

**CALIFORNIA REGIONAL WATER QUALITY  
CONTROL BOARD  
LOS ANGELES REGION**

**ORDER NO. R4-2005-0061**

**WASTE DISCHARGE AND WATER RECYCLING REQUIREMENTS  
FOR  
ALAMITOS BARRIER RECYCLED WATER PROJECT**

**ISSUED TO**

**LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS  
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA**

	Page No.
INTRODUCTION .....	1
PROJECT SPONSORS .....	1
OTHER PARTIES.....	2
REGULATORY AGENCIES.....	2
PURPOSE OF ORDER.....	3
ALAMITOS BARRIER PROJECT (ABP) .....	3
ALAMITOS BARRIER RECYCLED WATER PROJECT (ABRWP) .....	4
APPLICABLE PLANS, POLICIES AND REGULATIONS .....	14
CEQA AND NOTIFICATION .....	18
WASTEWATER TREATMENT AND SOURCE CONTROL .....	19
ADVANCED WATER TREATMENT FACILITY (AWTF) INFLUENT SPECIFICATIONS .....	20
RECYCLED WATER SPECIFICATIONS .....	21
RECYCLED WATER CONTRIBUTION, RETENTION TIME AND HORIZONTAL SEPARATION REQUIREMENTS .....	25
ULTRAVIOLET LIGHT SPECIFICATIONS .....	26
GROUNDWATER MONITORING WELLS AND PROGRAMS.....	26
PROVISIONS .....	27
GENERAL REQUIREMENTS .....	30
REOPENER.....	32
EFFECTIVE DATE OF THE ORDER .....	33

FIGURES:

1. FIGURE P1 – Vicinity Map of Alamitos Barrier Recycled Water Project
2. FIGURE P2 – Geologic Cross-Section A-A'

3. FIGURE P3 – Flow Diagram of Wastewater Treatment Processes at Long Beach Water Reclamation Plant
4. FIGURE P4 – Schematic of Treatment Processes for Advanced Wastewater Treatment Facility
5. FIGURE P5 – Alamitos Barrier Water Supply and Blend Station Schematic Diagram
6. FIGURE P6 – Injection Well Locations of Alamitos Barrier Recycled Water Project
7. FIGURE P7 – Groundwater Monitoring Well Locations of Alamitos Barrier Recycled Water Project
8. FIGURE P8 – Monitoring and Production Wells within 3 Miles of Alamitos Barrier

#### ATTACHMENTS

1. Attachment A-1 – Table 64431-A – Inorganic Chemicals
2. Attachment A-2 – Table 4 – Radioactivity
3. Attachment A-3 – Table 64444-A – Organic Chemicals
4. Attachment A-4 – Table 64533-A – Primary MCLs for Disinfection Byproducts
5. Attachment A-5 – Monitoring Parameters for General Physical and General Mineral
6. Attachment A-6 – Table 64449-A – Secondary Maximum Contamination Levels Consumer Acceptance Limits
7. Attachment A-7 – Chemicals of Concern to the Regional Board
8. Attachment A-8 – Remaining Priority Pollutants
9. Attachment A-9 – Water Replenishment District of Southern California Alamitos Barrier Recycled Water Project – Findings of Fact
10. Attachment T – Monitoring and Reporting Program No. CI-8956
11. Attachment W – Standard Provisions Applicable to Waste Discharge Requirements

**State of California  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION**

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**ISSUED TO**

**Los Angeles County Department of Public Works  
Water Replenishment District of Southern California**

**(File No. 93-076)**

The California Regional Water Quality Control Board, Los Angeles Region (hereafter Regional Board) finds:

**INTRODUCTION**

1. The Alamitos Barrier Recycled Water Project (ABRWP, or Project) is one of three Groundwater Recharge Reuse Projects, designed to prevent seawater intrusion and replenish groundwater resources in the Los Angeles Region.
2. In order to conserve potable water due to droughts, water rationing, competition for potable water and increased demands in the 1990s, and with recent advances in water treatment technology, the Water Replenishment District of Southern California (WRD) proposes the ABRWP, which
  - A. Injects reverse osmosis-treated recycled water (RO recycled water) produced at the advanced water treatment facility (AWTF) into the Alamitos Gap Seawater Intrusion Barrier (Alamitos Barrier, or Barrier), thus replacing 50% of potable water up to 3 million gallons per day (MGD) or approximately 3,360 acre-ft per year (AFY);
  - B. Improves the reliability of water supply; and,
  - C. Replenishes groundwater resources.
3. This proposed injection of RO recycled water will conserve potable water and protect the important groundwater resources of the Central Groundwater Basin by operating the Alamitos Barrier, located near the mouth of the San Gabriel River. Through continued effective operation of the Alamitos Barrier Project (ABP) since 1964, a Barrier has been established to prevent seawater intrusion.

**PROJECT SPONSORS**

4. **The Water Replenishment District of Southern California** manages the Central Groundwater Basin located in Los Angeles County. It sponsors, owns, manages, and leads

the ABRWP and currently purchases potable water from the Metropolitan Water District of Southern California (MWD) for injection into the Alamitos Barrier. This potable water is a blend of imported water consisting of Colorado River water and State Project water that is filtered and treated by the MWD at their Jensen, Diemer, and Weymouth Treatment Plants. The WRD owns the site of Leo J. Vander Lans Water Treatment Facility on which the AWTF was built. The WRD is the purveyor of the RO recycled water produced at AWTF.

5. **The Los Angeles County Department of Public Works (LACDPW)** currently operates the ABP and continues to operate and maintain the existing water transmission pipeline, distribution header, injection wells, extraction wells, and monitoring wells located along the Alamitos Barrier.

#### **OTHER PARTIES**

6. **The Long Beach Water Department, the City of Long Beach (City)** owns the rights to the recycled water produced at the Long Beach Water Reclamation Plant (Long Beach WRP) and currently serves recycled water meeting Title 22 requirements for unrestricted irrigation and industrial uses throughout its service area. The City provides Title 22 water to the AWTF as well as operates and maintains the AWTF, and furnishes the RO recycled water to the Alamitos Barrier.
7. **The County Sanitation Districts of Los Angeles County (CSDLAC)** own and operate the Long Beach WRP, which produces the tertiary treated wastewater with chlorine disinfection that will be pumped into the Title 22 recycled water distribution system operated by the City, and then undergoes further treatment at AWTF to produce 3,360 AFY of RO recycled water. The CSDLAC sewerage system will also receive the residual solids from the microfiltration process and the brine from the RO process.

#### **REGULATORY AGENCIES**

8. The Alamitos Barrier straddles the border between this Regional Board and the Santa Ana Regional Board. In a February 9, 2004 letter to the Santa Ana Region, this Regional Board requested the lead on permitting the Alamitos Barrier Recycled Water Project (See Finding Nos. 16 - 26). Because of the long history of this Project under the jurisdiction of this Regional Board, and the facts that the AWTF and injection facilities supplying the water are located in the Los Angeles Region, it is believed that the permitting should be undertaken by this Regional Board. In a July 30, 2004 letter, the Santa Ana Region agreed with this Regional Board's request.
9. The California Department of Health Services (DHS) is the agency with the primary responsibility for establishing criteria, under Title 22 of the Code of Regulations, to protect the health of the public using the groundwater basins as a source of potable water and to protect the water quality in the receiving aquifers as a source of water quality, and the Regional Board is guided by DHS' requirements. DHS has provided comments to the Regional Board, which have been incorporated into these requirements.

## **PURPOSE OF ORDER**

10. On September 22, 1999, the WRD submitted a Report of Waste Discharge (ROWD) to this Regional Board and applied for Water Recycling Requirements (WRRs), pursuant to California Water Code section 13522.5, for the ABRWP.
11. This Order is the issuance of WRRs to the two proponents (collectively referred hereinafter as Project Sponsors) described above for the ABRWP, pursuant to California Water Code section 13523.1. The Project Sponsors are both individually, and collectively, responsible for compliance with the requirements in this Order.

## **ALAMITOS BARRIER PROJECT (ABP)**

### **12. Alamitos Gap Seawater Intrusion Barrier (Alamitos Barrier) and Groundwater Basins**

- A. Decades of over pumping caused the water levels in the Central Groundwater Basin to drop, resulting in a loss of groundwater storage capacity and seawater intrusion into the potable aquifers. The Alamitos Barrier is designed to protect the Central Groundwater Basin of Los Angeles County and the Orange County Groundwater Basin\* from seawater intrusion through creation of a pressure ridge by injection of fresh water into the Alamitos Barrier through an alignment of 43 injection wells located approximately two miles inland from the mouth of the San Gabriel River at the Los Angeles/Orange County boundary (Figure P1). The seawater trough is created by the extraction of brackish groundwater from wells located on the seaward side of the injection well arc. The combination of the pressure ridge and the reduced pressure trough on the seaward side of the ridge assures that groundwater will flow from the ridge toward the trough (the Pacific Ocean), thereby assuring that sea water cannot flow inland through the exposed aquifers. The failure to maintain an effective seawater intrusion barrier would cause serious water quality degradation in drinking water aquifers located in southeastern Los Angeles County and northwestern Orange County, and the potential loss of this water resource.

\* Protection of the water quality of the Orange County Groundwater Basin is under the jurisdiction of the Santa Ana RWQCB.

- B. The Alamitos Barrier is part of the Central Groundwater Basin located in the southern portion of the San Gabriel River flood plain within Hydraulic Unit 405.15, belonging to the Los Angeles-San Gabriel Hydraulic area. Along the coast, the Alamitos Barrier is bounded to the northwest by Bixby Ranch Hills and to the south by Landing Hill. Figure P1 depicts the vicinity map of the Alamitos Barrier.

The Coastal Plain of Los Angeles County covers approximately 480 miles and is bordered by the Santa Monica Mountains to the north, the Pacific Ocean to the south and west, the Merced and Puente Hills to the northeast, and the Los Angeles/ Orange County line to the southeast. This last boundary is more of an institutional border than a physical one; the geology is such that the groundwater basin is hydrologically continuous across this border into Orange County. Faults in the Coastal Plain break the continuity of geologic formations and thus, alter the flow characteristics in the aquifers. The

Newport-Inglewood Uplift separates the Coastal Plain into two groundwater basins, the West Coast and Central Groundwater Basins.

- C. The Central Groundwater Basin and Orange County Groundwater Basin, which are geologically one basin, are important sources of local groundwater and provide 40% of the water demands in the region. The Central Groundwater Basin is bounded on the north by the Hollywood Basin and a series of low hills extending from the Elysian Hills on the northwest to the Puente Hills on the southeast. The west and south of the Central Groundwater Basin are bounded by the Newport-Inglewood uplift. The east and southeast of the Central Groundwater Basin are bounded by the Los Angeles County-Orange County line. The Orange County Groundwater Basin is bounded by two principal fault zones, the Whittier and the Newport-Inglewood, which act as groundwater flow restrictions due to resulting placement of permeable rock against impermeable rock.

In the vicinity of the Alamitos Barrier, there are seven water-bearing units, which are subject to seawater intrusion. These include the Recent Aquifer near surface and in order from the near surface to bottom, Zones C, B, A, and I, Main Aquifer (also known as the Silverado Aquifer in the remainder of the Central Groundwater Basin), and the Lower San Pedro Aquifer. The geological cross section for these aquifers is illustrated in Figure P2.

13. **Injection Water** – Historically, the WRD has purchased potable imported water (State Water Project and/or Colorado River) and local water to supply its recharge operations. Currently, the WRD purchases potable water from MWD for injection by the LACDPW into the Alamitos Barrier. For the ten-year period between 1993-94 Water Year to 2002-03 Water Year, imported water injected ranged from 3.4 to 5.5 MGD, with a historic maximum (since 1964) of approximately 6.5 MGD. Approximately 6 MGD of imported water is currently injected into the Alamitos Barrier to prevent seawater intrusion and to artificially recharge groundwater. The majority of injected water replenishes the inland aquifers, which are a source of municipal water supplies.
14. The ABP has been operated since 1964. No changes are proposed to the existing ABP injection facilities.

#### **ALAMITOS BARRIER RECYCLED WATER PROJECT (ABRWP)**

##### **15. Source and Treatment of Title 22 Effluent Water**

- A. The source of the injection water is from the Long Beach WRP's Title 22 effluent. The Long Beach WRP is a publicly owned treatment work (POTW) located at 7400 East Willow Street, Long Beach, California (see Figure P1 for vicinity map). The Long Beach WRP is a tertiary treatment plant with an average dry weather design treatment capacity of 25 MGD, but only treats an average of 20 MGD. Water that is not reused is discharged to Coyote Creek under a National Pollutant Discharge Elimination System (NPDES) permit (No. CA0055119, Order No. R4-2002-0123), issued by this Regional Board in 2002.

- B. The Long Beach WRP treats wastewater from industrial, commercial and residential sources from the cities of Long Beach, Hawaiian Gardens, Lakewood, Cerritos and Artesia. Approximately 5% of the flow is from industrial sources, and there are no known chemical, pharmaceutical, photographic or biological production facilities located within the service area. In compliance with 40 Code of Federal Regulations, Part 403 and the NPDES permits for the Long Beach WRP and other POTWs owned and operated by the CSDLAC, the CSDLAC developed and has been implementing a Pretreatment Program approved by the U.S. Environmental Protection Agency (USEPA). Two of the four primary objectives of the Program are to prevent pass through of pollutants or cause interference in the operation of the POTWs by regulating the discharge of toxic pollutants from industrial sources to the POTWs. The Program reduces the likelihood of toxic contamination in the effluent and provides reliability in the treatment process.
- C. Treatment at the Long Beach WRP consists of preliminary, primary, secondary (operating in a nitrification/denitrification mode), tertiary treatment, and chlorine disinfection. Figure P3 depicts the flow diagram of the treatment process. Preliminary treatment at the headworks removes coarse particles and debris from the wastewater. The primary settling tanks remove the majority of the organic and inorganic suspended solids. Secondary treatment uses the activated sludge process and consists of aeration basins where most of the total organic carbon is removed by microorganisms, followed by clarifiers that remove most of the microorganisms and suspended inorganic solids. Tertiary treatment consists of coagulation using cationic polymer and filtration in conventional, deep bed, dual-media (anthracite coal and sand) gravity filters. Tertiary treatment reduces settleable solids, suspended solids and turbidity in the wastewater. The disinfected tertiary effluent contains n-Nitrosodimethylamine (NDMA) at an average concentration of 945 ng/L, with a minimum concentration of 71.7 ng/L measured in August 2003, and a maximum concentration of 1,590 ng/L measured in September 2003, based on data collected between July 2003 through May 2004.
- D. Solids removed from primary and secondary treatments are pumped to the CSDLAC outfall sewer for conveyance through the sewerage system to the Joint Water Pollution Control Plant (JWPCP) in Carson for removal, treatment and disposal. Coarse solids and debris removed from preliminary treatment and dried sludge are hauled to a landfill that is permitted to accept such wastes, or the latter is beneficially reused in a manner that does not impact water quality.
- E. An effective source control program is currently administered by the CSDLAC to minimize the risk that wastewater treated at the Long Beach WRP will be contaminated with toxic chemicals to protect the treatment facilities and downstream beneficial uses. This program may be expanded to include not only contaminants that may be detrimental to the facilities and the environment, but also include contaminants specified by the DHS that may be harmful to human health and drinking water supplies. CSDLAC, through a comprehensive monitoring program, will be able to reasonably ensure that the recycled water delivered to the ABRWP for recharge into the groundwater basins via injection at the ABP is not contaminated with toxic chemicals of industrial origin that are of a concern in drinking water sources.



16. **Advanced Water Treatment Facility (AWTF)**

- A. The AWTF is located at 7380 East Willow Street, Long Beach, where it is situated adjacent to the Long Beach WRP site below Willow Street and between the San Gabriel River and Coyote Creek in Long Beach (Figure P1). Approximately 3.5 MGD of disinfected tertiary treated effluent as Title 22 feedwater from the Long Beach WRP will receive additional treatment at the WRD's AWTF. The remaining tertiary treated effluent will be discharged to Coyote Creek, or distributed for reuse.
- B. The AWTF is designed to produce approximately 3,360 AFY of water for the Alamitos Barrier injection, based on 85% recovery efficiency for the RO process, and 90% operational reliability. The initial AWTF effluent capacity will be 3 MGD. The AWTF will be designed to accommodate future expansion to 8.9 MGD of reverse osmosis permeate at some future date, should sufficient supply be available, barrier or other demands allow, and regulatory conditions permit. Figure P4 presents the schematic of the treatment process for the AWTF. Treatment is comprised of the following:
- a. **Automatic Strainer:** The Automatic Strainer is used to protect downstream membrane treatment systems from large particles. The Title 22 feedwater will undergo 500 micron straining through motor operated, automatic backwash, stationary basket, and rotating arm strainers.
  - b. **Microfiltration (MF):** MF is used to reduce the turbidity and silt density of the Title 22 feedwater prior to RO for increased system reliability and reduced RO membrane fouling. The MF units are periodically back-washed to clean the membranes. The backwash is sent back to the Long Beach WRP for reprocessing.
  - c. **Reverse Osmosis (RO):** The MF filtrate is fed into one RO process train that uses thin film membranes under Phase 1 of this Project, with a normal permeate capacity of 3.0 MGD. It is anticipated that additional trains installed under later phases of the Project will have nominal permeate capacities between 2.0 and 3.0 MGD. Each RO process train achieves a guaranteed recovery rate of 80 percent with a rated operating recovery of 85 percent. The RO removes salts, minerals, metal ions, organic compounds, and microorganisms.
  - d. **Ultraviolet Light (UV) Treatment:** UV is used for reduction of light-sensitive NDMA to a target concentration of 10 ng/L in the final RO treated recycled water prior to being blended with the potable water for the injection. The Long Beach WRP provides adequate disinfection, and the UV at the AWTF provides additional disinfection.
  - e. **Decarbonation:** Following UV treatment, the water will pass through a decarbonator to release excess carbon dioxide and to stabilize the product water.
  - f. **pH Adjustment/Corrosivity Stabilization:** Product water from the RO train is injected with sodium hydroxide to adjust the pH and reduce the potential for minerals to be leached from the cement lining used in the transmission pipeline,

which would affect the integrity of the pipe.

The proposed Project complies with Section 60320 of Article 5.1, entitled "Groundwater Recharge", of the California Code of Regulations Title 22, Division 4, Chapter 3, entitled "Water Recycling Criteria." The DHS considers the above treatment to be the best available treatment technology for recycled water used for groundwater recharge by direct injection.

- C. Because the Long Beach WRP disinfection process accomplishes the level of disinfection required for injecting recycled water, no additional disinfection processes are required in the advanced treatment train. All waste streams will be discharged to a trunk sewer leading to the CSDLAC's JWPCP in Carson where they will be mixed with the 350 MGD influent to the JWPCP, and eventually be discharged into the Pacific Ocean through an outfall diffuser system.
17. **Transmission of RO Recycled Water** – The RO recycled water will be pumped westward along Willow Street through a 24-inch high density polyethylene force main to its junction with the existing 27-inch imported water delivery pipeline in Studebaker Road, which conveys the RO recycled water off-site to the Blend Station. The pumps will be furnished with adjustable frequency drives. The Blending Station consists of a junction tee with a parallel set of double check valves upstream in the 27-inch delivery pipeline. Upstream of the Blending Station, the imported water will pass through a pressure reducing station and will arrive at the Blending Station at 70 psi. The recycled water will mix with the imported water below the double check valves at a pressure of 60 psi. The existing 27-inch delivery pipeline will then convey the blended water to the Alamitos Barrier for injection.
18. **Barrier Blend Station** – The Barrier Blend Station is the point where the RO recycled water from the AWTF mixes with the potable water from MWD on its way to the barrier injection system, as shown in the schematic of Figure P5. The MWD delivery system will be protected by an above-grade, backflow prevention system installed in the LACDPW potable water feed line as a method of in-line protection. Backflow prevention consists of two identical parallel pipe trains with two check valves in series. A butterfly valve is installed upstream and downstream of the double check valves to isolate the system for maintenance. An air release valve is installed at the highest point in the pipe train. A sampling port is also provided.
19. **Barrier Injection Facilities**
- A. **Distribution Header Pipeline** – The RO recycled water mixed with potable water at Barrier Blend Station will be delivered approximately two miles to the distribution header. The distribution header pipeline consists of two legs, one extending approximately 4,000 feet to the west, and the other extending approximately 3,800 feet to the southeast. Pipe diameters range from 12 to 18 inches to the west, and from 8 to 14 inches to the southeast.
- B. **Injection Wells** – The alignment of injection wells extends westward along 7th Street from Margo Avenue to the San Gabriel River, where it turns towards the south along the Los Alamitos Channel (see Figure P6 for the well alignment). Two types of injection wells were constructed at the Alamitos Barrier: nested and composite. Nested wells are

constructed with a single casing, but can inject water into different aquifers separated by grout seals. Injection well casings are typically six or twelve inches in diameter and are made of stainless or low carbon steel with 1/8-inch wide screen openings through selected aquifer zones. Up to four casings can fit within a 30-inch diameter bore hole. The void between the grout seals is packed with gravel, which can be resupplied through 4-inch PVC gravel feed tremie tubes. Currently, the Alamitos Barrier is equipped primarily with either single or dual injection wells. The composite type injection wells are comprised of casings similar to the nested casings, except that they are screened in multiple aquifer zones without grout seals between them.

Of the 43 existing injection wells shown in Table P1, 19 are single injection wells, injecting only into either A or I aquifer. Another 17 are dual injection wells, injecting separately into the A/I or C/B aquifers. The remaining 7 wells are composite wells, 6 and 1 of them injecting simultaneously into C/B/A/I aquifers and B/A/I aquifers, respectively. Distances between injection wells vary between approximately 50 feet to 1,200 feet, for a total span of approximately 1.2 miles. There are 4 existing extraction wells located seaward of the injection wells. These extraction wells remove salty groundwater from the Recent and Zone I aquifers and help reduce seawater intrusion. No new injection or extraction wells are proposed for this Project.

<b>Table P1 – Injection Wells</b>		
<b>LACDPW Project No.</b>	<b>LACFCD Well No.</b>	<b>Aquifer(s) Injected and Interval (feet)</b>
33G	492BG	Zones A&I (42 – 103)
33J	492BF	Zones A&I (66 – 126)
33L	492BE	Zones A&I (56 – 136)
33N	492BD	Zones A&I (58 – 148)
33Q	492BC	Zones A&I (69 – 164)
33Q1	492CG	Zones B&C (27 – 44)
33S	492BA	Zones A&I (73 – 194)
33S1	492CN	Zones B&C (25 – 45)
33T	492AZ	Zones A&I (89 – 199)
33U	492AY	Zones A&I (98 – 238)
33U3	492CP	Zones B&C (70 – 125)
33V	492AX	Zones A&I (119 – 269)
33W	492AW	Zones A,B,C,I (120 – 390)
33X	502Q	Zones A,B,C,I (170 – 430)
33Y	502P	Zones A,B,C,I (218 – 457)
33Z	502M	Zones A,B,C,I (206 – 461)
33Z2	502BK	Zone I (405 – 444)
33Z2	502BJ	Zone A (310 – 362)
34D	502N	Zones A,B,C,I (219 – 474)
34E	502CC	Zones B&C (146 – 251)
34E	502CD	Zone I (411 - 456)
34F	502BZ	Zone I (411 - 451)
34F	502BY	Zone A (301 -351)
34G	502AV	Zone I (400 - 450)

<b>Table P1 – Injection Wells</b>		
<b>LACDPW Project No.</b>	<b>LACFCD Well No.</b>	<b>Aquifer(s) Injected and Interval (feet)</b>
34G2	502CF	Zones B&C (141 -261)
34G2	502CG	Zone I (406 -446)
34H	502CB	Zone I (405 -445)
34H	502CA	Zone A (275 - 345)
34J	502AW	Zone I (396 - 431)
34J	502AY	Zone A (271 - 316)
34L	503AS	Zones A,B,C,I (146 - 400)
34S	503AY	Zones B&C (120 - 1820)
34S	503AW	Zone I (312 -347)
34S	503AX	Zone A (225 - 290)
34V	503BB	Zones B&C (120 - 177)
34V	503AZ	Zone I (260 -300)
34V	503BA	Zone A (200 -230)
34Z	503BL	Zone I (110 -150)
35F	503BN	Zones A&I (80 -115)
35G	503BM	Zone I (80 - 145)
35H1	514I	Zone A (131 - 171)
35H1	514J	Zone I (215 -237)
35H2	514K	Zones A, B, I (112 - 241)

\* LACFCD is an abbreviation of Los Angeles County Flood Control District.

20. **Groundwater Monitoring Wells** consist of 8 permit compliance wells and 13 tracer wells shown in Figure P7.

A. Permit Compliance Wells in Table P2 will be used to detect, track, and monitor the underground movement of the recharge water towards the nearest active drinking water production well SB-LEI, and the water quality of various aquifers comprising the groundwater basins for compliance purposes.

<b>Table P2 – Permit Compliance Wells</b>			
<b>LACDPW Project No.</b>	<b>LACFCD* Well No.</b>	<b>Aquifer Monitored and Interval (feet)</b>	<b>Location</b>
34HJ	502BW	Zone I (400 - 440)	170 feet (3-month travel)
34HJ	502BX	Zone A (304 - 334)	170 feet (3-month travel)
34LS	503BF	Zone C (136 – 181)	350 feet (3-month travel)
34LS	503BE	Zone B (191 – 216)	350 feet (3-month travel)
34L10	502AK	Zone C (165 - 185)	900 feet (1/4 distance travel)
34L10	502AL	Zone B (219 - 254)	900 feet (1/4 distance travel)
34L10	502AM	Zone A (305 - 359)	900 feet (1/4 distance travel)
34L10	502AN	Zone I (399 - 444)	900 feet (1/4 distance travel)

a. Four existing monitoring wells consist of composite wells (502AK, 502AL, 502AM, and 502AN) at the location 900 feet away from the Alamitos Barrier, representing

¼ distance between the Alamitos Barrier and the nearest active production well SB-LEI.

- b. Four additional dual wells (502BW, 502BX, 503BF, and 503BE) represent different aquifers at two locations within 3-month travel time of the Alamitos Barrier.

These eight monitoring wells owned by the LACDPW as well as referenced with the LACFCD well numbers have been used to established baseline and ambient groundwater quality prior to the start of delivery of RO recycled water at the Alamitos Barrier.

- B. There are a total of 13 tracer wells, listed in Table P3, which will be used to monitor the movement of the blended recharge water using intrinsic tracer monitoring as it moves inland. The results from the Tracer Well analyses will enable a distinction to be made between the recycled water blended and existing in-situ groundwater. The WRD has submitted a proposal to utilize intrinsic differences in recycled water and ambient groundwater quality to track the movement of recycled water. The DHS has agreed to allow the use of intrinsic monitoring at the 3-month tracer wells for a maximum period of six months to verify that intrinsic tracers are capable of tracking the movement of recycled water into the groundwater basins at the Alamitos Barrier. If sufficient correlation is not achieved during that time period, the DHS will require artificial tracers to be injected into the recycled water to better model the movement of recycled water at the Alamitos Barrier. The Regional Board and DHS will approve of the artificial tracer methods, if necessary.

<b>Table P3 – Tracer Wells</b>			
<b>LACDPW Project No.</b>	<b>LACFCD Well No.</b>	<b>Distance from Alamitos Barrier</b>	<b>Aquifer(s) Monitored</b>
33ST	492BK	100 feet	Zones B, C
33ST	492BL	100 feet	Zone A
33ST	492BM	100 feet	Zone I
33XY	502BL	100 feet	Zone C
33XY	502BM	100 feet	Zone B
33XY	502BN	100 feet	Zone A
33XY	502BP	100 feet	Zone I
34F5	502BR	200 feet	Zone A
34F5	502BS	200 feet	Zone B
34F5	502BU	200 feet	Zone C
34JL	503AR	320 feet	Zone C
34TO.1	503AB	330 feet	Zone B
34TO.1	503AC	330 feet	Zone A

- 21. **Groundwater Quality Study** – A detailed review of groundwater quality data for the study area in Figure P8, covering a 3-mile distance from the Alamitos Barrier, indicates that in general, water quality is within primary and secondary drinking water standards. Exceedances are generally limited to localized areas where chloride and color are present in elevated concentrations. There is no documented contamination from anthropogenic sources in the

Pleistocene aquifers in the study area, in part due to the effectiveness of the local aquitards as a barrier to downward vertical flow.

An exception is well HELL-SB2, located approximately 1,500 feet southeast of the Barrier. The well HELL-SB2 shows definite indications of barrier source water. In contrast to most production wells in the area, the well HELL SB-2 is perforated primarily in the Zone I, where water is injected at the Alamitos Barrier. This well is an agricultural well and does not pose a threat to potable well supplies. With the exception of well HELL-SB2, the water quality of groundwater from the production wells in the vicinity of the Alamitos Barrier is distinctly different from water which is injected in the Alamitos Barrier. Because the source water for historic injection at the Barrier has included the Colorado River, which is high in sulfate, sulfate serves as an effective indicator of movement of injected water. A very significant finding of this study is that sulfate concentrations in local production wells suggest that these wells do not produce significant quantities of water that originated from injection at the Alamitos Barrier, even after 30 years of barrier operation. Given that these wells produce groundwater primarily from the Main Aquifer, this finding is consistent with the hydrostratigraphy of the basin and the hydrologic budget.

**22. Projected Travel Times to 2,000 Foot Boundary and Nearest Well**

- A. Montgomery Watson Harza, Inc. evaluated travel times between the Alamitos Barrier and the nearest production wells by three methods, which are:
  - a. Flow velocity using Darcy’s Equation and Monte Carlo Simulation;
  - b. Migration of a documented chloride plume; and,
  - c. Migration of a documented sulfate plume, which represents the actual introduction of imported water into the Alamitos Barrier.
- B. **2000-Foot Travel Time** – The results of these three methods of evaluating the minimum retention time for recycled water injected into the Alamitos Barrier based on groundwater flow velocity are summarized in Table P4.

<b>Method</b>	<b>Zone A</b>	<b>Zone I</b>	<b>Uncertainty</b>	<b>Variability</b>
Darcy’s Equation (Monte Carlo Simulation)	0.4-667	0.2-20	High	High
Chloride Plume	3.8	NA	Low	Low
Sulfate Plume	NA	2.2	Low	Low

- a. The uncertainty and variability of Darcy’s Equation are considered high. The uncertainty and variability associated with chloride and sulfate plumes are low. Because the uncertainty and variability in the theoretical flow velocity is high compared to the solute transport velocity based upon geochemical tracers, the estimates of groundwater flow velocity based upon geochemical tracers are the most valid. Based on these estimates, the 1-year minimum retention time

requirement is satisfied for all points a distance of 2,000 feet from the Alamitos Barrier in all injection zones.

- b. In order to assure that no potable water supply wells are allowed to be constructed within 2,000 feet of the Alamitos Barrier, the WRD adopted Resolution No. 02-651 on November 4, 2002, and requested the Los Angeles County and Orange County Department of Health Services to adopt a regulation that prevents the use of groundwater for drinking water within the 2,000 feet control zone surrounding the injection barrier (Should provide proof to DHS and Regional Board that this has been done). At the present time, there are no production wells located within 2,000 feet of the Alamitos Barrier on the landward side. Several production wells exist within 2,000 feet on the seaward side of the Alamitos Barrier, but they are either used for agricultural supplies or as barrier extraction wells to provide the pumping trough seaward of the Alamitos Barrier.
- C. **Nearest Well Travel Time** – The nearest drinking water wells screened in Zone A and Zone I are the Yellowtail Well, located approximately 5,600 feet northeast of the Alamitos Barrier, and SB-LEI Well, located approximately 4,500 feet east of the Alamitos Barrier. Assuming the maximum velocities for Zone A and Zone I are 2,661 and 2,750 feet/year, respectively, then the estimated minimum retention times to the Yellowtail Well and SB-LEI Well are approximately 2.1 and 1.6 year, respectively. This indicates that even with these conservatively high velocities, injected water will remain in the underground for greater than 1 year before reaching the nearest potable water well, which is a requirement of this permit.

### 23. Recycled Water Quality for Groundwater Injection

- A. Results of sampling collected from the ABRWP's AWTF during startup indicate that the product water will meet all requirements of the California Drinking Water Primary and Secondary Maximum Contaminant Levels (**MCLs**). Tests conducted by others on MF/RO/UV treatment processes also have indicated that selected pharmaceutically active compounds and other toxic contaminants not included in the drinking water standards, are removed or reduced to low levels in the product water.

**MCLs** are health protective drinking water standards adopted by DHS that are to be met by public water systems. MCLs take into account not only the chemicals' health risks but also factors such as their detectability and treatability, as well as the costs of treatment. More information, such as DHS' process for establishing MCLs, is available in the DHS' website at <http://www.dhs.ca.gov/ps/ddwem/chemicals/chemindex.htm>.

- B. The Monitoring and Reporting Program (MRP) that is part of this Order requires the Project Sponsors to monitor for all constituents of drinking water specified in Chapter 15, Title 22, California Code of Regulations, both regulated and unregulated. For contaminants in concentrations above the MCLs or Public Health Goals (**PHGs**), or for contaminants that do not have MCLs but are in concentrations above the Notification Levels (**NLs**), previously referred to as "Action Levels", the Project Sponsors are required to investigate the cause and implement remedial or corrective actions.

**PHGs** are levels of contaminants in drinking water that pose no significant health risks if water is consumed for a lifetime and are based on risk assessments. They are established by Cal/EPA's Office of Environmental Health Hazard Assessment, pursuant to Health and Safety Code §116365(c), for contaminants with MCLs or for contaminants for which DHS plans to promulgate MCLs. Health and Safety Code §116365(a) requires DHS to establish contaminants MCLs at levels as close as is technically and economically feasible to the contaminants' PHGs. **NLs** are health-based advisory levels established by DHS for contaminants in drinking water with no MCLs. NLs are scientifically calculated using standard risk assessment methods for non-cancer and cancer endpoints, and typical exposure assumptions. Chemicals for which NLs are established may eventually be regulated by an MCL, depending on the extent of contamination, the levels observed, and the risk to human health. More information for drinking regulations for PHGs and NLs is available in the DHS' website at <http://www.dhs.ca.gov/ps/ddwem/chemicals/AL/notificationlevels.htm>.

- C. To address concerns regarding emerging chemicals including endocrine disruptors and pharmaceutically-active chemicals analyzed annually, the MRP also requires the Project Sponsors to conduct quarterly priority pollutants screening and annually tentatively identified chemical analysis (TIC). A TIC is a special analytical procedure to identify and quantify detected compounds that are not on the target list for the specific method being analyzed. Detected peaks that correspond to a compound on the target list will be identified and quantified. Unidentified peaks will be compared with the mass spectrometer reference library containing approximately 75,000 compounds to identify the compound. The DHS has specified some endocrine disrupting chemicals, pharmaceuticals and other chemicals for monitoring (see MRP).
- D. The Regional Board recognizes that certain chemicals (such as perchlorate, 1,4-dioxane, NDMA, and 1,2,3-trichloropropane, in Attachment A-7: Chemicals of Concern to the Regional Board) not having MCLs may be a threat to groundwater quality, and that the science surrounding these chemicals is evolving with respect to health threats from these chemicals and possible loss of beneficial uses. Therefore, in order to implement State antidegradation policy, and based upon the best science available, limits have been established for these chemicals based upon the standard risk assessment methods for non-cancer and cancer endpoints, and typical exposure assumptions, including a 2-liter per day ingestion rate, a 70-Kilogram adult body weight, and a 70-year lifetime.

For Chemicals of Concern that are not considered carcinogens, the limit is derived from the "No observed adverse effect level" (NOAEL), adjusted by appropriate factors to take into account uncertainties in the available data. An estimate of drinking water's contribution to total exposure to the Chemicals of Concern is also included.

For those Chemicals of Concern that are considered carcinogens, the limit is based upon a "*de minimis*" theoretical lifetime risk of up to one excess case of cancer in a population of one million people.

Chemicals of Concern are based on the best available science. State the Regional Board staff recognize the importance of water recycling and the need to protect



resources, however, the broader purposes of the Porter-Cologne Act must be served. In other words, the Regional Board cannot sacrifice long-term water quality in the interest of short-term water recycling. Instead, the Regional Board must strike a balance between the competing interests. The WDR/WRRs recognize the need for balance by permitting the project to go forward, while establishing reasonable limitations, based on the best available science, to ensure that long-term loading of pollutants known to pose a threat to human and health and safety does not occur at unsafe levels.

As the science continues to evolve, this Permit may need to be updated to reflect the current science.

- E. If the RO recycled water does not meet permit requirements for the injection wells but meets the requirements for discharge from the Long Beach WRP to the River, the RO recycled water can be discharged directly to Coyote Creek under the Long Beach NPDES WRP permit, Order No. R4-2002-0123, NPDES No. CA0054119. If the RO recycled water does not meet NPDES permit requirement for the Long Beach WRP discharge to the river system, the AWTF will be shut down and any off-spec water in storage will be sent to the CSDLAC Joint Outfall "C" for conveyance to the JWPCP in Carson for treatment.

24. **Contingency Plan** – WRD has developed a revised Operation, Maintenance, and Monitoring Plan (OMM Plan\*) that incorporates specific procedures to be followed by operating staff for all potential emergencies or conditions, which might lead to RO recycled water unacceptable for injection.

On June 10, 2005, the DHS approved the revised OMM Plan incorporating all comments requested by the DHS on September 15, 2004. The DHS also requests the WRD to submit a performance testing protocol for the UV system prior to operation and to submit results of the performance testing as they become available.

25. **Resolution No. 04-710** – Prior to onset of operation, the WRD received Resolution No. 04-710, adopted by its governing board on September 1, 2004, which made the WRD responsible for developing a plan for providing an alternative source of domestic water supply, or a DHS approved treatment mechanism, to any user whose domestic water well is found to violate California drinking water quality regulations as a direct result of the ABRWP, or when the DHS makes an analysis and finding that the domestic water well is unsuitable for human consumption as a direct result of the ABRWP. Such alternative sources can include water delivered for blending at the producing well, imported water, water produced at a well head treatment plant, and water produced from new wells. The WRD must notify the DHS in a timely manner, when such a determination is made.

## APPLICABLE PLANS, POLICIES AND REGULATIONS

26. **Basin Plan** – The Regional Board adopted a revised *Water Quality Control Plan for the Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) on June 13, 1994, and amended by various Regional Board resolutions. This updated and consolidated plan represents the Board's master quality control planning document and regulations. The Basin Plan (i) designates beneficial uses for surface and groundwater, (ii)

sets narrative and numerical objectives that must be attained or maintained to protect the designated (existing and potential) beneficial uses and conform to the State's antidegradation policy, and (iii) includes implementation provisions, programs, and policies to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. This Order implements the plans, policies, and provisions of the Board's Basin Plan.

The Basin Plan (Chapter 3) incorporates Title 22 primary MCLs by reference. This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. Also, the Basin Plan specifies that "Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses." Therefore the secondary MCLs, which are limits based on aesthetic, organoleptic standards, are also incorporated into this permit to protect groundwater quality.

27. **Title 22 of the California Code of Regulations** – The California Department of Health Services established primary and secondary maximum contaminant levels (MCLs) for inorganic, organic, and radioactive contaminants in drinking water. These MCLs are codified in Title 22, California Code of Regulations (Title 22). Title 22 primary MCLs (see Attachments A-1 to A-4) have been used as bases for effluent limitations of the RO recycled water in WDRs and WRRs permit to protect the **Groundwater Recharge** beneficial use when that receiving groundwater is designated as municipal and domestic supply.

**Groundwater Recharge** – RO recycled water from the ABRWP's AWTF through the Alamitos Barrier enters the Central Groundwater Basin and the Orange County Groundwater Basin. Since ground water from these basins is used to provide drinking water to over one million people, Title 22-based limits are needed to protect that drinking water supply where there is the potential for the contaminant to be present in the injection. By limiting the contaminants in the RO recycled water injection, the amount of pollutants entering the groundwater basins are correspondingly reduced. Once groundwater basins are contaminated, it may take years to clean up, depending on the pollutant. Compared to surface water pollution, investigations and remediation of groundwater are often more difficult, costly, and extremely slow.

28. **Antidegradation Policy** – On October 28, 1968, the State Board adopted Resolution No. 68-16, *Maintaining High Quality Water*, which established an antidegradation policy for State and Regional Boards. The State Board has, in State Board Order No. 86-17 and an October 7, 1987 guidance memorandum, interpreted Resolution No. 68-16 to be fully consistent with the federal antidegradation policy. As a result, the federal antidegradation policy provides some guidance in interpreting State Board Resolution No. 68-16. The State policy is designed to ensure that a water body will not be degraded resulting from the permitted discharge, except under the conditions established in the State Antidegradation Policy. The provisions of this Order are consistent with the antidegradation policy.

In conformance with State Antidegradation Policy, the Regional Board could choose to adopt limits of "nondetect" for anthropogenic Chemicals of Concern where no scientific or regulatory criteria exist. The Antidegradation Policy is an important regulatory tool for the Regional Board and it provides a backstop where knowledge of contaminants is evolving that requires "the highest water quality consistent with the maximum benefit to the people of the State will be

maintained.” (SWRCB Res. No. 68-16, ¶ 3.) The loading of anthropogenic compounds to underground aquifers is particularly problematic. Waste discharged into underground aquifers is technically difficult to remove and can be extremely costly to remediate. Moreover, a contaminated groundwater resource may become unsuitable for beneficial use, and may become unsuitable for a lengthy period of time. As a result, the State Antidegradation Policy’s command to maintain “the highest water quality consistent with the maximum benefit to the people of the State” requires particular sensitivity when considering allowing reclaimed water containing waste to be injected into a groundwater aquifer.

To maintain the highest water quality, the Regional Board could specify limitations based on the non-detect levels for anthropogenic compounds because that would provide assurance that aquifer’s water quality was being maintained. Instead, Regional Board staff are taking a middle ground and relying on the best available science to maintain the highest water quality consistent with the maximum benefit to the people of the State. Regional Board staff used the existing science, as explained in Finding 23.D., to develop limits protective of beneficial uses of the groundwater based upon their professional judgement. This approach is also consistent with State Board Resolution No. 77-1 (concerning water reclamation) and recognizes the important role the ABRWP will play in protecting and enhancing groundwater resources.

29. **Beneficial Uses** – In the Basin Plan, the beneficial uses of the Central Basin Groundwater Basin are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
30. The State Board adopted Resolution No. 77-1, Policy with Respect to Water Reclamation in California, which includes principles that encourage and recommend funding for water recycling and its use in water-short areas of the State. On September 26, 1988, the Regional Board also adopted Resolution No. 88-012, *Supporting Beneficial Use of Available Reclaimed Water in Lieu of Potable Water for the Same Purpose*, which encourages the beneficial use of recycled wastewater and supports water recycling projects.
31. Section 13523 of the California Water Code provides that a regional board, after consulting with and receiving recommendations from DHS, and after any necessary hearing, shall, if it determines such action to be necessary to protect the public health, safety, or welfare, prescribe water recycling requirements for water that is used, or proposed to be used, as recycled water. Groundwater recharge of freshwater aquifers with recycled water could affect the public health, safety, or welfare; therefore requirements for such use are necessary.
32. Section 13523 further provides **at a minimum**, that the recycling requirements shall include, or be in conformance with, the statewide water recycling criteria established by DHS pursuant to Water Code Section 13521. DHS adopted revised Water Recycling Criteria (Chapter 3, Division 4, Title 22, California Code of Regulations) that became effective on December 2, 2000. Applicable criteria to this recycling Project are prescribed in this Order.
33. Section 60320 of the Water Recycling Criteria provides that DHS’ recommendations to the Regional Water Quality Control Boards for proposed groundwater projects and for expansion of existing projects will be made on an individual case basis where the use of recycled water involves a potential risk to public health.

34. Section 60320 further provides that DHS' recommendations will be based on relevant factors of each project, including the following: treatment provided, effluent quality and quantity, spreading area operations, soil characteristics, hydrogeology, residence time, travel time, and distance to withdrawal.
35. Section 13540 of the Water Code requires that recycled water may only be injected into an aquifer used as a source of domestic water supply if DHS finds the recharge will not degrade the quality of the receiving aquifer. To facilitate determination of whether a recharge project will not degrade the receiving groundwater, DHS has developed draft Recycling Criteria for Groundwater Recharge Reuse (latest version is dated December 1, 2004). Compliance with the requirements in the criteria would likely not result in degradation of the receiving groundwater.
36. Prior to submitting its recommendations, DHS reviewed reports and studies on the Project including a Title 22 Engineering Report (dated August 1999), an Amended Title 22 Engineering Report (dated May 2002), a Groundwater Monitoring Program (dated August 7, 2002), an Expanded Groundwater Monitoring Program (dated March 17, 2004), and other supplemental information and responses to the DHS pertaining to the ABRWP. After the review, DHS conducted a public hearing on the Project on February 4, 2004, in Long Beach, California, to consider the ABRWP. There was no testimony in opposition to the Project.

The DHS also reviewed the WRD's OMM Plan submitted on August 23, 2004. On September 15, 2004, the DHS approved it under the condition that some changes be made in the proposed OMM.

37. The Regional Board has consulted with DHS regarding the proposed groundwater recharge with recycled water. DHS submitted its Findings of Fact to the Regional Board, in a letter dated July 8, 2004. The major DHS' recommendations and requirements in the Findings of Fact are shown in Table P5.

<b>Table P5 – Recycling Criteria for Groundwater Recharge Reuse</b>	
<b>Factors</b>	<b>Minimum Requirements</b>
Maximum recycled water contribution	Water recharged of wastewater origin shall not exceed 50 percent of the total water recharged.
Minimum retention time underground <sup>[1]</sup>	At least 12 months prior to extraction from domestic supply wells.
Horizontal separation requirements <sup>[1]</sup>	At least 2,000 feet between point of recycled water direct injection and domestic water supply wells.
Monitoring well requirements <sup>[2]</sup>	Monitoring wells at a location between the Alamitos Barrier and 3-month travel time from recharge area, and at additional intermediate points between the Alamitos Barrier and the nearest downgradient domestic water well SB-LEI (State Well No. 05S/12W-01A03).
Total nitrogen <sup>[3]</sup>	The total nitrogen concentration shall not exceed 5 mg/L in the recycled water.
Total organic carbon <sup>[4]</sup>	The total organic carbon concentration shall not exceed 0.5 mg/L divided by the maximum average recycled water contribution in the blend of recycled water and diluent <sup>[5]</sup> water. This is a 50% Project.

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Footnote:

- [1]. The importance of the retention time and the physical setback is based on the concept that water moving through the aquifers is afforded an extra level of treatment through soil filtration; the longer the water stays underground, the more likely trace organic and inorganic chemicals would be removed through the natural filtration process. In addition, virus decay with time and a 12-month retention time provides additional log reduction in the virus density in the recycled water.
- [2]. The wells shall be installed such that samples can be obtained independently from each aquifer potentially conveying the recharge water. Monitoring well locations shall be determined based on a numerical model, tracer, or other method to determine the estimated underground travel time from the recharge operation to the monitoring well sites. In addition, construction of the wells shall be such that samples can be obtained independently from each aquifer conveying the recharge water.
- [3]. Total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as total nitrogen.
- [4]. Total organic carbon means oxidizable organic carbon measured by an approved laboratory pursuant to subsection 64415(a) using Method 5310C, *Standard Methods for the Examination of Water and Wastewater, 20<sup>th</sup> Edition, 1998*, with a reporting level of 0.10 mg/L, and precision and accuracy within plus-and-minus 20 percent.
- [5]. Diluent water is water that **is not** treated wastewater and that is used to supplement the recycled water in the Alamitos Barrier. In addition, diluent water must be equivalent to potable water quality and be approved for use by the DHS and the Regional Board.

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38. Regulatory agencies who issue well permits have adopted policies to prohibit or to consult with the DHS and the WRD before issuing permits for the construction of new wells for domestic purposes within 2000 feet of the Alamitos Barrier. These include the County of Los Angeles Department of Health Services, the City of Long Beach Department of Health and Human Services, and the Orange County Health Care Agency. On November 4, 2002, the WRD adopted Resolution No. 02-651 directing the District's staff to recommend against drilling of any new domestic water production wells within 2000 feet of the Alamitos Barrier.
  39. The requirements contained in this Order are in conformance with the goals and objectives of the Basin Plan and implement the requirements of the California Water Code and Water Recycling Criteria.

### CEQA AND NOTIFICATION

40. The WRD authorized preparation of an Initial Study/Proposed Negative Declaration by Psomas in mid-1998, in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.). The Initial Study did not reveal any significant environmental impacts. The Initial Study/Proposed Negative Declaration was released for public comment on October 3, 1998, with an advertisement in the Los Angeles Times, mailings to interested agencies and circulation through the State Clearinghouse

(#98101009). No negative comments were received and the conclusion that there would be no significant environmental impacts was the basis for the Notice of Determination and adoption of a Negative Declaration by the WRD Board of Directors on November 19, 1998. No further comments or objections were received during the subsequent 45 days. Therefore, the Project has completed the notification and review process required by CEQA.

41. This issuance of water recycling requirements by a regulatory agency for the protection of the environment is exempt from the provisions of Chapter 3 [commencing with Public Resources Code Section 21100, et seq., Division 13, CEQA] in accordance with Section 15308, Title 14, California Code of Regulations.
42. Pursuant to California Water Code section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to the State Water Resources Control Board, 1001 I Street, Sacramento, California, 95814, within 30 days of adoption of the Order.

The Regional Board has notified the Project Sponsors and interested agencies and persons of its intent to issue Water Recycling Requirements for the proposed Alamitos Barrier Recycled Water Project, and has provided them with an opportunity to submit their written views and recommendations.

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

**IT IS HEREBY ORDERED** that the Los Angeles County Department of Public Works and the Water Replenishment District of Southern California shall comply with the following requirements:

#### **I. WASTEWATER TREATMENT AND SOURCE CONTROL**

For any noncompliance or violation with these requirements, unless otherwise specifically provided, the Project Sponsors shall notify and submit a report according to Provision VII.5. of this Order.

1. Treatment of wastewater intended for groundwater recharge injection shall be as proposed in the Findings of this Order and shall consist of preliminary and primary sedimentation, secondary biological treatment, tertiary treatment, chlorine disinfection, and advanced water treatment (comprising of automatic strainer, MF, RO, pH adjustment, and UV treatment). Replacement of equipment or major modifications to the treatment process as described in this Order and in the *Engineering Report for the Alamitos Barrier Recycled Water Project* (August 1999) and the *Amended Engineering Report for the Alamitos Barrier Recycled Water Project* (May 2002), both prepared by the WRD, and other supplemental information on this Project shall be subject to review and approval by DHS and this Regional Board.
2. There shall be no bypassing of the treatment processes described in this Order, except for coagulation. Coagulation need not be used as part of the treatment process provided the turbidity of the secondary effluent (influent to the filters) is continuously measured, the influent turbidity does not exceed 5 Nephelometric turbidity units (NTU)

for more than 15 minutes, and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceeds 5 NTU for more than 15 minutes.

3. The WRD shall enter into a legal agreement with the CSDLAC that shall include provisions for an Industrial Pretreatment and Pollution Source Control Program applicable to the Long Beach WRP. The agreement shall require that CSDLAC maintain a comprehensive industrial wastewater pretreatment and source control program for controlling discharges of waste from commercial and industrial sources that could adversely affect the quality of the recycled water from the AWTF or production of recycled water. The agreement shall also require that CSDLAC comply with all applicable federal and state legal and regulatory requirements with respect to its pretreatment program, and that the program shall be consistent with the most recent recommendations issued by DHS with respect to pretreatment and source control requirements for groundwater recharge project. The agreement shall include provisions that allow for the inclusion in the Pretreatment and Source Control Program any contaminants that DHS has identified that may pose a risk of contamination to a drinking water supply as a result of the groundwater injection project. The LACSD in conjunction with the WRD shall:
  - A. Make an assessment of the fate of the source contaminant compounds through the wastewater and recycled water treatment systems;
  - B. Conduct a source investigation and monitoring program focused on the identified target compounds and their potential ability to persist through the treatment systems;
  - C. Conduct a comprehensive outreach program to industrial, commercial and residential communities within the Long Beach WRP wastewater collection service area to manage and minimize the discharge of the compounds of concern at the source; and,
  - D. Develop a proactive program for maintaining an inventory of compounds discharged into the Long Beach WRP wastewater collection system service area so that new compounds of concern can be evaluated rapidly.

The agreement shall become effective 90 days after review and approval by the Regional Board and DHS.

## **II. ADVANCED WATER TREATMENT FACILITY (AWTF) INFLUENT SPECIFICATIONS**

For purposes of this Order, the AWTF includes an automatic strainer, microfiltration, reverse osmosis, pH adjustment, and UV light treatment. The influent to the AWTF shall be tertiary treated effluent and shall, at all times, be adequately oxidized. The influent shall be considered adequately oxidized when it meets the following characteristics:

1. The monthly average Biochemical Oxygen Demand value ( $BOD_5$  20°C) does not exceed 15 mg/L. Compliance shall be determined monthly using the average of the analytical

- results of all 24-hour composite samples taken at least weekly during the month.
2. The monthly average Total Suspended Solids (TSS) concentration does not exceed 15 mg/L. Compliance shall be determined monthly using the average of the analytical results of all 24-hour composite samples taken daily during the month.
  3. The total organic carbon (TOC) shall not exceed 16 mg/L for more than two consecutive samples; if the TOC fails to comply with this criteria, this Project shall be suspended until the TOC is reduced to 16 mg/L or less.
    - A. For one year after initial startup, the WRD shall collect and analyze a 24-hour composite sample twice a week; and,
    - B. Subsequently, the DHS may allow the WRD to collect and analyze weekly 24-hour composite samples, based on its review of the first year of data.
  4. Turbidity - The turbidity of the reverse osmosis feed water prior to disinfection shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period and 0.5 NTU at any time. The turbidity shall be continuously measured with at least one reading every 1.2 hours and recorded. The results of the daily average turbidity determinations shall be reported quarterly to DHS and the Regional Board. Compliance with the daily average turbidity shall be determined based on using the recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. When the turbidity requirements are exceeded, delivery of recycled water shall be suspended until such time the cause of the exceedance has been identified and corrected. Any failure to meet the turbidity performance requirements shall be reported to the DHS and the Regional Board in the next monthly report.

### **III. RECYCLED WATER SPECIFICATIONS**

1. Recycled water, for the purposes of this Order, is wastewater that has received primary, secondary and tertiary treatment, and chlorine disinfection followed by MF, RO, UV light treatment, decarbonation, and corrosivity stabilization.
2. Recycled water used for injection shall be, at all time, adequately oxidized, filtered, disinfected, and subject to organics removal by RO and UV treatment. There shall be no bypassing of any treatment process, except for decarbonation and caustic soda addition, which provide pH adjustment as required for stabilization in the above statement of Section III.1.
3. Total Organic Carbon
  - A. The total organic carbon (TOC) of the recycled water shall not exceed 0.5 mg/L divided by the maximum average recycled water contribution, which shall not exceed 50%, in the recharge water of blended recycled and diluent water injected into the aquifers. Therefore, the TOC of the recycled water shall not exceed 1.0



mg/L.

- B. For this new recharge Project, the WRD shall determine compliance as soon as 4 samples have been collected, averaging all available samples up to 20 samples. After that time, compliance with this requirement shall be determined as the most recent 20-sample running average of at least weekly grab sampling calculated monthly. In the event of a violation of the TOC requirement, the WRD shall suspend recharge until the requirement is met. Within 7 days of the suspension, the WRD shall notify DHS and this Regional Board.

If the average of the last four samples exceeds the TOC limit, the WRD shall submit a report within 60 days to DHS and this Regional Board describing the cause(s) of the exceedance and the corrective actions implemented and/or to be implemented to avoid future exceedances.

4. Total Nitrogen

- A. The total nitrogen concentration shall not exceed 5 mg/L in the recycled water.
- B. The total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as total nitrogen.
- C. The weekly average of total nitrogen concentration in the recycled water or the blend with diluent water if blended before injection, shall not exceed 5 mg/L as nitrogen, based on results of analysis of 2 grab or 24-hour composite samples per week, obtained at least 3 days apart. The laboratory shall complete each analysis within 72 hours after samples received. If the results of the total nitrogen concentration in any single sample exceeds 5 mg/L as nitrogen, the laboratory must report the result to the WRD within 72 hours of completion of the results. If the average of two consecutive samples exceeds 5 mg/L as nitrogen, the WRD shall:
  - a. Investigate the cause and make appropriate corrections;
  - b. Within 24 hours of being notified by the laboratory, notify DHS and the Regional Board and submit a report according to Provision VII.5. of this Order;
  - c. Suspend injection of the recycled water until appropriate corrections are made to reduce total nitrogen levels to below 5 mg/L, if the average of all samples collected over the ensuing two-week period exceeds 5 mg/L;
  - d. Suspend injection of the recycled water until appropriate corrections are made to reduce total nitrogen levels to below 5 mg/L, if more than 25% of all samples collected over a two-week period exceeds 10 mg/L; and,
  - e. Submit a report to the DHS and the Regional Board within 30 days of conclusion of enhanced groundwater monitoring, summarizing the results of

the enhanced groundwater monitoring program and describing the causes of the exceedance and corrective actions taken to avoid future violations of these requirements.

- D. Diluent water shall be monitored quarterly for nitrate and nitrite. Within 48 hours of being informed by the laboratory of a nitrate and/or nitrite result greater than a MCL, a confirmation sample shall be collected and analyzed. If the average of the initial and confirmation samples exceeds a maximum contaminant level:
  - a. The District shall notify the DHS and Regional Board within 48 hours of receiving the confirmation sample result.
  - b. The causes of the exceedance shall be investigated and appropriate corrections shall be made.
  - c. Each week the District shall collect and analyze two grab or 24-hour composite samples at least 3 days apart.
  - d. If the average of all samples collected over the ensuing 2-week period exceeds the applicable criterion, recharge of the blended recycled water shall be suspended until appropriate corrections are made.
5. Recycled water shall be, at all times, adequately disinfected. In the event that the recycled water exceeds any of the following, based on daily grab samples, the Project Sponsors shall suspend injection of recycled water until such time the cause of the failure has been identified and corrected. Any failure to meet the total coliform performance requirements shall be reported to the DHS and the Regional Board in the next monthly report.
  - A. A 7-day median of 2.2 most probable number (MPN) per 100 milliliters for two consecutive days;
  - B. 23 MPN per 100 milliliters in more than one sample in any 30-day period prior to injection; and,
  - C. 240 MPN per 100 milliliters in any sample prior to injection.
6. The conductivity of the RO treated recycled water upstream of the UV system shall not exceed 300  $\mu\text{S}/\text{cm}$  at any time. The conductivity of the RO treated recycled water shall be continuously measured with an online conductivity meter and recorder. At any time the conductivity limit is exceeded, the AWTF will be shut down automatically and result in the suspension of injection of recycled water until such time that the cause of the high-conductivity condition has been identified and corrected.
7. The pH of the product water for injection or recharge water shall be, at all times, within the range of 6.5 to 8.5 pH units.

8. Concentrations of contaminants in the recycled water shall, at all times, not exceed the following DHS' MCLs for drinking water. These limits are prospective, new state and federal MCLs will be added as they are adopted. Compliance with primary MCLs shall be determined on the basis of a running quarterly average, calculated each quarter using the previous four quarters of data. Compliance with secondary MCLs shall be determined annually based on a representative grab sample or the average of samples collected during the year, if more than one. In case of a violation of any of either primary, or secondary MCLs, the WRD shall notify and submit a report according to Provision VII.5. of this Order.
  - A. Primary MCLs specified in Chapter 15, Domestic Water Quality and Monitoring, Title 22, California Code of Regulations (CCR):
    - a. Inorganic chemicals in Section 64431, Table 64431-A, except for nitrogen compounds, Attachment A-1 of this Order;
    - b. Radionuclides in Section 64443, Table 4, Attachment A-2 of this Order;
    - c. Regulated organic chemicals in Section 64444, Table 64444-A, Attachment A-3 of this Order; and,
  - B. Primary MCLs for disinfection byproducts specified in Chapter 15.5, Article 2, Section 64533, Table 64533-A, Attachment A-4 of this Order
  - C. Secondary MCLs in Chapter 15, Domestic Water Quality and Monitoring, Title 22, CCR, Table 64449-A, Attachment A-6 of this Order. The Corrosivity Index in Table 64449-A is not applicable for 100% recycled water. The Corrosivity Index after adding lime to the recycled water should be within  $\pm 0.5$  Langelier Saturation Index (LSI).
  - D. Any new Federal or State MCL upon adoption.
9. Concentrations of Chemicals of Concern to the Regional Board shall not exceed the limits outlined on Attachment A-7 of this Order.
10. Recycled water shall not contain lead in concentrations greater than 0.015 mg/L, in more than 10% of samples collected during any monitoring period.
11. Recycled water shall not contain copper in concentrations greater than 1.0 mg/L (secondary MCL), which is the most stringent drinking water standard.
12. Concentrations of mineral constituents in the recycled water injected into the Barrier shall not exceed those in Table P6 (Basin Plan Objectives):

<b>Table P6 – Concentrations of Mineral Constituents in the Recycled Water Injected into the West Coast Barrier</b>		
<b>Constituent</b>	<b>Unit</b>	<b>Limit</b>
Total dissolved solids	mg/L	800
Sulfate	mg/L	250
Chloride	mg/L	250
Boron	mg/L	1.5

13. Compliance with primary and secondary MCLs will be determined as described in parts A and B below. Should an exceedance of permit limits occur, the WRD shall investigate the cause(s) and submit a report to DHS and this Regional Board within 60 days of the exceedance describing the cause(s) and remedial and/or corrective actions implemented or to be implemented with a time schedule.
  - A. Compliance with limits referenced above for inorganic chemicals, radionuclides, organic chemicals, disinfection byproducts, lead and copper, or Chemicals of Concern to the Regional Board, shall be based on the running-quarterly average, calculated each quarter using the previous four quarters of data.
  - B. If the single sample result (or average of samples collected during the year, if more than one) exceeds a secondary maximum contaminant level.

**IV. RECYCLED WATER CONTRIBUTION, RETENTION TIME AND HORIZONTAL SEPARATION REQUIREMENTS**

1. The total volume of recycled water recharged by injection shall not exceed 12.5 mgd and 17.5 mgd for 75% and 100% for recycling water, respectively, based upon a monthly average.
2. The amount of recycled water injected into the Alamitos Barrier shall not exceed 50 percent of the total injected water into the Alamitos Barrier. The quality of diluent for the Alamitos Barrier shall be equal to potable water. Compliance shall be on a monthly running average basis over a time period up to a maximum of the preceding 60 months. Once a month, the average recycled water contribution shall be calculated during this period by dividing the total volume of recycled water injected during the preceding months by the total volume of injection during that period. If the average receiving water contribution exceeds 50 percent, the WRD shall notify DHS and the Regional Board within 7 days and submit a report within 60 days of knowledge of exceedance according to Provision VII.5.
3. The injection of recycled water shall not cause the percentage of recycled water in any single aquifer at any domestic well affected by ABRWP to exceed 50 percent water of recycled water origin. Any recycled water that may already be present in the groundwater because of other activities, such as recycled water injection in the Harbor Water Recycling Project – Dominguez Gap Barrier Project, shall be accounted for as part of the total amount of recycled water in calculating the percent of recycled water in an aquifer.

4. Upon approval by the DHS and the Regional Board, the WRD shall implement the groundwater and tracer monitoring programs to track the movement of recycled water through the aquifer systems. After the first year of operation and annually thereafter, using the results of the groundwater and tracer monitoring programs, the WRD shall determine the amount of recycled water entering each individual aquifer, where recycled water is, the recycled water contribution and time of travel of recycled water.
5. Recycled water shall be retained underground for a minimum of 12 months, prior to extraction at any domestic water supply well. A numerical model, and tracer shall be used to determine the recycled water contribution and time of travel to each aquifer. The tracer shall be determined prior to start-up.
6. A minimum horizontal separation between the point where recycled water or blend of recycled water and diluent water is injected and a domestic water supply well shall be at least 2,000 feet. No new domestic drinking water wells shall be allowed to extract from the Lower San Pedro aquifer and all of the other aquifers in the area between 2,000 feet from the Alamitos Barrier. The WRD shall coordinate with the DHS against issuing permits for new domestic water production wells within 2,000 feet from the Alamitos Barrier.

#### V. ULTRAVIOLET LIGHT SPECIFICATIONS

UV disinfection shall comply with the “Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse” (December 2000) published by the National Water Research Institute, which specifies for RO permeate that:

1. The design UV dose shall be at least 50 millijoules per square centimeter ( $\text{mJ}/\text{cm}^2$ ) under maximum day flow; and,
2. The RO permeate UV transmittance shall be 90% or greater at 254 nm.

The WRD shall submit a performance testing protocol for the UV system prior to operation and submit results of the performance testing as they become available.

#### VI. GROUNDWATER MONITORING WELLS AND PROGRAMS

1. The WRD shall establish, as a minimum, 2 types of groundwater monitoring wells at locations between the Alamitos Barrier injection wells and the nearest domestic water supply well SB-LEI (State Well No. 05S/12W-01A03), in compliance with Minimum Retention Time and Horizontal Separation Requirements of Finding 37, as follows:
  - A. **Three-Month Well** shall be located at approximately 3-month underground travel time from the Alamitos Barrier injection wells. Samples shall be taken independently from FCD Well Nos. 503BF, 503BE, 502BW and 502BX for Zones C, B, I and A, respectively.
  - B. **Quarter Distance Well** represents 1- to 2- year travel time distance from the Alamitos Barrier injection wells to monitoring wells. Samples shall be taken

independently from FCD Well Nos. 502AK, 502AL, 502AM, and 502AN for Zones C, B, A, and I, respectively.

2. The WRD shall submit the baseline groundwater monitoring report for the monitoring wells prior to Project startup. The Project Sponsors have not submitted the baseline groundwater monitoring report to either the Regional Board or the DHS, at the time this permit was adopted.
3. The groundwater monitoring program shall be reviewed and modified every two years or sooner, based on results of the monitoring program. Changes to the monitoring program, including monitoring well locations, shall be approved by the Regional Board and the DHS.

## **VII. PROVISIONS**

1. The Project Sponsors shall delineate the responsible party or parties to comply with the specific requirements in this Order including the Monitoring and Reporting Program (see MRP). This information shall be provided, in writing and signed by the five Project Sponsors, to the Regional Board Executive Officer within 45 days of the effective date of this Order. This delineation will facilitate effective communication between the Project Sponsors and the Regional Board. However, the Project Sponsors are individually, and collectively, responsible for compliance with this Order.
2. Any injection or discharge of recycled water, or a blend of recycled water and diluent water, at any point(s) other than the 43 wells in the Alamitos Barrier and except as provided for in Provision VII.8 of this Order, is prohibited and constitutes a violation of this Order.
3. The recharge of recycled water into the Alamitos Barrier shall not cause degradations of the groundwater basins and shall not constitute more than 50% by volume in the domestic water well SB-LEI. If at any time, the injection of recycled water is determined to be adversely impacting the receiving groundwater, or constitutes more than 50% by volume in the SB-LEI, the injection of the recycled water shall be suspended immediately but not later than 24 hours of knowledge of the adverse impact. The WRD shall notify DHS and the Regional Board according to Provision VII.5.

RO recycled water that does not meet permit requirements for the injection wells but meets the requirements for discharge from the Long Beach WRP to the River can be discharged directly to the San Gabriel River or Coyote Creek under the provisions of the Long Beach WRP NPDES. If RO recycled water does not meet NPDES permit requirements for the Long Beach WRP discharge to the river system, the AWTF shall be shut down and any off-spec water in storage shall be sent to the CSDLAC Joint Outfall "C" for conveyance to the JWPCP in Carson for treatment.

4. If the WRD or the DHS determines that a well is no longer usable as a safe, wholesome, and potable source of drinking water because it exceeds drinking water quality regulations, and if the cause of this condition is a result of the recharge Project, the WRD shall within 24 hours notify the owner of the well to discontinue using the well and

shall implement the approved plan for providing an alternative source of domestic water supply pursuant to WRD Resolution No. 04-710, or a DHS approved treatment mechanism. The WRD shall also notify as soon as possible the DHS and the Regional Board according to Provision VII.5.

5. For any violation of requirements in this Order, the WRD shall notify DHS and the Regional Board within 24 hours of knowledge of the violation either by telephone or electronic mail. This notification shall be followed by a written report within 7 days of notification, unless otherwise specified in this Order. The report shall include, but not limited to, the following information, as appropriate:
  - A. Nature and extent of the violation;
  - B. Date and time: when the violation started, when compliance was achieved; and, when injection was suspended and restored, as applicable;
  - C. Duration of violation;
  - D. Cause/s of violation;
  - E. Corrective and/or remedial actions taken and/or will be taken with time schedule for implementation to prevent future violations; and
  - F. Impact of the violation.
6. After a year of injecting recycled water into the Barrier, the WRD shall update the OMM Plan and submit it to DHS for review and approval. Significant changes to the OMM Plan must be approved by DHS prior to implementation. The WRD shall furnish the Regional Board with a copy of the approved OMM Plan within 30 days of DHS approval. The AWTF shall be operated in accordance with the approved OMM Plan.

The OMM Plan shall cover critical operational parameters to include routine testing procedures for the MF, RO, and UV systems, optimization of the UV dose for disinfection and reduction of light-sensitive contaminants, and all treatment processes, maintenance and calibration schedules for all monitoring equipment, process alarm set points, and response procedures for all alarms in each treatment process of the AWTF, including criteria for diverting recycled water if water quality requirements are not met, start-up, emergency response and contingency plans. During the first year of operation of the ABRWP, all treatment processes shall be optimized to reduce contaminant levels. The results of these initial optimization efforts shall be incorporated into the updated OMM Plan. The OMM Plan shall include staffing levels with applicable certification levels for ABRWP operations personnel. Significant changes in the operation of any of the treatment processes shall be reported to the DHS and the Regional Board. Significant changes in the approved OMM Plan, which may include provisions to comply with Condition 4 in DHS' July 8, 2004 Findings of Fact, must be approved by the DHS and the Regional Board prior to instituting changes.

7. For any material change or proposed change in character, location or volume of recycled water, or its uses, the WRD shall submit at least 120 days prior to the proposed change an engineering report or addendum to the existing engineering report to the Regional Board and DHS [pursuant to California Water Code, section 13522.5 and CCR, Title 22, Section 60320.080] for approval. The Engineering Report shall be prepared by a qualified engineer and geologist who are experienced in groundwater recharge, both registered or certified in the State of California. However, replacement or addition of injection wells to the Alamitos Barrier will not require a report of material change, or filing of a new Report of Waste Discharge, provided:
  - A. the additional injection capacity does not violate any requirement in this Order;
  - B. at least 30 days prior to installation, the WRD submit in writing the purpose and location of the wells to DHS and the Regional Board; and,
  - C. within 90 days after the installation of the wells, the WRD submit in writing the complete geologic and electrical logs and as-built construction diagrams of the injection wells to DHS and the Regional Board.
8. This Order includes “Standard Provisions Applicable to Waste Discharge Requirements” (Standard Provisions - Attachment W). In the event of conflict between provisions stated herein and the Standard Provisions, the provisions stated herein prevail.
9. This Order includes Monitoring and Reporting Program No. CI-8956 (MRP). In the event of conflict between provisions stated in the MRP and the Standard Provisions, the provisions in the former prevail.
10. The WRD shall provide an Annual Report described in the MRP to this Regional Board, DHS, and all downgradient public drinking water systems of production wells.
11. In order to limit the presence of contaminants in the recycled water including regulated and unregulated contaminants identified in Attachments A-1 to A-4 and A-6 to A-8, the WRD shall, for the purposes of protecting public health, ensure that its equipment and facilities for treatment operate at levels of peak performance. In addition, LACDPW also needs to ensure that its equipment and facilities for recharge shall operate at levels of peak performance.
12. Every five years, the WRD shall update the engineering report and submit it to this Regional Board and DHS for approval.
13. The requirements in this Order do not exempt the Project Sponsors from complying with any other laws, regulation, or ordinances, which may be applicable. This Order does not legalize the Long Beach WRP, the AWTF, or the Alamitos Barrier, and it leaves unaffected any further constraint on the use of recycled water that may be contained in other statutes or required by other agencies.
14. This Order does not alleviate the responsibility of the Project Sponsors to obtain other necessary local, State, and Federal permits to construct facilities necessary for to comply



with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.

### **VIII. GENERAL REQUIREMENTS**

1. A copy of this Order shall be maintained at the Long Beach WRP, the AWTF, and the Alamitos Barrier offices so that this Order is available at all times to operating personnel.
2. The Project Sponsors shall, at all times, properly operate and maintain all treatment facilities and control systems, transmission and injection facilities and related appurtenances, which were constructed and installed or used by the Project Sponsors to achieve compliance with the requirements of this Order. Proper operation and maintenance includes: effective performance testing, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance and control procedures).
3. A Wastewater Treatment Plant Operator, or a Water Treatment Plant Operator, with at least Grade V certificate shall inspect the AWTF on a regular basis to ensure that all unit treatment processes are working properly and that the recycled water from the Long Beach WRP is in compliance with this Order.
4. Supervisors and operators of the Long Beach WRP shall possess a certificate of appropriate grade as specified in Title 23, California Code of Regulations, Section 3680 or subsequent revisions.
5. The WRD shall enter into a legal agreement with the CSDLAC that shall include provisions for an Industrial Pretreatment and Pollution Source Control Program applicable to the Long Beach WRP. The agreement shall require that CSDLAC maintain a comprehensive industrial wastewater pretreatment and source control program for controlling discharges of waste from commercial and industrial sources that could adversely affect the quality of the recycled water from the AWTF or production of recycled water. The agreement shall also require that CSDLAC comply with all applicable federal and state legal and regulatory requirements with respect to its pretreatment program, and that the program shall be consistent with the most recent recommendations issued by DHS with respect to pretreatment and source control requirements for groundwater recharge project. The agreement shall include provisions that allow for the inclusion in the Pretreatment and Source Control Program any contaminants that DHS has identified that may pose a risk of contamination to a drinking water supply as a result of the groundwater injection project. The program shall include:
  - A. An assessment of the fate of the specified contaminant compounds through the wastewater and recycled water treatment systems.
  - B. A source investigation and monitoring program focused on the specified contaminants and their potential ability to persist through the treatment systems.
  - C. A comprehensive outreach program to industrial, commercial and residential communities within the sewage collection agency's service area to manage and

minimize the discharge of compounds of concern at the source.

- D. A proactive program for maintaining an inventory of compounds discharged into the wastewater collection system so that new compounds of concern can be evaluated rapidly.
6. The WRD shall provide standby or emergency power facilities and/or sufficient storage or diversion capacity or other means such that in the event of power outages or plant upset or other causes, the discharge or injection of raw or inadequately treated wastewater does not occur.
7. The Project Sponsors through a comprehensive monitoring program (see MRP) should continue to assure that the recycled water produced at the AWTF for injection into the groundwater in the Alamitos Barrier is not contaminated with toxic chemicals of industrial origin.
8. Adequate facilities shall be provided to protect the Long Beach WRP, AWTF, and Alamitos Barrier injection system from damage by storm flows and runoff.
9. Neither the wastewater treatment nor injection of recycled water shall cause a condition of pollution or nuisance as defined in section 13050 of the California Water Code.
10. The injection of recycled water shall not result in earth movement in geologically unstable areas.
11. Injection of recycled water shall not impart tastes, odors, color, foaming, or other objectionable characteristics to receiving groundwater.
12. Injection of recycled water shall not cause a violation of any applicable water quality standard for receiving groundwater adopted by this Regional Board or the State Board.
13. In the event of any change in name, ownership, or control of the Long Beach WRP, AWTF, and the Alamitos Barrier injection facilities, the Project Sponsors shall notify DHS and this Regional Board of such change and shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Regional Board at least 30 days prior to the change.
14. The Project Sponsors shall maintain all records required under this Order that includes the MRP for at least 5 years.
15. After notice and opportunity for a hearing, this Order may be modified, revoked, reissued, or terminated for cause, which include, but is not limited to:
  - A. Failure to comply with any condition of this Order;
  - B. Endangerment of human health or the environment resulting from the permitted activities in this Order;

- C. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts;
  - D. Acquisition of new information, which could have justified the application of different conditions if known at the time of Order adoption;
  - E. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
16. The Project Sponsors shall furnish, within a reasonable time, any information the Regional Board or the DHS may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Project Sponsors shall also furnish to the Regional Board or the DHS, upon request, copies of any records required to be kept under this Order.
17. Filing of a request for modification, revocation, reissuance, or termination of the Order, or a notification of planned changes or anticipated noncompliance, does not stay any condition of this Order.
18. DHS's July 8, 2004, Water Replenishment District of Southern California Alamitos Barrier Recycled Water Project - Findings of Fact (Attachment A-9) are incorporated herein and made part of this Order.
19. All pipelines and valves are installed with purple identification tapes or purple polyethylene vinyl wraps according to the American Water Works Association (AWWA) California-Nevada Section guidelines.

**IX. REOPENER**

This Order may be reopened to include the most scientific relevant and appropriate limitations for this discharge.

**X. EFFECTIVE DATE OF THE ORDER**

This Order takes effect upon its adoption.

I, Jonathan S. Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order Adopted by the California Regional Water Quality Control Board, Los Angeles Region on September 1, 2005.

**ORIGINAL SIGNED BY**

Jonathan S. Bishop  
Executive Officer

/DTSAl/