 26, 2004, VVWRA submitted a *Basis of Design Report: Upgrades to Regional Wastewater Reclamation Facility Project*, which provided the basis of design for an expansion to 14.5 mgd capacity and other plant upgrades. On June 15, 2006, VVWRA submitted a *Basis of Design Report: 18 MGD Expansion Project, Regional Wastewater Facility*. This report provides the basis of design for an expansion to 18 mgd and other plant upgrades.

In addition, the Discharger submitted an *Antidegradation Analysis for Expansion of the Regional Wastewater Treatment Plant* on March 16, 2007, and a Report of Waste Discharge, dated June 28, 2006, for the first two phases of expansion. The additional flow from the Phase I and Phase II expansions will be discharged after secondary treatment to newly constructed percolation ponds, from where it will percolate into the groundwater. The Discharger also is undertaking additional denitrification, replacing sludge drying beds with belt filter presses, and lining sludge lagoons as additional control measures.

The Discharger also submitted an *Antidegradation Analysis for Expansion of the Regional Wastewater Treatment Plant: River Discharge* on August 28, 2007 and a revised Report of Waste Discharge, dated August 13, 2007, supporting its planned expansion to a 22.0 mgd discharge. The August 13, 2007, Report of Waste Discharge specifically requested expansion of the effluent discharge to surface water (Discharge Point 001) from 8.3 mgd to 14.0 mgd. This surface water discharge is the discharge regulated in this Order. In the 22 MGD Phase III Expansion Project, the Discharger will add biological nitrogen removal capability and replace tertiary filtration capability using membrane biological reactor technology. Because this technology functions as both secondary clarification and tertiary filtration, the Discharger will convert existing air bays and construct additional tankage for pre and post anoxic reactor tanks. The Discharger also proposes to replace chlorination disinfection and dechlorination technologies with UV filtration. The carbon source for denitrification is from a fermenter unit, which receives sludge from the primary clarifier.

This permit incorporates the changes proposed by VVWRA, thereby allowing the facility to discharge up to 14.0 mgd of tertiary-treated effluent to surface water.

B. Discharge Points and Receiving Waters

The existing Order includes three discharge points: a discharge of effluent to the Mojave River (Discharge Point 001), a discharge of effluent to percolation ponds (Discharge Point 002), and discharge of recycled water (Discharge Point 003). The discharge of recycled water is not actually a single discharge point, but is named as a single discharge point (Discharge Point 003) for simplicity. Names for these discharge

points are not specifically identified in the existing Order. This Order regulates only the following discharge point:

Table 2. Discharge Points and Receiving Waters

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Tertiary Treated Effluent (Disinfected)	34 °, 37', 1" N	117 °, 21', 12" W	Mojave River

Discharges from Discharge Point 002 and Discharge Point 003 are regulated under separate orders, as discussed above. The potential discharge of industrial storm water from the Facility is covered by the Statewide General Industrial Permit.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data – Discharge Point 001

For the summary below, monitoring data for the discharge to the Mojave River (Discharge Point 001) were reviewed from Annual Reports between 1999 and 2003; monthly reports between 1999 – 2003 for select pollutants;[2] monthly reports and quarterly reports[3] for 2004; the permit renewal application; and data supplied by the Discharger in electronic form for January 2001 through July 2005. Also, the Water Board conducted site inspections on June 16, 2004, and April 11-12, 2006.

Effluent Limitations and SMR Reporting

Effluent limitations in the existing Order and data reviewed are summarized below:

[2] The existing Order contains average weekly effluent limitations for BOD and TSS. Weekly data for BOD and TSS were reviewed based on electronic data submitted by the Discharger for January 2001 through July 2005.

[3] Monthly reports for February and July, 2004; Quarterly reports for 2nd and 3rd Quarter 2004.

Table 3. Selected Historic Effluent Limitations and Monitoring Data–Discharge Point 001

Parameter	Units	Effluent Limitations			Monitoring Data	
		Average Monthly	Average Weekly	Maximum Daily	Highest Reported Average Monthly Discharge	Highest Reported Daily Discharge
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	10 (30-day mean)	15	30	5.1 (10.8 Highest Average Weekly discharge)	13
	lbs/day	692 (30-day mean)	1,038	2,077	484	785
Total Suspended Solids (TSS)	mg/L	10 (30-day mean)	15	30	3.4 (9.1 Highest Average Weekly discharge)	22.5
	lbs/day	692 (30-day mean)	1,038	2,077	345	1,277
Methylene Blue Active Substances (MBAS)	mg/L	1.0 (30-day mean)	--	2.0	0.35	0.55
	lbs/day	69 (30-day mean)	--	138	14	32
Total Dissolved Solids dried at 180°C (TDS)	mg/L	460 (12-month mean)	--	580	456	510
	lbs/day	31,842 (12-month mean)	--	40,149	27,392	28,603

"—" = no effluent limitation

Other effluent limitations established for the discharge to the Mojave River in Order No. 6-99-58 were as follows:

- Flow to the Mojave River shall not exceed an annual average of 8.3 mgd.
- Maximum instantaneous flow rate to the treatment facilities shall not exceed 14.0 mgd.
- Dissolved oxygen in the effluent shall not be less than 1.0 mg/L.
- The 30-day average percent removal for BOD and TSS shall be at least 85%.
- All wastewater discharged to the Mojave River shall have a pH of not less than 6.5 pH units nor more than 8.5 pH units nor cause changes of normal ambient levels exceeding 0.5 pH units.
- Effluent shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 per 100 mL and the number of coliform organisms does not exceed 23 per 100 mL (i.e., maximum) in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last 7-days for which analyses have been completed.
- Effluent shall be a filtered wastewater that does not exceed an 30-day running average turbidity of 2 turbidity units (NTU) and does not exceed 5 NTU more than 5 percent of the time during any 24-hour period.

- Effluent shall contain a maximum one-hour average total chlorine residual concentration of 0.019 mg/L and a four-day average total chlorine residual concentration of no more than 0.011 mg/L. The maximum daily discharge of chlorine shall be 1.3 lbs/day based on the maximum instantaneous flow of 14.0 mgd following flow equalization.

Summary of Permit Renewal Application Data

Effluent data also were provided with permit renewal application for discharges from the treatment plant to the Mojave River and included the following for conventional and non-conventional pollutants:

Table 4. Application Data for Conventional and Non-Conventional Pollutants – Discharge Point 001

Parameter	Units	Maximum Daily Value	Average Daily Value
Conventionals and Non-Conventionals			
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	13.00	3.40
Total Coliform	#/100mL[1]	300	2.0
Oil and Grease	mg/L	12.80	3.50
pH (min)	s.u.	6.0	--
pH (max)	s.u.	7.55	--
Total Suspended Solids (TSS)	mg/L	22.5	2.8
Ammonia Nitrogen, Total (as N)	mg/L	7.80	1.80
Chlorine, Total Residual	mg/L	0.011	0.004
Dissolved Oxygen	mg/L	9.11	6.77
Flow Rate	mgd	9.80	6.53
Nitrite Plus Nitrate (as N)	mg/L	Not Reported	Not Reported
Phosphorus, Total (as P)	mg/L	Not Reported	Not Reported
Temperature (°C) (Winter)	°C	27.60	21.60
Temperature (°C) (Summer)	°C	28.60	25.50
Total Dissolved Solids (TDS)	mg/L	498.00	350.00
Total Kjeldahl Nitrogen (as N)	mg/L	4.20	1.80
Whole Effluent Toxicity Testing			
Acute Toxicity	% Survival in 100% effluent	70-100	--
Chronic Toxicity[2]: *Pimephales promelas*		No significant difference	--
Chronic Toxicity[2]: *Ceriodaphnia dubia*		No significant difference	--

"--" = no reported values

[1] Erroneously reported in Application Form 2A as fecal coliform.

[2] Chronic WET testing was conducted on the effluent and a control sample using *Pimephales promelas* (larvae survival and teratogenicity) and *Ceriodaphnia dubia* (survival and reproduction). The Discharger reported no significant difference between the control sample and a sample of 100% effluent in annual tests between 2000 and 2004.

The permit renewal application also included the results of priority pollutant sampling for effluent discharged to the Mojave River. Data for priority pollutants in the receiving water were not provided with the permit renewal application, but were provided with separate sampling conducted to implement the California Toxics Rule (CTR), as discussed below. Receiving water toxicity testing results were included with the permit renewal application.

From December 2001 through May 2002 the Discharger collected two samples per month of the effluent discharged to the Mojave River for a total of 12 samples and analyzed them for the 126 "Priority Pollutants." Samples were also collected from the upgradient and down gradient receiving water stations in the Mojave River. The following table presents data for priority pollutants detected. All other priority pollutants were reported as below method detection limits and, therefore, data were not included in this table.

Table 5. Application Data for Priority Pollutants – Discharge Point 001

Parameter	Units	Maximum Daily Value	Average Daily Value
Priority Pollutants			
Antimony, Total Recoverable	µg/L	0.32	0.28
Antimony, Total Recoverable	lbs/day	0.022	0.016
Arsenic, Total Recoverable	µg/L	5	3.81
Arsenic, Total Recoverable	lbs/day	0.34	0.22
Cadmium, Total Recoverable	µg/L	0.1	0.064
Cadmium, Total Recoverable	lbs/day	0.0067	0.0037
Chromium III	µg/L	3	2.25
Chromium III	lbs/day	0.20	0.13
Copper, Total Recoverable	µg/L	4	2.88
Copper, Total Recoverable	lbs/day	0.27	0.17
Lead, Total Recoverable	µg/L	0.5	0.34
Lead, Total Recoverable	lbs/day	0.034	0.019
Mercury, Total Recoverable	µg/L	0.026	0.023
Mercury, Total Recoverable	lbs/day	0.0018	0.0013
Nickel, Total Recoverable	µg/L	2	1.57
Nickel, Total Recoverable	lbs/day	0.13	0.090
Selenium, Total Recoverable	µg/L	1.4	0.98
Selenium, Total Recoverable	lbs/day	0.094	0.057
Silver, Total Recoverable	µg/L	0.7	0.32
Silver, Total Recoverable	lbs/day	0.047	0.018
Thallium, Total Recoverable	µg/L	0.01	0.0054
Thallium, Total Recoverable	lbs/day	0.00067	0.00031
Zinc, Total Recoverable	µg/L	51	38.3
Zinc, Total Recoverable	lbs/day	3.44	2.21
Cyanide	µg/L	7	2.68
Cyanide	lbs/day	0.47	0.15
Chlorodibromomethane	µg/L	1.6	0.42
Chlorodibromomethane	lbs/day	0.11	0.024
Chloroethane	µg/L	0.39	0.13

Parameter	Units	Maximum Daily Value	Average Daily Value
Chloroethane	lbs/day	0.026	0.0074
Chloroform	µg/L	16	8.50
Chloroform	lbs/day	1.08	0.49
Dichlorobromomethane	µg/L	6.7	0.11
Dichlorobromomethane	lbs/day	0.45	0.11
Methyl Chloride	µg/L	0.33	0.17
Methyl Chloride	lbs/day	0.02	0.0095
Methylene Chloride	µg/L	2.9	0.40
Methylene Chloride	lbs/day	0.20	0.023
Bis(2-Ethylhexyl)Phthalate	µg/L	15	2.52
Bis(2-Ethylhexyl)Phthalate	lbs/day	1.01	0.15
Dibenzo(a,h)Anthracene	µg/L	0.06	0.032
Dibenzo(a,h)Anthracene	lbs/day	0.0040	0.0019
1,4-Dichlorobenzene	µg/L	0.9	0.67
1,4-Dichlorobenzene	lbs/day	0.061	0.039
Dimethyl Phthalate	µg/L	1.1	0.63
Dimethyl Phthalate	lbs/day	0.074	0.037

The following acute and chronic toxicity results were reported for the Mojave River downstream of Discharge Point 001:

Table 6. Application Data for Aquatic Toxicity Mojave River (Receiving Water)

Parameter	Units	Reported Values
Acute Toxicity	% Survival in 100% effluent	75 – 100
Chronic Toxicity[1]: *Pimephales promelas*		Significant difference downstream (1/23/01) Significant difference upstream (1/21/04)
Chronic Toxicity[1]: *Ceriodaphnia dubia*		No significant difference

[1] Chronic WET testing was conducted on the receiving water (upstream and downstream) and a control sample using *Pimephales promelas* (larvae survival and teratogenicity) and *Ceriodaphnia dubia* (survival and reproduction). The Discharger reported no significant difference between the control sample and a sample of 100% receiving water in all but two annual tests (as noted in the table above) between 2000 and 2004

D. Compliance Summary – Discharge Point 001

The summary of violations and non-compliance during the permit term has been assembled from discharger self monitoring reports, discharger letters, and other available information. The violations are assembled in chronological order.

1999

Turbidity: The effluent turbidity to the Mojave River was measured with a 30-day average of 2.35 NTUs which exceeded the 30-day average limit for turbidity of 2 NTUs (June 1999).

2000

Nitrate: Influent sampling for nitrate was not conducted (September 2000).

2001

Total Coliform: The final effluent to the Mojave River was measured with a coliform count of 300 colonies per 100 ml (April 3, 2001) and 30 colonies per 100 ml (July 28, 2001) causing an exceedance of the limitation that the number of coliform organisms not exceed 23 per 100 mL (i.e., maximum) in more than one sample within any 30-day period.

2002

Total Coliform: The final effluent to the Mojave River was measured with a coliform count of 33 colonies per 100 ml (February 19, 2002) and 72 colonies per 100 ml (March 4, 2002) causing an exceedance of the limitation that the number of coliform organisms not exceed 23 per 100 mL (i.e., maximum) in more than one sample within any 30-day period.

2003

No significant events of exceeding effluent limitations occurred during 2003.

2004

Total coliform: The final effluent to the Mojave River was measured with a coliform count of 80 colonies per 100 ml (March 17, 2004) and 110 colonies per 100 ml (4/15/04), causing an exceedance of the limitation that the number of coliform organisms not exceed 23 per 100 mL (i.e., maximum) in more than one sample within any 30-day period, The probable cause of this event was an excessive buildup of algae on the secondary clarifier weirs.

2005

Unpermitted discharge: On April 12, 2005, a rapid erosion of a south percolation pond levee caused an unauthorized discharge of 8.72 million gallons of non-disinfected secondary treated wastewater to the Mojave River. The investigation of the incident revealed that the overflow occurred because level sensors on the south percolation ponds did not provide sufficient information to operations staff that would have prevented the incident.

2006

Turbidity: On April 11, 2007, the effluent turbidity to the Mojave River was above 5 NTUs for a period of 7½ hrs, exceeding the time limit of 72 minutes. The event occurred from 12:08 am to 7:45 am. The cause of the event was failure of the plant's

two backup generators to supply power during an power interruption that occurred on April 10, 2007 at 7:00 pm. The backup generators started but an incorrect setting tripped the generators and thereby prevented the generators to supply power to the plant. The operators made adjustments to the settings and restored power to the facility from one of the backup generator at about 10:20 am. The electric utility restored power to the facility at 11:30 am. During the outage, wastewater flowed through the plant, but the wastewater flow did not receive aeration, thereby effectively bypassing the secondary treatment facilities. Sludge overflowed the weirs of the secondary clarifiers, causing an overload of solids in the tertiary filters. The overloaded filters caused a discharge of excessive solids to the Mojave River.

Turbidity and monthly total suspended solids events: During the April 11-12, 2006, compliance evaluation inspection, the Water Board noted extended periods of time between January and April 2006 where the 30-day running average turbidity limitation and the average monthly TSS limitation were exceeded.

2006 to 2007

TDS: From July 2006 to August 2007, for a period of 14 consecutive separate months, the discharger exceeded either the daily maximum rate of 40,149 lbs/day or the 12-month mean rate of 31,842 lbs/day. During this period, the discharger met their concentration limits for TDS. The event occurred because the discharger increased flow to the Mojave River, which reached a mean monthly flow of 11.92 MGD in October 2006. In September 2007, the discharger was back in compliance with the rate limits for TDS.

E. Planned Changes

The allowable discharge to the Mojave River (Discharge Point 001) will expand to 14.0 mgd (as specified in the August 28, 2007, Anti-degradation Analysis and August 13, 2007, Report of Waste Discharge and February 7, 2008 Anti-Degradation Analysis Addendum and NPDES permit application submitted by the Discharger) from the previous discharge of 8.3 mgd (as specified in Order No. 6-99-58).

The Discharger has planned upgrades and expansions (as discussed above) that would include an additional discharge to the percolation ponds via Discharge Point 002 and an increase in design flow for the discharge to the Mojave River via Discharge Point 001 14.0 mgd. This Order is affected by the increased discharge to the Mojave River.

Mass-based effluent limitations were included in the Order No. 6-99-58 for discharges to the Mojave River for BOD, TSS, MBAS and TDS; therefore mass-based effluent limitations are established in this Order for these pollutants (as well as other pollutants) at Discharge Point 001.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100 through 21177.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Water Board adopted a Water Quality Control Plan for the Lahontan Region (hereinafter Basin Plan) which became effective on March 31, 1995. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Mojave River and the upper Mojave River Valley Ground Waters are as follows:

Table 7. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Mojave River; Surface Water (Dept. of Water Resources No. 628.2 – Upper Mojave Hydrologic Area of the Mojave Hydrologic Unit)	Existing: Municipal and domestic water supply (MUN), Agricultural Supply (AGR), Groundwater Recharge (GWR), Contact (REC-1) and Non-Contact (REC-2) water recreation, Commercial and Sport fishing (COMM), Cold Freshwater Habitat (COLD), Warm freshwater habitat (WARM), wildlife habitat (WILD).

Requirements of this Order implement the Basin Plan.

VVWRA is currently collecting data to characterize the water quality, biological resources, and beneficial uses of the Mojave River upstream and downstream of the VVWRA discharge and will provide this information to assist in updating the Basin

Plan water quality standards. Upon completion of the study (June 30, 2010), the Water Board may use this information, or other additional data, to amend the Basin Plan accordingly.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes (40 C.F.R. § 131.21, 65 Fed. Reg. 24641 (April 27, 2000)). Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Stringency of Requirements for Individual Pollutants.** Individual pollutant restrictions in this Order consist of technology-based and water quality-based effluent limitations. This Order contains some restrictions on individual pollutants that are more stringent than the minimum technology-based limitations required by the federal CWA. Specifically, technology-based effluent limitations for two constituents, 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), are more stringent than required by the secondary treatment standards under the CWA. As explained in Section IV.B.2 below, these effluent limitations are based on the performance of the Discharger's tertiary treatment system. This tertiary treatment system is necessary to protect the beneficial uses of the receiving water and meet requirements for recycled water, consistent with Water Code section 13241 (specifically (a) and (f)). In addition, these limitations were included in and carried over from Order No. 6-99-58. Water quality-based effluent limitations in this Order have been scientifically derived to implement water quality objectives that

protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR-SIP, which was approved by USEPA on May 18, 2000. Most beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). The remaining water quality objectives and beneficial uses in the Basin Plan were approved by USEPA in 2004 and are applicable water quality standards pursuant to section 131.21(c)(2). This Order's restrictions on individual pollutants are no more stringent than required to implement the applicable water quality standards for purposes of the CWA.

6. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that the State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The Water Board has determined that the Discharger's proposal for Membrane Biological Reactor treatment for filtration and nitrification-denitrification and ultraviolet (UV) disinfection will meet the requirement for best practicable treatment and control and is consistent with federal and State antidegradation policies. The discharger's plans to construct new facilities will result in a higher effluent quality discharged to the Mojave River. This change in water quality is consistent with maximum benefit to people of the State because water quality is improved. The resultant effluent quality will not unreasonably affect present and anticipated beneficial uses and not result in a water quality less than prescribed in the Basin Plan. The treatment plant upgrades result in the best practicable treatment or control of the discharge to prevent pollution or nuisance. After considering the incremental cost increases to the VVWRA user fees, added demand upon the state's energy grid, and associated waste disposal costs with reverse osmosis brine, the Water Board concludes that the proposed project results in the highest water quality consistent with maximum benefit to the people of the state.

7. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All

effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

8. **Monitoring and Reporting Requirements.** Section 122.48 of 40 CFR requires that NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (hereinafter MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

D. Impaired Water Bodies on CWA 303(d) List

The Mojave River is not listed as an impaired water body on the CWA 303(d) List.

E. Other Plans, Polices and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs may be established: (1) using USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) on an indicator parameter for the pollutant of concern; or (3) using a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

A. Discharge Prohibitions

The discharge prohibitions established in this Order are from waste discharge prohibitions in the Basin Plan that apply to the entire Lahontan Region (Section 4.1) or based on discharge prohibitions specified in the California Water Code.

B. Technology-Based Effluent Limitations

1. Scope and Authority

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in § 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator. Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary-level treatment in terms of biochemical oxygen demand (5-day at 20°C) or BOD_5, total suspended solids (TSS), and pH. These regulations at 40 CFR §133.102 prohibit BOD_5 and TSS concentrations from exceeding a 30-day average of 30 mg/l (expressed as average monthly effluent limitations) and a 7-day average of 45 mg/l (expressed as average weekly effluent limitations) and that the average percent removal of BOD_5 and TSS be no less than 85%. These regulations also require that pH be maintained between 6.0 and 9.0 standard units.

In addition, regulations promulgated in 40 CFR §125.3(a)(1) require technology-based effluent limitations for municipal discharges in NPDES permits for POTWs based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

2. Applicable Technology-Based Effluent Limitations

Although the Discharger is subject to technology-based effluent limitations based on the secondary treatment standards at 40 CFR Part 133, the Discharger provides tertiary treatment, including inline coagulation/flocculation, filtration, chlorination, and dechlorination, in order to protect the beneficial uses of the Mojave River downstream of the discharge (see Section IV.C. below). The tertiary treatment required to maintain these beneficial uses of the Mojave River results in better performance and warrant more stringent effluent limitations for BOD_5 and TSS than what is required by secondary treatment standards. The previous Order (No. 6-99-58) included technology-based effluent limitations for BOD5 and TSS effluent concentrations based on the performance capability of the tertiary treatment system. These effluent limitations are carried over from Order No. 6-99-58 and are summarized in Table 8 below. The technology-based limitations for pH and the requirement for 85 percent removal of BOD5 and TSS for Discharge Point 001 are based on the secondary treatment standards at 40 CFR Part 133. However, as discussed in Section IV.C below, the Basin Plan water quality objectives for pH require water quality-based effluent limitations more stringent than the limitations based on secondary treatment standards.

Discharge flow to the Mojave River (Discharge Point 001) is limited to the rated design capacity of 14.0 mgd as an average annual flow. This limitation is modified from the previous Order (No. 6-99-58).

Mass-based effluent limitations for Discharge Point 001 are calculated from concentration-based limitations using the following equation and are based on a permitted flow for the discharge to the Mojave River of 14.0 mgd.

Mass-based effluent limitations are established using the following formula:

Mass (lbs/day) = flow rate (MGD) × 8.34 × effluent limitation (mg/L)

Where:

Mass = mass limitation for a pollutant (lbs/day)

Effluent limitation = concentration limitation for a pollutant (mg/L)

Flow rate = discharge flow rate (MGD)

8.34 is a conversion factor

Summary of Technology-based Effluent Limitations
Discharge Point 001

Table 8. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations					
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	10	15	30	--	--	--
	lbs/day	1,170	1,750	3,500	--	--	--
pH	standard units	--	--	--	6.0	9.0	--
Total Suspended Solids	mg/L	10	15	30	--	--	--
	lbs/day	1,170	1,750	3,500	--	--	--

"--" = not applicable

The average annual flow of effluent discharged to the Mojave River shall not exceed 14.0 million gallons per day (mgd).

The average monthly percent removal for Biochemical Oxygen Demand (BOD), 5-day @ 20°C and Total Suspended Solids (TSS) shall be at least 85 percent.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard. The process for determining reasonable potential and calculating WQBELs, when necessary, is intended to protect the beneficial uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other State plans and policies, or water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

As noted in Section III, the beneficial uses of the Mojave River downstream of Discharge Point 001 include municipal and domestic water supply (MUN), Agricultural Supply (AGR), Groundwater Recharge (GWR), Contact (REC-1) and Non-Contact (REC- 2) Water Recreation, Commercial and Sport Fishing (COMM), Cold Freshwater Habitat (COLD), Warm Freshwater Habitat (WARM) and Wildlife Habitat (WILD).

The Basin Plan includes both narrative and numeric water quality objectives applicable to the Mojave River. In addition, priority pollutant criteria in the CTR apply to the Mojave River.

3. Determining the Need for WQBELs

California Toxics Rule (CTR) Parameters (Priority Pollutants)

In accordance with Section 1.3 of the SIP, the Water Board conducted a reasonable potential analysis (RPA) for each priority pollutant with an applicable criterion or objective to determine if a WQBEL is required in the proposed Order. The Water Board analyzed effluent and receiving water data to determine if a pollutant in a discharge has the reasonable potential to cause or contribute to an excursion above a state water quality standard. For all parameters that have the reasonable potential to cause or contribute to an excursion above a water quality standard, numeric WQBELs are required. The RPA considers water quality criteria and objectives outlined in the CTR, NTR, and Basin Plan for protection of freshwater aquatic life and for human health for consumption of water and organisms.

Some CTR criteria are hardness or pH-dependent. The Discharger provided receiving water hardness data as part of their required monitoring for priority pollutants with criteria in the CTR. The Discharger also provided pH data as part of routine receiving water monitoring during the term of the existing Order. The hardness value of 170 mg/L as $CaCO_3$ and a pH of 7.2 standard units, the lowest measured hardness and pH, representing the most conservative approach, were used in the RPA to calculate certain freshwater criteria.

The Discharger is required to analyze effluent samples for CTR priority pollutants annually for the life of the permit to determine the presence of these pollutants in the discharge and provide data for future reasonable potential assessments. Some priority pollutants (e.g., copper, cyanide) must be monitored more frequently to demonstrate compliance with effluent limitations established in this Order.

To conduct the RPA, the Water Board identified the maximum observed effluent concentration (MEC) and maximum background concentration (B) in the receiving water for each constituent, based on data provided by the Discharger.

Section 1.3 of the SIP provides the procedures for determining reasonable potential to exceed applicable water quality criteria and objectives. The SIP specifies three triggers to complete the RPA:

1) Trigger 1 – If the MEC is greater than or equal to the CTR water quality criterion or applicable objective (C), a limit is needed.

2) Trigger 2 - If background water quality (B) > C and the pollutant is detected in the effluent, a limit is needed.

3) Trigger 3 – If other related information such as CWA 303(d) listing for a pollutant, discharge type, compliance history, etc. indicates that a WQBEL is required.

Sufficient effluent and ambient data are needed to conduct a complete RPA. If data are not sufficient, the Discharger is required to gather the appropriate data for the Water Board to conduct the RPA. Upon review of the data, and if the Water Board determines that WQBELs are needed to protect the beneficial uses, the permit will be reopened for appropriate modification.

Board staff requested in a June 27, 2001 letter that the Discharger provide analytical information regarding priority pollutants in the effluent and receiving water. The Discharger submitted effluent and receiving water data for priority pollutants to the Water Board that were collected between December 2001 and May 2002. In addition, the Discharger submitted some priority pollutant data in Annual Reports from 1999 to 2005 and as part of its application for permit renewal. These data were sufficient to perform the RPA for the discharge to the Mojave River. The State Implementation Policy specifies no minimum number of samples to complete a Reasonable Potential Analysis. The June 27, 2001 letter indicated Water Board staff's conclusion that a data set consisting of 12 samples collected once every two weeks over a six-month period was statistically significant.

Data for pollutants determined to have reasonable potential are summarized in Table 9 for Discharge Point 001. Based on this information, the discharge from VVWRA has the reasonable potential to cause or contribute to an excursion of applicable water quality criteria from the CTR for the following constituents: copper, zinc, cyanide, chlorodibromomethane (dibromochloromethane),

dichlorobromomethane (bromodichloromethane), bis(2-ethylhexyl)phthalate, and dibenzo(a,h)anthracene.

Other pollutants also present in the effluent, but not triggering reasonable potential, include the following CTR pollutants: antimony, arsenic, cadmium, chromium III, lead, mercury, nickel, selenium, silver, thallium, chloroethane, chloroform, methyl chloride, methylene chloride, 1,4-dichlorobenzene, and dimethyl phthalate.

Table 9. Summary of Reasonable Potential Analysis for CTR Pollutants Observed – Discharge Point 001

Parameter	Maximum Observed Effluent Concentration (µg/L)	Maximum Background Concentration (µg/L)	Most Stringent Applicable CTR Criterion (µg/L)	Reasonable Potential?	Basis for Reasonable Potential Determination
Antimony	0.3	0.07	6[3]	No	--
Arsenic	5	3	10[4]	No	--
Cadmium	0.1	ND	3.73	No	--
Chromium III	3	2	320	No	--
Copper	4	20	14.7	**Yes**	Trigger 2
Lead	0.5	0.21	6.25	No	--
Mercury	0.026	0.02	0.050[2]	No	--
Nickel	2	2	81.7	No	--
Selenium	1.4	1.2	5	No	--
Silver	0.7	0.03	10.1	No	--
Thallium	0.01	0.01	1.7[2]	No	--
Zinc	240	60	188[1]	**Yes**	Trigger 1
Cyanide	7	6	5.2	**Yes**	Triggers 1 and 2
Chloroethane	0.39	0.4	--	No	--
Chlorodibromomethane (Dibromochloromethane)	30	0.75	0.41[2]	**Yes**	Triggers 1 and 2
Chloroform	51	33	--	No	--
Dichlorobromomethane (Bromodichloromethane)	17	4.8	0.56[2]	**Yes**	Triggers 1 and 2
Methyl Chloride	0.33	0.33	--	No	--
Methylene Chloride	2.9	2.9	4.7[2]	No	--
Bis(2-ethylhexyl) phthalate	15	10	1.8[2]	**Yes**	Triggers 1 and 2
Dibenzo(a,h)anthracene	0.06	None	0.0044[2]	**Yes**	Trigger 1
1,4 Dichlorobenzene	0.9	1	5[3]	No	--
Dimethyl Phthalate	1.1	ND	313,000[2]	No	--

"--" = not applicable

[1] Freshwater aquatic life criteria for metals are expressed as a function of total hardness in the water body. (See page 31717 of Federal Register Notice Vol. 65, No. 97, May 18, 2000, for calculations). The copper and zinc criteria were based on a hardness value of 170 mg/L (as $CaCO_3$) (the minimum value) from upstream data from 12/10/01, 12/18/01, 1/16/02, 2/5/02, 2/26/02 and 4/18/02.

[2] Human health criteria for consumption of water and organisms were based on the receiving water beneficial use of MUN.

[3] California Maximum Contaminant Level

[4] Federal Maximum Contaminant Level

Non-CTR Pollutants

The procedures in the SIP for determining reasonable potential and calculating WQBELs specifically apply only to priority pollutant criteria promulgated through the NTR and CTR and to priority pollutant objectives established by Water Boards in their Basin Plans. For other constituents, the Water Board must determine what procedures it will use to evaluate reasonable potential and calculate effluent limitations. In order to maintain consistency in methodology for permitting discharges of various constituents, the Water Board proposes to use the same procedures required by the SIP for CTR constituents to evaluate reasonable potential and, where necessary, develop WQBELs for non-CTR constituents.

For constituents with no promulgated numeric water quality criteria or objectives, the Water Board also must interpret narrative objectives from the Basin Plan to establish the basis for reasonable potential and effluent limitation calculations. In addition to USEPA National Recommended Water Quality Criteria, the Central Valley Water Board has developed *A Compilation of Water Quality Goals* that it uses to help select the appropriate basis for interpreting narrative criteria in NPDES calculations. These goals include USEPA-recommended criteria for protection of aquatic life, drinking water MCLs, agricultural water quality limits, and other water quality goals designed to protect various beneficial uses. Appropriate selection of criteria or goals to interpret narrative criteria depends on the specific beneficial uses of the receiving water. For example, drinking water MCLs and SMCLs are used to interpret narrative criteria if the receiving water is a source of municipal drinking water (MUN). Board staff proposes to use *A Compilation of Water Quality Goals*, where appropriate, to help select numerical water quality goals to interpret narrative water quality objectives from the Basin Plan.

Table 10 summarizes the reasonable potential analysis for non-CTR parameters at Discharge Point 001. The table includes data on non-CTR constituents detected and quantified in the Discharger's effluent based on monitoring data from 1999 through 2006. The table includes the maximum concentration of each parameter present in the Discharger's effluent at quantifiable levels, the background concentrations (concentrations in receiving water upstream of the discharge), and the most stringent applicable recommended water quality criterion, objective, or goal along with the basis of that criterion, objective, or goal.

The Basin Plan includes a narrative criterion for Chemical Constituents (pages 3-4 and 3-5) which, in part, says, "Waters designated as AGR shall not contain concentrations of chemical constituents in amounts that adversely affect water for beneficial uses (i.e., agricultural purposes)." In addition, page 3-15 of the Basin Plan states, "In determining compliance with objectives including references to the AGR designated use, the Water Board will refer to water quality goals and recommendations from sources such as the Food and Agriculture Organization of the United Nations, University of California Cooperative Extension, Committee of Experts, and McKee and Wolf's 'Water Quality Criteria' (1963)."

The United Nation's Agricultural Water Quality Limit for sodium is 69 mg/L (as noted in *A Compilation of Water Quality Goals*). This value is the lowest available numerical value available for interpreting the chemical constituents objective for sodium (see Table 10 below); however, this water quality goal cannot be used as an absolute value for interpreting the narrative Water Quality Objective for Chemical Constituents from the Basin Plan (see State Water Board WQO 2004-0010). Therefore, the Water Board has not determined that the discharge of sodium from the facility will not cause, have the reasonable potential to cause, or contribute to an excursion of the narrative Basin Plan Water Quality Objective for Chemical Constituents. Should additional monitoring or other information indicate that the AGR use is potentially impacted by the discharge, the Water Board will consider the need for an effluent limitation for sodium.

Table 10. Summary of Reasonable Potential Analysis for Non-CTR Pollutants – Discharge Point 001

Parameter	Maximum Observed Effluent Concentration (in µg/L unless otherwise noted)	Maximum Background Concentration (B) (in µg/L unless otherwise noted)	Most Stringent Applicable Recommended Water Quality Criterion or Goal (in µg/L unless otherwise noted)	Basis for Minimum Applicable Water Quality Criterion or Goal	Reasonable Potential?	Basis for Reasonable Potential Determination
CONVENTIONAL POLLUTANTS						
Fecal Coliform	No Data	No Data	Log Mean of 20/100 mL (30-day period) and no more than 10 percent of samples may exceed 40/100 mL (30-day period)	Basin Plan Objective	Yes	Basin Plan Objective for fecal coliform; constituent generally present in POTW effluent; subset of total coliform; total coliform data show exceedances of total coliform criteria
pH	6.0 – 7.75 (standard units)	7.2 – 8.3 (standard units)	6.5-8.5 (standard units)	Basin Plan Objective	Yes	MEC > WQO
NON-CONVENTIONAL POLLUTANTS						
Ammonia Nitrogen, Total (as N)	15,900	100	5,900 (1-hour average) [2] 960 (4-day average)	Basin Plan – Based on 1986 EPA Criteria	Yes	MEC > WQO
Chlorine, Total Residual	5-7 (Range of Daily Averages)	No Data	3 (maximum) 2 (six-month median)	Basin Plan Objectives (EPA Aquatic Life Criteria are 19 [1-hour average] and 11 [4-day average])	Yes	MEC > WQO
Chloroform [1]	51	No Data	100	Basin Plan Objective for Chemical Constituents – California Primary MCL	No	--
Coliform, Total	300/100 mL (April 3, 2001 and 33/100 mL and 74/100 mL within 30 days (February 19 – March 4 2002)	No Data	MPN of 2.2 per 100 mL (median of last 7 days analyses); MPN of 23 per 100/mL (no more than one sample in any 30 days); MPN of 240 per 100 mL (instantaneous maximum)	CCR, Title 22 requirements for disinfected tertiary recycled water – required for application in landscaping and on unrestricted access golf courses and to protect beneficial uses of Mojave River (AGR and REC-1)	Yes	MEC > WQO

Parameter	Maximum Observed Effluent Concentration (in µg/L unless otherwise noted)	Maximum Background Concentration (B) (in µg/L unless otherwise noted)	Most Stringent Applicable Recommended Water Quality Criterion or Goal (in µg/L unless otherwise noted)	Basis for Minimum Applicable Water Quality Criterion or Goal	Reasonable Potential?	Basis for Reasonable Potential Determination
Methylene Blue Active Substances (MBAS)	550	<20	500	Basin Plan Objective for Chemical Constituents – Secondary MCL for foaming agents	Yes	MEC > WQO (based on SMCL)
Molybdenum	<10	<2.0	No numeric objective or criterion	USEPA IRIS value is 35 µg/L	No	--
Nitrate Nitrogen[3], Total (as N)	50,000 (as N)	1,800 (as N)	10,000 (as N)	Basin Plan Objective for Chemical Constituents – MCL	Yes	MEC > WQO (based on MCL)
Sodium	110,000	No Data	No numeric Water Quality Objective or numeric interpretation of narrative Water Quality Objective for this site – United Nations Agricultural Water Quality Limit is 69,000 (69 mg/L)	Basin Plan Narrative Objective for Chemical Constituents	No – Agricultural Goal alone insufficient for reasonable potential determination	--
Total Dissolved Solids	510,000	430,000	No numeric objective or criterion	--	No reasonable potential based on data alone, but limits required based on existing limits in permit	Existing Effluent Limitations
Turbidity	4.60	7.6 (upstream); 7.8 (downstream)	2 NTU (average within a 24-hour period); 5 NTU (cannot be exceeded more than 5 percent of the time in a 24-hour period); 10 NTU (instantaneous maximum)	CCR, Title 22 requirements for filtered wastewater – required for application for landscaping and unrestricted access golf courses and to protect beneficial uses of Mojave River (AGR and REC-1)	Yes	MEC > WQO B> WQO

Parameter	Maximum Observed Effluent Concentration (in µg/L unless otherwise noted)	Maximum Background Concentration (B) (in µg/L unless otherwise noted)	Most Stringent Applicable Recommended Water Quality Criterion or Goal (in µg/L unless otherwise noted)	Basis for Minimum Applicable Water Quality Criterion or Goal	Reasonable Potential?	Basis for Reasonable Potential Determination
Vanadium	30	10	50	Basin Plan Objective for Chemical Constituents – California State Action Level for Drinking Water (Agr. Water Quality Limit is 100 µg/L)	No	--

[1] Chloroform is a CTR pollutant; however, no criteria for chloroform were promulgated in the CTR. Therefore, for purposes of a reasonable potential analysis, chloroform is treated as a non-CTR pollutant. EPA has proposed recommended criteria for protection of human health to replace its current recommended criteria. In light of the uncertainty regarding EPA's criteria recommendations, the Water Board is using the California MCL for chloroform as the basis for the reasonable potential analysis for this constituent.

[2] The Water Board used data provided by the Discharger for the Mojave River downstream of Discharge Point 001 to calculate applicable ammonia objectives. The Discharger provided quarterly pH and temperature data for 1999-2003. The Water Board selected data for the most critical month (August) from the quarterly data and used the median pH (7.6 standard units) and the average temperature (23.2 °C) from the August data to determine ammonia objectives using Tables 3-1 and 3-3 (waters designated COLD) from the Basin Plan.

[3] The wastewater undergoes aerobic secondary treatment prior to being directed to Outfall 001 and 002. Under these circumstances, organic nitrogen is converted to ammonia, which is converted to nitrate.

4. WQBEL Calculations

As specified in 40 CFR section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an excursion above any State water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses for the receiving water as specified in the Basin Plan and achieve applicable water quality objectives and criteria (that are contained in the Basin Plan and other State plans and policies) or USEPA water quality criteria contained in the CTR and NTR.

WQBEL Calculations for CTR Parameters (Priority Pollutants)

The specific procedures for calculating WQBELs for CTR parameters are contained in Section 1.4 of the SIP. These procedures include:

1) If applicable and available, use of the wasteload allocation (WLA) established as part of a total maximum daily load (TMDL).
2) Use of a steady-state model to derive an effluent concentration allowance (ECA) and use of statistical procedures based on a lognormal distribution of effluent pollutant concentrations to develop maximum daily effluent limitations (MDELs) and average monthly effluent limitations (AMELs).
3) Where sufficient effluent and receiving water data exist, use of a dynamic model that has been approved by the Water Board.
4) Establishing effluent limitations that consider intake pollutants using procedures in the SIP.

Because there are no TMDLs for the Mojave River and there is no dynamic model approved by the Water Board for modeling the effects of this discharge, and consideration of intake pollutants is not appropriate for this discharge, the Water Board has used the second procedure to develop effluent limitations. Using a simple mass-balance equation, the Water Board has calculated ECAs as follows:

$ECA = C + D\ (C - B)$ when $C > B$, and
$ECA = C$ when $C \leq B$

Where:
C = the priority pollutant criterion/objective, adjusted for hardness, pH, and translators
D = the dilution credit; and
B = the ambient background concentration.

The ambient background concentration is the observed maximum concentration with the exception that an *ECA* calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects is the ambient background concentration as an arithmetic mean.

Downstream of the discharge, the Mojave River is, at times, composed entirely of effluent. Therefore, no dilution credit is applied in calculations of WQBELs for the discharge to the Mojave River. Thus:

$$ECA = C + D\,(C - B)$$
$$= C + 0\,(C - B)$$
$$= C$$

As noted above, some CTR criteria are hardness- or pH-dependent. The Discharger provided receiving water hardness data as part of its required monitoring for priority pollutants with criteria in the CTR. The Discharger also provided pH data as part of routine effluent monitoring during the term of the previous Order. The hardness value of 170 mg/L as $CaCO_3$ and a pH of 7.2 standard units, the lowest measured receiving water hardness and pH, were used in all calculations. Since a site specific translator has not been developed for any CTR constituent, as described in the SIP Section 1.4.1, the USEPA conversion factors for copper and zinc were used for translating the dissolved copper and zinc criteria into total recoverable effluent concentration allowances (*ECA*) with no dilution.

Aquatic Life Criterion or Objective

For each *ECA* based on an aquatic life criterion or objective (i.e., acute or chronic aquatic life criterion), the long-term average discharge condition (*LTA*) is calculated by multiplying the *ECA* by a factor (multiplier) that adjusts for effluent variability based on the coefficient of variation (*CV*) for the effluent pollutant concentration data. If (a) the number of effluent data points is less than ten, or (b) at least 80 percent of the data are reported as not detected, the CV is set equal to 0.6.

ECA Equations

$$\text{ECA multiplier}_{acute99} = e^{\wedge}(0.5\sigma^2 - z\sigma)$$
$$\text{ECA multiplier}_{chronic99} = e^{\wedge}(0.5\sigma_4^2 - z\sigma_4)$$

Where
- σ = standard deviation
- $\sigma = [ln(CV^2 + 1)]^{0.5}$
- $\sigma^2 = ln(CV^2 + 1)$
- $\sigma_4 = [ln(CV^2/4 + 1)]^{0.5}$
- $\sigma_4^2 = ln(CV^2/4 + 1)$
- z = 2.326 for 99th percentile probability basis

LTA Equations

$$LTA_{acute} = ECA_{acute} \times \text{ECA multiplier}_{acute99}$$
$$LTA_{chronic} = ECA_{chronic} \times \text{ECA multiplier}_{chronic99}$$

Using the lowest (most limiting) of the LTAs for the pollutant, an average monthly effluent limitation, AMEL, and a maximum daily effluent limitation, MDEL are

calculated by multiplying the most limiting LTA by a factor (multiplier) that adjusts for the averaging periods and exceedance frequencies of the criteria or objectives and the effluent limitations, and the effluent monitoring frequency as follows:

$$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier95}$$
$$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier99}$$

The AMEL and MDEL multipliers are calculated as described below using the previously calculated *CV* and the anticipated monthly sampling frequency (*n*) of the pollutant in the effluent. If the sampling frequency is four times a month or less, *n* is set equal to 4.

$$AMEL_{multiplier95} = e^{(z\sigma_n - 0.5\sigma_n^2)}$$

Where:
$\sigma_n = [ln(CV^2/n+ 1)]^{0.5}$
$\sigma_n^2 = ln(CV^2/n+ 1)$
z = 1.645 for 95th percentile probability basis
n = number of samples per month

$$MDEL_{multiplier99} = e^{(z\sigma - 0.5\sigma^2)}$$

Where:
$\sigma_n = [ln(CV^2+ 1)]^{0.5}$
$\sigma_n^2 = ln(CV^2+ 1)$
z = 2.326 for 99th percentile probability basis

Sample Calculations for Copper based on Aquatic Life Criteria

Acute Effluent Concentration Allowance with no dilution

$ECA_a = C = 23.08\ \mu g/L$

Chronic Effluent Concentration Allowance with no dilution

$ECA_c = C = 14.68\ \mu g/L$

Long Term Average concentration based on acute ECA

$LTA_a = 23.08\ \mu g/L \times 0.495 = 11.43\ \mu g/L$
(where 0.495 = acute ECA multiplier at 99% occurrence probability; CV = 0.33)

Long Term Average concentration based on chronic ECA

$LTA_c = 14.68\ \mu g/L \times 0.690 = 10.12\ \mu g/L$
(where 0.69 = chronic ECA multiplier at 99% occurrence probability; CV = 0.33)

Most Limiting LTA concentration: LTA = 10.12 µg/L

Average Monthly Effluent Limitation

AMEL = LTA × 1.295
(where 1.295 = AMEL multiplier at 95% occurrence probability; n = 4; CV = 0.33)

AMEL = 10.12 µg/L × 1.295 = 13.10 µg/L = **13 µg/L** (rounded)

Maximum Daily Effluent Limitation

MDEL = LTA × 2.019
(where 2.019 = MDEL multiplier at 99% occurrence probability; CV = 0.33)

MDEL = 10.12 µg/L × 2.019 = 20.43 µg/L = **20 µg/L** (rounded)

Human Health Criterion or Objective

For the applicable human health criterion or objective, the AMEL is set equal to the ECA.

$AMEL_{human\ health}$ = ECA

To calculate the MDEL for a human health criterion or objective, the ECA is multiplied by the ratio of the MDEL multiplier to the AMEL multiplier as specified in the SIP.

Sample Calculations for Chlorodibromomethane Based on Human Health Criteria

Effluent Concentration Allowance with no dilution

ECA = C = 0.41 µg/L

AMEL = ECA = **0.41 µg/L**

MDEL = AMEL × (MDEL multiplier / AMEL multiplier)
= 0.41 µg/L × 3.176
= 1.302 µg/L = **1.3 µg/L** (rounded)

Attachment I summarizes the factors used in the equations above to calculate WQBELs for the CTR parameters where the RPA determined that the discharge would cause, have reasonable potential to cause, or contribute to an excursion of water quality standards.

Mass-based limitations are calculated from concentration-based limitations using the equation provided in Section IV.B.2 and are based on the permitted flow for the

discharge to the Mojave River of 14.0 mgd. ***Calculations of priority pollutant effluent limitations are, in general, rounded to two significant figures.***

WQBEL Calculation for Non-CTR Parameters

As noted above, downstream of the discharge, the Mojave River is, at times, composed entirely of effluent. No dilution credit is applied in calculations of WQBELs for the discharge to the Mojave River. For ammonia and methylene blue active substances (MBAS), the Water Board used statistical procedures based on the procedures in USEPA's *1991 Technical Support Document for Water Quality-based Toxics Control* to translate water quality objectives into an MDEL and an AMEL. Maximum Contaminant Levels (MCLs) and Secondary Maximum Contaminant Levels (SMCLs) used to protect the MUN use have been treated as average monthly values and, consequently, established as the AMEL for the discharge.

Where necessary, the Water Board reviewed data submitted by the Discharger to determine a CV for calculating effluent limitations. The CVs for ammonia and for MBAS are included in Table 11 below. For some non-CTR parameters (e.g., pH and turbidity), the water quality objectives are applied directly as effluent limitations. For TDS, the limitations from Order No. 6-99-58 are carried over to this Order.

Mass-based limitations are calculated from concentration-based limitations using the equation provided in Section IV.B.2 and are based on the permitted flow for the discharge to the Mojave River of 14.0 mgd. These calculations are, in general, rounded to three significant figures.

Table 11. Summary of CV Used in Calculations for Non-CTR Pollutants

Parameter	Number of Observations < 10 or are ≥ 80% of Observations Reported as ND?	Coefficient of Variation (CV)
Ammonia Nitrogen, Total (as N)	No	0.55
Methylene Blue Active Substances (MBAS)	No	0.42

Conventional Pollutants

pH

The pH limitations of an instantaneous maximum of 8.5 standard units and instantaneous minimum of 6.5 standard units were established using the Basin Plan objective. Existing effluent data show that effluent pH has periodically been measured below the lower pH requirement of 6.5 standard units. Also, technology-based effluent limitations derived from secondary treatment standards require pH to be maintained within the range of 6.0 to 9.0 standard units and the existing Order (No. 6-99-58) established limitations requiring a pH range from 6.0 to 8.5 standard units. Therefore, pH limitations are necessary in this Order. To maintain consistency with the Basin Plan, the limitations in this Order are based on the Basin

Plan objective and are more stringent than either the technology-based effluent limitations or the effluent limitations in Order No. 6-99-58.

VVWRA currently is collecting data, including effluent and receiving water (Mojave River) monitoring for many constituents. After review and analysis of new or additional data, the Board may choose to reopen this Order to modify the final effluent limitations at Discharge Point 001 for pH to ensure that the discharge is compliance with the Basin Plan. New effluent limitations may be established to attain of all beneficial uses, water quality objectives, and nondegradation of water quality, as specified in the Basin Plan.

Fecal Coliform

The fecal coliform limitations were established using the Basin Plan Objective, which requires that the log mean during any 30-day period not exceed 20/100 mL and that no more than 10 percent of samples collected during any 30-day period exceed 40/100. Order No. 6-99-58 does not include effluent limitations for fecal coliform.

Non-Conventional Pollutants

Ammonia Nitrogen, Total (as N)

Water quality objectives for total ammonia nitrogen (as N) were calculated from Basin Plan Tables 3-1 and 3-3. These tables provide 1-hour and 4-day average criteria based on pH and temperature for waters designated as COLD. Based on downstream receiving water data for the month of August from 1999-2003 provided by the Discharger, a median pH value of 7.6 standard units (7.75 standard units using the Basin Plan tables) and a average temperature of 23.2 degrees Celsius (rounded to 25 degrees Celsius to use the Basin Plan tables) were used to calculate ammonia criteria of 5.9 mg/L (as N) as a 1-hour average and 0.96 mg/L (as N) as a 4-day average. The Water Board used the same procedures used for CTR aquatic life criteria to calculate WQBELs based on these aquatic life criteria for ammonia. From 1214 effluent data points for ammonia (as N) collected by the Discharger between January 2001 through March 2006, the Water Board calculated a CV of 0.55. Using the equations for determining the MDEL and AMEL discussed in Section IV.C.4, the Water Board calculated the following effluent limitations for total ammonia nitrogen (as N).

AMEL = 0.80 mg/L (as N)
MDEL = 1.5 mg/L (as N)

Mass-based effluent limitations were calculated using the following formula:

Mass (lbs/day) = flow rate (MGD) × 8.34 × effluent limitation (mg/L)
Where: Mass = mass limitation for a pollutant (lbs/day)
Effluent limitation = concentration limit for a pollutant (mg/L)
Flow rate = discharge flow rate (MGD)
8.34 is a conversion factor

Using this formula, the following mass-based effluent limitation has been calculated for total ammonia nitrogen, and all other non-CTR pollutants, using a flow of 14.0 mgd:

AMEL = 93.4 lbs/day (as N)
MDEL = 175 lbs/day (as N)

Order No. 6-99-58 does not include effluent limitations for ammonia.

VVWRA currently is collecting data, including effluent and receiving water (Mojave River) monitoring for many constituents. After review and analysis of new or additional data, the Board may choose to reopen this Order to modify the final effluent limitations at Discharge Point 001 for total ammonia nitrogen to ensure that the discharge is in compliance with the Basin Plan. New effluent limitations may be established to attain all beneficial uses, water quality objectives, and nondegradation of water quality, as specified in the Basin Plan.

Total Residual Chlorine (TRC)

Order No. 6-99-58 contains effluent limitations for TRC that require a maximum 1-hour average TRC concentration of 0.019 mg/L and a 4-day average concentration of no more than 0.011 mg/L. The maximum daily discharge of chlorine of 1.3 lbs/day was based on the maximum instantaneous flow of 14 mgd.

This Order establishes an MDEL of 3 µg/L and a six-month median effluent limitation of 2 µg/L based on the Basin Plan water quality objectives for chlorine. These effluent limitations are more stringent than the existing effluent limitations (e.g., 1 hr average = 0.019 mg/L vs. a daily maximum of 0.003 mg/L)

MDEL = 3 µg/L (0.003 mg/L)
= 0.350 lbs/day

Six-Month Median = 2 µg/L (0.002 mg/L)
= 0.234 lbs/day

As discussed in Provision VII.A.2 of this Order, effluent limitations for TRC are below the expected minimum level (ML) for this constituent. Non-compliance with a TRC limitation is defined by exceeding both the limitation and the Reporting Level (RL). The Discharger must achieve the lowest possible RL for Total Residual Chlorine but, in no case, may the RL be greater than 0.1 mg/L.

Dissolved Oxygen

The Basin Plan objective (Table 3-6) for dissolved oxygen is 4 mg/L as an instantaneous minimum value. The dissolved oxygen limitation is established using the Basin Plan objective. The existing Order (No. 6-99-58) established an instantaneous minimum limitation of 1 mg/L. The limitation in this Order, based on

the Basin Plan objective, is more stringent than the effluent limitation in Order No. 6-99-58 and, therefore, there is no backsliding.

Methylene Blue Active Substances (MBAS)

The existing Order (No. 6-99-58) contains effluent limitations for MBAS which include a 30-day mean of 1.0 mg/L and 69 lbs/day; and a daily maximum of 2.0 mg/L and 138 lbs/day.

The Basin Plan Objective for Chemical Constituents (pages 3-4 and 3-5), Secondary MCLs for Foaming Agents, establishes the most stringent water quality objective for MBAS at 0.5 mg/L. Using the statistical procedures from USEPA's 1991 *Technical Support Document for Water Quality-based Toxics Control*, this Order establishes 0.5 mg/L as the AMEL and includes an MDEL based on the AMEL and a CV of 0.42. The CV was calculated from 345 data points collected by the Discharger between January 1999 and July 2005 and submitted to the Water Board.

AMEL = 0.5 mg/L
= 35 lbs/day
MDEL = 0.9 mg/L
= 62 lbs/day

The proposed limitations are more stringent than the existing limitations (e.g., AMEL of 0.5 mg/L vs. 1.0 mg/L) and, therefore, there is no backsliding.

Nitrate Nitrogen, Total (as N)

There is no applicable numeric water quality objective for nitrate in the Basin Plan applicable to the Mojave River surface water at the point of discharge for VVWRA. However, the Basin Plan has a chemical constituents objective for water designated MUN. The Basin Plan also implements, and incorporates by reference, California's Nondegradation Policy.

The Basin Plan states that waters designated as MUN shall not contain concentrations of chemical constituents in excess of the Maximum Contaminant Level or MCL. Therefore, the MCL of 10 mg/L of total nitrate–nitrogen (as N) establishes an upper water quality objective for nitrate. Effluent discharged into the Mojave River percolates into underlying groundwater. Water Board staff's evaluation to determine an appropriate nitrate-nitrogen water quality objective, protective of beneficial uses and consistent with the Nondegradation policy, follows.

California's Nondegradation Policy, State Water Board Resolution No 68-16, incorporates federal antidegradation policy required under 40 CFR 131.12. Resolution No 68-16 states, in part, that an increase in pollutant discharge must utilize best practical treatment and control to assure that (a) pollution or nuisance will not occur and (b) the highest water quality will be maintained consistent with the maximum benefit to the people of the State.

The discharger submitted the *River Antidegradation Analysis Report* on August 28, 2007. In this report, the discharger proposed tertiary treatment with biological nutrient removal for nitrogen. The discharger requested that, based on the proposed treatment process, a 12-month average effluent limitation of 10 mg/L for total nitrogen. The discharger submitted the *Addendum to Antidegradation Analysis for Expansion of the Regional Wastewater Treatment Plant, River Discharge* on January 7, 2008. Following completion of nitrification and denitrification facilities, the discharger proposed a 12-month average effluent limitation of 5.0 mg/L for nitrate (as N).

The Water Board reviewed the supporting cost data submitted in the *River Antidegradation Analysis* and concurs that the proposed tertiary treatment facility with biological nutrient removal for nitrogen implements best practical treatment and control. Water Board then evaluated the discharger's requested proposed limit relative to the capability of the proposed treatment technology. Based on a review of the USEPA fact sheet *Biological Nutrient Removal Processes and Costs*, and discussions with other California State Regional Water Boards, the Water Board staff research shows the combination of biological nutrient removal and tertiary filtration can produce an effluent quality with an average long–term performance concentration of 6.0 mg/L for total nitrogen.

In treated wastewater with biological nutrient removal, total nitrogen consists of organic–nitrogen, ammonia–nitrogen, nitrite–nitrogen, and nitrate–nitrogen. The nitrification process usually oxidizes ammonia to nitrate, and nitrite–nitrogen is usually present in concentrations of less than 0.5 mg/L. In addition, most of the organic–nitrogen is consumed in the activated sludge and nitrification process. Therefore, for purposes of developing effluent limits for nitrate–nitrogen, the nitrate–nitrogen long–term average is the difference between the total nitrogen long–term average and the ammonia–nitrogen long–term average. As determined in the section for ammonia–nitrogen, the AMEL for ammonia nitrogen is 0.80. Using the CV of 0.55 and the 1214 effluent data points collected by the Discharger between January 2001 and March 2006 for ammonia-nitrogen, the long–term average concentration for ammonia nitrogen is 0.80 ÷ 1.17 = 0.70 mg/L. Thus, the expected long–term performance concentration for nitrate–nitrogen is 6.0 mg/L – 0.7 mg/L = 5.3 mg/L.

The long–term performance concentration of 5.3 mg/L is more restrictive than the MCL of 10 mg/L. The Water Board selects the long–term performance concentration of 5.3 mg/L as the applicable basis for water quality based effluent limitations. The selected long-term performance concentration satisfies the pollution and nuisance requirement of the California's nondegradation policy because the long–term performance concentration is below the MCL. The selected long–term performance concentration also satisfies California's Nondegradation Policy requirement for "maximum benefit to the people of the State" because the data provided by the Discharger in the *River Antidegradation Analysis Report* shows that to achieve a more restrictive limit would result in an economic impact to the served population.

Based on information provided by the discharger in the August 2007 Antidegradation Analysis, Water Board staff evaluated the effect of different treatment technologies for total nitrogen reduction with respect to the average VVWRA user costs.

Table 11-a Incremental User Fee Cost Increases

Existing Treatment Costs 18 MGD ($/user/mo)	**Proposed MBR Treatment Costs 22 MGD ($/user/mo)**	**Treatment Cost Increase ($/user/mo)**	**Total Nitrogen Reduction from 11.6 mg/L Current to 6 mg/L after Proposed MBR**	**Incremental Increase in User Cost ($ per mg/L reduction/user/mo)**
$12.87	$20.26	$7.39	5.6 mg/L	$1.32
Proposed MBR Treatment Costs 22 MGD ($/user/mo)	**Possible RO Treatment Costs 22 MGD ($/user/mo)**	**Treatment Cost Increase ($/user/mo)**	**Total Nitrogen Reduction from 6 mg/L Proposed MBR to Possible RO 2 mg/L**	**Incremental Increase in User Cost ($ per mg/L reduction/user/mo**
$20.26	$33.41	$13.15	4 mg/L	$3.29

The MBR technology is not likely to produce a lower long-term effluent total nitrogen concentration than 6 mg/L. Thus, the incremental monthly treatment user charge increase for each mg/L reduction in total nitrogen from 11.6 mg/L to 6 mg/L is $1.32. The discharger evaluated reverse osmosis technology to reduce the total effluent nitrogen concentration from 6 mg/L to 2 mg/L. The incremental monthly treatment user charge for each mg/L reduction from 6 mg/L to 2 mg/L is $3.29. Thus, the incremental cost increase per mg/L of total nitrogen reduced is about 2.5 times greater for the reverse osmosis technology than for MBR technology. This would place an undue hardship on the community and affect economic growth and is not necessarily for the maximum benefit to the people of the State. After considering: (1) the MBR technology for planned upgrades, (2) the incremental cost increases to the VVWRA user fees with reverse osmosis technology, (3) added energy demand upon the state's energy grid with reverse osmosis technology, and (4) associated waste disposal costs for reverse osmosis brine, the planned MBR technology is the best practicable treatment or control of the discharge.

For purposes of calculating the AMEL and MDEL, the long–term performance concentration is the LTA. Because the limits are associated with a future discharge, the default CV is 0.6. The assumed number of samples per month is 4.

AMEL = 8.2 mg/L
= 957 lbs/day
MDEL = 11.3 mg/L
= 1320 lbs/day

VVWRA currently is collecting data, including effluent and receiving water (Mojave River) monitoring for many constituents. After review and analysis of new or additional data, the Board may choose to reopen this Order to modify the final effluent limitations at Discharge Point 001 for total nitrate nitrogen to ensure that the discharge is in compliance with the Basin Plan. New effluent limitations may be

established to attain all beneficial uses, water quality objectives, and nondegradation of water quality, as specified in the Basin Plan.

Order No. 6-99-58 does not include effluent limitations for nitrate.

Total Dissolved Solids (TDS)

There is no applicable numeric water quality objective for TDS in the Basin Plan applicable to the Mojave River surface water at the point of discharge for the Facility; however, the existing Order (No. 6-99-58) contains effluent limitations for TDS of 460 mg/L as a 12-month mean and a daily maximum of 580 mg/L. These effluent limitations are carried over to this Order as average annual and maximum daily effluent limitations; therefore, there is no backsliding.

VVWRA currently is collecting data, including effluent and receiving water (Mojave River) monitoring for many constituents. After review and analysis of new or additional data, the Board may choose to reopen this Order to modify the final effluent limitations for total dissolved solids at Discharge Point 001 to ensure that the discharge is compliance with the Basin Plan. New effluent limitations may be established to attain all beneficial uses, water quality objectives, and nondegradation of water quality, as specified in the Basin Plan.

Turbidity

Title 22 of the California Code of Regulations establishes requirements for disinfected tertiary recycled water use when applying the waters for landscaping and unrestricted access to golf courses, such as Westwinds. These requirements also protect the beneficial uses of the Mojave River [e.g., Agricultural Supply (AGR) and Contact Recreational Water (REC-1)]. Based on Title 22, turbidity effluent limitations will be established as: 2 NTU (average within a 24-hour period); 5 NTU (not to be exceeded more than 5 percent of the time in a 24-hour period); and 10 NTU (instantaneous maximum).

The existing Order (No. 6-99-58) required that the average turbidity of filtered wastewater not exceed an average turbidity of 2 NTU (30-day running average); and 5 NTU (not to be exceeded more than 5 percent of the time in a 24-hour period).

The application of the Title 22 requirements result in more stringent effluent limitations than in the existing Order (e.g., the 30-day running average established in Order No. 6-99-58 is now a 24-hour average and an instantaneous maximum was added).

Total Coliform

Title 22 of the California Code of Regulations establishes requirements for disinfected tertiary recycled water use when applying the waters for landscaping and unrestricted access to golf courses, such as Westwinds. These requirements also protect the beneficial uses of the Mojave River [e.g., Agricultural Supply (AGR) and

Contact Recreational Water (REC-1)]. Based on Title 22, total coliform limitations have been established as follows: the median concentration of total coliform bacteria shall not exceed an MPN of 2.2 per 100 mL based on the results of the last seven days for which analyses have been completed; the number of total coliform bacteria shall not exceed an MPN of 23 per 100 mL in more than one sample in any 30-day period; and the number of total coliform bacteria shall not exceed an MPN of 240 per 100 mL (instantaneous maximum).

The existing Order (No. 6-99-58) established total coliform limitations of an MPN of 2.2 per 100 mL (median number of coliform organisms in the last seven-days for which analyses have been completed) and an MPN of 23 per 100 mL (no more than one sample in any 30-day period). The existing Order did not establish an instantaneous maximum limitation.

Table 12. Summary of Factors Used in WQBEL Calculations for Non-CTR Pollutants

Parameter (units)	Acute Aquatic Life Criterion	Chronic Aquatic Life Criterion	Human Health Criterion	Coefficient of Variation (CV)	Most Limiting LTA	AMEL	MDEL
Ammonia Nitrogen, Total (as N) (mg/L)	5.9	0.96	--	0.55	0.53	0.80	1.5
MBAS (mg/L)	--	--	0.5	--	--	--	0.5
Nitrate Nitrogen, Total (as N) (mg/L)	--	--	10	0.6	5.3 (as N) (BPTC)	8.2 (as N)	11.3 (as N)

5. Whole Effluent Toxicity (WET)

Whole effluent toxicity (WET) tests measure the degree of response of exposed aquatic test organisms to an effluent to determine the aggregate toxic effect of a mixture of pollutants in the effluent. The WET approach allows for protection of narrative toxicity objectives or implementation of numeric criteria for toxicity. There are two types of WET tests: acute and chronic. An acute toxicity test is conducted over a short time period and measures mortality. A chronic toxicity test generally is conducted over a longer period of time or during a critical life phase and may measure mortality, reproduction, growth, or other sub-lethal responses.

The Basin Plan specifies a narrative objective for toxicity, requiring that: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in, human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration and/or other appropriate methods as specified by the Regional [Water] Board. The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for

the same water body in areas unaffected by the waste discharge or, when necessary, for other control water..."

In addition, Section 4 of the SIP states that a chronic toxicity effluent limitation is required in permits for all discharges that will cause, have the reasonable potential to cause, or contribute to chronic toxicity in receiving waters.

The Facility's discharge to the Mojave River at Discharge Point 001 is continuous, and there generally is little or no dilution of the discharge by the receiving water. Therefore, it is possible that the discharge could contribute to both acute and chronic toxic effects in the Mojave River.

The existing Order (No. 6-99-58) required both acute and chronic toxicity testing of effluent discharged at Discharge Point 001. In addition, the existing Order included receiving water limitations specifying that the discharge not cause acute or chronic toxicity in ambient waters. Acute toxicity was defined in the Receiving Water Limitations as less than 90 percent survival 50 percent of the time and less than 70 percent survival 10 percent of the time of standard test organisms in undiluted effluent in a 96-hour static or continuous-flow test. Chronic toxicity was defined in the MRP as a statistically significant difference at the 95 percent confidence level in survival or growth between test organisms exposed to an appropriate control water and undiluted effluent.

The Discharger summarized the results of WET testing in its permit renewal application. Acute toxicity testing showed a percent survival of 70-100 percent for *Pimephales promelas* in undiluted effluent. Chronic WET testing was conducted on the effluent and a control sample using *Pimephales promelas* (larvae survival and teratogenicity) and *Ceriodaphnia dubia* (survival and reproduction). The Discharger reported no significant difference between the control sample and a sample of 100% effluent in annual tests between 2000 and 2004. The Discharger reported no significant difference between the control sample and a sample of 100% receiving water in all but two annual tests between 2000 and 2004. There was a significant difference in *Pimephales promelas* survival and teratogenicity between receiving water sample taken from the Mojave River downstream of the discharge location and tested on January 23, 2001, and a control sample. There also was a significant difference in *Pimephales promelas* survival and teratogenicity between receiving water sample taken from the Mojave River upstream of the discharge location and tested on January 21, 2004, and a control sample.

From the reported data, it appears that the Discharger has not violated the receiving water limitations for acute or chronic toxicity in Order No. 6-99-58. Based on the occasional presence of some toxicity in the effluent, however, the proposed Order continues to include both acute and chronic WET monitoring requirements. In addition, the acute toxicity limitation from Order No. 6-99-58 are expressed as an Effluent Limitations, rather than receiving water limitations, because these requirements apply to undiluted effluent. The chronic toxicity requirements are expressed as Provisions in this Order and serve as triggers for accelerated testing and initiation of a toxicity reduction evaluation (TRE).

The definitions of acute and chronic toxicity in the effluent limitations have been modified for clarity; however, the underlying definitions (percent survival in undiluted effluent for acute toxicity and no significant difference in chronic toxicity between undiluted effluent and a control for chronic toxicity) are consistent with the definitions in Order No. 6-99-58.

Table 13. Summary of Water Quality-based Effluent Limitations – Discharge Point 001 (Based on 14.0 mgd Permitted Flow)

Parameter	Units	Effluent Limitations						
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-month Median	Average Annual
Conventional Pollutants								
pH	standard units	--	--	--	6.5	8.5	--	--
Priority Pollutants								
Copper, Total Recoverable	mg/L	13	--	20	--	--	--	--
	lbs/day	1.5	--	2.3	--	--	--	--
Zinc, Total Recoverable	µg/L	77	--	190	--	--	--	--
	lbs/day	9.0	--	22	--	--	--	--
Cyanide, Total (as CN)	µg/L	3.6	--	9.6	--	--	--	--
	lbs/day	0.42	--	1.1	--	--	--	--
Chlorodibromomethane (Dibromochlormethane)	µg/L	0.41	--	1.3	--	--	--	--
	lbs/day	0.048	--	0.15	--	--	--	--
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56	--	1.4	--	--	--	--
	lbs/day	0.065	--	0.16	--	--	--	--
Bis(2-ethylhexyl) phthalate	µg/L	1.8	--	3.6	--	--	--	--
	lbs/day	0.21	--	0.42	--	--	--	--
Dibenzo(a,h)anthracene	µg/L	0.0044	--	0.0088	--	--	--	--
	lbs/day	0.00051	--	0.0010	--	--	--	--
Non-conventional Pollutants								
Ammonia Nitrogen, Total (as N)	mg/L	0.80	--	1.5	--	--	--	--
	lbs/day	93.4	--	175	--	--	--	--
Chlorine, Total Residual[1]	mg/L	--	--	0.003	--	--	0.002	--
	lbs/day	--	--	0.350	--	--	0.234	--
Dissolved Oxygen	mg/L	--	--	--	4.0	--	--	--
Methylene Blue Active Substances (MBAS)	mg/L	0.50	--	0.90	--	--	--	--
	lbs/day	58.4	--	105	--		--	--
Nitrate Nitrogen, Total	mg/L	8.2	--	11.3	--	--	--	--

Parameter	Units	Effluent Limitations						
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-month Median	Average Annual
(as N)	lbs/day	957	--	1320	--	--	--	--
Total Dissolved Solids (TDS)	mg/L	--	--	580	--	--	--	460
	lbs/day	--	--	67,700	--	--	--	53,700

"--" = not applicable

[1] Effluent limitations for Total Residual Chlorine are below the expected minimum level (ML) for this constituent. Non-compliance with a Total Residual Chlorine limitation is defined by exceeding both the limitation and the ML. The Discharger must achieve the lowest possible ML for Total Residual Chlorine but, in no case, may the ML be greater than 0.1 mg/L.

Fecal Coliform

Effluent at all times shall be an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The number of fecal coliform bacteria shall not exceed either of the following:

- A log mean of 20 per 100 mL for any 30-day period
- 40 per 100 mL in more than 10 percent of all of the samples collected in any 30-day period.

Total Coliform

Effluent at all times shall be an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The number of total coliform bacteria shall not exceed any of the following:

- A median Most Probable Number (MPN) of 2.2 per 100 mL based on the results of the last seven days for which analyses have been completed
- An MPN of 23 per 100 mL in more than one sample in any 30-day period
- An MPN of 240 per 100 mL at any time (instantaneous maximum).

Turbidity

Effluent shall be a filtered wastewater that does not exceed any of the following:

- An average of 2 NTU within a 24-hour period
- 5 NTU more than 5 percent of the time in a 24-hour period
- 10 NTU at any time (instantaneous maximum).

Acute Toxicity

The effluent shall not exhibit acute toxicity, defined as:

- Less than 90 percent survival of *Pimephales promelas* in undiluted effluent in ≥ 50 percent of the samples in a calendar year; or
- Less than 70 percent survival of *Pimephales promelas* in undiluted effluent in ≥ 10 percent of the samples in a calendar year.

Acute whole effluent toxicity (WET) testing shall be conducted in accordance with the requirements specified in the Monitoring and Reporting Program (Attachment E).

D. Final Effluent Limitations

Table 14 and the text that follows the table summarize the final effluent limitations included in the proposed Order. The more stringent requirements of the technology-based effluent limitations and the water quality-based effluent limitations are included in the table as the final effluent limitations.

Table 14. Summary of Final Effluent Limitations – Discharge Point 001 (Based on 14.0 mgd Permitted Flow)

Parameter	Units	Final Effluent Limitations							Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median	Average Annual	
Conventional Pollutants									
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	10	15	30	--	--	--	--	E
	lbs/day	1,170	1,750	3,500	--	--	--	--	E
pH	standard units	--	--	--	6.5	8.5	--	--	WQO
Total Suspended Solids	mg/L	10	15	30	--	--	--	--	E
	lbs/day	1,170	1,750	3,500	--	--	--	--	E
Priority Pollutants									
Copper, Total Recoverable	µg/L	13	--	20	--	--	--	--	CTR
	lbs/day	1.5	--	2.3	--	--	--	--	CTR
Zinc, Total Recoverable	µg/L	77	--	190	--	--	--	--	CTR
	lbs/day	9.0	--	22	--	--	--	--	CTR
Cyanide, Total (as CN)	µg/L	3.6	--	9.6	--	--	--	--	CTR
	lbs/day	0.42	--	1.1	--	--	--	--	CTR
Chlorodibromomethane (Dibromochlormethane)	µg/L	0.41	--	1.3	--	--	--	--	CTR
	lbs/day	0.048	--	0.15	--	--	--	--	CTR
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56	--	1.4	--	--	--	--	CTR
	lbs/day	0.065	--	0.16	--	--	--	--	CTR
Bis(2-ethylhexyl)phthalate	µg/L	1.8	--	3.6	--	--	--	--	CTR
	lbs/day	0.21	--	0.42	--	--	--	--	CTR
Dibenzo(a,h)anthracene	µg/L	0.0044	--	0.0088	--	--	--	--	CTR
	lbs/day	0.00051	--	0.0010	--	--	--	--	CTR

Parameter	Units	Final Effluent Limitations							Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median	Average Annual	
Non-Conventional Pollutants									
Ammonia Nitrogen, Total (as N)	mg/L	0.80	--	1.5	--	--	--	--	WQO
	lbs/day	93.4	--	175	--	--	--	--	WQO
Chlorine, Total Residual[2]	mg/L	--	--	0.003	--	--	0.002	--	WQO
	lbs/day	--	--	0.350	--	--	0.234	--	WQO
Dissolved Oxygen	mg/L	--	--	--	4.0	--	--	--	WQO
Methylene Blue Active Substances (MBAS)	mg/L	0.50	--	0.90	--	--	--	--	WQO
	lbs/day	58.4	--	105	--		--	--	WQO
Nitrate Nitrogen, Total (as N)	mg/L	8.2	--	11.3	--	--	--	--	WQO /A
	lbs/day	957	--	1320	--	--	--	--	WQO /A
Total Dissolved Solids (TDS)	mg/L	--	--	580	--	--	--	460	E
	lbs/day	--	--	67,700	--	--	--	53,700	E

"--" = not applicable

[1] E=Existing Permit (Order No. 6-99-58); CTR=California Toxic Rule; WQOs=Basin Plan Water Quality Objectives; A=Antidegradation Policy

[2] Concentration-based effluent limitations for Total Residual Chlorine are below the expected minimum level (ML) for this constituent. Non-compliance with a Total Residual Chlorine limitation is defined by exceeding both the limitation and the Reporting Level (RL) used by the Discharger. The Discharger must achieve the lowest possible RL for Total Residual Chlorine but, in no case, may the RL be greater than 0.1 mg/L.

Flow

The average annual flow of effluent discharged to the Mojave River shall not exceed 14.0 million gallons per day (mgd) in any calendar year.

Water Board staff considered both annual and monthly average maximum flow limits. Neither affects the mass limits, which are based on 14 MGD. The Water Board did not propose changing the mass limits to reflect a potentially higher daily or monthly flow. If an annual average flow limit is 14 MGD, VVWRA could have monthly and daily flows that exceed 14 MGD by a wide margin and still be able to meet the annual flow limit. Flows too far above 14 MGD on a daily or monthly basis would cause violations in meeting daily or monthly mass-based limits. However, VVWRA wants operational flexibility to discharge at higher rates at certain times of the year. For this reason, the flow limit is an annual average. However, mass based effluent limits are based upon a maximum daily flow rate.

BOD/TSS Percent Removal

The average monthly percent removal for Biochemical Oxygen Demand (5-day @ 20° C) and Total Suspended Solids shall be at least 85 percent.

Fecal Coliform

Effluent at all times shall be an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The number of fecal coliform bacteria shall not exceed either of the following:

- A log mean of 20 per 100 mL for any 30-day period
- 40 per 100 mL in more than 10 percent of all of the samples collected in any 30 day period.

Total Coliform

Effluent at all times shall be an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater. The number of total coliform bacteria shall not exceed any of the following:

- A median Most Probable Number (MPN) of 2.2 per 100 mL based on the results of the last seven days for which analyses have been completed
- An MPN of 23 per 100 mL in more than one sample in any 30-day period
- An MPN of 240 per 100 mL at any time (instantaneous maximum).

Turbidity

Effluent shall be a filtered wastewater that does not exceed any of the following:

- An average of 2 NTU within a 24-hour period
- 5 NTU more than 5 percent of the time in a 24-hour period
- 10 NTU at any time (instantaneous maximum).

Acute Toxicity

The effluent shall not exhibit acute toxicity, defined as:

- Less than 90 percent survival of *Pimephales promelas* in undiluted effluent in ≥ 50 percent of the samples in a calendar year; or
- Less than 70 percent survival of *Pimephales promelas* in undiluted effluent in ≥ 10 percent of the samples in a calendar year.

Acute whole effluent toxicity (WET) testing shall be conducted in accordance with the requirements specified in the Monitoring and Reporting Program (Attachment E).

E. Interim Effluent Limitations

The RPA conducted for the discharge to the Mojave River indicates that reasonable potential exists for the CTR pollutants copper, zinc, cyanide, chlorodibromomethane, dichlorobromomethane, bis(2-ethylhexyl)phthalate, and dibenzo(a,h)anthracene. Reasonable potential also exists for the non-CTR pollutants total ammonia nitrogen, and total nitrate nitrogen. Order No. 6-99-58 did not include effluent limitations for these CTR and non-CTR pollutants and pollutants. Order No. 6-99-58 established effluent limitations for pH, total residual chlorine (TRC), dissolved oxygen, and methylene blue active substances (MBAS), but this Order includes effluent limitations more stringent than the effluent limitations in Order No 6-99-58.

40 CFR section 131.38(e) provides conditions under which interim effluent limitations and compliance schedules may be issued for CTR pollutants. In addition, 40 CFR section 122.47 generally governs compliance schedules in NPDES permits. Effluent limitations based on CTR pollutants must comply with the provisions of the SIP [40 C.F.R. section 131.38(e)(6) and the SIP, Section 2.1]. The SIP allows inclusion of an interim limitation with a specific compliance schedule for the final effluent limitation in an NPDES permit for priority pollutants if the final limitation for the priority pollutant is based on CTR criteria and the Discharger demonstrates that it is infeasible to achieve immediate compliance with the effluent limitation. The Basin Plan does not provide the authority to include in a permit compliance schedules and interim effluent limitations for non-CTR pollutants.

CTR Pollutants

Based on the effluent data submitted to the Water Board, it appears that it is feasible for the Discharger to comply immediately with the new CTR-based effluent limitations for copper. Therefore, the proposed Order does not include interim limitations and a compliance schedule for copper.

Based on existing data submitted by the Discharger, the Water Board has determined that it is infeasible for the Discharger to comply immediately with the CTR-based effluent limitations for zinc, cyanide, chlorodibromomethane, dichlorobromomethane, bis[2-ethylhexyl]phthalate, and dibenzo (a,h) anthracene. Interim effluent limitations and compliance schedules for these pollutants are included in the proposed Order.

In addition, for non-CTR pollutants, it appears that the Discharger will be unable to comply with all final effluent limitations. The Basin Plan does not provide the authority to include compliance schedules and interim effluent limitations for non-CTR pollutants.

Pursuant to the SIP (Section 2.2.1, Interim Requirements under a Compliance Schedule), when compliance schedules are established in an Order, interim effluent limitations must be included based on current treatment Facility performance or existing permit limitations, whichever is more stringent, to maintain existing water quality. Order No. 6-99-58 does not include effluent limitations for zinc, chlorodibromomethane, dichlorobromomethane, bis(2-ethylhexyl)phthalate or dibenzo(a,h)anthracene. Therefore, the current performance will serve as the basis for the interim effluent limitations, effective until **May 18, 2010,** after which, the Discharger must comply with the final effluent limitations for these pollutants for Discharge Point 001.

In developing the interim limitations, where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville,* Harper and Row). Therefore, the interim maximum daily effluent limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3-standard deviation interim limit, the observed maximum effluent concentration (MEC) has been established as the interim maximum daily effluent limitation.

When there are less than ten sampling data points available, the *Technical Support Document for Water Quality- Based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be used as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than ten data points for a constituent, interim limitations are based on 3.11 times the observed MEC to obtain the interim maximum daily effluent limitation (TSD, Table 5 2).

The SIP requires that the Water Board establish other interim requirements, such as requiring the Discharger to develop a pollutant minimization plan and/or source control measures, and participate in the activities necessary to achieve the final effluent limitations. By **six months following the effective date of this Order,** the Discharger must prepare and submit a compliance plan that describes the steps that will be taken to ensure compliance with applicable limitations.

The interim effluent limitations for CTR pollutants are summarized in Table 15 below.

Table 15. Summary of Interim Effluent Limitations for CTR Pollutants – Discharge Point 001 (Based on 14.0 mgd Permitted Flow)

Parameter	Units	Number of Detected Data Points	MEC[1]	Statistically-Based Maximum	Interim Maximum Daily Effluent Limitation (MDEL)	Basis
Zinc, Total Recoverable	µg/L	19	240	210	240	MEC
	lbs/day		28	24	28	MEC
Cyanide	µg/L	8	7	23	23	3.11 × MEC
	lbs/day		0.82	2.7	2.7	3.11 × MEC
Chlorodibromomethane (Dibromochlormethane)	µg/L	13	30	24	30	MEC
	lbs/day		3.5	2.8	3.5	MEC
Dichlorobromomethane (Bromodichloromethane)	µg/L	15	17	18	18	Mean + 3.3 SD
	lbs/day		2.0	2.1	2.1	Mean + 3.3 SD
Bis(2-ethylhexyl)phthalate	µg/L	3	15	47	47	3.11 × MEC
	lbs/day		1.8	5.5	5.5	3.11 × MEC
Dibenzo(a,h)anthracene	µg/L	1	0.06	0.19	0.19	3.11 × MEC
	lbs/day		0.0070	0.022	0.022	3.11 × MEC

[1] Maximum mass estimated based on MEC at 14.0 mgd flow.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

The Basin Plan contains numeric and narrative water quality objectives applicable to all surface waters within the Lahontan Region. Water quality objectives include an objective to maintain the high quality waters pursuant to federal regulations (40 CFR § 131.12) and State Water Board Resolution No. 68-16. Surface water limitations in this Order are included to ensure protection of background water quality and beneficial uses of the receiving water.

B. Groundwater

The Basin Plan contains numeric and narrative water quality objectives applicable to all ground waters within the Lahontan Region. Groundwater quality objectives include an objective to maintain the high quality waters pursuant to federal regulations (40 CFR § 131.12) and State Water Board Resolution No. 68-16. Groundwater limitations in this Order are included to ensure protection of background water quality and beneficial uses of groundwater that may be affected by discharges to the Mojave River.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

Order No. 6-99-58 included influent monitoring for BOD, MBAS, COD, the nitrogen series, total petroleum hydrocarbons and CTR pollutants. In an effort to reduce sampling costs, some influent monitoring requirements have been dropped as unnecessary. The influent monitoring included in this order is required to collect information to determine compliance with effluent limitations, to collect information about nitrogen at the Facility, and to determine the percent removal of TSS and BOD in the treatment process. The Discharger must monitor influent prior to the primary clarifiers (INF-001).

Table 17. Summary of Influent Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	24-hour composite	4/week[1]	40 CFR Part 136 Methods
Total Suspended Solids (TSS)	mg/L	24-hour composite	4/week[2]	40 CFR Part 136 Methods
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/month	40 CFR Part 136 Methods
Flow	mgd	Measure	1/day	See General Monitoring Provisions (Section I)
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/month	40 CFR Part 136 Methods
Total Kjeldahl Nitrogen (as N)	mg/L	Grab	1/month	40 CFR Part 136 Methods
Conductivity	µmhos/cm	Continuous	1/day	40 CFR Part 136 Methods
pH	standard units	Continuous	1/day	40 CFR Part 136 Methods

1 Conducted at approximately the same time as effluent monitoring for BOD (5-day @ 20°C).
2 Conducted at approximately the same time as effluent monitoring for TSS.

No other influent monitoring is required.

B. Effluent Monitoring – Monitoring Location EFF-001

Order No. 6-99-58 established effluent monitoring requirements. In general, these monitoring requirements are carried over to the proposed Order (e.g., flow, pH, turbidity, TSS, BOD, TDS, oil and grease, sulfate, and total residual chlorine). Some monitoring requirements (e.g., COD) have been removed, since this monitoring is not necessary to determine compliance with effluent limitations. Monitoring for parameters with newly established effluent limitations has been added. Monitoring for some pollutants for which there are no effluent limitations (e.g., boron, chloride) is included for both the effluent and the receiving water in order to assess the potential impact of the discharge on beneficial uses of the Mojave River.

The Discharger is required to analyze effluent samples for CTR priority pollutants annually for the life of the permit as described in IV.C.3 to determine the presence of these pollutants in the discharge and provide data for future reasonable potential assessments. Monitoring is more frequent for CTR pollutants for which effluent limitations have been established in the Order to demonstrate compliance with the limitations.

Effluent from the treatment Facility to the Mojave River at Discharge Point 001 must be monitored at the sample box before the Parshall Flume (EFF-001) and be representative of the effluent discharged to the Mojave River.

Table 18, below, summarizes monitoring requirements for Monitoring Point EFF-001. In addition, quarterly acute toxicity sampling and annually chronic toxicity sampling are carried over from the previous Order.

Because nitrogen effluent limitations are newly added and because major plant upgrades are in progress, 2 samples for month for the nitrogen seies (ammonia, nitrite, nitrate, total kjeldahl nitrogen) is the minimum Water Board staff believes necessary to determine compliance with interim and final effluent limitations during this permit cycle.

Table 18. Summary of Effluent Monitoring Requirements (EFF-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method[1] and (Minimum Level, units)
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	24-hour composite	4/week	40 CFR Part 136 Methods
Biochemical Oxygen Demand (BOD) (5-day @ 20°C), Percent Removal	% (percent)	Calculate	4/week	--
Fecal Coliform[2]	MPN/100 mL	Grab	5 evenly spaced in one 30-day period/yr	40 CFR Part 136 Methods
Oil and Grease	mg/L	Grab	1/quarter	40 CFR Part 136 Methods
pH	standard units	Continuous	1/day	40 CFR Part 136 Methods
Conductivity	µmhos/cm	Grab	1/day	40 CFR Part 136 Methods
Total Suspended Solids (TSS)	mg/L	24-hour composite	4/week	40 CFR Part 136 Methods
Total Suspended Solids (TSS), Percent Removal	% (percent)	Calculate	4/week	--
Priority Pollutants				
Copper, Total Recoverable	µg/L, lbs/day [3]	Grab	1/month	GFAA (ML= 5 µg/L);or ICP (ML = 10 µg/L);or ICPMS (ML= 0.5 µg/L);or SPGFAA (ML = 2 µg/L)
Zinc, Total Recoverable	µg/L, lbs/day [3]	Grab	1/month	FAA (ML= 20 µg/L);or ICP (ML = 20 µg/L);or ICPMS (ML= 1 µg/L);or SPGFAA (ML = 10 µg/L)
Cyanide, Total (as CN)	µg/L, lbs/day [3]	Grab	1/month	COLOR (ML = 5)
Chlorodibromomethane (Dibromochloromethane)	µg/L, lbs/day [3]	Grab	1/month	GC (ML = 0.5)
Dichlorobromomethane (Bromodichloromethane)	µg/L, lbs/day [3]	Grab	1/month	GC (ML = 0.5)
Bis(2-ethylhexyl)phthalate	µg/L, lbs/day [3]	Grab	1/month	GCMS (ML = 5)
Dibenzo(a,h)anthracene	µg/L, lbs/day [3]	Grab	1/month	LC (ML = 0.1)
Remaining CTR Priority Pollutants	µg/L	Grab	1/year	40 CFR Part 136 Methods
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L, lbs/day [3]	Grab	2/month	40 CFR Part 136 Methods
Boron, Total Recoverable	mg/L, lbs/day [3]	Grab	1/quarter	40 CFR Part 136 Methods
Chloride	mg/L, lbs/day [3]	Grab	1/quarter	40 CFR Part 136 Methods
Chlorine, Total Residual	mg/L, lbs/day [3]	Grab	1/month	40 CFR Part 136 Methods
Dissolved Oxygen	mg/L	Grab	1/week	40 CFR Part 136 Methods
Fluoride, Total	mg/L, lbs/day [3]	Grab	1/quarter	40 CFR Part 136 Methods
Flow	Mgd	Measure	1/day	See General Monitoring Provisions (Section I)
Hardness, Total (as $CaCO_3$)[4]	mg/L	Grab	1/quarter	40 CFR Part 136 Methods
Methylene Blue Active Substances (MBAS)	mg/L, lbs/day [3]	24-hour composite	1/month	Method approved by Executive Officer

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method[1] and (Minimum Level, units)
Nitrate Nitrogen, Total (as N)	mg/L, lbs/day [3]	Grab	2/month	40 CFR Part 136 Methods
Nitrite Nitrogen, Total (as N)	mg/L, lbs/day [3]	Grab	2/month	40 CFR Part 136 Methods
Sodium, Total	mg/L, lbs/day [3]	Grab	1/month	40 CFR Part 136 Methods
Sulfate, Total (as SO_4)	mg/L, lbs/day [3]	Grab	1/quarter	40 CFR Part 136 Methods
Temperature	°C	Grab	1/week	40 CFR Part 136 Methods
Total Coliform[2]	MPN/100 mL	Grab	1/day	40 CFR Part 136 Methods
Total Dissolved Solids (TDS)	mg/L, lbs/day [3]	24-hour composite	1/month	40 CFR Part 136 Methods
Total Kjeldahl Nitrogen (as N)	mg/L, lbs/day [3]	Grab	2/month	40 CFR Part 136 Methods
Turbidity	NTU	Measure	1/day	40 CFR Part 136 Methods
Whole Effluent Toxicity, Acute	See Section V.A below			
Whole Effluent Toxicity, Chronic	See Section V.B below			

[1] Where more than one approved method is available, the Discharger shall ensure that, where possible, the method detection limit (MDL) and the minimum level (ML) are less than the most stringent effluent limitation. Where the most stringent effluent limitation is less than the MDL for all approved methods, the Discharger shall select the method with the lowest MDL. Where no 40 CFR Part 136 method is available, the Discharger shall use a method approved by the Executive Officer. For Priority Pollutants where test methods are specified in the table above, the methods are as follows:

- GC = Gas Chromatography
- CGMS = Gas Chromatography/Mass Spectroscopy
- LC = High Pressure Liquid Chromatography
- GFAA = Graphite Furnace Atomic Absorption
- SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption
- ICP = Inductively Coupled Plasma
- ICPMS = Inductively Coupled Plasma/Mass Spectroscopy
- COLOR = Colormetric

[2] Based on 2007 data for total coliform included with the January 22, 2008 memorandum from Gina Cloutier, VVWRA Laboratory Supervisor, included with the VVWRA letter dated January 23, 2008, the total coliform MPN measurements show that the fecal coliform effluent limitations were not exceeded for the entire year. Therefore, fecal coliform monitoring is reduced to a minimum five samples evenly spaced in any 30-day period per year. Water Board staff finds it is acceptable for VVWRA to use its in-house laboratory to analyze fecal coliform until Department of Health Services certification of this constituent is completed, expected for November 2008. Until such certification is obtained, VVWRA shall report the status of certification with each fecal coliform sample result submitted, until certification is obtained.

[3] The mass emission (in lbs/day) for the regulated pollutants in the discharge shall be calculated and reported using the limitation concentration and the actual flow rate measured at the time of discharge and the formula:

$m = 8.34\ C_i Q$

where: m = mass discharge for a pollutant, lbs/day
C_i = concentration for a pollutant, mg/L
Q = actual discharge flow rate, mgd

[4] Hardness shall be measured concurrently with total recoverable copper and total recoverable zinc.

C. Land Discharge Monitoring – Not Applicable (See Order No. 6-99-58.)

This Order establishes no minimum groundwater monitoring requirements, which are contained in Order 6-99-58. However, in order to evaluate the effects of the discharge on receiving groundwater, the monitoring program requires data to be submitted in the next self monitoring report from the following wells when they are sampled: OW-1, NW-1, NW-2, NW-3, OW-6, SP-1, SP-2, SP-3, SP-4, LW-1, LW-2, LW-3, LW-4.

Because groundwater is polluted with nitrate beneath the new south percolation ponds, a separate groundwater investigation is pending.

D. Reclamation Monitoring Requirements – Not Applicable (See Order No. 6-99-58 and Order No. R6V-2003-28)

E. Whole Effluent Toxicity Testing Requirements

Acute whole effluent toxicity testing is included in the Monitoring and Reporting Program to measure compliance with acute whole effluent toxicity limitations. The test methods and sampling frequencies are carried over from Order No. 6-99-58.

The Facility's discharge to the Mojave River at Discharge Point 001 is continuous, and there generally is little or no dilution of the discharge by the receiving water. Therefore, it is possible that the discharge could contribute to both acute and chronic toxic effects in the Mojave River.

The existing Order (No. 6-99-58) required both acute and chronic toxicity testing of effluent discharged at Discharge Point 001.

As noted above, the Discharger summarized the results of WET testing in its permit renewal application. Chronic WET testing was conducted on the effluent and a control sample using *Pimephales promelas* (larvae survival and teratogenicity) and *Ceriodaphnia dubia* (survival and reproduction). The Discharger reported, in WET data resubmitted on February 3, 2006, no significant difference between the control sample and a sample of 100% effluent in annual tests between 2000 and 2004. The Discharger reported no significant difference between the control sample and a sample of 100% receiving water in all but two annual tests between 2000 and 2004. There was a significant difference in *Pimephales promelas* survival and teratogenicity between receiving water sample taken from the Mojave River downstream of the discharge location and tested on January 23, 2001, and a control sample. There also was a significant difference in *Pimephales promelas* survival and teratogenicity between receiving water sample taken from the Mojave River upstream of the discharge location and tested on January 21, 2004, and a control sample.

From the resubmitted data, it appears that the Discharger has not violated the receiving water limitations for acute or chronic toxicity in Order No. 6-99-58. Based on the occasional presence of some toxicity in the effluent and receiving water, however, the proposed Order continues to include both acute and chronic WET monitoring requirements, as in Order No. 6-99-58.

F. Receiving Water Monitoring

1. Surface Water (RSW-001; RSW-002; RSW-003; RSW-004)

Two sampling stations have been established on the Mojave River at sites approved by the Executive Officer; one sampling station (e.g., RW-001) is located 4.1 miles upstream (south) of the confluence of the Facility discharge with the Mojave River at a point in the channel immediately upstream of the Old National Trails Bridge on Route 66, near the USGS Gaging Station. This sampling station is approximately 0.2 miles upstream (south) of the sampling location in the previous Order, which was north of the Old National Trails Bridge. Access can be gained through the Rockview Nature Park, City of Victorville. The second sampling station (e.g., RW-002) is located in the channel 1.75 miles downstream (north) of the confluence of the Facility discharge with the Mojave River at a point west of the intersection of Robertson Ranch Road and National Trails Highway. In addition, the Discharger is required to add two new surface water sampling stations, RSW-003 and RSW-004. These stations must be established at an intermediate location between the point of discharge to the Mojave River and RSW-002 with the exact location to be proposed by the Discharger and approved by the Water Board Executive Officer.

Surface water monitoring is needed to measure compliance with receiving water limitations, particularly where no effluent limitations have been established. The minimum sampling frequency (1/quarter) is carried over from Order No. 6-99-58.

Table 19. Summary of Surface Water Monitoring Requirements (RSW-001, RSW-002, RSW-003, RSW-004)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
pH	standard units	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Ammonia Nitrogen, Total (as N)	Mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Boron, Total Recoverable	Mg/L	Grab	1/year	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Chloride	mg/L	Grab	1/year	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Chlorine, Total Residual	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Dissolved Oxygen	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Fluoride, Total	mg/L	Grab	1/year	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Hardness, Total ($CaCO_3$)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Haloacetic Acids, Total	µg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Nitrate Nitrogen, Total (as NO_3)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Nitrite Nitrogen, Total (as NO_2)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Orthophosphate (as P)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Sulfate, Total (as SO_4)	mg/L	Grab	1/year	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Temperature	°F	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Total Coliform	MPN/ 100 mL	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Total Kjeldahl Nitrogen (as N)	mg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Trihalomethane, Total	µg/L	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer
Turbidity	NTU	Grab	1/quarter	40 CFR Part 136 Methods or Other Method Approved by Executive Officer

In addition, chronic aquatic toxicity monitoring is required to demonstrate compliance with the Nondegradation of Aquatic Communities and Populations Basin Plan water quality objective and receiving water limitation in this Order.

2. Groundwater – (See Order No. 6-99-58)

Order No. 6-99-58 requires receiving groundwater monitoring. Because the Mojave River is an effluent dominated stream downstream of the VVWRA, receiving groundwater is affected by the surface water discharge as effluent percolates. To determine the effect of surface water discharges on the receiving groundwater, the Monitoring and Reporting Program for this Order requires that data collected from monitoring wells located along the Mojave River to be reported after each sampling event along with the monitoring data required in this Order.

G. Other Monitoring Requirements

1. Pretreatment Monitoring

Pretreatment monitoring requirements are based on the previous Order and 40 CFR Part 403.

2. Biosolids Monitoring

Biosolids monitoring requirements are based on the previous Order and 40 CFR Part 503.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

Conditions that necessitate a major modification of a permit are described in 40 CFR §122.62, which include the following:

(a) *When standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision.* Therefore, if more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act or amendments thereto, the Water Board will revise and modify this Order in accordance with such more stringent standards.

(b) *When new information that would justify different permit conditions becomes available,* the Water Board may reopen this Order and modify the effluent limitations or add final water quality-based effluent limitations as appropriate. The Discharger is conducting special effluent and receiving water monitoring. The Water Board may reopen this Order to evaluate the impact of any past or potential future operations on receiving waters. In addition, this Order includes provisions allowing the Discharger to conduct an optional metals translator study for copper and/or zinc and a water effects ratio study for ammonia nitrogen. Upon submission of and based on the results of these studies, the Water Board may reopen this Order to reconsider and modify, if appropriate, the final effluent limitations established in this Order for these constituents. This Order also includes a provision for an optional monitoring study for cyanide, bis(2-ethylhexyl)phthalate, and dibenzo (a,h,)anthracene. Upon submission of and based on the results of this study, the Water Board may reopen this Order to reconsider the reasonable potential determinations for cyanide, bis(2-ethylhexyl)phthalate, and dibenzo (a,h,)anthracene and remove or modify, if appropriate, the final effluent limitations established in this Order for these constituents.

(c) *When Facility alterations or changes in operations justify new conditions that are different from the existing permit.* This Order may be modified to include appropriate conditions or limitations to address demonstrated effluent toxicity based on newly available information. In addition, the discharge of a new chemical that is found to have reasonable potential to cause, or contribute to an in-stream excursion above any chemical-specific water quality criteria, narrative water quality objective for chemical constituents from the Basin Plan, or narrative water quality objective for toxicity from the Basin Plan, would be considered a change in Facility operations that requires reopening this Order to establish new effluent limitations.

2. Special Studies and Additional Monitoring Requirements

a. **Toxicity Identification Evaluations or Toxicity Reduction Evaluations.** By **Three Months After the Effective Date of this Order**, the Discharger is required to submit to the Water Board an initial investigation Toxicity Reduction Evaluation (TRE) work plan. This plan generally describes the steps the Discharger intends to follow if acute or chronic toxicity is detected during accelerated acute WET testing or chronic WET testing as specified in the Monitoring and Reporting Program (Attachment E). The plan is required in order to ensure continued compliance with WET limitations and requirements in the Order; to ensure attainment of the toxicity objective in the Basin Plan; and to ensure protection of beneficial uses of the Mojave River.

b. **Optional Studies.** The Discharger may develop and submit to the Water Board for its consideration a translator study for copper or zinc or for both metals. Upon completion of the study and submission of the study results, the Water Board may, based on the results, reopen this Order to modify the final effluent limitations for copper and zinc in accordance with the Provisions in Section VI.C.1.d of this Order.

The Discharger also may conduct and submit a study involving development of a water effects ratio (WER) for ammonia. Upon completion of the study and submission of the study results, the Water Board may, subsequent to any Basin Plan amendment adopted by the Water Board and approved by USEPA, modify the final effluent limitations for ammonia, in accordance with the Provisions in Section VI.C.1.d of this Order.

In addition, the Discharger may conduct and submit to the Water Board for its consideration a study involving collection of additional, reliable ambient and effluent monitoring data for cyanide, bis(2-ethylhexyl)phthalate, and dibenzo(a,h)anthracene. Upon completion of the study and submission of the study results, the Water Board may, based on the results, reconsider the reasonable potential determinations or modify the final effluent limitations for cyanide, bis(2-ethylhexyl)phthalate, and/or dibenzo (a,h,)anthracene in accordance with the Provisions in Section VI.C.1.d of this Order.

These studies are optional and may be initiated by the Discharger at its discretion.

3. Best Management Practices and Pollution Prevention

a. **Pollutant Minimization Program (PMP).** The PMP required in this Order is necessary to address pollutants for which there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as "detected, but not quantified" (DNQ) and the effluent limitation is less than the Reporting Limit (RL); or

ii. A sample result is reported as "not detected" (ND) and the effluent limitation is less than the Method Detection Limit (MDL), using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

b. **Best Management Practices (BMPs).** This Order references the requirement for the Discharger to identify, implement, and monitor BMPs in accordance with a site specific Storm Water Pollution Prevention Plan (SWPPP) as required under the General Industrial Storm Water Permit. The Discharger has applied for coverage under this permit and is regulated under Waste Discharge Identification Number 6B36I005756.

4. Construction, Operation, and Maintenance Specifications

These provisions are based on the requirements of 40 CFR 122.41(e) and the existing Order.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Program Requirements.** Requirements are based on the previous Order and 40 CFR Part 403.

b. **Sludge Disposal Requirements.** Requirements are based on previous Order and 40 CFR Part 503.

6. Other Special Provisions

Order Continuation After Expiration Date. This provision is common in California NPDES permits and is authorized under 40 CFR 122.6(d).

7. Compliance Schedules

This Order establishes interim effluent limitations and compliance schedules that provide the Discharger time to bring the Facility into compliance with some new final effluent limitations for CTR pollutants.

In accordance with Section 2.1 of the SIP, interim limitations and compliance schedules for CTR pollutants may only be provided by the Water Board after the Discharger demonstrates and justifies that it is infeasible for the Discharger to achieve immediate compliance with newly established final effluent limitations. Infeasible means not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. Based on data submitted by the Discharger, the Water Board has determined that it is infeasible for the Discharger to achieve immediate compliance with some of the newly established effluent limitations for CTR pollutants.

The provision for compliance schedules is based on Section 2.1 (Compliance Schedules) of the SIP. This Order allows the Discharger until **May 18, 2010,** to comply with the final effluent limitations for zinc, cyanide, chlorodibromomethane (dibromochloromethane), dichlorobromomethane (bromodichloromethane), bis(2-ethylhexyl)phthalate, and dibenzo(a,h)anthracene. The Discharger is required to develop and begin implementing a Compliance Plan by **six months following the effective date of this Order.** In addition, in accordance with 40 CFR 122.47, annual reporting is required to inform the Water Board about the progress made by the Discharger to achieve compliance with the final limitations within the specified time. During the interim period, the Discharger is required to meet the interim limitations derived from Facility performance data.

A provision was added to establish new receiving water monitoring stations RSW-003 and RSW-004. Historically, the Mojave River was a perennial stream down gradient of the up gradient receiving water monitoring station (RSW-001) located at the Lower Mojave River Narrows. In recent years, the Mojave River has become an ephemeral stream from the Lower Mojave River Narrows to the effluent discharge location (EFF-001) due to localized groundwater pumping. The Mojave River is effluent dominated down stream of the discharge location.

The current down gradient receiving water monitoring station (RSW-002) was established over one and one-half miles down stream of the effluent discharge location (EFF-001) because it provided the easiest access to the Mojave River due to the bluffs along the western side of the river. Because of the long distance between these two points, there is no data to evaluate the immediate receiving water quality conditions with respect to water quality objectives. Therefore, it is assumed that the effluent quality discharged from the treatment plant (measured at EFF-001) represents the receiving water quality in the immediate Mojave River.

The two new receiving water monitoring stations will allow the Water Board to evaluate the effects of the discharge with respect to water quality objectives closer to the point of discharge.

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Lahontan Region (Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for **Victor Valley Waste Reclamation Authority**. As a step in the WDR adoption process, the Water Board staff has developed tentative WDRs which were circulated for public comment under cover letters dated August 30, 2005, April 24, 2006 and January 10, 2008. The Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the following: Victorville Daily Press and Barstow Desert Dispatch on January 8, 2008.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Officer at the Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Water Board, written comments should be received at the Water Board offices by 5:00 p.m. on **February 8, 2008.**

C. Public Hearing

The Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: **February 14, 2008**
Time: **8:30 am**
Location: **Mojave Desert Air Quality Management District**
14306 Park Ave
Victorville, CA 92392

Interested persons are invited to attend. At the public hearing, the Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing. Please be aware that dates and venues may change. Our Web address is **http://www.waterboards.ca.gov** where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Water Board by calling (760) 241-6583.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Jehiel Cass at (760) 241-6583.

JC/rp BO2008/VVWRA/ R6V-2008-004 VVWRA NPDES

ATTACHMENT G – BASIN PLAN WATER AMMONIA WATER QUALITY OBJECTIVE TABLE

Table 3-1
ONE-HOUR AVERAGE CONCENTRATION FOR AMMONIA[1,2]

Waters Designated as COLD, COLD with SPWN, COLD with MIGR (Salmonids or other sensitive coldwater species present

	Temperature, °C						
pH	0	5	10	15	20	25	30
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0091	0.0129	0.0182	0.026	0.036	0.036	0.036
6.75	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
7.00	0.023	0.033	0.046	0.066	0.093	0.093	0.093
7.25	0.034	0.048	0.068	0.095	0.135	0.135	0.135
7.50	0.045	0.064	0.091	0.128	0.181	0.181	0.181
7.75	0.056	0.080	0.113	0.159	0.22	0.22	0.22
8.00	0.065	0.092	0.130	0.184	0.26	0.26	0.26
8.25	0.065	0.092	0.130	0.184	0.26	0.26	0.26
8.50	0.065	0.092	0.130	0.184	0.26	0.26	0.26
8.75	0.065	0.092	0.130	0.184	0.26	0.26	0.26
9.00	0.065	0.092	0.130	0.184	0.26	0.26	0.26
Total Ammonia (mg/liter NH_3)							
6.50	35	33	31	30	29	20	14.3
6.75	32	30	28	27	27	18.6	13.2
7.00	28	26	25	24	23	16.4	11.6
7.25	23	22	20	19.7	19.2	13.4	9.5
7.50	17.4	16.3	15.5	14.9	14.6	10.2	7.3
7.75	12.2	11.4	10.9	10.5	10.3	7.2	5.2
8.00	8.0	7.5	7.1	6.9	6.8	4.8	3.5
8.25	4.5	4.2	4.1	4.0	3.9	2.8	2.1
8.50	2.6	2.4	2.3	2.3	2.3	1.71	1.28
8.75	1.47	1.40	1.37	1.38	1.42	1.07	0.83
9.00	0.86	0.83	0.83	0.86	0.91	0.72	0.58

1 To convert these values to mg/liter N, multiply by 0.822
2 Source: U. S. Environmental Protection Agency. 1986. Quality criteria for water, 1986. EPA 440/5-86-001.

Table 3-2
ONE-HOUR AVERAGE CONCENTRATION FOR AMMONIA[1,2]

Waters designated WARM, WARM with SPWN, WARM with MIGR (Salmonids or other sensitive coldwater species absent)[3]

	Temperature, °C						
pH	0	5	10	15	20	25	30
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0091	0.0129	0.0182	0.026	0.036	0.051	0.051
6.75	0.0149	0.021	0.030	0.042	0.059	0.084	0.084
7.00	0.023	0.033	0.046	0.066	0.093	0.131	0.093
7.25	0.034	0.048	0.068	0.095	0.135	0.190	0.190
7.50	0.045	0.064	0.091	0.128	0.181	0.26	0.26
7.75	0.056	0.080	0.113	0.159	0.22	0.32	0.32
8.00	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.25	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.50	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.75	0.065	0.092	0.130	0.184	0.26	0.37	0.37
9.00	0.065	0.092	0.130	0.184	0.26	0.37	0.37
Total Ammonia (mg/liter NH_3)							
6.50	35	33	31	30	29	29	20
6.75	32	30	28	27	27	26	18.6
7.00	28	26	25	24	23	23	16.4
7.25	23	22	20	19.7	19.2	19.0	13.5
7.50	17.4	16.3	15.5	14.9	14.6	14.5	10.3
7.75	12.2	11.4	10.9	10.5	10.3	10.2	7.3
8.00	8.0	7.5	7.1	6.9	6.8	6.8	4.9
8.25	4.5	4.2	4.1	4.0	3.9	4.0	2.9
8.50	2.6	2.4	2.3	2.3	2.3	2.4	1.81
8.75	1.47	1.40	1.37	1.38	1.42	1.52	1.18
9.00	0.86	0.83	0.83	0.86	0.91	1.01	0.82

1 To convert these values to mg/liter, multiply by 0.822
2 Source: U. S. Environmental Protection Agency. 1986. Quality criteria for water, 1986. EPA 440/5-86-001.
3 These values may be conservative, however, if a more refined criterion is desired, USEPA recommends a site-specific criteria modification.

Table 3-3
FOUR DAY AVERAGE CONCENTRATION FOR AMMONIA[1,2]

Waters Designated as COLD, COLD with SPWN, COLD with MIGR (Salmonids or other sensitive coldwater species present)

	Temperature, °C						
pH	0	5	10	15	20	25	30
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0008	0.0011	0.0016	0.0022	0.0022	0.0022	0.0022
6.75	0.0014	0.0020	0.0028	0.0039	0.0039	0.0039	0.0039
7.00	0.0025	0.0035	0.0049	0.0070	0.0070	0.0070	0.0070
7.25	0.0044	0.0062	0.0088	0.0124	0.0124	0.0124	0.0124
7.50	0.0078	0.0111	0.0156	0.022	0.022	0.022	0.022
7.75	0.0129	0.0182	0.026	0.036	0.036	0.036	0.036
8.00	0.0149	0.021	0.030	0.042	0.042	0.042	0.042
8.25	0.0149	0.021	0.030	0.042	0.042	0.042	0.042
8.50	0.0149	0.021	0.030	0.042	0.042	0.042	0.042
8.75	0.0149	0.021	0.030	0.042	0.042	0.042	0.042
9.00	0.0149	0.021	0.030	0.042	0.042	0.042	0.042
Total Ammonia (mg/liter NH_3)							
6.50	3.0	2.8	2.7	2.5	1.76	1.23	0.87
6.75	3.0	2.8	2.7	2.6	1.76	1.23	0.87
7.00	3.0	2.8	2.7	2.6	1.76	1.23	0.87
7.25	3.0	2.8	2.7	2.6	1.77	1.24	0.88
7.50	3.0	2.8	2.7	2.6	1.78	1.25	0.89
7.75	2.8	2.6	2.5	2.4	1.66	1.17	0.84
8.00	1.82	1.70	1.62	1.57	1.10	0.78	0.56
8.25	1.03	0.97	0.93	0.90	0.64	0.46	0.33
8.50	0.58	0.55	0.53	0.53	0.38	0.28	0.21
8.75	0.34	0.32	0.31	0.31	0.23	0.173	0.135
9.00	0.195	0.189	0.189	0.195	0.148	0.116	0.094

1 To convert these values to mg/liter N, multiply by 0.822.
2 Source: U. S. Environmental Protection Agency. 1992. Revised tables for determining average freshwater ammonia concentrations. USEPA Office of Water Memorandum, July 30, 1992.

Table 3-4
FOUR DAY AVERAGE CONCENTRATION FOR AMMONIA[1,2]

Waters designated WARM, WARM with SPWN, WARM with MIGR (Salmonids or other sensitive coldwater species absent)[3]

	Temperature, °C						
pH	0	5	10	15	20	25	30
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0008	0.0011	0.0016	0.0022	0.0031	0.0031	0.0031
6.75	0.0014	0.0020	0.0028	0.0039	0.0055	0.0055	0.0055
7.00	0.0025	0.0035	0.0049	0.0070	0.0099	0.0099	0.0099
7.25	0.0044	0.0062	0.0088	0.0124	0.0175	0.0175	0.0175
7.00	0.0078	0.0111	0.0156	0.022	0.031	0031	0.031
7.75	0.0129	0.0182	0.026	0.038	0.051	0.051	0.051
8.00	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
8.25	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
8.50	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
8.75	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
9.00	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
Total Ammonia (mg/liter NH_3)							
6.50	3.0	2.8	2.7	2.5	2.5	1.73	1.23
6.75	3.0	2.8	2.7	2.6	2.5	1.74	1.23
7.00	3.0	2.8	2.7	2.6	2.5	1.74	1.23
7.25	3.0	2.8	2.7	2.6	2.5	1.75	1.24
7.50	3.0	2.8	2.7	2.6	2.5	1.76	1.25
7.75	2.8	2.6	2.5	2.4	2.3	1.65	1.18
8.00	1.82	1.70	1.62	1.57	1.55	1.10	0.79
8.25	1.03	0.97	0.93	0.90	0.90	0.64	0.47
8.50	0.58	0.55	0.53	0.53	0.53	0.39	0.29
8.75	0.34	0.32	0.31	0.31	0.32	0.24	0.190
9.00	0.195	0.189	0.189	0.195	0.21	0.163	0.133

1 To convert these values to mg/liter N, multiply by 0.822.
2 Source: U. S. Environmental Protection Agency. 1992. Revised tables for determining average freshwater ammonia concentrations. USEPA Office of Water Memorandum. July 30, 1992.
3 These values may be conservative, however, if a more refined criterion is desired, USEPA recommends a site-specific criteria modification.

ATTACHMENT H – BASIN PLAN DISSOLVED OXYGEN WATER QUALITY OBJECTIVE TABLE

Table 3-6
WATER QUALITY CRITERIA FOR
AMBIENT DISSOLVED OXYGEN CONCENTRATION[1,2]

	Beneficial Use Class			
	COLD & SPWN[3]	COLD	WARM & SPWN[3]	WARM
30 Day Mean	NA[4]	6.5	NA	5.5
7 Day Mean	9.5 (6.5)	NA	6.0	NA
7 Day Mean Minimum	NA	5.0	NA	4.0
1 Day Minimum[5,6]	8.0 (5.0)	4.0	5.0	3.0

1 From: USEPA. 1986. Ambient water quality criteria for dissolved oxygen. Values are in mg/L.

2 These are water column concentrations recommended to achieve the required intergravel dissolved oxygen concentrations shown in parentheses. For species that have early life stages exposed directly to the water column (SPWN), the figures in parentheses apply.

3 Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching (SPWN).

4 NA (Not Applicable).

5 For highly manipulatable discharges, further restrictions apply.

6 All minima should be considered as instantaneous concentrations to be achieved at all times.

Attachment I – Summary Water Quality-Based Effluent Limit Calculations for Priority Pollutants

The water quality-based effluent limits for California Toxics Rule (CTR) priority pollutants developed for this Order are summarized below and were calculated as described in the methodology summarized in Attachment F, Fact Sheet Section IV.D.1 of this Order.

Priority Pollutant	Human Health Calculations			Aquatic Life Calculations											Selected Limits	
	Human Health			Saltwater / Freshwater												
	AMEL = ECA = C hh	MDEL/AMEL multiplier	MDEL hh	ECA acute = C acute	ECA acute multiplier	LTA acute	ECA chronic = C chronic	ECA chronic multiplier	LTA chronic	Lowest LTA	AMEL multiplier 95	AMEL aquatic life	MDEL multiplier 99	MDEL aquatic life	AMEL	MDEL
	ug/L		ug/L	ug/L		ug/L	ug/L		ug/L	ug/L					ug/L	ug/L
Copper	1300	1.55	2,026	23.08	0.495	11.43	14.68	0.690	10.12	10.12	1.295	13.11	2.019	20.44	13	20
Zinc	n/a	2.43	--	187.83	0.220	41.34	187.83	0.398	74.70	41.34	1.867	77.16	4.533	187.83	77	190
Cyanide	700	2.64	1,850	22	0.182	4.014	5.20	0.337	1.751	1.751	2.077	3.630	5.481	9.598	3.6	9.6
Chlorodibromomethane (Dibromochloromethane)	0.41	3.176	1.302	--	--	--	--	--	--	--	--	--	--	--	0.41	1.3
Dichlorobromomethane (Bromodichloromethane)	0.56	2.587	1.448	--	--	--	--	--	--	--	--	--	--	--	0.56	1.4
Bis(2-Ethylhexyl)Phthalate	1.8	2.006	3.611	--	--	--	--	--	--	--	--	--	--	--	1.8	3.6
Dibenzo (a,h) Anthracene	0.0044	2.006	0.0088	--	--	--	--	--	--	--	--	--	--	--	0.0044	0.0088

Notes:
"- -" = No Value
C = Water Quality Criteria
hh = Human health
AMEL = Average monthly effluent limitation
MDEL = Maximum daily effluent limitation
ECA = Effluent concentration allowance
LTA = Long-term average concentration

Attachment Z
(Applicable only to Board Order 6-99-59)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

STANDARD PROVISIONS
FOR WASTE DISCHARGE REQUIREMENTS

1. Inspection and Entry

The Discharger shall permit Regional Board staff:

a. to enter upon premises in which an effluent source is located or in which any required records are kept;

b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements (WDRs);

c. to inspect monitoring equipment or records; and

d. to sample any discharge.

2. Reporting Requirements

a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.

b. Pursuant to California Water Code Section 13260 (c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not be limited to, all significant soil disturbances.

c. The Owners/Discharger of property subject to WDRs shall be considered to have a continuing responsibility for ensuring compliance with applicable WDRs in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the WDRs shall be reported to the Regional Board. Notification of applicable WDRs shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.

d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing, and correct that information.

e. Reports required by the WDRs, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars ($1,000) for each day of violation.

f. If the Discharger becomes aware that their WDRs (or permit) are no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their WDRs (or permit) be rescinded.

3. Right to Revise WDRs

The Regional Board reserves the privilege of changing all or any portion of the WDRs upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the WDRs may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and re-issuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the WDRs which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the WDRs. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the WDRs.

7. Waste Discharge Requirement Actions

The WDRs may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and re-issuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the WDRs conditions.

8. Property Rights

The WDRs do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the WDRs including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the WDRs shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the WDRs are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from treatment and disposal facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operation. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.

b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.