

Environmental Restoration Project



ER Site No. 190: Steam Plant Tank Farm

ADS: 1302

Operable Unit: Technical Area I

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Site History

ER Site 190 is an active tank farm for the Steam Plant, located in the southwest portion of Technical Area (TA)-I on the northeast corner of the intersection of Hardin Boulevard and Wyoming Boulevard. The site is L-shaped, with a north-south leg measuring 180 ft by 460 ft that contains Tanks 1 through 4 (Tanks 1 and 4 are 250,000 gal each; Tanks 2 and 3 are 50,000 gal each). Tanks 1 through 4 have been emptied, and contain only residual fuel oil. The east-west leg is 220 ft by 210 ft and contains Tank 5 (500,000 gal). The fenced site's total area is approximately 3 acres. Tanks at the site are built on concrete pads and are surrounded by unpaved, native soil with berms of soil providing secondary containment.

A sixth tank, Tank 6 (1M gal), also serves the Steam Plant but is located outside the site boundaries on the south side of Hardin Boulevard. It is not considered to be part of the site. The Steam Plant (also known as Boiler Plant, Building 605) is located 1700 ft north of ER Site 190 at the northeast corner of Wyoming Boulevard and K Street.

The Steam Plant Tank Farm includes two pump houses. Pump House 1 is located south of Tank 4 and services Tanks 5 and 6. At one time it also serviced the truck and railroad tanker car off-loading station. Pump House 2 is located southwest of Tank 2 and, at one time, serviced Tanks 1 through 4.

The original Steam Plant Tank Farm, consisting of Tanks 1 to 4, Pump House 2, and associated pipe lines, was constructed in the 1940s and released to SNL/NM by Kirtland Air Force Base (KAFB) in 1950. Tanks 5 and 6 and Pump House 1 were constructed later. All tanks contained #2 diesel fuel oil (hereafter referred to as "fuel oil") to be used as a back-up supply system for the Steam Plant when the primary fuel supply (natural gas) is unavailable. The back-up supply system has never been needed and the fuel oil currently in the tanks (residual in Tanks 1 to 4) is the original product delivered.

One documented release of fuel oil has occurred at this location. On or around June 4, 1991, the main valve of Tank 5 was inadvertently left open during a fuel oil sampling event and more than 5,000 gal (exact volume unknown) slowly drained through the pipe line and into underground storage Tank 605-8, located at the Steam Plant. This and other underground storage tanks at the Steam Plant were supposed to be empty. On June 25, 1991, maintenance workers noticed the concrete vault above Tank 605-8 was filled and overflowing with fuel oil.

Facilities personnel called a tanker trucking company to remove the fuel oil from the tank and to haul it to Tank 5. After one 5,000-gal load was transferred to Tank 5, workers discovered fuel oil up-welling to the land surface at an area outside the berm northwest of Tank 5. The remaining fuel oil in Tank 605-8 at the Steam Plant was removed and transported off-site by the tanker trucking company.

A few days later, the area northwest of Tank 5 was excavated and a leaking pipe was discovered, which was then cut and capped. Sometime in early August, facilities personnel continued excavating the soil to determine the full extent of fuel oil contamination. The excavation pit was 50 ft by 35 ft by 15 ft.

During excavation, it became evident that the fuel oil release was much greater than anticipated. Although the full horizontal and vertical extent of contamination was not determined, the excavation was discontinued and the pit backfilled with the original fuel-oil contaminated soil. On August 27, 1991, the Steam Plant Tank Farm was listed as ER Site 190.

Other potential releases have occurred at Site 190. In 1989, the Tiger Team observed a potential release at Pump House 2. This pump house is approximately 10 ft by 6 ft and the floor is 7 ft bgs. Pump House 2 contained pumps that distributed the fuel oil to and from Pump House 1 and Tanks 1 through 4. At the time of the Tiger Team review, there was a 3 to 4 inch accumulation of fuel oil from leaking pumps standing on the floor of the pump house. The floor of the pump house has a French drain which is thought to be connected to a buried gravel retention pit.

During a site visit in August 1991, ER personnel noticed an additional potential source of contamination immediately adjacent to the Steam Plant Tank Farm. A KAFB vehicle washing station northeast of the Steam Plant Tank Farm was located so that surface water from truck washing operations ran through the tank farm.

Plans are currently underway to remove the 4 original tanks (Tanks 1 to 4) and associated piping. Because of the capacities of Tanks 5 and 6, Tanks 1 to 4 are no longer needed, and have had all but a residual amount of fuel oil removed. Activities that may impact the ER Site 190 include rerouting existing pipelines, abandoning existing lines in place, installing lines, and removing the tanks.

Additional site history information and compilation of data that has been collected at this site is provided in the TA-I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan that was submitted to the Environmental Protection Agency in February 1995.

Constituents of Concern

The potential contaminants of concern (COCs) identified for this site during its history include: Hydrocarbons, Volatile Organic Compounds (VOCs), and Semi-Volatile Organic Compounds (SVOCs).

Current Hazards

There are no current hazards at this site related to contamination of the surface soils. A remediation system is installed in the central part of the site (northeast of Tank 4) for the remediation of contaminated subsurface soils. These subsurface soils contain fuel oil (and component VOCs and SVOCs) with a composition similar to the product in the above ground storage tanks on site. The remediation system contains no structures or stored materials that could pose a potential hazard. Information on the hazards associated with the bulk storage facility (tanks, pump houses, and underground pipes) should be obtained from staff members at the Steam Plant (Building 605, 844-3842).

Current Status of Work

The TA-I RFI determined that #2 diesel-contaminated soils were present at the point of release in a 30-ft diameter area to a depth of less than 100 feet below ground surface. The concentration of Total Petroleum Hydrocarbons (TPH) was found to be as high as 52,100 ppm. There were very low levels (less than 0.3 mg/kg for each constituent) of the VOCs acetone, benzene, 2-butanone, ethylbenzene, toluene, and xylene, and there were low levels (less than 10 mg/kg for each constituent) of the SVOCs dibenzofuran, fluorene, and 2-methyl naphthalene. Based upon the nature of contamination and the physical location of the site, it was decided that the best remediation option was in-situ bioventing.

The bioventing Voluntary Corrective Measure (VCM) started in FY99. The bioventing system has been monitored since June 1999.

A respiration test was conducted in August 2001. This test indicated that we had minimal biodegradation ongoing at the site. Thus other alternatives were evaluated to advance this site to removal from the HSWA permit.

Because depth to groundwater is much greater than the extent of contamination, it is unlikely that diesel-related contamination has migrated through the vadose zone to the shallow water-bearing zone that is at a depth of approximately 275-ft bgs. The regional aquifer is approximately 540 feet bgs at this location. A risk assessment was completed that used available TPH results and chemical constituent concentrations that would be associated with Diesel #2 fuel oil at the known TPH concentration. The risk assessment indicated that SWMU 190 had a human health and ecorisk that was acceptable for the proposed industrial land use. Thus in September 2002, a No Further Action (NFA) proposal was submitted to the NMED for SWMU 190.

Future Work Planned

No future work is planned pending feedback from the NMED on the NFA proposal.

Waste Volume Estimated/Generated

A small amount of waste was generated as a result of sampling. Some nonhazardous waste was generated in FY99 from drilling the new boreholes for the bioventing project. This waste was left on site. Approximately 1/2 barrel of wastewater from operation of the bioventing system was also disposed of as waste.

Information for ER Site 190 was last updated Jan 21, 2003.