February 2000

Envision

a cleaner environment

Arnold Engineering Development Center Installation Restoration Update

LANDFILL FLARE — AEDC engineer, Mike Hathorn, discusses the final stages in construction of the new Coffee County Landfill flare facility with Thomas Wilson, an employee of the contracting firm from Ohio. The permanent flare became operational January 11.

Permanent flare installed at landfill

A permanent flare system became operational at the Coffee County Landfill on January 11 and is now burning off 250 standard cubic feet of landfill gas per minute. The flare connected to a gas collection system replaces a temporary flare operating since January 1999 on the landfill's north side near the Coffee County Central High School.

"The foundation for the permanent flare was started in November 1999 and installation of the equipment began in December," said Dennis Flatt, restoration program manager. A 10-foot concrete wall next to Highway 55 suppresses noise that might be heard by nearby residences.

The gas collection system was installed after joint air quality testing conducted in January 1999 by AEDC, the U.S. Environmental Protection Agency and the Tennessee Department of Environment and Conservation confirmed that landfill gas migrated from the landfill. The migration was in the direction of the high school and affected homes across Highway 55.

"This interim corrective measure program provides protection for the northern and western edges of the landfill," Flatt said. "The gas collection system captures landfill gas migrating from the landfill and supplies it to the flare system where it is burned."

A total of 23 gas recovery wells are in place on the north side of the landfill near the high school and 51 wells have been drilled on the north side of the landfill near the high school and 51 wells have been drilled on the landfill's west side next to Highway 55. "The wells continue to work

Continued on page 2

A publication for Coffee and Franklin county residents

Environmental Public Affairs

Arnold AFB, Tennessee

CAB to meet Feb. 15

The next Arnold AFB Community Advisory Board meeting is set for 4:30 p.m., Tuesday, Feb. 15 in Manchester at the Oak Restaurant, 947 Interstate Drive.

Members of the public are welcome to attend the CAB meetings and/or apply for membership on the board.

Flare installed ...

(Continued from Page 1)

as designed," Flatt said. "This means that the methane from the landfill is being captured, burned and prevents further lateral migration."

"To date AEDC has spend $ 2.3 million on the gas collection system and other measures to resolve the landfill gas problem at the landfill," said Clark Brandon, deputy chief of the environmental management division. "This does not include the $2.1 million for the clay cap," he added.

AEDC engineers and scientists working the Coffee County Landfill issue are Mike Hathorn, Barry Henderson and Ray Henshaw. They represent AEDC at activities underway at the landfill site.

The Coffee County Joint Landfill Commission operated the Coffee County Landfill from 1971 to 1989 under a lease agreement from the Air Force. The landfill was used for the disposal of hazardous and solid waste including construction debris and household garbage.

Construction of the clay cap for the landfill, a major AEDC installation restoration program project, was completed in November 1998. An interim groundwater extraction system became operational at the site in 1995.

"We are continuing our corrective measures study," said Pam King, installation restoration program manager. "We are looking at a final design for the groundwater capture system, potentially expanding the gas collection system, and methods of leachate control for the landfill."

King said in the meantime AEDC is in the process of completing the Resource Conservation and Recovery Act facility investigation for the Coffee County Landfill. A plan was approved in December 1999, that will add 16 additional monitor wells at the site. She said, "construction of these wells should start within six weeks."

Completed in December, a water line along Old Tullahoma Highway provides Manchester city water to 16 residences across from the landfill. "City water is being provided as a safety precaution as a result of the landfill gas problem," Flatt said.

Flatt also stated that four homes on Harper Lane would be provided with city water in the near future. He said the State of Tennessee has already approved the water line extension plan for that area.

GAS SAMPLE — Working together to sample landfill gas levels in a area near the Coffee County Landfill are representatives from AEDC, the EPA and the Tennessee Department of Environment and Conservation. Edwina Chilton, AEDC industrial hygienist, takes a gas sample from a gas probe next to the Old Tullahoma Highway as AEDC engineer, Barry Henderson; Hugh Vick, an EPA contractor; and Doyle Brittain, EPA remedial project manager for Arnold AFB, monitor the test sample.

NEW LANDFILL FLARE — AEDC engineer, Mike Hathorn, checks out the new Coffee County Landfill flare facility just before it became operational on January 11. The new flare system replaces a temporary flare that operated at the landfill since January 1999.

Spring Creek water line near completion

Work is being completed on the water line extension in the Spring Creek Road area that will provide Estill Springs water to residents in that neighborhood.

The five-mile waterline cost $250,000 and is being completed because contamination was discovered in late 1998 in several drinking wells in that area just south of Arnold AFB.

According to Matt Cesarz, project manager, the loop north along Spring Creek Road, to UT Farm Road and down Forrest Lake Road, is completed. "The tie in with the southern end of Spring Creek Road and Reservoir Road should be finished in early February," he added.

The line includes 8,300 linear feet of eight-inch pipe on the north end of Spring Creek Road and the rest is 17,000 linear feet of six-inch pipe. "Connections to individual residence taps should take place sometime in March," Cesarz said.

"With the cooperation from both the Environmental Protection Agency and the Tennessee Department of Environment and Conservation, AEDC sampled private water wells in the Spring Creek area in late 1998," said Clark Brandon, deputy chief of the environmental management division. "At that time, several wells wee found to have traces of contaminants that could have come from an old industrial waste disposal area located in the Camp Forrest area."

"Although the contamination in the Spring Creek area is below the level in which it would endanger public health, we felt responsible for providing public water to the residents," Brandon added.

Plans call for the Air Force to provide Estill Springs water to 20 residences on Spring Creek Road, Reservoir Road and Buckeye Lane. "Residents who live on UT Farm Road and Forrest Lake Road who want to connect to the waterline should contact the Estill Springs Water Department," Cesarz said.

The site that is causing the contamination problem is an old water treatment plant that served Camp Forrest activities during World War II and then was used as a major disposal site for AEDC wastes from 1953 until 1980. The five-acre site has been filled and graded over.

In October 1996, groundwater extraction wells were installed at the site to control and treat (by air stripping and liquid phase carbon desorption) contaminant movement from the site to surrounding areas.

Where to get more environmental information

Published data and documents relating to the AEDC restoration program are available for public review at the information repository at the Coffee County Lannom Memorial Library, 312 North Collins Street in Tullahoma.

Additional information about the repository or the restoration program can be obtained by calling the Environmental Public Affairs Office at 454-4353 or the AEDC Public Affairs Office at 454-4202.

News on web site

Using your home computer and the world wide web, the AEDC external home page can be reached at: www.arnold.af.mil.

The latest environmental news is available including copies of the ENVISION newsletter.

WATER SAMPLING -- At the Nov. 18 , 1999 Community Advisory Board meeting, Steve Arnold, AEDC hydrogeologist, points out where water samples were taken near Brumalow Creek. Assisting Arnold are Maj. David Bell, AEDC judge advocate, and Charles King, CAB co-chairman.

Training raises awareness, reduces waste at AEDC

Remember sitting through that environmental training class? Guess what? You learned something.

According to Jennifer Dougherty, AEDC environmental engineer, an assessment was conducted of the AEDC training and awareness program, and the results showed a positive, measurable effect on waste reduction and disposal.

"Waste generation has decreased," she said. "In fiscal year 1995, 426,331 kilograms of waste was disposed through the Defense Reutilization and Marketing Organization. In fiscal year 1998, that number dropped to 291,555 kilograms."

Mike Hunter, AEDC hazardous waste manager, credits the training and awareness program with much of this reduction.

"Many factors have contributed to the reduction of waste generated at AEDC," he said. "But, I feel the single largest factor is increased awareness of environmental issues."

Dougherty said AEDC has a staff of trained environmental specialists responsible for making sure the center is compliant with state and federal regulations, but they can't do all the work themselves. To assist them in their job, the training and awareness program was established for all Team AEDC members.

"To protect the environment and to maintain compliance with regulations, you can employ a staff of environmental personnel, but if you don't have an educated work force, it won't matter," she said. "It is the day-to-day things that happen out in the work areas that have an impact on the environment."

ENVIRONMENTAL CLASS --Training plays a major role in reducing waste at AEDC. The environmental training and awareness program was established for all Team AEDC members.

Training programs are both formal and informal, and include awareness efforts. Some of the courses are site-specific and include storm water pollution prevention, spill awareness and non-hazardous chemical spill response, hazardous waste management, hazard communication, solid waste minimization, affirmative procurement and a site specific contingency plan.

"These courses are generally offered to individuals who are expected to have an effect on specific topics based on their job tasks," she said. "The training is available to anyone who requests it. However, new hires, no matter where they work, receive a combination of general environmental awareness training and hazard communication."

Team AEDC members also attend outside conferences and classes. But that isn't all. AEDC celebrates Earth Day with educational and awareness activities and presents and conducts an Environmental Recognition Program.

Dougherty said surveys and base inspections allow environmental workers to identify areas that need improvement and make suggestions. .

Other measurable successes can be seen in the recycling program. In calendar year 1994, AEDC recycled 85.6 tons of paper and 81.9 tons of cardboard. By 1998, these numbers jumped to 119.5 tons and 158.3 tons respectively.

"Since 1994, we have increased the number of different items and materials recycled, adding mixed paper, newsprint, glass, plastic, wood waste, toner cartridges, CD's, and transparencies to the program," she said. "We are even composting our food waste now. Granted, AEDC has a base-wide recycling program, but the program is only as effective as team members' participation and that requires a well-educated work force."

"The drums must be labeled and turned in within three days of being filled, or AEDC could receive a fine," Dougherty said. "Unlabeled containers are not as common as they once were. By improving labeling systems, we have cut costs in this area."

Tree harvest pays for forest management program

Management of the base pine forest is an essential part of our ecosystem and AEDC's commitment to conservation of wildlife, natural and cultural resources. Arnold AFB has over 5,900 acres of pine forest and 23,000 acres of hardwood forest.

According to Mark Moran, natural resources manager for AEDC's environmental management division, 4,300 acres of mixed pine, mainly loblolly, short leaf, Virginia and white pine, were planted between 1950 and 1960 as part of the base's sound attenuation program. "This was to provide somewhat of a buffer between AEDC and the surrounding communities," he said.

An additional 1,400 acres were planted between 1960 and 1970 and during this time a pine harvesting program was initiated. Over the next 15 years, the harvesting program consisted of thinning the existing pine stands.

Final harvests or clear cutting of pine stands started in 1982. "A pine reforestation program that started in 1983 replants pine on sites where the final harvests were completed," Moran said. "We now plant loblolly pine exclusively for the reforestation program as it has proven to grow better and faster than other pine species over the full range of site classes."

The pine forest is an important economic part of the natural resources management program. The revenues generated by the sale of forest products are used to offset the costs of the overall AEDC forest management program. A forester, Jeff Piatt, and Phillip Cyree, a forest technician, are assigned to the forest management program.

TREE HARVEST -- Forestry workers cut some of the 200 acres of pine harvested each year at AEDC.

"We harvest around 200 acres of pine each year," Moran stated. "Our forest management budget is $285,000 per year and in 2000 alone, we have collected $300,000 from the pine forest harvest." He estimated that the harvest in 2000 could bring in close to $400,000.

He said the average age of trees at first harvest is 40 years and is 18-24 inches in diameter. After the harvest, the area is left for 12-18 months before site preparation and replanting takes place.

The harvests are scattered over the entire acreage each year so that a well-balanced distribution of age classes can be maintained over the landscape. The average size of the pine stands is 11 acres with sizes ranging from two to 80 acres. Clear cutting large acreage's of multiple stands in single locations is avoided.

He said that along with the 5,900 acres of pine, AEDC also has 23,000 acres of mixed hardwood trees mainly oak, hickory and some poplar and maple. The overall forest provides essential habitat for a diversity of species.

"Of the thousands of species that call AEDC home, 72 are listed by the federal and state governments as endangered or in need for management," he said.

REPLANTING TREES -- AEDC forestry worker, Floyd Gibbes, uses a tree planter to plant some of the 150,000 new trees each year at AEDC. The new trees replace those cut during the annual tree harvest.

Backyard composting produces a useful product

With the coming spring in a few months, it's time to think composting. A backyard compost site can convert your yard trimmings such as grass into a product that can be used for mulching, fertilizing, or conditioning soil.

"Composting is a feasible and cheap way to dispose of yard wastes and produces a useful end product," said Kristy Sells, AEDC pollution prevention specialist. "By having your own backyard compost, you can save money on mulch and fertilizer."

She said to start your own compost site, choose a spot about three-foot square in your yard preferably out of direct sunlight. You can build a composting bin out of chicken wire, scrap wood or cinder blocks, although this is not necessary.

The three most important ingredients in an compost pile are moisture, oxygen and temperature. An ideal diet for the microorganisms that do all the work in a compost pile is a carbon source (dry brown stuff such as dry leaves, dead weeds and newspapers or shredded cardboard) and a nitrogen source (wet green stuff such as grass clippings and plants).

Coarse brush should be placed at the bottom of the pile to allow air to circulate. The compost pile is constructed by adding successive layers of organic material—a mixture of "dry brown stuff" and "wet green stuff." Water should be sprinkled on the pile after each layer of material is added so that the pile maintains the consistency of a squeezed-out sponge, but is not soggy.

Sells said that most organic materials are acceptable for use as compost, including grass clippings, leaves, paper (including shredded newspaper), coffee grounds, sawdust, wool and cotton rags, and manure from animals such as cows, horses and chickens. Woody yard waste can be composted, but should be clipped and sawed into small pieces. She said that many foods can be composted as well, but meats, grease and dairy products should be omitted because they cause odor problems and attract pests.

Non-organic material (styrofoam and metal), plastic, and charcoal or coal ashes are not suitable for composting. Other materials that should not be composted include diseased plants, vegetation treated with pesticides, food waste that may attract pests, and pet wastes.

"The compost pile must be regularly aerated by turning it with a pitchfork and mixing the old layers with the new layers," Sells said.

Sells said "the compost is ready to use when it is dark brown or black and crumbly with a sweet aroma."

Recipes for a healthy environment

Have you ever though about how many chemicals you use every day? Disinfectants, cleaners, and air fresheners all contain chemicals that are potentially damaging to your health and the environment.

You can make a number of simple substitutions using natural ingredients that work equally well or, in some cases, better. When you're cleaning up a mess, try some of the following.

Furniture polish

Use olive oil, lemon oil, beeswax, or a mixture of beeswax and olive oil. A combination of 2 teaspoons lemon oil and 1-pint mineral, vegetable, or olive oil in a spray bottle also works.

Glass cleaner

Mix 3 tablespoons ammonia, 1 tablespoon white vinegar, and 3/4 cup water and put in a spray bottle.

Oven cleaner

Oven cleaners usually contain lye, which is extremely toxic. A good alternative to commercial oven cleaners is a paste of water and baking soda which is applied on the spots that need cleaning and then scrubbed with steel wool. (Be careful not to get any of the mixture on the elements). You can also sprinkle salt on spills while they are warm and then scrub.

Drain cleaner

Prevent drain clogs by covering drains with screens to keep out grease, hair, and food scraps. If blockage does occur, pour 1 cup each baking soda, salt, and white vinegar down the drain. Wait 15 minutes and then flush with boiling water.

Toilet bowl cleaner

Pour 1/2-cup chlorine bleach in the bowl. Let stand for 30 minutes and scrub clean. Or scrub with a solution of 1/2-cup borax in 1-gallon water.

Disinfectant/germicide

Soapy water works well in place of a disinfectant.

Floor and rug cleaner

Ceramic tile can be cleaned effectively using a solution of 1/4 cup baking soda, 1/2 cup white vinegar, 1 cup ammonia, and 1 gallon warm water. This solution also works well as a general cleaner.

You can make floor polish for linoleum and vinyl by mixing 1 part thick boiled starch with 1 part soapsuds. Rub this mixture on the floor and then polish dry with a clean, soft, dry cloth. Pouring on club soda, scrubbing, soaking for a few minutes, and then wiping clean may safely strip commercial floor wax.

Status report on IRP sites

The status of all installation restoration programs as of Jan. 31, 2000. Eighteen sites have been closed and no further action is planned.

Site 1, Landfill 2 and leaching pit 2: Construction of a $1.56 million modified clay cap with a geosynthetic clay liner was completed in November 1997. Groundwater treatment facility treats approximately 1,700,000 gallons of water per month. Private water wells were sampled west of airfield as a precautionary measure.

Site 2, Retention reservoir and J-4 draining area: No further action on the retention reservoir and recommended no further action for the J-4 drain area.

Site 3, Landfill 4: Construction of a $2.1 million cap started in March 1997 completed in November 1998. Groundwater treatment facility treats about 17,000 gallons of water per day. Permanent gas ventilation system installed in January 2000. Private wells in area being sampled.

Site 4, Surface drainage, Bradley Creek: This site is recommended for no further action having completed the RCRA facility assessment and confirmatory sampling.

Site 5, Surface drainage, Rowland Creek: No further action based upon the RCRA facility assessment.

Site 6, Camp Forrest water treatment plant: Corrective measure study underway included sampling of private water wells in Spring Creek area. Interim corrective measure in the form of a groundwater treatment facility that treats about 400,000 gallons of water per month. A waterline from Estill Springs will be completed this month for residents in this area.

Site 7, Main test area: Corrective measure study underway. Interim corrective measure in the form of a groundwater treatment facility in operation.

Site 8, Leaching pit no. 1: Corrective measure study underway. Groundwater treatment facility and solvent/water separator brought on-line in May. Interim corrective measure in the form of a groundwater treatment facility in operation. Previous interim measures include low temperature thermal desorption soil treatments.

Site 9, Surface drainage-Brumalow Creek: Additional effort will include long-term monitoring. This site is recommended for no further action.

Site 10, Fire Protection Training Area 2, Landfill 1, Burn area 2: No further action on all three areas with long term monitoring.

Site 11, Chemical treatment pond: No further action. This former site is not part of the retention reservoir flow through treatment process.

. **Site 12, Retention leach/burn area:** An interim corrective measure to biologically treat soils and RCRA facility investigation is complete. The site is proposed for no further action with long-term monitoring.

Site 13, Fire Protection Training Area: Proposed for no further action.

Site 14, Surface drainage-Crumpton Creek: Proposed for additional sampling and long-term monitoring.

Site 15, High energy fuel burn/burial area: No further action based upon completed confirmatory sampling results.

Site 16, Beryllium leaching area: No further action based upon completed confirmatory sampling results.

Site 17, Burn area no. 2: No further action based upon completed confirmatory sampling resutls.

Site 18, Building 1421 area: This site is proposed for no further action based upon confirmatory sampling results.

Site 19, Camp Forrest area: Thirty six monitor wells installed at nine former Camp Forrest gasoline stations/motor pools. A work plan for Camp Forrest is being developed.

Site 20, Steam plant ash pits: No further action based upon source removal and sampling results.

Site 21, Three hazardous waste storage buildings and one non-hazardous waste storage building: No further action on all four buildings. These were previously permitted storage units that underwent RCRA closure.

Site 22, Entire RCRA corrective action program: Some areas required more study and some areas are no further action. A corrective measurement action focused on groundwater is underway

Site 23, Salvage yard: No further action.