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NASA Proposes Expansion of On-Site Treatment Plant



NASA Remedial Project Manager Steve Slaten, right, and System Operations Technician David Loera are shown discussing the source area groundwater treatment plant expansion plans. Slaten is pointing uphill or up-gradient of the existing plant where a new injection well would be sunk.

To speed removal of chemicals from groundwater hundreds of feet beneath the surface, and as one important part of NASA's comprehensive cleanup plan, NASA has proposed to expand its on-site treatment plant located at the Jet Propulsion Laboratory (JPL). The plant was constructed in 2004 and became operational in early 2005 to allow for a detailed study of treatment technologies that would remove volatile organic compounds and perchlorate from groundwater directly beneath JPL, where the highest levels of chemicals are located. In the plant's first five months of operation, through July 2005, more than eight pounds of volatile organic compounds and approximately 300 pounds of perchlorate have been removed from groundwater.

Located in the north-central section of the 176-acre JPL complex, the plant currently treats the water at a rate of approximately 150 gallons per minute (gpm). The proposed expansion would more than double the rate of treatment, bringing it to approximately 350 gpm. In expanding the plant NASA would add an extraction well to bring groundwater from beneath JPL to the above-ground treatment plant, increasing the total number of extraction wells to three. NASA would also install one additional injection well to return clean water to the aquifer, also increasing the total number of injection wells to three (see accompanying diagram). The

expansion would include pipeline installation to connect the new wells to the existing plant. This expansion cleanup would target what is referred to as the "source area," an eight-acre by 100-foot-thick area of the aquifer beneath JPL that contains chemicals disposed of by historic practices in the 1940s and '50s. The plant utilizes two technologies – a liquid-phase granular activated carbon system to remove volatile organic compounds, and a fluidized bed reactor to remove perchlorate. Liquid-phase granular activated carbon is the most commonly used method to remove volatile organic compounds from groundwater, and the newer fluidized bed reactor perchlorate-removal process "has proven to be highly effective" at the JPL site, according to NASA remedial project manager Steve Slaten.

La NASA Propone una Expansión de la Planta de Tratamiento de Agua

La NASA ha propuesto expandir su planta de tratamiento de agua subterránea localizada en el Jet Propulsion Laboratory (JPL). Este plan aceleraría la eliminación de los compuestos químicos que se encuentran en el agua subterránea a cientos de pies debajo de la superficie de la tierra.

Durante la etapa inicial de la operación de la planta que duró cinco meses (hasta julio de 2005), se eliminaron aproximadamente 300 libras de perclorato y más de ocho libras de compuestos orgánicos volátiles (VOCs) del agua subterránea. La expansión propuesta estaría localizada al norte de la parte central de JPL, el área donde existe la más alta concentración de compuestos químicos en el agua subterránea. Este plan podría duplicar la cantidad de agua subterránea tratada de 150 galones por minuto (gpm) a aproximadamente 350 gpm.

La expansión propuesta proveería una forma más eficaz de capturar y eliminar los VOCs y el perclorato, y ayudaría a prevenir el movimiento de los compuestos químicos fuera del perímetro de JPL.

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COMMENT IS INVITED ON PROPOSED PLAN Public Meeting is Scheduled to Discuss It

Public Comment Period
November 1, 2005 to December 15, 2005

PUBLIC MEETING
Wednesday, November 16, 2005
7 p.m. - 9 p.m.
Altadena Community Center
730 E. Altadena Drive, Altadena

NASA invites public comment on the actions described in its Proposed Plan to expand its on-site groundwater treatment plant at the Jet Propulsion Laboratory (JPL). Copies of the Proposed Plan and supporting technical documents are available by visiting any of the public information repositories listed on page 3 or at the NASA JPL Water Cleanup Website at <http://jplwater.nasa.gov>. You may also request a copy or get additional information by calling (818) 393-0754.

Comments on NASA's Proposed Plan may be submitted electronically to mfellows@nasa.gov or by mail to the attention of Merrilee Fellows, NASA Water Cleanup Outreach Manager, Jet Propulsion Laboratory, NASA Management Office, 180-801, 4800 Oak Grove Drive, Pasadena, CA 91109. No specific format for the comments is necessary.

All comments must be submitted either electronically by midnight December 15, 2005, or, if comments are posted by mail, the comments must bear a postmark of no later than December 15, 2005.

NASA will hold a public meeting on the Proposed Plan from 7 p.m. to 9 p.m. on Wednesday, November 16, 2005 at the Altadena Community Center, 730 E. Altadena Drive, Altadena. Oral and written comments will be accepted at the meeting, and NASA will provide a copy of a transcript of the meeting at its Information Repository at the local public libraries and at <http://jplwater.nasa.gov>.

Invitación a una Reunión Pública

La NASA tendrá una reunión pública para discutir el Plan Propuesto de expandir su planta de tratamiento de agua subterránea ubicada en el Jet Propulsion Laboratory (JPL), el 16 de noviembre de 2005, de 7:00 p.m. a 9:00 p.m. en Altadena Community Center.

La NASA le invita a hacer comentarios respecto al Plan Propuesto. Los comentarios se pueden enviar por correo electrónico a mfellows@nasa.gov o por correo regular a Merrilee Fellows, Jet Propulsion Laboratory, NASA Management Office, 180-801, 4800 Oak Grove Drive, Pasadena, CA 91109, hasta el 15 de diciembre de 2005.

Por preguntas llame a Gabriel Romero al (818) 354-8709.

Inside
Groundwater Monitoring
Dentro del Boletín
Estudio de Control de
Agua Subterránea

Dedicated Team at NASA Headquarters Supports NASA Water Cleanup at JPL And Other Environmental Efforts Nationwide



NASA Environmental Management Division Director James Leatherwood, center, discusses plans for the comprehensive JPL groundwater treatment program with the JPL-based NASA Remedial Project Manager Steve Slaten and Project Outreach Manager Merrilee Fellows.

planning while looking for ways to modify industrial processes and/or the development of substitute materials. They successfully worked with the U.S. Environmental Protection Agency to limit the use of ozone depleting substances on NASA flight vehicles and find substitutes for hazardous materials.

On the compliance front, the Environmental Management Division works to ensure that NASA's current and future operations meet all federal, state, and local environmental regulations. When remediation is necessary, the division's staff works closely with each center, addressing those sites as rapidly as possible to protect human health and the environment.

In the area of conservation, the Environmental Management Division encourages and works with NASA centers on careful land use planning, the enhancement of existing natural resources, and the preservation of those cultural resources associated with significant aspects of historic and prehistoric heritage. For example, as part of "decommissioning" a long-closed nuclear power test reactor at NASA Glenn Plum Brook Station in Sandusky, Ohio, efforts were also taken to produce a video and two textbooks preserving the unique history of this one-of-a-kind NASA facility.

According to Environmental Management Division Director James Leatherwood, the division's focus on conservation, especially through programs such as recycling and energy/water conservation, helps reduce the impact of NASA activities on the environment. At the NASA Goddard Space Flight Center in Greenbelt, Md., the central heating plant harnesses methane gas from a nearby landfill and uses it to fire boilers that produce steam heat piped into 31 Goddard buildings. "The environmental benefits are huge," said Barry Green, Goddard energy manager. "We are reducing emissions equivalent to taking 35,000 cars off the road per year or planting 47,000 acres of trees." By using this system, NASA will also save taxpayers more than \$2.2 million per year over the next decade in fuel costs. Goddard is the first federal facility in the country to heat its buildings with landfill gas.

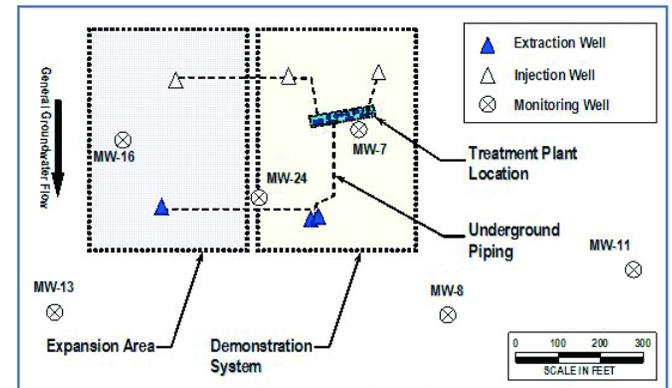
Another example of NASA's environmental stewardship and conservation efforts can be found at NASA's Ames Research Center in California's Silicon Valley. There, 18 to 27 breeding pairs of the western burrowing owl, designated by California as a "Species of Special Concern" and by the federal government as a "Species of Management Concern," have been sheltered each year in the center's rare upland grassland habitat.

While NASA is known for its exploration of the universe, Leatherwood also hopes it will be known as an active environmental steward here on Earth. "NASA's Environmental Management Division and the environmental staff at all our centers are working every day to ensure that 'mission success' includes achievements on our earthly surroundings as well," he said. ■

Equipo en la Sede Central de la NASA Apoya Asuntos del Medio Ambiente a Nivel Nacional

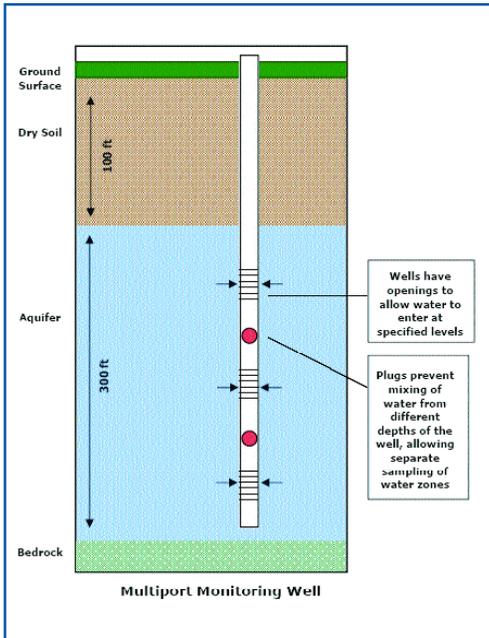
La NASA tiene un grupo dedicado al Manejo del Medio Ambiente en Washington, D.C. constituido por más de una docena de expertos, cuyo rol es de apoyar proyectos relacionados al medio ambiente en los centros de la NASA en todo el país; como ser el proyecto de limpieza del agua en el Jet Propulsion Laboratory. Este grupo asegura que se cumpla la política de la NASA con respecto al medio ambiente. El manejo del medio ambiente es una parte integral de la cultura de la NASA y de sus programas.

NASA Proposes Expansion - Continued from Page One



The design of the expanded on-site treatment plant is expected to be even more effective in capturing and removing volatile organic compounds and perchlorate, helping prevent spread of the chemicals off-site. Based on the successful operation of the existing plant to date, expanding it would also improve the efficiency – and reduce costs – of the eventual final cleanup method selected for the groundwater that has moved off-site. NASA has prepared a Proposed Plan describing the proposed treatment plant expansion and the liquid-phase granular activated carbon and fluidized bed reactor technologies that together make up NASA's "preferred alternative" for cleaning up groundwater beneath JPL. NASA's Proposed Plan also describes other cleanup alternatives that NASA evaluated for use at the site. NASA is inviting members of the public to comment on the Proposed Plan and participate in a public meeting that will be held on Wednesday, November 16, 2005, from 7 p.m. - 9 p.m. at the Altadena Community Center (see sidebar on page 1). Following receipt of public comment, NASA may modify its "Preferred Alternative." In conjunction with state and federal regulators, NASA will make a final decision on its plans to expand the treatment system after considering all information submitted during the 45-day public comment period that ends December 15, 2005. If approved, construction of the expansion could occur as early as next year. ■

Groundwater Monitoring Provides Useful Information



Every three months, groundwater samples are taken from the 25 NASA monitoring wells located both on and off the Jet Propulsion Laboratory property. Recent results show some indications of progress being made by NASA's groundwater cleanup project. The two newest wells were installed in late 2004, one in the Pasadena Water and Power City Yard near the 210 freeway at W. Hammond Street, and another in a parking lot behind Muir High School. The new wells are further southeast from JPL than earlier wells, in the direction of possible groundwater flow. Most of the NASA monitoring wells are what is referred to as "multi-port," allowing for sampling at various depths in the aquifer, which begins approximately 200 feet beneath the ground surface. (See diagram.) Since most wells are multiport, there are 82 zones sampled within the 25 wells.

NASA uses results from the ongoing monitoring to better understand the complicated groundwater flow conditions and the movement and extent of the groundwater that contains chemicals associated with historic waste disposal practices at JPL.

The latest sampling, conducted from April 25 through May 26, monitors progress being made in NASA's overall groundwater cleanup effort. For instance, concentrations of volatile organic compounds and perchlorate in Monitoring Well number 7, located within the

area targeted for treatment by NASA's new on-site "source area" treatment plant, showed what NASA analysts called a "decreasing trend" from the previous quarter. The treatment plant began operating in early 2005.

According to NASA remedial project manager Steve Slaten, "The reduction in volatile organic compounds and perchlorate in monitoring well 7 is likely the result of the on-site groundwater treatment system that is removing the chemicals to 'non-detect' levels before the water is put back into the aquifer upstream from the treatment plant. The new treatment system has been highly effective at removing these unwanted chemicals, which is why NASA is proposing to expand it." [See story on page 1].

The monitoring wells also provide information about the direction that groundwater is flowing. The data show that deep groundwater flows from the area beneath the Arroyo Seco are currently captured by the extraction wells used by Lincoln Avenue Water Company located in Altadena. Groundwater extracted from these wells is treated by the NASA-funded Lincoln Avenue Water Company treatment plant in Altadena. The extraction wells and treatment system are working as planned, capturing and removing the chemicals from groundwater. "The Lincoln Avenue Water Company's treatment system is treating water to levels that meet all drinking water requirements, and importantly, cleaning up groundwater to prevent further movement of chemicals," Slaten said. "Monitoring provides important information about the performance of our groundwater cleanup systems."

While the monitoring results are showing progress on cleaning up the groundwater, groundwater flow and conditions far below the surface of the ground are difficult to understand, and the latest results do not provide all the answers. "More data, especially from the two newest and most distant monitoring wells, is still needed," Slaten said. "We plan to look at the next round of sampling very carefully and decide if we need to install additional monitoring wells. In the meantime, the investment we're making in monitoring is paying important dividends to our cleanup effort."

Results from quarterly sampling of these monitoring wells are placed on the NASA Water Cleanup website at <http://jplwater.nasa.gov>. ■

Estudio de Control de Agua Subterránea Provee Información Importante

Los resultados más recientes de los estudios de control del agua subterránea realizados por la NASA muestran que ha habido un cierto progreso en la eliminación de compuestos químicos del agua subterránea. Cada tres meses se toman muestras de agua subterránea de 25 pozos de control pertenecientes a la NASA localizados dentro y fuera del perímetro de JPL.

La NASA usa estos resultados para entender mejor las condiciones complejas del movimiento de agua subterránea y para asesorar la extensión de agua subterránea con compuestos químicos relacionada a los procedimientos de eliminación de desechos usados por la NASA en el pasado. Estas actividades no afectan de ninguna manera el agua potable consumida por los residentes del área, ya que dicha agua debe cumplir con todos los estándares existentes para el agua potable.

Los resultados de estos estudios se pueden encontrar en la página web: <http://jplwater.nasa.gov>.

Information on
NASA cleanup activities
at JPL is available online at
<http://jplwater.nasa.gov>
and at the following
**INFORMATION
REPOSITORIES**

La Cañada Flintridge Public Library

4545 Oakwood Ave.
La Cañada Flintridge, California 91011
(818) 790-3330

Pasadena Central Library

285 E. Walnut St.
Pasadena, California 91101
(626) 744-4052

Altadena Public Library

600 E. Mariposa Ave.
Altadena, California 91001
(626) 798-0833

JPL Repository

(JPL Employees Only)
4800 Oak Grove Dr.
Bldg. 111 - 112
Pasadena, California 91109
(818) 354-4200



NASA Management Office

4800 Oak Grove Drive
Pasadena, CA 91109

For more information CONTACT

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Para más información en español llame a

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Teléfono: (818) 354-8709

NASA's Groundwater Cleanup

JOIN US!
Public Meeting

WEDNESDAY, NOVEMBER 16, 2005
7 p.m. - 9 p.m.
Altadena Community Center

¡Asista!
Reunión Pública
Miércoles, 16 de noviembre de 2005
7:00 p.m. - 9:00 p.m.
Altadena Community Center



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VISIT OUR WEBSITE AT <http://jplwater.nasa.gov>
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Space Administration
Jet Propulsion Laboratory
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NOVEMBER 2005
UPDATE

NASA's Groundwater Cleanup

PUBLIC MEETING

Wednesday, November 16, 2005
7 p.m. - 9 p.m.
Altadena Community Center
730 E. Altadena Drive
Altadena

NOVIEMBRE DE 2005

NOVEDADES DE LA NASA
Actividades de Limpieza del Agua Subterránea

REUNIÓN PÚBLICA

Miércoles, 16 de noviembre de 2005