INFORMATION SHEET

ORDER NO. R5-2005-XXXX
THE BOEING COMPANY
SACRAMENTO COUNTY

Background

The Boeing Company, as directed by the Board and the Department of Toxic Substances Control, is initiating cleanup of groundwater beneath the Inactive Rancho Cordova Test Site (IRCTS). The IRCTS consists of approximately 4000 acres in eastern Sacramento County to the east of Sunrise Boulevard, south of White Rock Road, and north of Douglas Road. Past rocket testing operations and disposal practices by The McDonnell-Douglas Corporation and/or The Aerojet-General Corporation, have caused the groundwater beneath the IRCTS to have become polluted with volatile organic contaminants (VOCs) and perchlorate.

Groundwater leaving the IRCTS to the south and southwest is contaminated by VOCs and perchlorate. The primary VOCs in the groundwater are trichloroethylene (TCE) and cis-1,2-Dichloroethylne (cis-1,2-DCE) at concentrations up to 380 micrograms per liter (µg/L) and 25 µg/L, respectively. Perchlorate has been found at concentrations up to 1,200 µg/L.

The Boeing Company is in the process of completing interim remedial actions to halt the spread of the groundwater pollution and clean it up. Groundwater extraction wells are being installed and treatment facilities are being constructed. During this period of time, two off-site water production wells were found to contain low levels of TCE. An agriculutral well (AG Well) south of Douglas Road and the IRCTS was found to contain up to 6.5 µg/L TCE. The well had originally supplied water to ranching and limited farming activities in the vicinity of the well. The property was included in a large residential housing project and the well was used to supply water for dust control and compaction during construction. When monitoring showed that the initially clean AG Well contained TCE, the use of the well was discontinued and water is currently being trucked to the site. The other water supply well (Gun Club Well) services the Cordova Shooting Center needs for landscape irrigation and non-potable uses (sinks and toilets). Bottled water is supplied for potable purposes. The Cordova Shooting Center is west of the IRCTS, west of Sunrise Boulevard and north Douglas Road. Samples collected from the Gun Club Well have been found to contain up to 0.75 µg/L TCE and no perchlorate. Higher concentrations of TCE, along with perchlorate, are found in the groundwater upgradient.

Wellhead Treatment Facilities

The treatment systems constructed by The Boeing Company consist primarily of bag filters followed by GAC vessels containing up to 10,000-pounds each of granular activated carbon (GAC). The GAC vessels are operated in series. GAC has been demonstrated to cost-effectively remove TCE to below 0.5 µg/L (Primary Drinking Water Standard of 5 µg/L, Public Health Goal of 0.8 µg/L). When concentrations of TCE in the effluent of the lead vessel equal concentrations in the influent to the lead vessels, the lead and lag vessels will be switched and the GAC replaced in the former lead vessel. The spent carbon is transported to a permitted facility for reactivation and destruction of the adsorbed VOCs. The bag filter will be used in front of the GAC vessels to remove particulates, thereby reducing the potential for clogging and extending the life of the GAC. Also upgradient in the plume affecting the

AG Well are 1,2-dichloroethylene (cis-1,2-DCE). GAC will effectively remove cis-1,2-DCE to below 0.5 µg/L (Primary Drinking Water Standard is 6 µg/L).

If needed, treatment for removal of perchlorate will be added to the Gun Club Well in the future. The treatment system for perchlorate is nearly identical to that provided for removal of VOCs except that the vessels are filled with an ion-exchange resin specifically designed to remove perchlorate. As with GAC, as the lead bed becomes saturated, the lead and lag vessels are switched and fresh resin is added to the former lead vessel.

The Gun Club Well produces 200-250 gallons per minute (gpm). The treatment system for the Gun Club Well is designed to treat up to 250 gallons per minute. During the summer time the well is used to produce up to 20,000 gallons per day for irrigation of the landscaping and non-potable purposes (sinks and toilets) at the Gun Club. Little use of the well occurs between November and March. The average monthly flow from April to October is 217,000 gallons.

The AG Well will be used to produce up to 700 gpm. The water will be used 5 days a week, 8 hours per day, for a period of 6 months during the year. The construction operations are expected to continue for up to 5 years. The maximum output per day is 0.336 million gallons. The water will be used on an intermittent basis for mass grading. The treatment system for the AG Well may only utilize a single GAC vessel, instead of the two described above for the Gun Club Well. In this instance the GAC is changed when the effluent concentration reaches one half of the effluent limitation.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the GWTFs is to Morrison Creek. 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 to remove VOCs and discharged to land. Any water that might be returned to the aquifer, though extremely unlikely, will be as good a quality, if not better, than the background groundwater at the site. 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.

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

The proposed Order establishes a discharge flow limits of 20,000 gallons per day for the Gun Club Well and 340,000 gallons per day for the AG Well. The proposed Order's discharge specifications for VOCs

are based on the treatment technologies employed and to maintain all beneficial uses of the 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 effluent, the Discharger is required to monitor for VOCs and pH.

The Discharger need not conduct groundwater monitoring under this Order. Groundwater monitoring is already being performed pursuant to the Imminent and Substantial Endangerment Order and with oversight provided by Regional Board and Department of Toxic Substances Control staff. Effects of the discharge on groundwater need not be monitored under this Order as the application of the effluent as allowed effectively precludes recharge of the groundwater by the effluent.

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