



**California Regional Water Quality Control Board**  
**Lahontan Region**



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Secretary for  
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Arnold Schwarzenegger  
Governor

READ FILE

**MAY 25 2007**

Hector Rodriguez  
City Manager  
City of Barstow  
220 E. Mountain View Street, Suite A  
Barstow, CA 92311

**CLEANUP OR ABATEMENT ORDER NO. R6V-2007-0017, CITY OF BARSTOW  
NITRATE CONTAMINATION IN GROUNDWATER, SAN BERNARDINO COUNTY,  
WDID NO. 6B360101001**

Enclosed is Cleanup or Abatement Order (CAO) No. R6V-2007-0017. This CAO directs the City of Barstow to supply provide an uninterrupted replacement water supply (i.e. bottled water, well head treatment or equivalent) to well owners with elevated nitrate concentrations in private drinking water supply wells in the area north of the Mojave River. The City of Barstow is responsible for complying with the requirements of this order because it caused or contributed to the pollution and degradation of groundwater in the area northwest of its historic agricultural disposal area.

The CAO requires the City of Barstow to provide uninterrupted replacement water to residences in the Soapmine Road area where analysis of groundwater samples taken since 2006 have indicated or future sample results indicate nitrate nitrogen levels equal to or higher than 5 milligrams per liter (mg/L). The CAO requires the City to test all private wells four times per year. The City may cease supply of uninterrupted water service if four consecutive quarters of testing indicate that nitrate nitrogen concentrations are all less than 5 mg/L.

If you have any questions, please contact John Steude at (530) 542-5571 ([jsteude@waterboards.ca.gov](mailto:jsteude@waterboards.ca.gov)) or Doug Smith at (5430) 542-5453 ([dfsmith@waterboards.ca.gov](mailto:dfsmith@waterboards.ca.gov)).

Harold J. Singer  
Executive Officer

Attachment: Soapmine Road Area Drinking Water Supply Wells

cc: Lahontan Water Board Members  
David Coupe, OCC, State Water Resources Control Board  
San Bernardino County Health Department  
Mailing list

file: T/Barstow CAO Cover Letter R6V-2007 522-07 DFS

**California Environmental Protection Agency**



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**CLEANUP OR ABATEMENT ORDER NO. R6V-2007-0017**

**REQUIRING THE CITY OF BARSTOW TO CLEANUP OR ABATE THE  
EFFECTS OF DISCHARGING NITRATE CONTAMINANTS TO  
GROUNDWATERS OF THE MOJAVE RIVER HYDROLOGIC UNIT,  
WASTEWATER TREATMENT PLANT, CITY OF BARSTOW,  
WDID NO. 6B360101001**

SAN BERNARDINO COUNTY

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

**FINDINGS**

1. The City of Barstow (hereafter "Discharger") owns and operates the municipal Wastewater Treatment Plant (WWTP) located at 2200 Riverside Drive in Barstow.
2. The Discharger is the responsible party subject to this Order because, as the former owner of the northern reclamation field property, the Discharger was responsible for the operation of the reclamation field and the discharge of wastes that caused elevated nitrate concentrations in groundwater.
3. Two irrigated fodder-crop (alfalfa) fields, located north and south of the Mojave River, have been used by the Discharger to reclaim secondary-treated effluent and biosolids from the WWTP. Disposal of effluent at the 67-acre, northern reclamation field property and its effect on groundwater are the subject of this Order.
4. The Discharger is required to comply with Waste Discharge Requirements (WDRs) specified in Board Order No. 6-94-26. The WDRs authorized discharge of secondary-treated effluent and biosolids at the two reclamation fields provided that waste discharges complied with applicable requirements.
5. Until 2004, and for approximately two decades prior to 2004, the Discharger applied up to 1.2 million gallons per day of secondary-treated effluent to the northern reclamation field. The secondary-treated effluent discharged by the WWTP contained nitrate nitrogen as well as ammonia and total Kjeldahl (TKN) nitrogen that convert to nitrate nitrogen. The

Discharger also spread unknown amounts of secondary-treated sewage biosolids from the WWTP on the northern reclamation field.

6. The WWTP secondary treated effluent and biosolids discharged at the northern reclamation field are defined as wastes pursuant to CWC section 13050(d).
7. The Discharger caused or allowed or threatened to cause nitrate-containing wastes to be discharged to waters of the State underlying and down gradient of the northern reclamation field.
8. Nitrate-containing wastes have impacted groundwater beyond the boundaries of the reclamation field. The Remedial Investigation Report (Report) submitted by the Discharger to the Water Board on March 30, 2007, details the presence of nitrate nitrogen in groundwater beyond the property boundary of the reclamation field. The Report identified a shallow nitrate plume, with a maximum nitrate nitrogen concentration of 32 milligrams per liter (mg/L), originating at the northern reclamation field. The results presented in the Report indicate that the nitrate plume originating at the reclamation field has migrated down gradient into the Soapmine Road neighborhood. The nitrate plume, as currently delineated, is approximately 6000 feet long and 2000 feet wide.
9. The Soapmine Road neighborhood includes approximately 40 private domestic drinking supply wells. Monitoring data (see Attachment A) from 2006 and 2007 indicate that approximately 13 of these wells contain water with nitrate nitrogen concentrations exceeding the drinking water Maximum Contaminant Level (MCL) of 10 mg/L for nitrate nitrogen. The MCL was established by the California Department of Health Services pursuant to the California Safe Drinking Water Act and may be found in Title 22 of the California Code of regulations, Division 4, Chapter 15, *Domestic Water Quality Monitoring*.
10. CWC section 13050(l) defines "pollution" as follows:

*as an alteration of the water quality to a degree that unreasonably affects either beneficial uses or facilities that serve these beneficial uses.*
11. Pursuant to Chapter 2 of the Water Quality Control Plan, Lahontan Region (Basin Plan), present and potential beneficial uses of groundwater underlying the reclamation field, and down gradient, include domestic and

municipal water supply, agricultural water supply, industrial water supply, freshwater replenishment, and aquaculture.

12. Because the discharges have caused groundwater beneath and immediately down gradient of the reclamation field to exceed the drinking water standard for nitrate nitrogen (10 mg/L), the affected ground water is no longer useable for drinking or domestic supply. This alteration is unreasonable because the aquifer is currently used for drinking water and the portion of the aquifer affected by the discharge is no longer suitable for this beneficial use. The discharges have, therefore, unreasonably affected the water for municipal and domestic supply beneficial use and caused a condition of pollution.
  
13. The MCL for nitrate nitrogen is 10 mg/L. Therefore, water containing nitrate nitrogen at levels less than 10 mg/L is suitable for domestic use. Data from three sampling events of private wells indicate that nitrate nitrogen levels fluctuate. Private drinking water supply wells having nitrate nitrogen levels below the MCL during one sampling event have exhibited levels above the MCL on a subsequent sampling event. Therefore, to ensure that water above the 10 mg/L MCL is not used for domestic water supply, it is appropriate to require uninterrupted replacement water service to residences where there is the possibility for nitrate nitrogen levels to increase from levels below the MCL to levels above the MCL between sampling events. Between 2006 and 2007, 22 of the 40 domestic wells (those that had nitrate nitrogen concentrations of less than 10 mg/L in 2006) exhibited an average nitrate nitrogen concentration increase of 1 mg/L. The standard deviation of this 1 mg/L increase is 4 mg/L. Therefore; it is reasonable to apply a safety factor to establish the level of nitrate nitrogen concentration in domestic supply wells that would require uninterrupted replacement water supply. Adding the standard deviation of 4 mg/L to the average annual increase of 1 mg/L would provide a safety factor of 5 mg/L. Therefore, it is appropriate to require the City of Barstow to provide uninterrupted replacement water supply to residences with private wells exhibiting a nitrate nitrogen concentration of 5 mg/L or greater (10 mg/L MCL – 5 mg/L safety factor = 5 mg/L).

#### **AUTHORITY – LEGAL REQUIREMENTS**

14. The California Water Code (CWC) section 13304(a) states:

*Any person...who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited*

*where it is, or probably will be, discharged to waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. A cleanup and abatement order issued by the state board or a regional board may require the provision of, or payment for, uninterrupted replacement water service, which may include wellhead treatment, to each affected public water supplier or private well owner. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.*

15. Pursuant to CWC section 13304, subdivision (f):

*Replacement water provided pursuant to subdivision (a) shall meet all applicable federal, state, and local drinking water standards, and shall have comparable quality to that pumped by the public water system or private well owner prior to the discharge of waste.*

16. The conditions described in Findings 8 and 9 constitute violations of WDRs and the Basin Plan. The conditions described in these Findings also identify discharges of wastes where it has been discharged or deposited into waters of the State (groundwater) or probably will be discharged into the waters of the State. The Discharger is therefore subject to CWC section 13304.

17. Pursuant to CWC section 13267(b):

*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from*

*the reports. In requiring those reports, the regional board shall provide the reports, and shall identify the evidence that supports requiring that person to provide the reports.*

18. This Order requires monitoring, work plans and reports pursuant to CWC section 13267(b). The work plans and monitoring required by this Order are necessary to design a water replacement plan and implementation schedule and to determine compliance with this Order.
19. Pursuant to CWC section 13304, the Water Board is entitled to, and may seek, reimbursement for all reasonable costs actually incurred by the Water Board to investigate unauthorized discharges of wastes or to oversee cleanup of such waste, abatement of the effect thereof, or other remedial action pursuant to this Order.
20. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provision of the California Environmental Quality Act (Public Resources Code, section 21000 et seq.), pursuant to California Code of Regulations (CCR), title 14, section 15321, subdivision (a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, section 21000 et seq.), in accordance with CCR title 14, sections 15308 and 15330.
21. Any person affected by this action of the Water Board may petition the State Water Resources Control Board (State Board) to review the action in accordance with CWC section 13320 and Title 23, CCR, section 2050 through 2068. The State Board, office of Chief Counsel, must receive the petition within 30 days of this Order.

### ORDERS

**IT IS HEREBY ORDERED**, pursuant to CWC sections 13267 and 13304, that the City of Barstow shall abate the effects of waste discharges at or near the northern reclamation field as follows:

1. **By May 27, 2007**, supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), to residences served by private domestic wells within the Soapmine Road area in which nitrate has been detected at concentrations at or exceeding 5 mg/L nitrate nitrogen, based on nitrate nitrogen concentration information generated in May 2006, August 2006,

and May 2007. The Soapmine Road area is defined as the area that is east of the Hacienda Mobile Home Park, north of the Mojave River, west of the Waterman Fault, and south of Soapmine Road including residences adjacent to and on both sides of Soapmine Road. Furthermore, the City shall supply interim uninterrupted replacement water service (i.e., bottled water or equivalent), to a residence served by private domestic wells within the Soapmine Road area within 48 hours of determining that the private well at that residence exhibits a nitrate nitrogen concentration of 5 mg/L or greater for the first time.

2. **By May 30, 2007**, submit a technical report to the Water Board listing all residences that have been provided interim uninterrupted replacement water service. The report must include the method that the City has implemented to provide interim uninterrupted replacement water service including how this service will be maintained. If a residence should have been provided interim uninterrupted replacement water service based on the requirement in Order No. 1 above and has not been provided interim uninterrupted replacement water service, the technical report must include actions the City has taken and will continue to take to provide interim uninterrupted replacement water service to the residence. If the reason that the City has failed to provide interim uninterrupted replacement water service is the refusal of the occupants of the residence to accept such service, the report must include a statement from the occupants of this refusal.
3. **By June 1, 2007**, provide notification to all parcel owners and residents in the Soapmine Road area that nitrate nitrogen concentrations in groundwater may exceed the MCL of 10 mg/L. The City shall also include notification that all potentially affected wells will need to be sampled on a quarterly basis, beginning July 1, 2007.
4. **By September 30, 2007**, complete the next quarterly sampling of all private domestic wells within the Soapmine Road area and submit samples with chain of custody documentation to a California certified laboratory for nitrate analyses. Samples from these wells must be collected quarterly thereafter (October – December, January – March, April – June, July – September).
5. **By October 15, 2007, and quarterly thereafter (January 15, April 15, July 15 and October 15) but no later than 21 days after completing the well sampling required in 4 above**, submit to the Water Board California-certified laboratory results and other quality assurance/control documentation from the first quarterly sampling event (and subsequent

quarterly sampling events) for all potentially affected private domestic wells and a list of residences with nitrate nitrogen concentrations at or exceeding 5 mg/L in their supply water that will receive bottled water or equivalent (using Method Detection Limit of 1 mg/L or better). If the results of this monitoring identify a well that exhibits a nitrate nitrogen concentration at or exceeding 5 mg/L for the first time, the City must notify the Water Board of this information within 48 hours of the City receiving the monitoring information.

6. **By August 15, 2007**, submit a detailed Alternative Water Supply Implementation Work Plan for long-term, uninterrupted, replacement water, for domestic supply wells with nitrate concentrations at or exceeding 5 mg/L nitrate as N. Include a report describing the volumes of interim uninterrupted water supplied to specific addresses up to July 31, 2007.
7. Following Executive Officer's concurrence with the detailed Alternate Water Supply Implementation Work Plan for wells with nitrate concentrations of 5 mg/L or greater, **the City shall implement the plan according to a schedule approved by the Executive Officer.**


The Discharger shall be liable, pursuant to CWC section 133304, to the Water Board for all reasonable costs incurred by the Water Board to investigate unauthorized discharges of waste, or to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, pursuant to this Order. The Discharger shall reimburse the Water Board for all reasonable costs associated with site investigation, oversight, and cleanup. Failure to pay any invoice for the Water Board's investigation and oversight costs within the time stated in the invoice (or within thirty days after the date of invoice, if the invoice does not set forth a due date) shall be considered a violation of this Order. If the Property is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program.

All technical and monitoring plans and reports required in conjunction with this Order are required pursuant to CWC section 13267 and shall include a statement by the Discharger, or an authorized representative of the Discharger, certifying (under penalty of perjury in conformance with the laws of the State of California) that the work plan and/or report is true, complete, and accurate. Hydrogeologic reports and plans shall be prepared or directly supervised by, and signed and stamped by a Professional Geologist or Professional Civil Engineer registered in California.



This Order in no way limits the authority of this Water Board to institute additional enforcement actions or to require additional investigation and cleanup of the site consistent with the CWC. The Order may be revised by the Executive Officer as additional information becomes available.

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

Ordered by:  Dated: May 25, 2007

HAROLD J. SINGER  
EXECUTIVE OFFICER

ATTACHMENT A: Soapmine Road Area Drinking Water Supply Wells  
Nitrate Nitrogen Concentrations (mg/L)

Well	May-06	Aug-06	May-07
a	5.8		7.3
b	6.6		7.9
c	14	14	15
d		11	11
e	3.6		4.4
f		5.3	6.5
g	7.5		6.3
h	9.4		11
i	3.8		3.4
j	7.8		7.6
k	3.4		3.5
l	11		13
m	14		
n	13		8.8
o	18		25
p		13	10
q		11	4.5
r	3.3		3.1
s	3.7		3.3
t	3.4		3.5
u	4.7		5.2
v	1.9		3.9
w	7.4		7.3
x	1.7		1.6
y		13	13
z	6.8		20
aa	3.8		4.8
bb	0.91		0.96
cc	2.6		2.6
dd	3.7		4.5
ee	4		4.2
ff	4.1		8.4
gg		13	15
hh			3.5
ii			0
jj			13
kk			5
ll			2.9
mm			2.6