

MID-YEAR 2012 | JPL CLEANUP UPDATE

This update helps meet NASA's ongoing objective to keep the public informed about the progress of groundwater cleanup efforts at and in the vicinity of NASA's Jet Propulsion Laboratory (JPL). The cleanup is permanently removing chemicals from the groundwater and is allowing local communities access to millions of gallons of clean drinking water. The groundwater chemicals are volatile organic compounds (VOCs) and perchlorate. These chemicals originated from long-discontinued liquid and solid waste disposal practices during the 1940s and 1950s when wastes from JPL drains and sinks were disposed of in brick-lined seepage pits – a waste management practice that was common at the time.

Earlier this year, we completed and posted to our Website (<http://jplwater.nasa.gov>) a Five-Year Review that looked at whether the three groundwater treatment systems were effectively treating groundwater and whether they are protective of human health and the environment. Results of that review show that this interim cleanup strategy is effective.

This Update reports on our continued progress and reinforces our commitment to ongoing communication with the public and to meeting our cleanup goals.

NASA's Interim Three-Plant Treatment Strategy is Doing the Job

“Our interim three-plant treatment strategy is effective. We're making excellent progress toward restoring valuable water resources to the community and fulfilling our commitment to take responsibility for the cleanup.”

-- NASA Groundwater Cleanup Project Manager Steve Slaten

NASA has implemented an interim three-plant treatment strategy to remove groundwater chemicals from beneath JPL and from beneath areas adjacent to and east-southeast of JPL. Our Source Area Treatment System, located within the JPL facility, continues to clean up groundwater in the area with the highest chemical concentrations. The NASA-funded Monk Hill Treatment System (MHTS) plant, offsite from JPL, is roughly in the center of the affected area, located at the Windsor Reservoir site in Pasadena near four previously closed Pasadena Water & Power (PWP) drinking water wells.

A NASA-funded Lincoln Avenue Water Company (LAWC) treatment system near two LAWC drinking water wells and slightly more than a mile from the source area is removing chemicals in groundwater from the farthest reaches of the affected area.

According to NASA Groundwater Cleanup Project Manager Steve Slaten, “The scientific studies we conducted and the data that we continue to collect from quarterly groundwater samples taken from our area network of 82 NASA monitoring locations (see sidebar on reverse side) continue to confirm that our interim three-plant treatment strategy is effective.”



Source Area Treatment System

Since system startup, NASA's Source Area Treatment System has reduced chemical concentration levels by more than 90 percent according to groundwater monitoring well data.

Since our “2011 Year in Review” report was published (read this at <http://go.nasa.gov/NyBRKb>), an additional 39 pounds of perchlorate and one pound of VOCs were removed from the source area groundwater, bringing the total removed since system startup to 1690 pounds of perchlorate and 40 pounds of VOCs. Perchlorate at this treatment site is removed from the source area groundwater using a fluidized bed reactor system with naturally-occurring microorganisms that break down the chemical compound into harmless byproducts. VOCs in the source area groundwater are removed using a liquid-phase granular activated carbon (LGAC) system. With LGAC, also known as a carbon filter process, water passes through a tank containing carbon particles. VOCs in the water attach to the carbon. After enough VOCs attach to it, the carbon is removed and processed for disposal at a licensed facility off-site, and fresh carbon is placed in the system.

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Monk Hill Treatment System (MHTS)

The MHTS can treat groundwater at a rate as high as 7,000 gallons per minute (gpm). The system began operations in early 2011. Two of the four previously closed production wells have been rehabilitated, and treated clean water from those wells is being added to Pasadena's drinking water supply. As of this writing, rehabilitation work has begun on the remaining two production wells. Perchlorate is removed at the MHTS using an ion exchange technology that runs groundwater through tanks filled with resin beads. As it contacts the beads, perchlorate is exchanged with chloride, and the perchlorate adheres to the beads. After enough perchlorate attaches to the resin beads, they are disposed of at a licensed facility and fresh beads are placed in the tanks. Similar to the Source Area Treatment System, LGAC is used to remove VOCs in MHTS groundwater. Following the LGAC carbon filter process, the water is pumped into the Windsor Reservoir, where it is then available for the City to use. To date, 385 pounds of perchlorate and 28 pounds of VOCs have been removed by the MHTS.

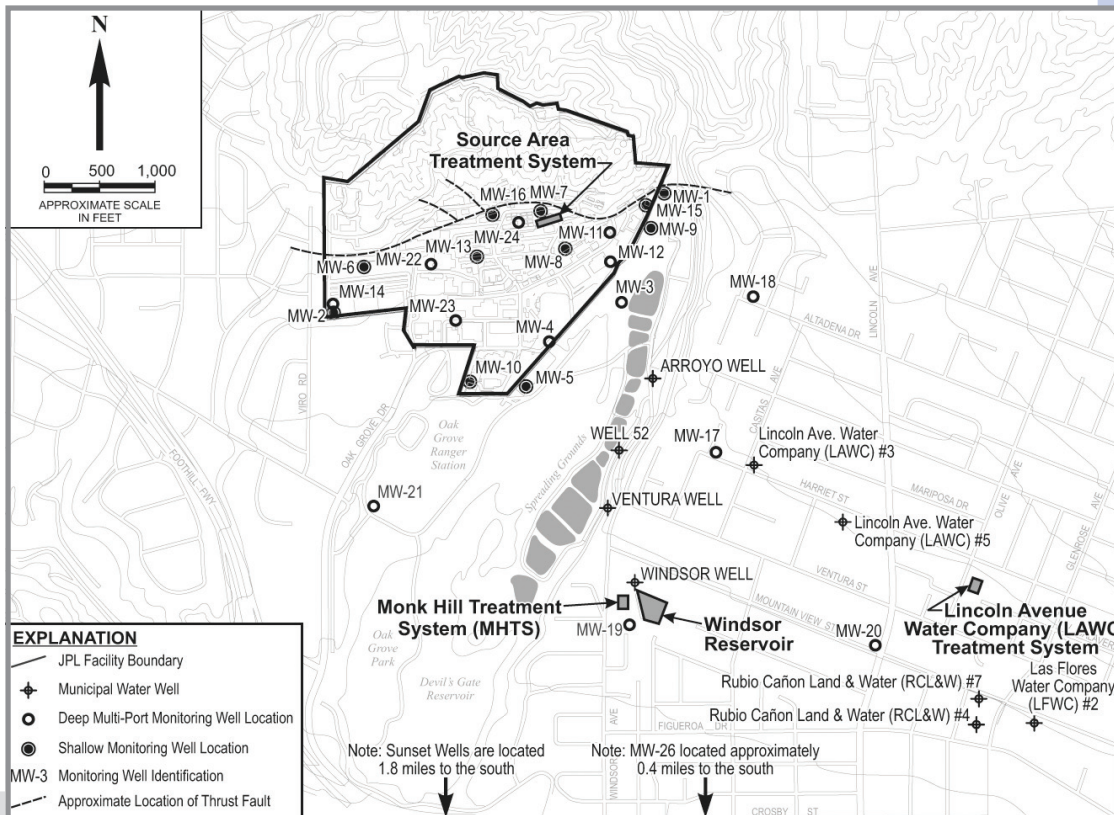


Lincoln Avenue Water Company (LAWC) Treatment System

The NASA-funded LAWC treatment system, which treats water pumped from two LAWC production wells at a rate of 2,000 gpm, continued removing chemicals from the leading edge of the affected area. Since our "2011 Year in Review" report was published an additional 94 pounds of perchlorate and 12 pounds of VOCs were removed from the groundwater, allowing LAWC to continue to provide clean drinking water to its customers. Using the same ion exchange and LGAC technologies as used by the MHTS, a total of 900 pounds of perchlorate and 190 pounds of VOCs has been removed from LAWC groundwater since system startup in 2004.



With its interim three-plant treatment strategy in place, NASA — known for reaching into the sky — is also reaching into the ground to clean up our environment.



Extensive NASA Network of Groundwater Monitoring Wells Tracks Chemicals

NASA has implemented an extensive network of monitoring wells that allows our scientists and engineers to see how the groundwater treatment systems are working and to provide information on the location and concentrations of unwanted chemicals in the deep groundwater. As shown on the accompanying map, monitoring wells have been drilled at the source area and along a mile-and-a-half southeasterly path following the underground aquifer. Twenty-six well sites, most with the ability to sample groundwater at different screening depths, provide NASA with a total of 82 monitoring locations.

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"NASA's continued monitoring has characterized the extent of chemicals; we know what originated from JPL," Cleanup Project Manager Steve Slaten points out. "Monitoring helps assure us that perchlorate and VOCs are being captured and removed from groundwater."