

EPA Proposes Water And Soil Cleanup Plan

Lammers Barrel Site (Operable Unit 1)

Beavercreek, Ohio

July 2011

Your opinion wanted

EPA invites your comments on the proposed cleanup plan for the Lammers Barrel OU1 site. Your input is important because EPA may modify or select another cleanup option based on public comments. There are several ways your voice can be heard during the public comment period that runs from July 1 to August 5, 2011.

- Fill out and return the enclosed comment form by the deadline.
- E-mail comments to EPA Project Manager Timothy J. Fischer at fischer.timothy@epa.gov or fax at 312-692-2512.
- Submit comments online at www.epa.gov/region5/cleanup/lammers/pubcomment.html
- Attend the public meeting on Thursday, July 14, 6-8 p.m., at the Beavercreek Council Chambers (1368 Research Park Drive, Beavercreek, OH) and submit a written or oral statement.

For more information

The administrative record containing official documents can be viewed at:

Beavercreek Community Library
3618 Dayton-Xenia Road
Beavercreek, Ohio

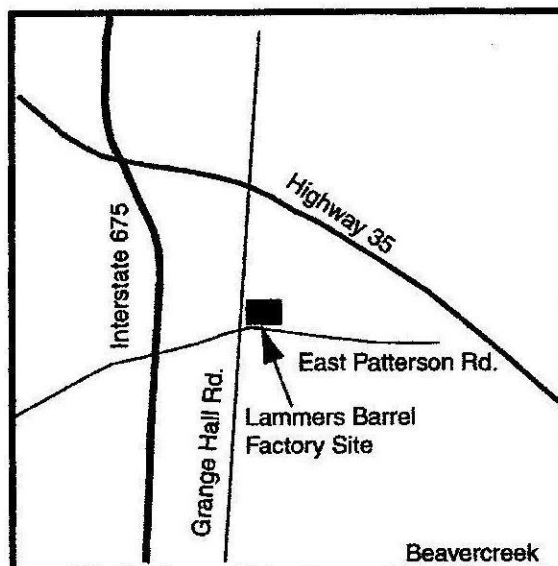
EPA Region 5 Records Center
77 W. Jackson Blvd.
Chicago, call 312-353-1063, 9 a.m. – 5 p.m., weekdays, for an appointment.

Website:
epa.gov/region5/cleanup/lammers/

The U.S. Environmental Protection Agency (EPA) is proposing special biological treatments as a way to clean up contaminated underground water supplies and soil at the Lammers Barrel site in Beavercreek, Ohio. The proposed cleanup plan also calls for restricting residential development at the site. This fact sheet contains a summary of the “remedial investigation/feasibility study” done for Lammers Barrel and describes EPA’s proposed cleanup plan for the site. The remedial investigation studies the nature and extent of the contamination at a site while the feasibility study outlines several proposed cleanup options. EPA often divides complex cleanup sites into smaller sections called “operable units” or OUs. This site has two OUs. OU1 includes contaminated soil and underground water supplies on the actual property. OU2 encompasses contaminated underground water east of the site.

EPA, in consultation with Ohio EPA, will select a final cleanup plan after the agencies review comments received from the public at a hearing and during the public comment period (*see left-hand box for ways you can participate in the decision-making process*). EPA is issuing the proposed cleanup plan as part of its public participation responsibilities under federal law.¹ EPA may modify the proposed cleanup plan or select another option based on new information or public comments so your opinion is important.

EPA’s proposed cleanup plan was picked from six options developed in the feasibility study. The \$3.4 million preferred cleanup alternative was selected because of a good balance between cost and effectiveness in protecting human



The Lammers Barrel site has been idle since a 1969 fire destroyed the factory building. Future uses for the location after a proposed EPA cleanup have not been determined but will be limited to industrial/commercial or recreational purposes.

¹Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA known as the Superfund law) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan require public notice about this proposed cleanup plan through a meeting, comment period and newspaper announcement. This fact sheet summarizes information contained in documents that can be reviewed at the Beavercreek Community Library and EPA Region 5 offices in Chicago.

health and the environment. All of the options are discussed beginning on page 3 of this fact sheet and in much greater detail in the technical documents on file at the Beavercreek Library and on the website.

About the Lammers Barrel site

The Lammers Barrel location occupies 2.5 acres at the northeast corner of Grange Hall and East Patterson roads in Beavercreek, Greene County, Ohio. The site is in a mixed commercial, industrial and residential area. The property is bordered on the north by an abandoned railroad right-of-way and several industrial facilities, on the west by Grange Hall Road, on the south by East Patterson Road and to the east by a parking lot. The nearest residences are 400 feet to the east and southeast. Little Beaver Creek flows from west to east across the site.

Several industrial operations have occupied the site over the years including a railway maintenance facility, a paint manufacturer and an oil company. After a fire at the site in September 1969, a local resident bought the parcel. To date, EPA has identified 41 parties responsible for the pollution on the site. That group of responsible parties agreed to pay for the remedial investigation/feasibility study.

Cleanup contacts

If you have questions about the comment period or public meeting or want to learn more about the Lammers Barrel site you can contact these team members:

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Call EPA toll-free, 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays.

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Extent of contamination

A class of hazardous chemicals called volatile organic compounds or VOCs was released by the industrial activities on the site. VOCs dissolve in water and evaporate easily. The VOCs that are causing concern at the Lammers Barrel site include trichloroethylene or TCE, vinyl chloride or VC, and 1,2 dichloroethene or DCE. Another mixture of chemicals found in petroleum products also polluted the area. This mixture called "BTEX" includes benzene, toluene, ethylbenzene and xylene. The VOCs and BTEX soaked into the ground and contaminated the soil as well as underground water supplies. The underground water formed a contaminated "plume" or mass of ground water, which is moving due east from the site at a rate of 300 feet a year.

The polluted soil and ground water on the Lammers Barrel property were designated as OU1. The contaminated plume east of the site is called OU2 and will be treated at a later date with its own feasibility study and proposed cleanup plan.

Beaver Creek is not affected by the plume, but the drinking water wells of 13 residences along East Patterson Road were tainted by the VOCs. These residences were connected to a municipal water supply in 1986 and 2000.

Risks to people and the environment

EPA conducted what is called a human health risk assessment, which estimates the likelihood of cancer and non-cancer health problems occurring if no cleanup action were taken at the site. The health assessment looked at several possible situations where children and adults could be exposed to contaminated soil or ground water on the site, were there not access restrictions in place. These exposure possibilities included children playing on the site, construction and commercial employees working on the site, someone trespassing on the property and people drinking the ground water (well water) from the site. The health assessment also examined risks from living on the site even though home construction will not be allowed until the underground water is cleaned up.

The study shows that, at present, the site poses an unacceptable risk from cancer and other health effects to those swallowing soil at the site, for example, through children's play. EPA estimates that one child in 10,000 and 3 adults in 100,000 would be expected to get cancer if they were to ingest contaminated soil on the site over a 70-year lifetime. Although the site is vacant and fenced to prevent this kind of exposure, for children playing on the site, two out of 100,000 would be expected to contract cancer if they were exposed to the pollutants over a 70-



The Lammers Barrel site occupies a 2.5-acre vacant lot in a predominantly industrial area of Beavercreek.

year lifetime. For on-site commercial/industrial workers, four out of 100,000 could get cancer if there were no cleanup. EPA believes the Agency's preferred cleanup alternative or one of the other options is necessary to protect human health from this possible exposure.

In addition, the study revealed that risk posed to people by drinking ground water at the site is unacceptably high. For construction workers, if no cleanup is undertaken, one out of 250,000 could develop cancer. The study also showed other health effects if people were to drink contaminated water at levels found there. Again, these risk assessments are hypothetical since at present, access restrictions prevent people from coming onto the site and drinking well water.

A similar study was conducted to evaluate the risk to wildlife at the site. The study indicated that levels of contamination in the creek are low and not likely to harm wildlife.

Cleanup goals

"Remedial Action Objectives" or RAOs are cleanup goals for the site designed to protect human health and the environment. The following RAOs were identified for OU1 based on risks and hazards presented in the health risk assessment:

- Prevent potential exposure of young children to contaminated soil
- Prevent exposure of on-site commercial/industrial workers to polluted soil

- Prevent human exposure to unsafe ground water
- Minimize the movement of soil contaminants to the underground water supplies
- Minimize further movement of the ground water plume
- Restore the ground water to drinking water standards within a reasonable period of time

Cleanup options

EPA considered six alternatives for managing and cleaning up contaminated soil and ground water on and near the Lammers Barrel site. The Agency evaluated each option against nine criteria required by law (*see explanation criteria, page 4*). All of the following cleanup options except the no action alternative call for long-term monitoring of the ground water conditions and "institutional controls" on the site. The institutional controls would take the form of an environmental covenant to restrict residential development on the property.

Alternative RA-1 – No Action: A no action alternative is always included as a baseline comparison. **Cost – \$0**

Alternative RA-2 – Institutional controls, excavation of affected soil with off-site disposal, ground-water extraction and treatment using air stripping: EPA estimates 8,345 cubic yards of contaminated soil would have to be excavated and disposed of off site under this option although additional sampling would be performed to more precisely define the polluted area. The remaining building slabs in the south-central area of the site would be demolished and consolidated with the excavated soil. Excavation work would take from three to six months. Also under Alternative RA-2, contaminated ground water would be removed from wells located along the southern and eastern property lines and treated by an air stripping process before being discharged to Little Beaver Creek. EPA estimates it would take 8-10 years to clean the ground water to drinking water standards using this method. **Cost – \$6.4 million**

Alternative RA-3 – Institutional controls, excavation of affected soil with off-site disposal, in-situ ground water treatment using enhanced reductive dechlorination (ERD): Soil excavation would be the same as Alternative RA-2. Instead of a ground water pump-and-treat system as in RA-2, this option would use a biological treatment known as ERD. ERD was shown to be effective in a pilot test conducted in 2004-2006. ERD

involves injecting biodegradable, carbon-based material such as molasses, whey or vegetable oil into the ground water to react with and reduce the hazardous chlorinated chemicals. Using this method, EPA estimates the ground water cleanup goals would be achieved in less than five years. **Cost – \$5.2 million**

Alternative RA-4 – Institutional controls, in-situ biological treatment of impacted soil, in-situ ground water treatment using ERD: Biological treatment of contaminated soil would involve mixing the soil with a patented, controlled-released, organic carbon material that would neutralize the VOCs. Alternative RA-4 also includes the same ERD biological treatment as in RA-3 for contaminated underground water supplies. **Cost – \$3.4 million**

Alternative RA-5 – Institutional controls, low-permeability engineered cover system, in-situ ground water treatment ERD: A patented, polymer asphalt cover system would top more than two feet of fill, clay and a geotextile drainage layer laid over contaminated soil under this cleanup option. The cover system would take three to four weeks to construct. The special top layer could be applied with conventional paving equipment. For underground water supplies, the same enhanced reductive dechlorination technique proposed for Alternatives RA-3 and RA-4 would be used. **Cost – \$2.1 million**

Alternative RA-6 – Institutional controls, low-temperature thermal desorption, in-situ ground water treatment using ERD: Under this option, contaminated soil on OU-1 would be excavated and treated on site using a technique called low-temperature thermal desorption or LTTD. This technology operates by heating excavated soil in thermal desorbers and removing volatile organic compounds when they evaporate. Vapors from the soil would be captured in the desorbers, treated using activated carbon and released to the atmosphere. Soil would then be returned to excavated areas. This process would take about six to eight months. As in Alternatives RA-3, 4 and 5, ground water would be treated with the ERD technique. Alternative RA-6 would require some extra measures to control air emissions, fugitive dust, surface water runoff, erosion, sedimentation and site access. **Cost – \$4 million**

Evaluation of alternatives

EPA compared each cleanup option with the nine evaluation criteria and formed the chart on page 7. The

no action alternative was rejected because it does nothing to reduce or contain the hazardous contaminants in or near the Lammers Barrel property.

EPA's preferred alternative is RA-4, institutional controls, biological treatment of contaminated soil and ground water treatment using enhanced reductive dechlorination.

The preferred alternative was selected over other options because it is expected to achieve substantial and long-term health risk reductions through
Continued on page 7 ...

Explanation of evaluation criteria

EPA compares each cleanup option or alternative with these nine criteria established by federal law:

- 1. Overall protection of human health and the environment** examines whether an option protects both human health and the environment. This standard can be met by reducing or removing pollution or by reducing exposure to it.
- 2. Compliance with applicable or relevant and appropriate requirements (ARARs)** ensures options comply with federal, state and local laws.
- 3. Long-term effectiveness and permanence** evaluates how well an option will work over the long-term, including how safely remaining contamination can be managed.
- 4. Reduction of toxicity, mobility or volume through treatment** determines how well the option reduces the toxicity, movement and amount of pollution.
- 5. Short-term effectiveness** compares how quickly an option can help the situation and how much risk exists while the option is under construction.
- 6. Implementability** evaluates how feasible the option is and whether materials and services are available in the area.
- 7. Cost** includes not only buildings, equipment, materials and labor but also the cost of maintaining the option for the life of the cleanup.
- 8. State acceptance** determines whether the state environmental agency (in this case Ohio EPA) accepts the option. EPA evaluates this criterion after receiving public comments.
- 9. Community acceptance** considers the opinions of nearby residents and other stakeholders about the proposed cleanup plan. EPA evaluates this standard after a public hearing and comment period.

Lammers Barrel OU1 Comment Sheet

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Place
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Evaluation Criteria	Alternative RA-1 No Action	Alternative RA-2 Excavation, Air Stripping	Alternative RA-3 Excavation, ERD	Alternative RA-4 Soil Mixing, ERD*	Alternative RA-5 Cover System, ERD	Alternative RA-6 Thermal Treatment, ERD
Overall Protection of Human Health and the Environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Compliance with ARARs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Long-Term Effectiveness and Permanence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reduction of Toxicity, Mobility, or Volume Through Treatment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Short-Term Effectiveness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Implementability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cost	\$0	\$6.4 million	\$5.2 million	\$3.4 million	\$2.1 million	\$4 million
State Acceptance	Will be evaluated after public comment period					
Community Acceptance	Will be evaluated after public comment period					
<input checked="" type="checkbox"/> – Meet Criteria <input checked="" type="checkbox"/> - Partially Meets Criteria <input type="checkbox"/> – Does Not Meet Criteria						

***EPA’s Recommended Alternative**

... continued from page 4
treatment. The plan is also expected to prevent future exposure to contaminated underground water supplies and is expected to allow the property to be used for the reasonably anticipated future land uses, which are recreational or commercial.

The proposed alternative also reduces the risk within a reasonable time frame at less cost than the excavation options. The proposed cleanup plan also provides for long-term reliability.

Based on the data and information available before public comments are heard, EPA and Ohio EPA believe the proposed alternative will protect human health and the environment, comply with federal and state environmental laws, be cost-effective and use permanent solutions and alternative treatment technologies to the maximum extent possible.

Next steps

EPA in consultation with Ohio EPA will evaluate all comments received during the public comment

period before deciding whether to adopt the proposed cleanup plan for Lammers Barrel OU1. Responses to the public comments will be in a document called a responsiveness summary that is typically attached to the final determination called a “record of decision” or ROD. The final decision will be announced in a local newspaper and a copy of the ROD will be placed at the Beavercreek Community Library and on the website for review.

After the final plan is selected, EPA will negotiate with the responsible parties to pay for the cleanup work.

Public outreach

EPA and Ohio EPA provide information regarding the cleanup of the Lammers Barrel site to the public through meetings, the site information repository maintained at the Beavercreek Community Library, the website, and announcements published in the *Dayton Daily News*. The environmental agencies encourage the public to gain a more comprehensive understanding of the site by reading the documents.

Biological Treatments Proposed For Contaminated Soil, Water

Lammers Barrel OU1 Site
Beavercreek, Ohio

Public Meeting: Thursday, July 14, 2011
Comment Period: July 1 – August 5, 2011

(details inside)

LAMMERS BARREL OU1: EPA Proposes Water and Soil Cleanup Plan