CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

CLEANUP AND ABATEMENT ORDER NO. R6V-2003-056

WDID NO. 6B190107069

REQUIRING LOS ANGELES COUNTY SANITATION DISTRICT NO. 20 PALMDALE WATER RECLAMATION PLANT AND THE CITY OF LOS ANGELES WORLD AIRPORTS TO CLEANUP AND ABATE WASTE DISCHARGES TO THE GROUND WATERS OF THE ANTELOPE HYDROLOGIC UNIT

Los Angeles County

The California Regional Water Quality Control Board, Lahontan Region (Regional Board), finds:

1. The County Sanitation Districts of Los Angles County owns and operates the Los Angeles County Sanitation District No. 20 (District) Palmdale Water Reclamation Plant (PWRP), located in the northeastern portion of the City of Palmdale. The City of Los Angeles World Airports (LAWA), is the landowner of the effluent management site (EMS). For the purposes of this Cleanup and Abatement Order (Order), the District and LAWA are collectively referred to as the "Discharger."

2. The discharge of undisinfected municipal wastewater, collected from the City of Palmdale and vicinity at the PWRP 30th Street East site near Avenue P, commenced in 1953. Initial PWRP capacity has been expanded from an average daily flow capacity of 0.75 million gallon per day (mgd) to 15 mgd. The current average daily flow is approximately 9.5 mgd. The discharge is located in the Antelope Hydrologic Unit. The ground water beneath the EMS has beneficial uses including Municipal and Domestic Supply (MUN). Treated effluent has been discharged to evaporation/percolation ponds located at the PWRP and progressively to irrigation sites, additional ponds northeast of the main plant site, and to furrowed land application sites.

3. The District began discharge of treated effluent to percolation ponds located in Section 16, T6N, R11W, SBB&M, of the effluent management site, prior to 1970. From 1970 to 1980 a portion of the flow was recycled for irrigation on the east half of Section 9. Since the early 1980's, the treated effluent has been land applied on LAWA property on portions of Sections 9, 10 and 11. Some crop irrigation commenced on the southwest and northwest portions of Section 10 in the 1990's.

The discharge of treated effluent to land application as a result of the Discharger's operations has caused concentrations of nitrate in the ground water to exceed background levels, and in some cases to exceed the maximum contaminant level (MCL) of 10 mg/L as N, as described in Finding No. 6.

4. The Regional Board began formal regulation of the discharge from the PWRP in 1957. On June 14, 2000, the Regional Board adopted its seventh revision of the waste discharge requirements (WDRs) for the PWRP under Board Order No. 6-00-57. As required by the Order, the Discharger submitted a Corrective Action Plan (CAP), an Effluent Management Plan (EMP), and a Farm Management Plan (FMP) to investigate, and mitigate, a condition of degraded ground water and ground water pollution, and to evaluate the potential for future degradation and pollution.

   The CAP proposed additional delineation of the areal and vertical extent of the degraded and polluted ground water plume at the effluent management site. The CAP also proposed additional ground water monitoring in the vicinity of monitoring wells MW4 and MW18. The CAP included a conceptual proposal for ground water quality restoration.

   In the EDP, the Discharger proposed to reduce the amount of wastewater disposed of by land spreading. It proposes instead to maximize recycling water for irrigated agriculture or disposal by other means designed to protect ground water quality.

   In the FMP, the Discharger proposed wastewater application rates and nutrient loading rates to minimize the transport of contaminants to ground water. Proposed nutrient loading and application rates for recycled water were based on crop agronomic rates.

5. In accordance with the Board Order No. 6-00-57, the Discharger submitted an ADA on June 12, 2003, which identified areas of degraded and polluted ground water associated with the Discharger's disposal and water recycling operations, and commercial agricultural practices on LAWA lease property.

6. Ground water monitoring data from the mid to late 1990's indicate nitrate (as N) concentrations periodically exceeding the primary Maximum Contaminant Level (MCL) of 10 milligrams per liter (mg/L) in wells MW4 and MW18 located north and downgradient of the land application areas. More recent data from samples collected on May 1, 2003 indicate nitrate values of 9.85 mg/L and 14.6 mg/L, in MW4 and MW18, respectively. Recently installed monitoring well MW20, located approximately ¼ mile southwest of well MW4 had a nitrate concentration of 10.0 mg/L on January 6, 2003. Ground water modeling projects that nitrate concentrations in the aquifer beneath the site could continue to rise to approximately 24 mg/L as N by 2025, unless mitigation measures are implemented by the Discharger.

Nitrate concentrations in the ground water beneath the effluent management area, as described in this Finding, exceed or threaten to exceed the water quality objective in the Water Quality Control Plan for the Lahontan Region (Basin Plan) as shown in Table 1 below. The water quality objective for nitrate as N is the MCL for drinking water of 10 mg/L as listed in Title 22 California Code of Regulations (Title 22 CCR). Background levels of nitrate as N for the effluent management site have been reported by the Discharger to be approximately 0.75 mg/L in the aquifer.

Table 1 Ground Water Quality		
Nitrate as N (mg/L) MCL is 10.0		
Monitoring Well MW4 (1/11/89-1/11/03)	Monitoring Well MW18 (3/26/96-3/26/03)	Background Data Vicinity of PWRP and EMS
0.2 – 14.6	2.1 – 16.0	0.75

7. The CAP identified and proposed the following actions to correct and prevent future degradation of ground water quality or pollution of ground water.

   - Upgrade the PWRP to include phased implementation of activated sludge treatment with nitrification/denitrification unit processes,
   - maximize onsite reuse of recycled water via expanded agricultural reuse of fodder crop (alfalfa),
   - convert land application areas for use in growing cultivated grasses and grains, and
   - extract ground water with elevated nitrate concentrations for crop irrigation to mitigate past and prevent future nitrate degradation/pollution.

8. The Discharger submitted a summary report dated July 31, 2003 on its efforts to implement the CAP, EDP and FMP.

9. Discharge Specifications I.C.1, I.C.3., and I.C.5., respectively of WDRs specified in Board Order No. 6-00-57 state as follows:

9.1 Receiving Water Limitations

"...

The discharge shall not cause the presence of the following substances or conditions in ground or surface waters of the Antelope Hydrologic Unit:

1. *Nondegradation*

State Water Resources Control Board Resolution No. 68-16 "Statement of Policy With Respect to Maintaining High Quality of Waters In California", known as the Nondegradation objective, requires maintenance of existing high quality in surface waters, ground waters, or wetlands. Whenever the existing quality of water is better than the quality of water established in the Basin Plan, such existing quality shall be maintained unless appropriate findings are made under Resolution No. 68-16.

...

3. *Chemical Constituents*

Ground waters designated as MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon drinking water standards specified in the following provisions of Title 22 of the California Code of Regulations: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64431-B of Section 64431 (Fluoride), Table 6444-A of Section 64444 (Organic Chemicals), Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels-Ranges). This incorporation-by-reference is prospective including future changes to the incorporated provisions as the changes take effect.

...

5. *Chemicals - Waters shall not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.*

..."

9.2 General Requirements and Prohibitions

9.2.1.1 Discharge Specification I.D.2. states that *"The discharge to waters of the State shall not contain substances in concentrations that are toxic to, or produce detrimental physiological responses in humans, plants, animals, or aquatic life."*

9.2.1.2 Board Order No. 6-00-57 Discharge Specifications I.D.6. states that *"The discharge shall not cause a pollution as defined in Section 13050(l) of the California Water Code, or a threatened pollution."*

10. The Basin Plan adopted by the Regional Board, and which became effective on March 31, 1995, establishes water quality objectives for the protection of beneficial uses. The Basin Plan requires that ground waters designated as MUN not contain concentrations of chemical constituents in excess of the primary maximum contaminant level (MCL) based upon drinking water standards specified in provisions of Title 22, California Code of Regulations. The standards have been established by the California Department of Health Services as a safe level to protect public drinking water supplies. The objectives included by reference the MCL for nitrate of 10 mg/L as N. The drinking water standard for nitrate is specified in Table 64431-A of Section 64431 (Inorganic Chemicals) Title 22 CCR.

11. The levels of nitrate as N in ground water (Table 1) affected by the Discharger's operations, therefore, constitute a pollution as defined in Section 13050(l)(1) of the California Water Code.

12. The continued discharge of wastewater to land threatens to continue to cause pollution in ground water.

13. The discharge of wastes, which contain an annual average concentration of total nitrogen of approximately 27.6 mg/L as N, to the ground waters of the Antelope Hydrologic Unit, has resulted in violations of WDR Discharge Specifications I.C.1, I.C.3., I.C.5, I.D.2. and I.D.6.

14. The discharge of wastes, as described in Finding No. 6 above, violates a prohibition contained in the Basin Plan. Specifically, the discharge violates and threatens to violate the following discharge prohibition:

"The discharge of wastes defined in Section 13050(d) of the California Water Code which would violate the water quality objectives of this plan, or otherwise adversely affect the beneficial uses of water designated by this plan, is prohibited."

15. This enforcement action is being taken by this regulatory agency to enforce the provisions of the California Water Code, and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000 et. seq.) in accordance with Section 15321, Chapter 3, Title 14, of the California Code of Regulations.

16. The Regional Board has notified the Dischargers and interested parties of a public hearing to be held at the Regional Board meeting on November 12, 2003. During the public hearing, the Regional Board heard and considered all comments related to the proposed Order.

ORDERS

THEREFORE, IT IS HEREBY ORDERED that pursuant to California Water Code Sections 13267 and 13304, the Discharger must clean up and abate the effects of the discharge and threatened discharge of nitrate to waters of the State forthwith and in accordance with the provisions of this Order:

1. **Cleanup**

1.1 **Plume Delineation**

1.1.1 The Discharger must submit a plan to delineate the nitrate (as N) plume to background level in the aquifer by **February 16, 2004**. The plan must include an implementation schedule.

1.1.2 The Discharger must complete plume delineation by **August 15, 2004**.

1.2 **Plume Containment**

1.2.1 The Discharger must submit a conceptual plan to contain the plume of nitrate-degraded ground water to the delineated extent by **February 16, 2004**. The plan must also include the disposal method for the extracted ground water. The plan must include an implementation schedule.

1.2.2 The Discharger must submit a final plume containment plan by **September 15, 2004** that will include the locations of extraction wells, and the ground water extraction rates.

1.2.3 The Discharger must achieve plume containment by **September 30, 2005**.

1.3 **Plume Remediation**

The Discharger has proposed to implement a remediation action consisting of ground water extraction and application to irrigated agriculture as described in Finding No. 7. Other equally acceptable actions to achieve compliance may be proposed.

1.3.1 The Discharger must submit a plan by **September 15, 2004**, which describes how the Discharger will implement the proposed remediation action, or methods of compliance equally acceptable to the Regional Board. The plan must describe how the Discharger plans to restore ground water quality to background levels or other levels approved by the Regional Board pursuant to State Water Resources Control Board Resolution Nos. 68-16 and 92-49. The plan must identify proposed extraction well locations, proposed volumes of ground water extraction, locations of areas proposed for irrigation with extracted ground water, and types of crops proposed to be cultivated with extracted ground water, or identify equally acceptable methods of remediation actions to achieve compliance.

1.3.2 The Discharger must by **September 15, 2005**, implement the plan proposed by the Discharger for extraction and application of ground water for irrigated agriculture, or an equally acceptable method for total nitrogen reduction in the ground water.

2. **Abatement**

The Discharger has proposed to implement abatement actions as described in Finding No. 7. The proposed abatement actions are intended to reduce the amount of nitrogen that reaches ground water in order to comply with the waste discharge requirements. Additionally, the abatement actions will be implemented in a phased manner to achieve incremental reductions in the amount of nitrogen that is discharged to ground water prior to achieving full compliance with waste discharge requirements and protection of beneficial uses. The Discharger has proposed: 1) treatment plant improvements to reduce total nitrogen in the treated wastewater, and 2) increase in acreage of land that will be used for agronomic irrigation with recycled water such that more nitrogen is utilized by crops. Other equally acceptable actions to achieve compliance may be proposed.

2.1 The Discharger must submit a report by **March 30, 2004**, which includes the following:

2.1.1 A detailed evaluation of the amount (pounds per year) of nitrogen currently being discharged to ground water (total nitrogen being disposed that is not being utilized by crops). This evaluation should, at a minimum, include the 2003 calendar year.

2.1.2 Evaluates the operation of the current agricultural reuse areas to determine if the operation can be improved to increase the amount of nitrogen removed from the effluent. This evaluation should, at a minimum, review crop type and production rates (tons per acre), and water and nutrient needs of the various crops to determine if site or operational modifications could result in increased nitrogen removal. If the evaluation determines that improvements can be achieved, the report must include an implementation schedule.

2.1.3 Describes abatement actions the Discharger will implement which will result in interim reductions in the amount of nitrogen reaching ground water. This must include a schedule listing the tasks to be completed to implement these interim reductions. Additionally, the Discharger must propose interim reductions in nitrogen discharges to ground water from that calculated in 2.1.1 above that correspond to the effectiveness of the proposed interim actions.

2.1.4 A description of how the Discharger intends to implement nitrogen reduction in treated wastewater along with increased use of agronomic application of wastewater or other equally acceptable methods to achieve compliance with the waste discharge requirements and beneficial use protection. This must include a detailed schedule listing the tasks to be completed to implement these actions and a description of how these actions will protect the beneficial uses of ground water and achieve compliance with the waste discharge requirements.

3. **Reports**

3.1 The Dischargers must submit quarterly status reports summarizing proposed cleanup and abatement actions taken, or equally acceptable actions to achieve compliance, and the effectiveness of the corrective actions, including, but not limited to:

3.1.1 Documentation of improvements in ground water quality attributable to the implemented cleanup actions.

3.1.2 Reduction of nitrogen in treated effluent by upgrade of the PWRP to include phased implementation of activated sludge treatment with nitrification/denitrification unit processes, or other nitrogen reduction methods, including the status of actions proposed to achieve this reduction and tasks completed.

3.1.3 Increase and maximization of use of recycled water through expanded agricultural irrigation reuse on fodder crops, including total acres in production and actual reductions in the amount of nitrogen being discharged to ground water based on nitrogen in applied wastewater and crop production data.

3.1.4 Reduction in land application of wastewater (total gallons per year).

3.1.5 An on-going evaluation of the amount (pounds per year) of nitrogen being discharged to ground water (does not include nitrogen that is used by crops based on actual crop production data) that is cumulative from the date of this Order.

3.2 Beginning on **January 15, 2004**, the Discharger must submit reports every three months, on or before January 15, April 15, July 15 and October 15 of each year, until remediation is complete. The reports must cover actions completed from the previous quarter and those actions to be implemented over the next three months. As to the analysis required in Section 3.1.5, each quarterly report must include data from the previous quarter.

4. **Qualifications of Persons Preparing Reports**

The Discharger must conduct the investigation and cleanup tasks by or under the direction of a California registered geologist or civil engineer experienced in the area of sanitary engineering and/or ground water pollution cleanup. All technical documents submitted to the Regional Board must contain the signature and stamp of the registered individual overseeing corrective actions.

5. **Amendments by the Executive Officer**

Since many aspects of investigation for plume delineation and remedial actions are unknown at this time, this Order may need to be revised in the future. Therefore, the Regional Board intends to amend this Order as needed and also authorizes its Executive Officer to issue any amendments of the Order as he or she deems appropriate.

Failure to comply with the terms or conditions of this Order will result in additional enforcement action that may include the imposition of administrative civil liability pursuant to Sections 13268 and 13350 of the California Water Code or referral to the Attorney General of the State of California for such legal action, as he may deem appropriate.

I, Harold J. Singer, 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, Lahontan Region, on November 12, 2003.

Harold J. Singer

HAROLD J. SINGER
EXECUTIVE OFFICER