Chisman Creek Case Study

Office of Emergency and Remedial Response (5201G)

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**Chisman Creek,
York County, Virginia**

BEFORE
Soil, groundwater, and surface water contaminated by disposal of fly ash

AFTER
Chisman Creek and Wolf Trap Parks, softball and soccer fields, and a memorial tree grove

IMPACT
Improved landscape, recreational activities, protection of the ecosystem, increased income and residential property value

The York County softball league supports 42 teams during spring and summer.

The field lights illuminate the evening. The bases are loaded. Fans cheer the batter. Sitting in the bleachers, you would never know that the field was once part of the Chisman Creek Superfund site. Today, the "keep out" signs are gone and the former fly ash disposal area supports two recreational parks with softball and soccer fields. Now, the familiar shouts and cheers of the games sound sweeter than usual because of the cleanup and redevelopment of the site. What follows is the story of how the partnerships formed by EPA made the site's transformation possible, and the economic impacts and environmental and social benefits that resulted.

Site Snapshot

Between 1957 and 1974, a local contractor deposited more than 500,000 tons of fly ash from Virginia Power's Yorktown Power Station in abandoned sand and gravel pits on the Chisman Creek property. Fly ash is a soot-like by-product that results from burning fossil fuels, such as coal and petroleum coke. In 1980, complaints from local citizens about discolored well water prompted state agencies to investigate the area. Results of the sampling showed heavy metal contamination in Chisman Creek, in the groundwater under the disposal areas, and in various on-site ponds. The metals included nickel, vanadium, arsenic, beryllium, chromium, copper, molybdenum, and selenium.

The Chisman Creek site is 15 miles north of Norfolk, Virginia, and consists of three parcels of land covering 27 acres. Over 1,200 households are within two miles of the site. Chisman Creek, a tributary of the Chesapeake Bay, is a 4,200-acre coastal watershed that starts as a small stream and ends as a broad tidal estuary. The estuary, on-site ponds, and land were used by local residents for recreational purposes.

Before

Source: Virginia Power

Before cleanup, "Keep Out" signs were posted to warn of site's potential hazards.

PROBLEM

- Contamination of soil, ground- and surface water from the disposal of over 500,000 tons of fly ash in abandoned sand and gravel pits

SOLUTION

- Constructed a clay cap over contamination
- Collected and treated groundwater
- Provided alternate water

PARTNERS

From Fly Ash...

In 1983, EPA added the site to its list of hazardous waste sites needing cleanup. Working with the local community, state agencies, and Virginia Power, EPA developed a two-part cleanup strategy. In 1986, Virginia Power began the first part of the cleanup which targeted the fly ash pits and contaminated groundwater. It extended public water lines to 55 homes with contaminated well water; covered the fly ash pits with clay, clean soil, and vegetation; and installed a groundwater treatment system at the oldest and deepest pit to collect and treat water trickling through the cap. To prevent use of the groundwater, Virginia Power filed deed restrictions with the county.

The second part of the cleanup plan targeted the three on-site ponds, a freshwater tributary stream, and the Chisman Creek estuary. Virginia Power relocated a 600-foot portion of the tributary to lessen the possibility of contact with the fly ash disposal areas and protect the

- U.S. EPA
- Commonwealth of Virginia
- York County
- Local community

aquatic ecosystem. Finally, it established a program to monitor ground- and surface water quality for the ponds, the tributary, and the estuary.

To Fly Balls...

In 1986, a 12-member Stewardship Committee comprising local residents and business representatives, a geology professor from the nearby College of William and Mary, a NASA scientist, and environmental professionals was formed to oversee cleanup and redevelopment of the site. Local residents were eager for the cleanup, but wanted to continue to use the area for recreation. A sports park was the perfect solution. As part of the cleanup, Virginia Power built a site cap that would also serve as the foundation for playing fields, and leveled and graded the site, so York County could build park structures and sod the fields. York County also purchased a lighting system that was installed by Virginia Power during the final stages of the cleanup.

The Chisman Creek sports park opened on May 4, 1991, with about 300 local residents, media, Virginia Power officials, and EPA, state, and county personnel on hand to enjoy the festivities. The 13-acre park has two lighted softball fields, restrooms, and a parking lot. The second park-the 28-acre Wolf Trap Park-features four soccer fields, restrooms, a parking lot, two ponds, and the County's Memorial Tree Grove.

After

Source: Virginia Power

During soccer season, Wolf Trap Park's soccer fields are used by about 800 people a week.

POSITIVE ECONOMIC IMPACTS

Short-term

- 90 jobs per year supported during four years of cleanup and redevelopment with an estimated total annual income of $2 million Property Value
- Roughly $560,000 potential increase in residential property values within two miles of the site

ENVIRONMENTAL BENEFITS

- Elimination of health threats from exposure to heavy metals in soil and groundwater
- Protection of the Chisman Creek ecosystem

SOCIAL BENEFITS

- Addition of two parks to the York County recreational system
- Support of a 42-team softball league and county soccer program
- Creation of the County Memorial Tree Grove to commemorate deceased York County residents

Keys to Success

A spirit of cooperation and several partnerships were the key to the cleanup and redevelopment of the Chisman Creek site. EPA coordinated with state and federal agencies to complete sampling, and health and ecological assessments at the site. The Stewardship Committee created a powerful forum for interested people and organizations to provide input on cleanup and redevelopment decisions and hear about progress. EPA, York County, and Virginia Power together coordinated the cleanup and redevelopment. This partnership's efforts earned an Environmental Achievement Award from the National Environmental Awards Council. The Consulting Engineers Council of Pennsylvania also recognized the engineering firm that designed the drainage system, clay cap, and recreational facilities with the council's "Grand Conceptor" award.

Want to Know More?

The Chisman Creek Technical Appendix provides detailed information on the economic impacts associated with this site, including the specific calculations used, sources of information, and possible limitations of the calculations. To obtain copies of the Technical Appendix for this fact sheet, or to learn more about the economic analyses performed for this site or other Superfund sites, please write to reuse.info@epa.gov or contact:

Melissa Friedland
Office of Superfund Remediation Technology Innovation
U.S. Environmental Protection Agency
(703) 603-8864

For more information about the cleanup and redevelopment of the Chisman Creek site, contact:

Andrew C. Palestini, Remedial Project Manager
U.S. Environmental Protection Agency (3HS43)
1650 Arch Street Philadelphia, PA 19103-2029
(215) 814-3233
palestini.andrew@epa.gov

To learn more about the redevelopment or reuse of Superfund sites, write to reuse.info@epa.gov, or call the Superfund Hotline at (800) 424-9346 or (703) 412-9810 (Washington, DC area).