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## **“Jet-shot” well decommissioning project completed**

### **Webster wells closed**

In late July, Groundwater Remediation Project crews finished decommissioning 70 high-risk, excess wells using a specialized ‘jet shot’ technique.

“We’re tackling 325 of the highest-risk wells by the end of September 2006,” said Dick Wilde, Fluor Hanford vice president of Soil & Water Remediation/Groundwater. “These aren’t the easiest wells either. They are some of the most difficult wells that are on the list to be decommissioned.”

Fluor Hanford and its subcontractors are decommissioning hundreds of excess wells at Hanford, because they could become a ‘expressways’ to groundwater for contamination in the soil. Wells posing the highest risk have been selected for decommissioning first: those that are deep, go to groundwater, or are close to waste sites.

The wells Wilde is referring to are called Webster Wells. Most wells consist of a single casing, or pipe, that has been driven into the ground. During decommissioning, a mechanical ripper with steel fingers is used to perforate the length of the pipe. Grout is forced into the well casing and out through the holes in the pipe, ensuring a good seal to prevent the movement of contaminants down the casing.

The Webster Wells have multiple casings, usually three. They were named after the person who had them installed in the 1970s and 1980s. Usually, they were used when sampling was conducted at various depths between the surface and the groundwater, so casings of various lengths were installed, one inside the other.

The mechanical ripper can’t perforate all of the casings, so the ‘jet shot’ technique was selected. ‘Jet shot’ refers to the individual blasts created by explosives lowered in the wells in ‘strings’ 20 to 40-feet-long. Working like tiny jet blasts, the charges perforated the sides of all three casings and created holes sideways into the surrounding soil. On

the surface, the blasts sometimes sounded like a quiet hydraulic hiss. If the ‘jet shot’ was in the lower part of the well, near groundwater, crews sometimes felt a slight vibration.

After 80 vertical feet of casings were perforated, grout was forced down into that section of the well, called a ‘lift.’ Most of the wells were 300-400 feet deep, so more than one lift was needed to complete each well. After the last lift was completed for each well, a concrete cap was placed on the well, along with a brass stamp inscribed with the decommissioning date.

Over the course of the project – from January to August, approximately 15,000 feet of well casings were perforated and sealed with grout. All of the wells were in, or near waste sites in the 200 Areas.

Several precautions were taken to ensure the safety and security of work crews and people in the vicinity of the ‘jet shots.’ At all times, security officers escorted the crews transporting and using the explosives. The explosives were kept in a special safe and only one string was out of the safe immediately prior to use. Horns were sounded prior to blasting as a warning signal, and afterwards to signal an ‘all clear.’ Strings of explosives were reduced to 10 feet and five feet long on the section of the well nearest the surface.

A blowout-prevention valve was used on top of the wells. Radiological Control Technicians and Industrial Hygienists monitored the work areas as a precaution ensuring nearby workers remained protected.

“Decommissioning these wells is another significant step forward in reducing the threat to Hanford’s groundwater,” said Wilde. “The subcontractors and workers on this job proved that when extraordinary methods are required to complete work, extraordinary precautions can be taken to mitigate the hazards involved.”

**Geoff Tyree, Communications**

