



3M Cottage Grove Site

Proposed cleanup plan for PFCs

The Minnesota Pollution Control Agency is proposing a cleanup plan for the 3M Cottage Grove Site in Cottage Grove, Minn. The plan addresses contamination related to perfluorochemicals (PFCs) in wastes disposed of at the site by the 3M Company. This fact sheet describes the proposed plan and how the public can comment on it.

Background

The 3M Cottage Grove Site encompasses a large industrial complex located along U.S. Highway 61 in Cottage Grove, Minn. The property covers about 1,700 acres but only about 200 acres on the southern portion are industrialized. High bluffs above the Mississippi River are on the southwest side of the property. Formerly known as the 3M Chemolite plant, the facility has been in operation since 1947. 3M currently manufactures a range of products there, including adhesive products, specialty paper, industrial polymers, abrasives, and reflective road-sign materials. The company also does proprietary research and development there.

As was common in manufacturing before the advent of environmental regulations, 3M disposed of various industrial wastes, including those from PFC manufacture, on the property as well as at three other disposal sites in Washington County. Disposal methods on the Cottage Grove property included burial and disposal pits.

The site was placed on the Superfund list in 1984 due to soil and groundwater contamination from volatile organic compounds (VOCs), typically solvents. 3M completed site investigations and cleanup actions to address VOCs at the Cottage Grove site in both soil and groundwater. A groundwater pump-out

system was installed to prevent VOCs in groundwater at the site from reaching the Mississippi River. The pump-out system is still in operation today.

PFCs at the 3M Cottage Grove site

PFCs are a family of synthetic chemicals that were initially developed in the 1950s and manufactured by 3M at the Cottage Grove facility. PFCs are used in a wide variety of products made around the world because of their unique abilities to resist heat, oil, stains, grease, and water. 3M phased out manufacture of some PFCs by 2002, most notably perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

As a result of the discoveries starting in 2004 that drinking water in parts of Washington County had become contaminated with PFCs, the MPCA directed 3M to look for PFC contamination remaining in soil or groundwater from past disposal practices on the Cottage Grove property. Investigation began in 2005 and continued into 2009 under MPCA oversight.

Site investigations

The MPCA and 3M signed a Settlement Agreement and Consent Order in May 2007 governing investigation and cleanup of the three 3M PFC disposal sites (i.e., Oakdale, Cottage Grove, and Woodbury). As part of the agreement, 3M completed a Remedial Investigation (RI) and Feasibility Study (FS) for the Cottage Grove site, the focus of which were to identify any remaining risks to public health or the environment from releases of PFCs at

the site. The Consent Order also required that in developing cleanup alternatives, primary consideration should go to those that excavate and destroy remaining PFC wastes, or that excavate and dispose of PFC wastes in a permitted, isolated, engineered containment facility.

The RI for the Cottage Grove site showed that previous cleanup actions for VOCs had not removed all residual PFCs on the property. A number of areas were found to contain elevated levels of PFCs in soil and in groundwater beneath the property. These areas had been used in the past for a range of purposes including storage, disposal, or treatment of various types of solid or liquid wastes. Groundwater under the property flows toward the Mississippi River. PFCs are also found in treated wastewater discharged from the site to the Mississippi River, and in sediments in a cove at the foot of the bluff and near shore.

Feasibility study

The objective of the FS is to evaluate various response-action alternatives which address PFCs in soil and groundwater at the site, and to provide recommendations for implementation. The MPCA has reviewed the alternatives and is now ready to present its proposed plan for the site.

The FS for the Cottage Grove site was developed with guidance and screening criteria of the U.S. Environmental Protection Agency which are used in the federal and Minnesota Superfund programs. The FS evaluates, compares, and contrasts each alternative for:

- short and long-term effectiveness
- reduction of toxicity, mobility, or volume through treatment
- implementability
- cost effectiveness
- overall protection of human health and the environment.

The FS for the 3M Cottage Grove site is available on the MPCA's Web page at www.pca.state.mn.us/publications/pfc-cottagegrove-feasibilitystudy.pdf.

Summary of Alternatives

Alternatives were developed in three categories: site-wide (SW), groundwater (GW), and soils and sediments (S/S). The following alternatives were developed for the FS:

Alternative SW-1 -- No Further Action.

Standard baseline option evaluated at all Superfund sites. No additional work to address soil and sediment contamination. No changes in current groundwater monitoring. Estimated cost: \$148,000.

Alternative SW-2 – Institutional controls, access restriction, and groundwater monitoring.

Would include deed restrictions to ensure the area remains zoned industrial/commercial. The site is already fenced securely and new drinking-water wells near the property are prohibited. Existing groundwater monitoring would continue. Estimated cost: \$653,000.

Alternative GW-1 -- Enhanced groundwater recovery with treatment prior to discharge.

Would expand and improve the existing groundwater extraction system to prevent off-site migration of groundwater beneath the Eastern Disposal Area and the East Cove, as well as the main plant area. Discharge from the system would be treated in the facility's existing wastewater treatment plant, which has a large Granulated Activated Carbon finishing system that removes PFCs. Discharge to the river would be required to meet MPCA-imposed limits for PFCs. Estimated cost: \$5.1 million. (GW-1 was the only groundwater alternative developed in the FS because this type of system has proven effective at destroying PFCs when carbon filters are thermally regenerated.)

Alternative S/S-1 – Treated wastewater from the facility is currently discharged via a flow channel to the Mississippi River at the East Cove. This alternative would: Stabilize the flow channel to prevent scouring; remove PFC-containing sediments in portions of the cove and remove portions of sandbar at cove outlet; dewater excavated sediments and transport them to long-term containment cell at the SKB Industrial Landfill in Rosemount; cover (cap with clayey soils) Disposal Areas D1, D2, and D9. Estimated cost: \$9.4 million.

Alternative S/S 2 –Includes all elements of S/S-1 plus removal of PFC-containing soils above Industrial Soil Reference Values (SRVs) for PFOA and/or PFOS in selected portions of Disposal Areas D1, D2 and D9. Excavated land areas would be backfilled with clean soil. Estimated cost: \$14.7 million.

Alternative S/S-3 (refined) – Same as S/S-2 plus removal of concrete basin previously used for disposal in Area D1 and overlying soils. Under this refined alternative, 3M conducted MPCA-required supplemental investigations, and identified additional soils in Disposal Areas D1, D2, and D9 that will be removed. In addition,

PFC contaminated sediments from throughout the East Cove will be removed, not just portions. Estimated cost: \$15 million.

Long-term containment of excavated PFC-containing material. Any soil, sediment, or other material excavated during cleanup that contains PFCs above the Industrial SRVs will be removed and placed in a permitted, engineered, long-term containment facility that is being built for these 3M materials at the SKB Industrial Landfill in Rosemount, Minnesota. This disposal facility will also be used for materials excavated and removed from the 3M Woodbury and 3M Oakdale disposal sites. All leachate from these PFC-containing materials will be collected and taken to the 3M Cottage Grove facility for treatment.

MPCA's recommended alternatives

The MPCA recommends implementing the following remedies at the Cottage Grove site (see summary table).

SW-2: Institutional controls, access restriction, and groundwater monitoring.

GW-1: Enhanced groundwater recovery with treatment prior to discharge.

S/S-3 (refined): Stabilize flow channel to East Cove and remove PFC-containing sediments throughout the cove; remove portions of sandbar at cove outlet; remove

concrete basin previously used for disposal in Area D1 and overlying soils; Remove PFC-containing soils in Disposal Areas D1, D2, and D9 that exceed Industrial SRVs for PFOA and/or PFOS; transport excavated materials to newly constructed containment facility at the SKB Industrial Landfill in Rosemount; backfill excavated Disposal Areas with clean soil and shape to reduce infiltration; collect leachate at SKB containment facility and take to 3M Cottage Grove facility for treatment.

MPCA staff believes this combination best meets the cleanup goals for the site. The selected remedies will take an estimated three years to complete.

What are the next steps?

This proposed cleanup plan is available for public comment (see below) from May 20 through June 19, 2009. After the comment period closes, MPCA will review any comments received and finalize the choice of remedial action(s), which will be documented in a Minnesota Decision Document (MDD). The MPCA's responses to comments received will be included in the Responsiveness Summary attached to the MDD. Unless significant modifications to the proposed remedies described in this fact sheet are needed, design and construction of the selected remedies should begin in fall 2009.

After the selection of the final remedy for the Site, 3M will prepare construction design documents for MPCA review and approval. These documents will outline activities and provide a more detailed schedule for completing the cleanup actions. Included in this plan will be such items as hours of operation, construction traffic flow, worker health, and safety, odor and noise controls.

Public comment and meeting on proposed alternatives

Public review and comment on the proposed cleanup plan for the 3M Cottage Grove site is an important contribution to

Table of alternatives (shaded = MPCA preferred alternatives)

Alternative	Description
SW-1	No further action
SW-2	Institutional controls, access restriction, monitoring
GW-1	Enhanced groundwater recovery and treatment
S/S-1	Remove sediments in portions of East Cove; remove portions of sandbar at cove outlet; dispose of excavated soils/sediments off-site; cover Eastern Disposal Area
S/S-2	Same as S/S-1 plus remove soils which have concentrations of PFOA or PFOS above Industrial Soil Reference Values (SRVs) from portions of Disposal Areas D1, D2 and D9
S/S-3 (refined)	Same as S/S-2 plus remove concrete basin and all overlying soils in Area D1, and remove PFC contaminated sediments from throughout the East Cove. Additional soil and sediment will be removed from D1, D2 and D9, and the East Cove as a result of MPCA-required supplemental investigations. All excavated PFC contaminated soil/sediments will be disposed off site at the SKB Industrial Landfill in Rosemount, Minnesota.

the remedy selection process. The public is invited to submit written comments on this proposed plan through June 19, 2009. Written comments may be sent to Gary Krueger, MPCA, Remediation Division, 520 Lafayette Road, St. Paul, MN 55155-4194 or email gary.krueger@pca.state.mn.us. Written comments may also be submitted at a public meeting on May 27, 2009 at the Cottage Grove City Hall.

Where can I get more information?

The full FS, along with addendums and other site-related information, is available on the MPCA Web site at <http://www.pca.state.mn.us/cleanup/pfc/pfcsites.html>, or by contacting Ralph Pribble at the MPCA, (651) 757-2657 or ralph.pribble@pca.state.mn.us.



Aerial view of Cottage Grove site, showing disposal areas D1, D2 and D9, and East Cove