



Five Year Review 2007 TO 2012

JET PROPULSION LABORATORY GROUNDWATER CLEANUP PROGRAM **Five-Year Review of Operable Units 1 & 3**

INTRODUCTION

The National Aeronautics and Space Administration (NASA) is responsible for cleanup of groundwater beneath and near the Jet Propulsion Laboratory (JPL). The cleanup of this groundwater is accomplished through water treatment systems known as “remedies”. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as Superfund, requires that the implementation and performance of on-going remedies at CERCLA sites be reviewed at least once every five years. This is the first five-year review for the JPL CERCLA site, spanning February 2007 to January 2012. The overall purpose of the five-year review is to determine if the remedies continue to be protective of human health and the environment.

NASA, in conjunction with the U.S. Environmental Protection Agency (EPA), completed the first five-year review in January 2012 of the groundwater cleanup remedies undertaken at the NASA JPL CERCLA Site to determine if they continue to be protective. These remedies include three groundwater extraction and above-ground treatment systems to remove volatile organic compounds (VOCs) and perchlorate from the groundwater. NASA has prepared a Five Year Review Report which describes the methods, findings, and conclusions of this review. The full report is available at: <http://jplwater.nasa.gov/>.

REMEDIAL ACTION SUMMARY

Cleanup activities at the NASA JPL site include three areas referred to as Operable Units (OUs). OU-1 addresses groundwater beneath the JPL “source area,” and OU-3 addresses deep groundwater outside the JPL fence line. Both OU-1 and OU-3 are included in the five-year review. Cleanup activities at OU-2 (on-facility soil) are complete so a five-year review is not needed. The successful remedy for OU-2 was completed in 2007, and included removal of VOCs in on-facility vadose zone soil using soil vapor extraction (SVE).

Source area groundwater (OU-1) treatment activities consist of a groundwater pump and treat system with reinjection for treatment of perchlorate and VOCs. Components of the OU-1 treatment system include liquid-phase granular activated carbon (LGAC) for VOC removal, a fluidized bed reactor (FBR) for perchlorate removal, and filtration. OU-3 includes off-facility groundwater treatment activities, consisting of two pump and treat systems: the Monk Hill Treatment System (MHTS) in Pasadena and the Lincoln Avenue Water Company (LAWC) treatment system in Altadena. These treatment systems were designed to remove perchlorate and VOCs from groundwater using ion exchange and LGAC. After disinfection, the treated water is used by Pasadena and LAWAC for drinking water. With the recent completion of the MHTS, both OUs are currently in the post-construction completion phase of the CERCLA cleanup process (i.e., long-term operation and maintenance [O&M] of the treatment systems).

for your information

FIVE-YEAR REVIEW PROCESS

The five-year review process integrates information taken from documents that outlined the remedies to be implemented and operational data, together with the experiences of those responsible for and affected by actions at the site. [There are six components to the five-year review process:](#)

1. Community Involvement and Notification

Activities to involve the community in the five-year review process were initiated through distribution of a newsletter released in early December 2011. The newsletter informed the public that the five-year review process was underway, and explained the purpose of this review. A brief summary of the remedies was included, noting that three groundwater extraction and aboveground treatment systems are currently operating to remove VOCs and perchlorate from the groundwater. The newsletter was made available on the NASA JPL CERCLA Program website (<http://jplwater.nasa.gov/>). In addition, hard copies of the newsletter were distributed to NASA JPL CERCLA Program stakeholders and over 4,000 residences near the JPL facility, and all JPL personnel (more than 5,000) were notified of the newsletter via e-mail and directed to the electronic version. This Fact Sheet was prepared to provide the community a summary of the final Five-Year Review Report. This fact sheet and the Final Report will be posted on our website.

2. Document Review

Documents were reviewed to obtain relevant information and data concerning each treatment system to evaluate its performance and protectiveness. Documents reviewed for the NASA JPL five-year review included investigation reports, decision documents, quarterly groundwater monitoring reports, construction reports, and treatment system progress reports. All these documents are available at the NASA JPL CERCLA website at <http://jplwater.nasa.gov/>.

3. Data Review and Analysis

Data from sampling and monitoring activities, as well as O&M reports and other remedy performance documentation were the primary basis for the technical analyses and final protectiveness determination. For the NASA JPL CERCLA site, the data review included examination of treatment system monitoring data, groundwater monitoring information, risk assessment information, and regulatory standards to identify any changes to the protectiveness of the selected remedies. The most recent sampling data were used in evaluating protectiveness of the remedies, and data trends over time were evaluated to determine the progress made toward achieving the remedial action objectives at each OU.

4. Site Inspection

The purpose of the site inspection is to provide information about a site's status and to visually confirm and document the conditions of the remedy, the site, and the surrounding area. Treatment system equipment at both NASA JPL OUs is monitored and maintained on a routine basis in accordance with the O&M plan for each system. The condition of monitoring wells is observed during quarterly groundwater monitoring, and necessary maintenance activities are completed promptly to ensure the wells are maintained in good condition.

5. Interviews

Interviews were conducted with Pasadena Water and Power and LAWC in support of this five-year review process. Both water purveyors felt that community outreach had been extensive and effective. They commented that materials have been easily accessible and questions from the community had been addressed immediately. In addition, the regulatory agencies that oversee current activities at OU-1 and OU-3 were given the opportunity to review and provide comments on the draft Five-Year Review Report. This included representatives from the EPA and State agencies (Department of Toxic Substance Control [DTSC] and Regional Water Quality Control Board [RWQCB]).

6. Protectiveness Determination

In the protectiveness determination, performance and monitoring data from the groundwater remedies was evaluated to determine if the remedial actions are protective and to recommend improvements if they are not performing as designed. [The information which has been gathered and reviewed is used to answer the following three questions:](#)

Are the cleanup actions (i.e., remedies) functioning as intended?

Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?

Is there any other information that exists that could call into question the protectiveness of the remedy?

FIVE-YEAR REVIEW SUMMARY AND CONCLUSIONS

Based on all of the information reviewed, the OU-1 and OU-3 treatment systems are performing as designed and are considered to still be protective of human health and the environment. Potential exposure pathways that could result in unacceptable risk (i.e., ingestion and contact with chemicals in groundwater) are being effectively controlled through the groundwater extraction and treatment provided by the MHTS and LAWC treatment systems. Both systems have routine monitoring programs in place to ensure chemicals are effectively removed. Treated water from both the MHTS and the LAWC system complies with all water quality requirements specified by federal and State regulations, with concentrations below federal and California MCLs. ■

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