

Spring 2016



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# Oversight News

Newsletter of the Commonwealth's Environmental Oversight of the Paducah Gaseous Diffusion Plant (PGDP)

*Kentucky Department for Environmental Protection  
Division of Waste Management  
Hazardous Waste Branch  
Paducah Gaseous Diffusion Plant Section*

## C-612 Northwest Plume Treatment System Refurbishment Completed



The Department of Energy (DOE) has just finished a complete upgrade and modernization of the C-612 Northwest Plume treatment system and successfully brought it back on-line. The system, which treats trichloroethene (TCE) and technetium-99 (Tc-99) contamination in northwest plume groundwater, has been operating more than 20 years. This is longer than was envisioned when the system was designed and installed in 1995. Earlier in 2015, LATA Kentucky

replaced the computer operating system, which was so old they had trouble finding replacement parts for it. They redesigned the carbon treatment system to make it easier to replace the carbon. Under Fluor, the old PVC process piping was completely replaced. The resin system used to treat Tc-99 was changed to a skid-mounted unit



Above: C612 building. Right: New carbon treatment beds.

Below: New Tc-99 treatment system



located in a trailer on a pad beside the building for easier access and change out.

The TCE influent concentration averages 2200 ug/L and the effluent averages 2.26 ug/L. The influent Tc-99 concentration averages 300 pCi/L and the effluent averages 60 pCi/L. The system operates with an average removal efficiency of 99.9 percent for TCE and 79.9 percent for Tc-99. Over the last 20 years, the northwest plume treatment system has treated more than 2 billion gallons of contaminated groundwater and removed nearly 40,000 pounds of TCE.

## AIP Explained



**Water Sampling at PGDP Outfall 004**



**Water sampling in a tributary to Bayou Creek**

Under the Agreement in Principle (AIP) program, Kentucky Division of Waste Management (DWM) conducts independent environmental monitoring activities and oversees monitoring activities conducted by DOE. Additionally, the program serves to disseminate information relevant to ongoing site cleanup activities to concerned citizens and the public in general, using formats such as you are reading now and their Annual Reports.

One of the primary goals of the Agreement in Principle (AIP) is to monitor current site activities through sampling and observation to identify possible threats to human health and the environment. Another goal is to ensure that DOE's environmental data is accurate and that interpretations made from the data reflect the actual environmental conditions at the areas evaluated. To achieve these goals, AIP staff routinely observes DOE facilities and operations to identify any environmental issues or concerns. Any resulting environmentally significant conditions or practices are then brought to DOE's attention.

AIP staff also collect independent environmental (soil, surface water and groundwater) samples, split environmental samples with DOE, and work with various independent research organizations, such as the University of Kentucky, under a Memorandum of Agreement (MOA) for the AIP program. For some projects, these research organizations

also collect independent environmental samples. These samples are routinely sent to an independent laboratory under contract to the AIP program. AIP sampling includes the collection of groundwater samples at the request of nearby property owners from private residential wells as a means to inform the public of current groundwater conditions near the PGDP boundaries; split environmental samples obtained to independently validate DOE's sampling results; and historically have split Wildlife tissue samples collected from animals living near the PGDP to monitor the biota.

The primary AIP independent contract laboratory is TestAmerica Laboratories (TAL) located in Earth City, Missouri. TAL is an accredited, independent laboratory that meets or exceeds the requirements set forth by governing EPA standards. The Cabinet for Health and Family Services (CHFS) analyzes groundwater samples as well as airborne and surface water samples collected using continuous monitoring equipment for gross alpha and gross beta concentrations. If trigger levels for gross alpha and gross beta are exceeded, then CHFS will analyze the sample for isotopic radionuclides. AIP staff interpret and formally share their analytical results with the appropriate parties.



**Fish split sampling with the Corps of Engineers**

## SWMU 4 Test Pits Completed

Six test pits were dug at the Solid Waste Management Unit (SWMU) 4 burial ground in January, February and March 2016. The pits were located in each of the five burial cells which are identified by distinct geophysical features. The purpose of the test pits was to help gain a better understanding of what had been disposed in SWMU 4. The pits were approximately 10 feet long and dug to the bottom of visible waste or 20 feet, whichever came first, with the exception of one pit that was dug to 25 ft. As each pit was dug, the clay and soil cap was segregated from the waste material and gray sandy clay that surrounded it. The waste that was encountered included such items as compressor blades, crushed drums, pipe, non-intact drums, rebar, wire, brick, timbers, broken and intact bottles, and a fume hood.

At each pit the soil and water (if available) at the base of the excavation was sampled. In addition, samples of "interesting" materials were taken, as they were encountered in each hole. Eight of these samples were sent for analysis. The excavated contents of each test pit was placed back in the hole and covered with the cap material.

After a higher than anticipated radioactive piece of debris was encountered in one of the pits, work was halted until safety documentation was updated and reviewed. After about three weeks, this process was completed and work resumed.

The test pits were the final portion of a multi-year assessment of SWMU 4 that began in 2012. The five-phase iterative assessment included surface soil sampling, passive soil gas sampling, 20 foot borings and piezometers for water level measurement, 60 foot borings to assess the Upper Continental Recharge System (UCRS) groundwater, 105 foot borings to assess the Regional Gravel Aquifer (RGA), monitoring wells and the test pits. All this new information will be compiled into a remedial investigation addendum which should be issued late this summer.

### *Kentucky Department for Environmental Protection*

Paducah Gaseous Diffusion Plant Section  
200 Fair Oaks Lane, Frankfort, KY 40601

Phone: 502-564-6716 , ext. 4641

Web: [waste.ky.gov](http://waste.ky.gov)

**The mission of the Kentucky Division of Waste Management is to protect human health and the environment by minimizing adverse impacts on all citizens of the Commonwealth through the development of fair, equitable, and effective waste management programs.**



Printed on recycled paper with federal or state funds when printed.

## Kentucky Department for Environmental Protection

Kentucky Environmental Oversight News is published quarterly by the Kentucky Department for Environmental Protection's Division of Waste Management. It features information regarding environmental cleanup activities at the Paducah Gaseous Diffusion Plant site and related topics. Additional information is available from:

Brian Begley, Supervisor PGDP Section, Kentucky Division of Waste Management, 200 Fair Oaks Lane, Frankfort, KY 40601. 502-564-6716.



**Acknowledgment:** This material is based upon work supported by the Department of Energy under Award Number DE-EM0002382.

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