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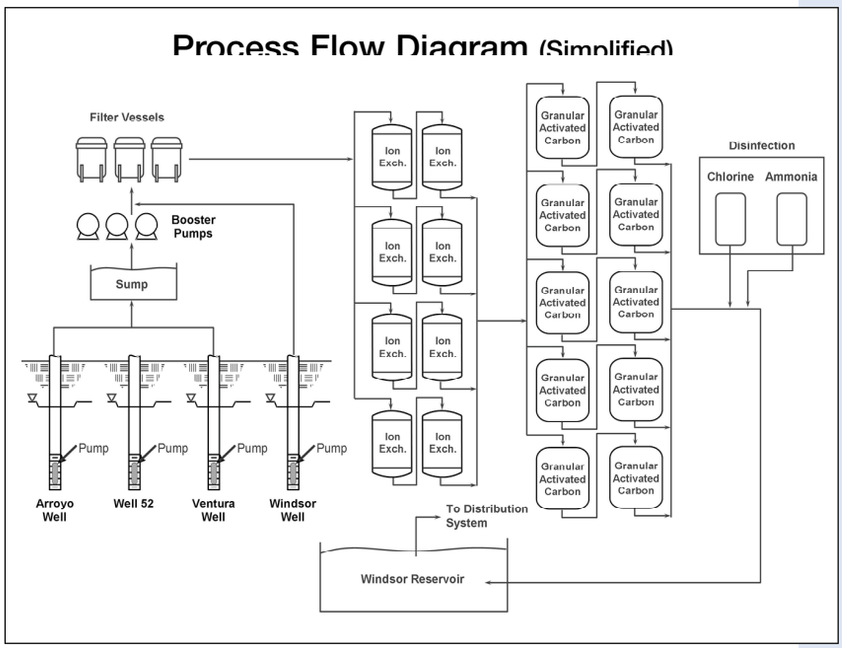
The Monk Hill Groundwater Treatment System

This fact sheet describes construction activities associated with a new groundwater treatment plant being built and funded by NASA in Pasadena, how community input has helped shape the facility's appearance and what measures are being taken to reduce possible disturbances during construction.

NASA and Pasadena Water and Power (PWP) are set to begin construction of a new groundwater treatment plant in Pasadena. This plant is part of an overall cleanup effort NASA is taking to remove chemicals from areas beneath and adjacent to the Jet Propulsion Laboratory (JPL). [See sidebar to the right.] NASA and the City of Pasadena considered the potential impacts from this project and identified mitigation measures that would be taken to protect public health and the environment. These measures along with those to reduce disturbances during construction and operation of the plant were folded into the project requirements. At the same time, NASA and PWP met with neighbors and community members to solicit public input for the facility's appearance and landscaping. Over the next year and a half, construction activities will be taking place at the City-owned Windsor Reservoir site and near four closed municipal water production wells. Once construction is complete, PWP will operate the plant. [See description of How Treatment Works.] Treating groundwater at this location will remove chemicals in groundwater and restore water quality in part of the aquifer underlying Altadena and Pasadena, thus enabling PWP to resume using four wells for supplying clean drinking water to customers.

How Treatment Works

Extracted groundwater first passes through a three vessel inlet water filter system to remove any sediment, then into the ion exchange tanks. The ion exchange system is made up of four pairs of steel tanks containing 12,000 to 16,000 pounds of tiny plastic beads called resin. As water flows through the tanks, perchlorate in the water attaches to the resin. Next, the Liquid-Phase Granular Activated Carbon (carbon filter) system, made up of five pairs of steel tanks containing about 40,000 pounds of charcoal-like carbon particles, removes Volatile Organic Compounds (VOCs). Routinely, the carbon particles and resin are changed out and are disposed of at licensed facilities. Finally, the clean water is disinfected, preventing the growth of bacteria in water for distribution. During operation of the treatment plant, the clean water is to be stored in the Windsor Reservoir before being distributed to PWP customers.



NASA received regulatory approval on the Monk Hill Treatment System's final design, construction, and operation and maintenance plan (OU3 Remedial Design/Remedial Action Workplan). Expected to come online in late 2010, this will be the third of three NASA-funded treatment plants operating as part of NASA's Comprehensive Environmental Restoration and Liability Act (CERCLA) Groundwater Cleanup Program at the Jet Propulsion Laboratory (JPL). The new Pasadena facility will be operating along with existing treatment plants at the source area located on site at JPL and at two wells at the Lincoln Avenue Water Company to remove groundwater chemicals from beneath and in areas adjacent to JPL.

CONTINUED ON REVERSE SIDE

Treatment Plant Construction

Construction of the new treatment plant is set to begin this Spring and will last roughly twelve months. Inside the fence, some of the first activity involves earthmoving – building access roads for maintenance vehicles and site grading on the property to lower the profile of the facility by three feet as viewed from the street. Activities also include constructing a water disinfection building, installing pipelines, making electrical improvements and building a concrete pad on which the treatment tanks will be placed. These tanks and other treatment plant structures will be painted a neutral tone to blend with the existing views. Landscaping, which began last November (also when "green-screen fencing" was installed), will continue outside the fence as curb-and-gutter and sidewalk work is completed. A new turn lane into the south gate will improve safety and appearances along Windsor Avenue. Watering the work area during earthmoving activities will be done to reduce dust. Typical construction equipment such as back hoes, excavators, bull-dozers and dump trucks will be operated during approved work hours in accordance with the City's noise ordinance. Cars owned by the work crew (typically 12 to 20 people), will be parked inside the fence.

Flowering shrubs planted last November are in bloom along Windsor Avenue.

Construction at the Wells

Construction at four City-owned production wells will run concurrently with construction of the treatment plant at Windsor Reservoir and will last three to four months. The wells (Arroyo, Ventura, Well 52 and Windsor Wells) have been closed due to the presence of perchlorate. Construction activities at the wells consist of installing pipes and new electrical components and pumps. New high-efficiency booster pumps will be installed near Ventura Well. These pumps are needed to push the extracted groundwater through the entire treatment system and on to the Windsor Reservoir.

Well Rehabilitation

Well rehabilitation will begin in the fall of 2009 after construction activities at each of the wells have been completed, and is expected to take nine to ten months. Rehabilitation includes well cleaning, relining when necessary, and water pump testing. These tests extract large volumes of groundwater that will be treated at the new plant and distributed to the Arroyo spreading basins. During work at the Ventura Well and Well 52, work crews (typically three to four people) will stage equipment either inside the fence when possible, or in a way that leaves at least four feet of unobstructed pavement for pedestrian, equestrian and bicycle access along Karl Johnson Parkway (the JPL access road along the east side of the spreading basins).

Start Up Testing

Start up testing will be conducted when rehabilitation has been completed at all four wells (anticipated in summer 2010). This testing will ensure that the entire system operates as it should and that the groundwater is cleaned to appropriate state and federal drinking water standards. Water flowing through the system during testing will be discharged to the Arroyo spreading basins, in compliance with Regional Water Quality Control Board surface water discharge requirements. PWP is required to obtain a permit from the State Department of Public Health prior to distributing the clean water to customers.

Four wells in Pasadena from which groundwater will be pumpled to the new Monk Hill Groundwater Treatment Plant.

ADDITIONAL INFORMATION

About NASA's Groundwater Cleanup Program at JPL is available at Information Repositories located in area libraries and on the JPL water cleanup Web site at http://jplwater.nasa.gov.

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