

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2011-0025

WASTE DISCHARGE REQUIREMENTS
AEROJET-GENERAL CORPORATION
WHITE ROCK NORTH DUMP GROUNDWATER TREATMENT FACILITY
SACRAMENTO COUNTY

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

1. On 22 July 2002, the Aerojet-General Corporation (hereafter Discharger) submitted an initial Report of Waste Discharge (RWD) for groundwater remediation project to address volatile organic contaminants (VOCs) and perchlorate at the former White Rock North Dump. The Discharger submitted a revised RWD on 8 November 2010. The Discharge also submitted supplemental information on 1 April 2003, 9 February 2004, 9 July 2004, 2 August 2005 and 7 November 2005 along with bi-annual groundwater monitor reports. The treatment facility is on property owned by Grantline Road Properties.
2. The project site location is shown on Attachment A, which is attached hereto and made part of this Order by reference.
3. The project is located in eastern Sacramento County, south of White Rock Road and west of Grant Line Road in Rancho Cordova, in Section 32, T9N, R7E MDB&M (latitude 38°58'30"N, longitude 121°18'34"). Agricultural and light industrial activities border the project location. The project site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference.
4. The project is on Assessor's Parcel No. 072-0110-022.
5. The objectives of the project are to implement the second phase of a groundwater remedy for contamination emanating from the White Rock North Dump pursuant to Cleanup and Abatement Order No. 96-150, issued by the Board on 3 May 1996. Groundwater beneath the White Rock North Dump was found to contain volatile organic contaminants (VOCs), consisting primarily of trichloroethylene (TCE) and its breakdown products, and perchlorate. Currently, TCE is found at concentrations up to 2100 micrograms per liter ($\mu\text{g/L}$), with a Primary Drinking Water Standard (MCL) of 5 $\mu\text{g/L}$ and a California Public Health Goal (PHG) of 1.7 $\mu\text{g/L}$. Perchlorate is found at concentrations up to 700 $\mu\text{g/L}$ beneath the dump. The MCL and PHG for perchlorate are both 6 $\mu\text{g/L}$.
6. The Discharger completed an interim groundwater extraction and treatment system to control polluted groundwater associated with the dump at the dump boundary. A series of five extraction wells pumps a total of up to 80 gallons per minute (gpm) to the Discharger's Sector B groundwater extraction and treatment system (GET B) on its Superfund Site just north of the dump. The operation of that facility is conducted under the 1989 Partial

Consent Decree for the Superfund Site. The water is treated to remove the pollutants prior to discharge on the Superfund Site.

Project Layout and Operation

7. Groundwater beneath and downgradient of the White Rock North Dump contains the pollutants perchlorate and TCE, and much lower concentrations of other VOCs including cis-1,2-dichloroethylene, vinyl chloride, tetrachloroethylene (PCE), 1,1-dichloroethylene, 1,1-dichloroethane, and 1,2-dichloroethane. There are two plumes of pollution at the site. An eastern plume is associated with the dump and consists of TCE and its breakdown products (VOCs listed above). The western plume consists of perchlorate and TCE and is emanating from the upgradient Superfund Site. The two plumes likely merge downgradient of the dump. In addition, another plume from the Superfund Site is located north and east of the dump. In addition to VOCs and perchlorate, this plume contains n-nitrosodimethylamine (NDMA), which is associated with liquid rocket testing conducted in Sectors A and B at the Superfund Site. Cleanup efforts are underway at the Superfund Site to control this northern and eastern plume to prevent NDMA and VOCs from migrating further downgradient and adversely impacting water users and this project.
8. The project covered by this order has already been constructed and targets the west and east plumes downgradient (south) of the dump. The project consists of a groundwater treatment system adjacent to the water supply well serving the Teichert sand and gravel processing plant east of Grant Line Road. That supply well has detectable concentrations of TCE and perchlorate. The treatment system consists of an air-stripper to remove the TCE and any other VOCs and an ion-exchange system to remove perchlorate (discussed further below in Finding 9). Two extraction wells, 4625 and 4702, have been placed to intercept the downgradient toe of the plume. The estimated 325 gpm combined flow produced by the wells is piped to the treatment system. The treated groundwater is provided to Teichert for use at its processing plant. If Teichert requires more water than what can be provided by the two extraction wells, then the Teichert supply well is utilized with its water also being processed through the groundwater treatment system. The Teichert Grant Line processing facility operates under Waste Discharge Requirements, Order No. R5-2002-0123.
9. The treatment facility is designed to treat up to 900 gpm with approximately 150 gpm from extraction well 4625, 175 gpm from extraction well 4702 and up to 575 gpm from the Teichert production well. The influent from well 4625 and the Teichert well is piped through bag filters to remove particulates and sediment. From there the water is processed through two ion exchange vessels operated in series, to remove perchlorate. Thence, that flow is combined with the flow from well 4702 and sent to the counter-flow air stripper to remove the VOCs. A transfer pump then pumps the water to either Teichert or to the Discharger's property near the GET B facility. In addition, a 12,000-gallon storage tank, recirculation filter and pump are provided for temporary storage in case of a power outage or unexpected shutdown.
10. Treated groundwater is preferentially provided to Teichert for use in their processing facility on Grant Line Road and/or a potential future processing plant on Scott Road. If Teichert does not need all or any of the water, the excess water is then transferred via pipeline to

Aerojet's Superfund site and discharged into Rebel Hill Ditch along with treated groundwater from Aerojet's GET A and GET B facilities. See Figure X for the location of these discharge points.

11. The treatment system is capable of removing perchlorate to 4 µg/L or less, and VOCs of concern to less than 0.5 µg/L, the standard practical quantitation limit for the VOCs of concern at the site.
12. The ion-exchange process uses a perchlorate-specific ion exchange resin that is disposed of when the resin's capacity for taking up perchlorate is exhausted. The resin is then replaced with fresh resin and the spent resin taken to a permitted disposal facility.
13. If additional groundwater extraction wells are determined to be needed to control the pollution, then those wells will be constructed and added to the system. If additional treatment capacity is needed, then this Order will be re-opened and revised as needed.
14. In the future, once the Record of Decision for Operable Unit 5 is completed and an enforcement order for implementation is issued, the GET A and GET B facilities will no longer be covered by the Partial Consent Decree. This Order will be re-opened and revised to include the operation and discharge from those two groundwater treatment facilities.

REGULATORY CONSIDERATIONS

15. *The Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives (WQOs), contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). Pursuant to Section 13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.
16. Surface water drainage from the treatment facility would potentially be to Morrison Creek. Future development of the area will establish drainage to Morrison Creek, tributary to Stone Lakes, tributary to the Sacramento River. The beneficial uses of the Sacramento River are municipal and domestic supply; agricultural irrigation and stock watering supply; process and service industrial supply; contact recreation, other noncontact recreation; warm and cold freshwater habitat; warm and cold migration; warm water spawning; wildlife habitat; and navigation. Rebel Hill Ditch on the Discharger's Superfund Site does not discharge off the property and recharges groundwater.
17. The designated beneficial uses of underlying groundwater include:
 - a. Municipal and domestic water supply (MUN);
 - b. Agricultural water supply (AGR);
 - c. Industrial service supply (IND); and
 - d. Industrial process supply (PRO).

18. The Basin Plan establishes numerical and narrative water quality objectives for surface and groundwater within the basin, and recognizes that water quality objectives are achieved primarily through the Board's adoption of waste discharge requirements and enforcement orders. Where numerical water quality objectives are listed, these are limits necessary for the reasonable protection of beneficial uses of the water. Where compliance with narrative water quality objectives is required, the Board will, on a case-by-case basis, adopt numerical limitations in orders, which will implement the narrative objectives to protect beneficial uses of the waters of the state.
19. The Basin Plan identifies numerical water quality objectives for waters designated as municipal supply. These are the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that the Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
20. The Basin Plan contains narrative water quality objectives for chemical constituents, tastes and odors, and toxicity. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants or animals. The chemical constituent objective requires that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The tastes and odors objective requires that groundwater shall not contain tastes or odors producing substances in concentrations that cause nuisance or adversely affect beneficial uses.
21. Section 13241 of the Water Code requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.
22. State Board Resolution No. 92-49 (hereafter Resolution No. 92-49) requires the Regional Board to require actions for cleanup and abatement of discharges that cause or threaten to cause pollution or nuisance to conform to the provisions of State Board Resolution No. 68-16 (hereafter Resolution No. 68-16) and the Basin Plan. Pursuant to Resolution No. 92-49, the Regional Board shall ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background

water quality, or if background levels of water quality cannot be restored, the best water quality which is reasonable and which complies with the Basin Plan including applicable WQOs.

23. Resolution No. 68-16 requires the Board in regulating discharges to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality less than that described in plans and policies (e.g., quality that exceeds WQOs). The extraction and treatment process will remove perchlorate and VOCs from the groundwater and restore the groundwater to beneficial uses. This Order is consistent with Resolution No. 68-16 since (1) the purpose is to accelerate and enhance remediation of groundwater pollution and such remediation will benefit the people of the State; (2) the discharge facilitates a project to evaluate the effectiveness of cleanup technology in accord with Resolution No. 92-49; (3) the degradation is limited in scope and duration; (4) best practicable treatment and control, including adequate monitoring and hydraulic control to assure protection of water quality, are required; and (5) the discharge will not cause WQOs to be exceeded in the groundwater.
24. These Waste Discharge Requirements deal with water quality as it relates to the discharge from the treatment system. Cleanup criteria for groundwater at this site will be established in a revision to the Cleanup and Abatement Order and are no further discussed further as a part of this order. The applicable WQOs are the narrative toxicity objective, Primary and Secondary Maximum Contaminant Levels, and the taste and odor objective as found in the Basin Plan. Numerical limits in this Order implement those Objectives. The following are the numerical WQOs for potential pollutants of concern at the site:

Constituent	WQO	Reference
Perchlorate	6 µg/L	Maximum Contaminant Level
trichloroethylene	1.7 µg/L	California Public Health Goal
1,2-dichloroethane	0.4 µg/L	California Public Health Goal
cis-1,2-dichloroethylene	6 µg/L	Maximum Contaminant Level
1,1-dichloroethylene	6 µg/L	Maximum Contaminant Level
1,1-dichloroethane	3 µg/L	California Public Health Goal
vinyl chloride	0.05 µg/L	California Public Health Goal

25. The action to adopt these Waste Discharge Requirements for the Aerojet-General Corporation is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) (CEQA) because it: (1) authorizes activity that will result in a minor modification to land pursuant to Title 14, California Code of Regulations, Section 15304; (2) consists of an action by a regulatory agency authorizing actions for the protection of the environment pursuant to Title 14, California Code of Regulations, Section 15308; and (3) authorizes minor cleanup actions costing \$1.5 million or less that are taken to prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release of a hazardous waste or substance pursuant to Title 14, California Code of Regulations, Section 15330. No additional construction is required for this project.

26. The discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, set forth in the Title 27, California Code of Regulations (CCR), section 20005 *et seq.* (hereafter Title 27), which allows a conditional exemption from some or all of the provisions of Title 27. The exemption, pursuant to Title 27 CCR Section 20090(b), is based on the following:
- a. The Regional Water Board is issuing Waste Discharge Requirements.
 - b. The discharge is in compliance with the applicable Basin Plan.
 - c. The wastewater does not need to be managed according to Title 22CCR, Division 4.5 and Chapter 11 as a hazardous waste.

Section 20090(d) allows exemption for a project to cleanup a condition of pollution that resulted from an unauthorized release of waste based on the following:

- d. Wastes removed from the immediate place of release will be discharged according to the Title 27 regulations; and
 - e. The remedial actions intended to contain wastes at the place of release shall implement the Title 27 regulations to the extent feasible.
27. Section 13267(b) of the California Water Code provides that:

“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 proposes to discharge 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 the waters of the state 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 reports and the benefits to be obtained from the reports. In requiring these reports, the Regional Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

The technical reports required by this Order and the attached MRP No. R5-2011-0025 are necessary to assure compliance with these WDRs. The Discharger operates the facility that discharges the waste subject to this Order.

28. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin No. 74-90* (June 1991) and *Water Well Standards: State of California Bulletin No. 94-81* (December 1981). These standards, and any more stringent standards implemented by the Regional Water Board or adopted by Sacramento County pursuant to California Water Code Section 13801 apply to all monitor, extraction and injection wells.

29. Section 3020(b)(2) of the Resource Conservation and Recovery Act (RCRA) states that prior to injection into or above an underground source of drinking water, contaminated groundwater shall be "...treated to substantially reduce hazardous constituents prior to such injection." In a letter dated 10 December 1999, the United States Environmental Protection Agency, Office of Solid Waste and Emergency Response (OSWER) states, "if extracted groundwater is amended at the surface (i.e., "treated") before reinjection, and the subsequent in-situ bioremediation achieves a substantial reduction of hazardous constituents the remedy would satisfy Section 3020(b)(2)." Therefore, the injection of groundwater within the treatment zone at this site, with or without the treatment for VOCs, complies with Section 3020(2) (b) of RCRA.
30. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

31. All the above and the supplemental data and information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
32. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the treatment technology discussed in this Order, and has provided them with an opportunity to submit their written comments and recommendations.
33. In a public meeting, all comments pertaining to these Waste Discharge Requirements were heard and considered.

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, the Aerojet-General Corporation, in order to meet the provisions contained in Division 7 of the California Water Code, and regulations and guidelines adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of any waste or other materials not specifically regulated by this Order is prohibited.
2. Creation of a pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code (CWC), is prohibited.
3. The discharge of wastes to surface water or surface water drainage courses is prohibited.

4. Discharge of waste classified as 'hazardous' under Section 2521, Chapter 15 of Title 23 or 'designated', as defined in Section 13173 of California Water Code is prohibited.

B. DISCHARGE SPECIFICATIONS

1. The flow through the treatment facility shall not exceed 900 gallons per minute (gpm).
2. The discharge shall not cause pollution or nuisance as defined by the California Water Code.
3. The discharge of treated groundwater shall be only be to Teichert for their use at its Grant Line Road and/or Scott Road facilities, or to Rebel Hill Ditch as shown on Attachment A, a part of this Order.

C. EFFLUENT LIMITATIONS

1. Treated effluent discharged from the treatment plant shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>30-Day Average</u>	<u>Daily Maximum</u>
TCE	µg/L	0.5	0.8
cis-1,2-DCE	µg/L	0.5	1.0
1,1-DCA	µg/L	0.5	1.0
PCE	µg/L	0.5	0.5
Perchlorate	µg/L	4.0	6.0
n-nitrosodimethylamine	µg/L	0.002	0.004

D. PROVISIONS

1. The Discharger shall comply with all applicable Standard provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are attached hereto and by reference are a part of this Order. This attachment and its individual paragraphs are commonly referenced as Standard Provisions.
2. The Discharger may be required to submit technical reports pursuant to California Water Code Section 13267 as directed by the executive Officer. The technical reports required by this Order are necessary to assure compliance with this Order.
3. All technical reports required herein that involve planning, investigation, evaluation, or design or other work requiring interpretation or proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835 and 7835.1. To demonstrate compliance with Title 16, CCR, Sections 415

and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

4. **Within 15 days from the adoption of this order**, the Discharger shall submit an Operation and Maintenance (O&M) Plan for the groundwater treatment facilities. The O&M Plan shall instruct field personnel on how to manage the day-to-day discharge operations to comply with the terms and conditions of this Order and how to make field adjustments, as necessary. A copy of the O&M Plan shall be kept at the facility for reference by operating personnel. Key personnel shall be familiar with its contents. The O&M plan shall be modified as needed to respond to changes in system operations.
5. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2011-0025, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
6. A copy of this Order shall be maintained at the project site and be available at all times to operating personnel.
7. The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed by the discharger to achieve compliance with these Waste Discharge Requirements.
8. The discharger shall promptly report to the Regional Water Board any violation of this Order, material change in the character, location, or volume of the discharge.
9. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger shall notify the succeeding owner or operator of the following items by letter, in advance of the transfer of ownership or control, and a copy of the notice must be forwarded to the Regional Water Board:
 - a. existence of this Order; and
 - b. the status of the dischargers' annual fee account
10. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the discharger from his liability under Federal, State, or Local laws, nor create a vested right for the discharger to continue the waste discharge.

11. Chemical, bacteriological, and bioassay analyses must be conducted at a laboratory certified for such analyses by the State Department of Health Services.
12. All reports, or other documents required by these WDRs, and other information requested by the Regional Board shall be signed by a person described below or by a duly authorized representative of that person.
 - a. for a corporation: by a responsible corporate officer such as: (a) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (b) any other person who performs similar policy or decision making functions for the corporation; or (c) the manager of one or more manufacturing, production, or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - b. Reports required by this Order, and other information requested by the Regional Water Board may be signed by a duly authorized representative provided:
 - i. the authorization is made in writing by a person described in paragraph (a) of this provision;
 - ii. the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and
 - iii. the written authorization is submitted to the Regional Water Board prior to or together with any reports, information, or applications signed by the authorized representative.
 - c. Any person signing a document under paragraph (a) or (b) of this provision shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
13. The discharger shall permit authorized staff of the Regional Water Board:

- a. entry to the project site covered by these Waste Discharge Requirements or in which any required records are kept;
 - b. access to copy any records required to be kept under terms and conditions of this Order;
 - c. inspection of monitoring equipment or records; and
 - d. sampling of any discharge.
14. In the event the discharger is unable to comply with any of the conditions of this Order due to:
- a. breakdown of any facility or control system or monitoring equipment installed by the Discharger to achieve compliance with this Order;
 - b. migration or application of substances, pollutants or byproducts outside the specified treatment area;
 - c. accidents caused by human error or negligence; or
 - d. other causes such as acts of nature;

the discharger shall notify the Regional Water Board by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem and the dates thereof, and the steps being taken to prevent the problem from recurring.

15. The Regional Water Board may review this Order periodically and may revise requirements when necessary. In addition, the discharger shall file a report of waste discharge with the Executive Officer at least 120 days before making any material change or proposed change in the character, location, or volume of the discharge.
16. Project coverage under these Waste Discharge Requirements may be terminated, by the Executive Officer at any time upon giving reasonable notice to the Discharger.

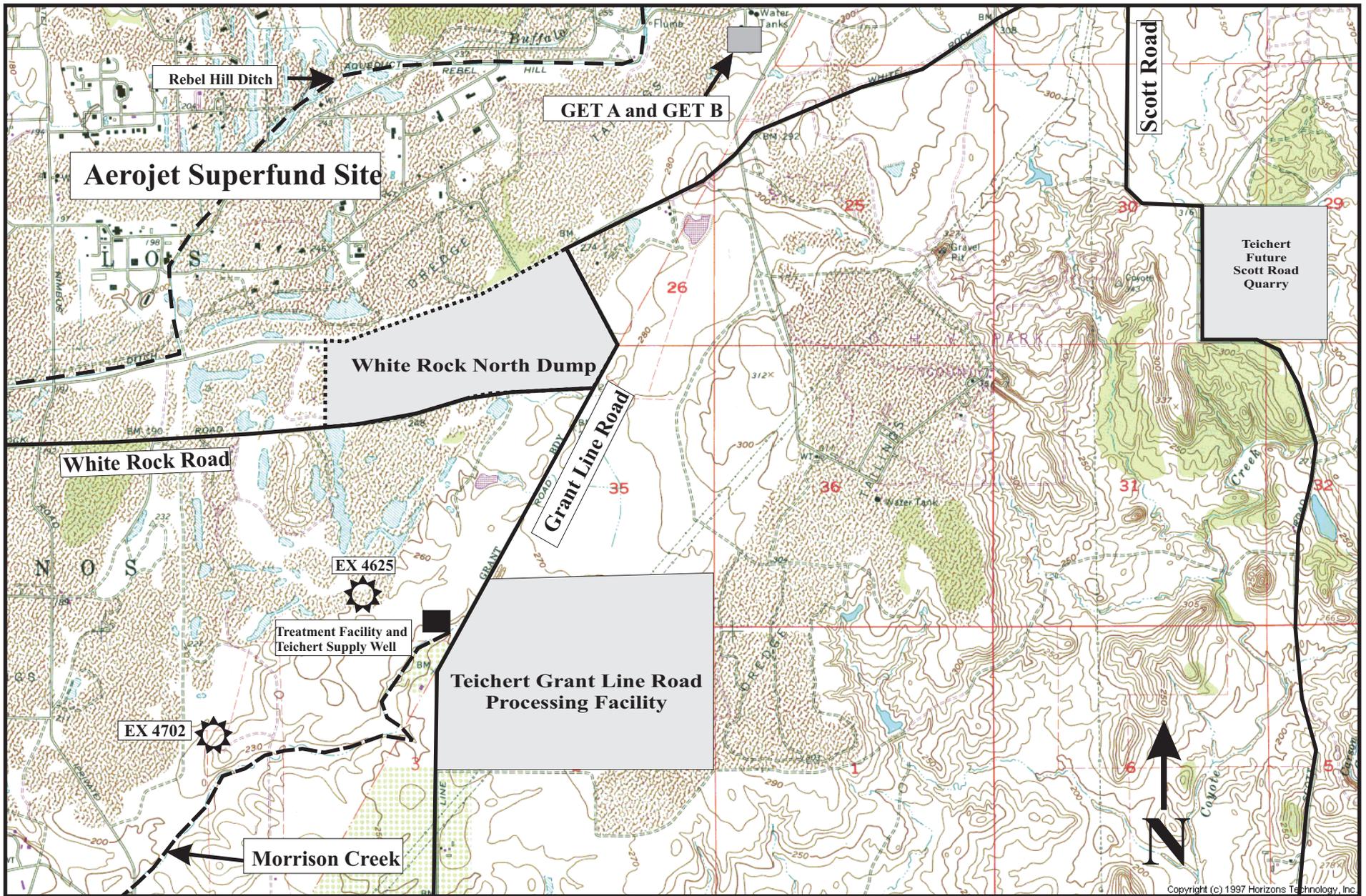
I, Pamela C. Creedon, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 8 April 2011.

Original signed by:

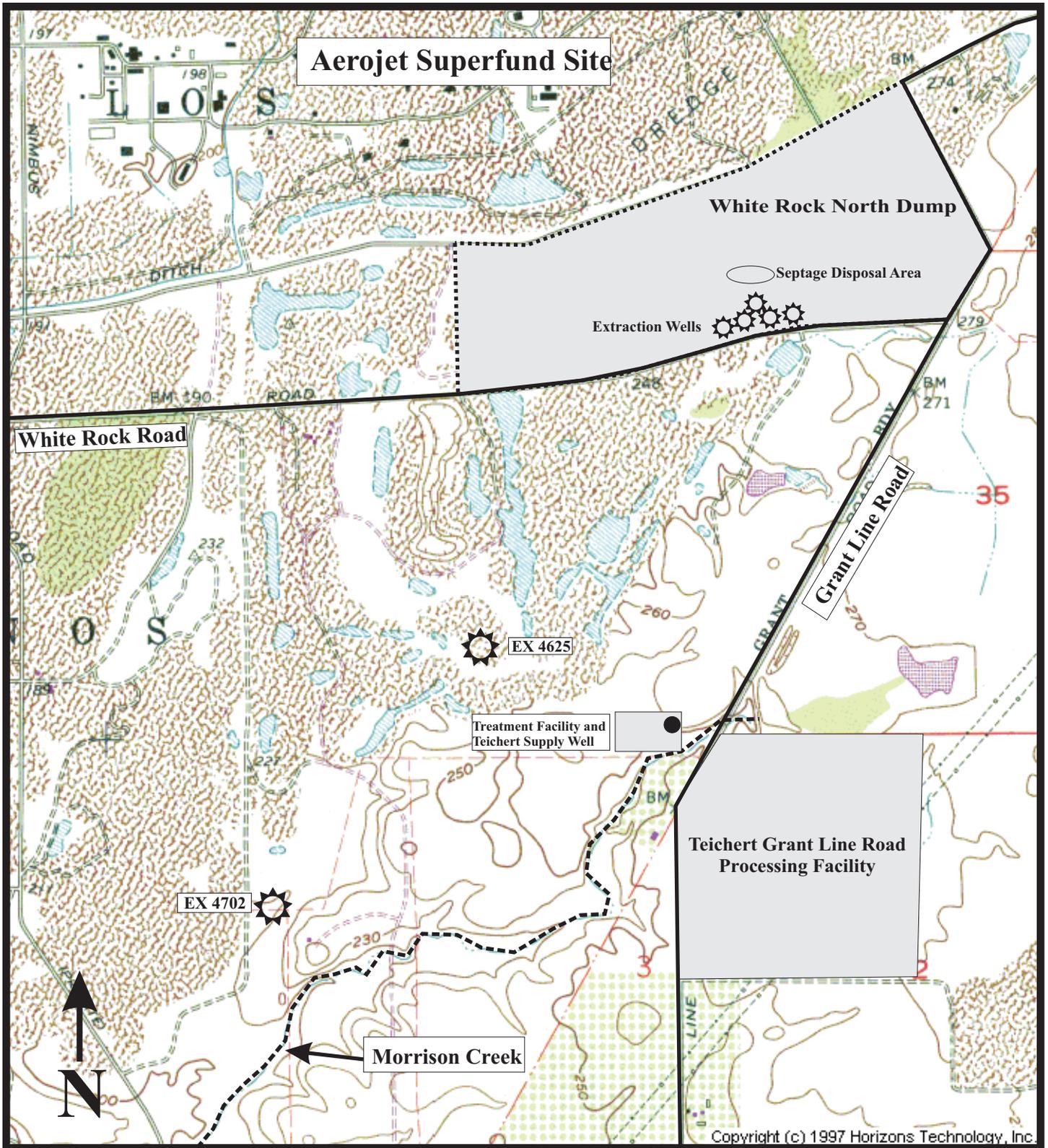
PAMELA C. CREEDON, Executive Officer

WASTE DISCAHRGE REQUIREMENTS ORDER NO. R5-2011-0025
AEROJET-GENERAL CORPORATION
WHITE ROCK NORTH DUMP GROUNDWATER TREATMENT FACILITY
SACRAMENTO COUNTY

12/24/2010 AMM



Attachment A
Aerojet-General Corporation
White Rock Road Dump
Groundwater Treatment Facility
Sacramento County



Attachment B
Aerojet-General Corporation
White Rock Road Dump
Groundwater Treatment Facility
Sacramento County

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2011-0025

FOR
AEROJET-GENERAL CORPORATION
WHITE ROCK NORTH DUMP GROUNDWATER TREATMENT FACILITY
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and treatment system. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

TREATMENT SYSTEM MONITORING

The treatment system is required to be monitored to assure compliance with effluent limitations. Each treatment system shall be sampled as follows in Table 1, using the analytical methods found in Table 2:

**Table 1: SAMPLING FREQUENCY AND
CONSTITUENT SUITE FOR TREATMENT SYSTEM**

Monitor Point	Units	Frequency
Influent Monitoring		
Perchlorate	µg/L	Monthly
Volatile Organics	µg/L	Monthly
n-nitrosodimethylamine	µg/L	Quarterly
Effluent Monitoring		
Perchlorate	µg/L	Monthly
Volatile Organics	µg/L	Monthly
Total Dissolved Solids	mg/L	Monthly
n-nitrosodimethylamine	µg/L	Monthly ¹
Electrical Conductivity ²	µmhos/com	Monthly
pH	pH units	Monthly
Flow ³ - average	gallons per minute	Monthly
Flow ³ - cumulative	total gallons per month	Monthly

¹ To commence after n-nitrosodimethylamine is detected in the influent.

² Field measurements.

³ Meter

GROUNDWATER MONITORING

Groundwater monitoring in the project area is conducted pursuant to Cleanup and Abatement Order No. 96-150 and the 1989 Partial Consent Decree for the Aerojet Superfund Site. Additional groundwater monitoring is not required by this Order. The treatment system is discharging groundwater back to the groundwater at a quality that is equivalent or better than the existing groundwater quality as the perchlorate and volatile organics have been removed.

Table 2: ANALYTICAL METHODS

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²
Perchlorate	EPA 314.1	4.0
n-nitrosodimethylamine	EPA Method 521	0.002
Volatile Organics	EPA Method 8260	0.5
Total Dissolved Solids	EPA Method 160.1	10,000

¹ Or an equivalent EPA-approved Method that achieves the maximum Practical Quantitation Limit.
² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value. If the approved method does not achieve the listed PQL, then a non-detect using the approved method is deemed to be in compliance with the limit.

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted each influent and/or effluent sampling is conducted. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: FIELD SAMPLING REQUIREMENTS

Parameters	Units	Type of Sample
Electrical Conductivity	µmhos	Grab
pH	pH units	Grab

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Regional Board within 48 hours of any unscheduled shutdown of a groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

The Discharger shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of each calendar quarter by **1 February, 1 May, 1 August, and 1 November** until such time as the Executive Officer determines that the reports are no longer necessary.

Quarterly reports shall be submitted to the Regional Board by the **1st day of the second month following the end of each calendar quarter (i.e., by 1 February, 1 May, 1 August, and 1 November)**. Each quarterly report shall include the following minimum information:

- (a) a description and discussion of the sampling results, including trends in the concentrations of pollutants;
- (b) if compliance with effluent limitations is not achieved, causes of the exceedances and a description of the improvements to correct the problems;
- (c) a copy of the laboratory data reports (can be on CD);
- (d) if applicable, the status of any ongoing remediation, including cumulative information on the mass of pollutant removed from the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system;
- (e) the volume of water provided to Teichert on a monthly basis;
- (f) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions; and

(g) A log of GAC/resin replacement, if applicable along with transportation date(s) and destination of disposal.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Original Signed by:

Ordered by: _____
PAMELA C. CREEDON Executive Officer

14 April 2011
(Date)

12/30/10:AMM

INFORMATION SHEET

ORDER NO. R5-2011-0025
AEROJET-GENERAL CORPORATION
WHITE ROCK NORTH DUMP GROUNDWATER TREATMENT FACILITY
SACRAMENTO COUNTY

Background

The Aerojet-General Corporation (Aerojet) and several other responsible parties were issued Cleanup and Abatement Order in May of 1996 directing them to determine the extent of pollution on and off the White Rock Road Dump property and cleanup and abate the pollution. Since that time, Aerojet has settled with the other responsible parties and has assumed sole responsibility for completing the cleanup tasks. Aerojet has also purchased the property from the former owner, CLC Investment Corporation.

The White Rock North Dump is at the northwest corner of White Rock Road and Grant Line Road in eastern Sacramento County. To the north of the dump is the Aerojet Superfund site. Wastes have not been disposed of at the site since the late 1960's. In addition to municipal waste materials, the site also received septic wastes. The site apparently also received some solvent wastes containing volatile organic constituents (VOCs). The co-mingling of the septic wastes at the septage receiving area with the solvents resulted in the breakdown of trichloroethylene (TCE) and perchloroethylene (PCE) into daughter products 1,1-dichloroethylene, (1,1-DCE), 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethane (1,2-DCA), cis-1,2-dichloroethylene (cis-1,2-DCE) and vinyl chloride. The VOCs entered the groundwater and were transported downgradient to the south. The highest existing measured concentration of TCE in the plume is 190 µg/L (Primary Drinking Water Standard (MCL) of 5 µg/L and a California Public Health Goal (PHG) of 1.7 µg/L). The other VOCs are generally in the range of 0.5 to 50 µg/L, with MCLs and PHGs in the range of 0.4 to 6 µg/L.

In addition to the VOCs in the plume emanating from the dump, there are two other pollutant plumes adversely impacting the groundwater in the vicinity of the dump. One plume originates on the Superfund site and flows beneath the western portion of the dump before comingling with the dump plume downgradient. That plume consists of TCE (highest measured concentrations south and north of the dump are 1300 µg/L and 3700 µg/L, respectively) and perchlorate, a component of solid rocket propellant. Perchlorate is measured at 2300 µg/L on the dump property and 130,000 µg/L at the source area north of the dump. Perchlorate has an MCL and a PHG of 6 µg/L. The other plume also originates on the Superfund site, but to the north and east of the dump. It consists of VOCs, perchlorate and n-nitrosodimethylamine (NDMA). This plume also flows to the south and is undergoing nearly complete capture and remediation by Aerojet's GET B system. That system is being evaluated to determine if it sufficiently captures the plume and prevent it from impacting water supplies to the south and the dump remedy to the west. NDMA has been found in groundwater below the dump property.

Groundwater Remediation Project

Numerous studies, investigations and remedy installations of occurred since the issuance of the Cleanup and Abatement Order. The extent of wastes in soil and groundwater has been

defined and Aerojet constructed two interim remedial systems. The first remedial system consists of five groundwater extraction wells near the dump's southern property and downgradient of the septage disposal area. The five wells pump an average combined flow of approximately 80 gallons per minute (gpm). The extracted groundwater is piped back to Aerojet's GET B facility on the Superfund site for removal of VOCs and NDMA and discharged to Rebel Hill Ditch for infiltration back into the groundwater. The second remedial project undertaken by Aerojet was to install a counter-flow air stripper on the water supply well for the Teichert Grant Line Road sand and gravel processing plant. TCE was found in the well and the air stripper is designed to remove TCE and other VOCs to below detection (0.5 µg/L) prior to use at the processing plant. Subsequent to construction of the air stripper, perchlorate was detected in the well. In response, Aerojet constructed a perchlorate-specific resin system to remove the perchlorate from the water produced by the supply well. The resin system can effectively remove perchlorate to less than 4 µg/L.

The final portion of the remedy was recently completed with the construction of two extraction wells at the southern extent of the plumes south of the dump. The wells are placed to intercept the plume emanating from the dump and also the western plume emanating from the Aerojet Superfund site, as described above. These two extraction wells, 4625 and 4702 will pump an estimated flows of 175 gpm and 150 gpm, respectively. The extracted water is piped to the treatment facility at the Teichert supply well. There, VOCs and perchlorate are removed prior to discharging the water. The water is preferentially provided to Teichert for use at their processing facility. If Teichert does not need all or some of the water, the excess water is piped up to Aerojet for discharge to Rebel Hill Ditch with the combined flows from Aerojet's GET A and GET B facilities. If Teichert needs more water than the combined flow from the extraction wells, then the Teichert supply well is operated and the water processed through the treatment system. With a design capacity of 1000 gpm, an additional flow of 575 gpm can be utilized from the supply well. Teichert is in the planning process for construction of a quarry on Scott Road, east of the Grant Line Road facility. The effluent from the treatment facility will also be used in the future to supply operations at the quarry site.

If in the future it is determined that additional extraction wells are needed to contain and cleanup the plumes, the flow from those wells will be added to the system. If additional treatment capacity is needed, the waste discharge requirements will be revised to address the new flows that put the discharge over 1000 gpm.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the project area is to Morrison Creek, tributary to the Sacramento River. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum

contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of Section 13000 of the California Water Code require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degradation to water quality objectives.

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

As stated above, groundwater will be extracted, treated and recharged through the vadose zone and eventually recharge the aquifer. The water quality of the effluent will be at or better than that of the groundwater being extracted as the VOCs and perchlorate are being removed. Groundwater quality is, and will continue to be, monitored to assess to cleanup under the Cleanup and Abatement Order. No degradation should occur as a result of the discharge.

Title 27

Title 27, CCR, section 20380 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable. The proposed discharge will not degrade groundwater quality. The project will be removing perchlorate and VOCs from the groundwater.

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

The proposed Order establishes a discharge flow limit of 1000 gpm from the treatment system. The proposed Order's effluent limitations protect all beneficial uses of the underlying groundwater.

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

This Order requires influent and effluent monitoring requirements, including flow rates. In order to adequately characterize its discharge, Aerojet is required to monitor for VOCs, perchlorate, NDMA and total dissolved solids.

AMM:12/30/10