



Minnesota
Pollution
Control
Agency

Remediation Division,
Superfund Program

3M Woodbury Disposal Site

Proposed cleanup plan for PFCs

Cleanup/PFCs #c-pfc3-02 • July 2008

The Minnesota Pollution Control Agency is proposing a cleanup plan for the 3M Woodbury Disposal Site in Woodbury, 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 Woodbury Disposal Site is located on the border of Cottage Grove and Woodbury, between Cottage Grove and Woodbury Drives and south of Dale Road. It comprises several former waste disposal areas that had received industrial wastes from the 3M Company from 1960-66. In addition, municipal wastes from the cities of Woodbury and Cottage Grove were disposed of in two separate areas of the site from 1964-66. The 656-acre site (see map) is owned by 3M.

3M wastes were disposed of primarily in two areas, known as the Main and Northeast Disposal Areas. Municipal wastes were placed in the two other separate areas. Together these areas cover about 20 acres of the approximately 656-acre site. Disposal methods included burial and open burning.

Contaminants called Volatile Organic Compounds (VOCs, mostly solvents) were discovered in ground water at the site by 1966, after which 3M stopped further disposal and began a ground-water investigation. A ground-water extraction system was completed at the site by 1973 and has operated continuously since. The extracted ground water is pumped via pipeline to the 3M Cottage Grove manufacturing plant, where it is used as

cooling or process water and then discharged to the Mississippi River.

Additional cleanup measures were taken at the site to consolidate and burn wastes, with the goal of reducing sources of VOC contamination to the ground water. About 200,000 cubic yards of wastes were excavated and burned on-site in 1968.

In 1992 3M entered the site in the MPCA's Voluntary Investigation and Cleanup (VIC) program, under which various investigations and response actions were conducted to further address contamination at the site. In 1996 3M backfilled open areas and regraded the site, placed a soil cap over the former disposal areas, and filed an institutional control on the property deed. These activities were all aimed at further managing VOCs at and related to the site.

PFCs at the 3M Woodbury disposal site

In 2005, PFCs were detected in pump-out wells at the Woodbury site. Prior to this time, the MPCA did not have analytical capabilities to sample and analyze for PFCs. PFCs are a family of synthetic compounds that have been used for decades to make products that resist heat, oil, stains, grease and water. 3M made PFCs from the late 1940s until 2002 at its Cottage Grove plant.

PFC-containing wastes were legally disposed of in four dumps or landfills (including, besides the Woodbury site, the 3M Oakdale site, Washington County Landfill, and disposal areas at the 3M Cottage Grove facility). These wastes have contaminated ground water flowing beneath the disposal sites with PFCs,

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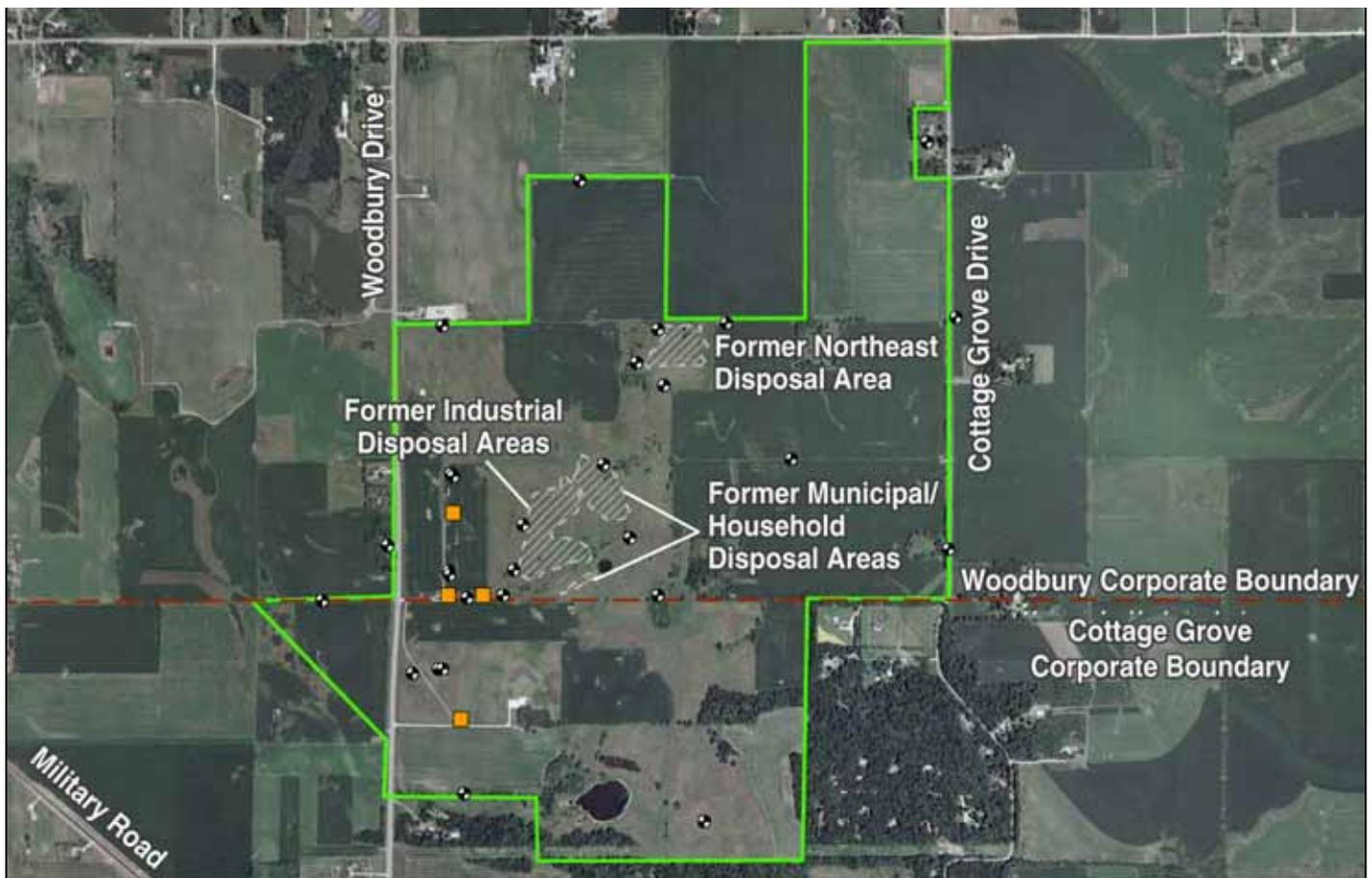
which impacted several of the city of Oakdale's municipal wells. Some private wells in Cottage Grove and Grey Cloud Township also were found to have PFCs above advisory limits.

Site investigations

The MPCA and 3M signed a Settlement Agreement and Consent Order in May 2007 governing investigation and cleanup of PFCs at the four disposal sites used to dispose of PFC wastes. As part of the agreement, 3M completed or is completing Remedial Investigations (RI) and Feasibility Studies (FS) for the sites, the focus of which are to identify any remaining threats to public health or the environment from releases of PFCs at the sites. The Consent Order also required that in developing cleanup alternatives, primary consideration should go to those that excavate and destroy remaining PFC wastes; or

As noted earlier, 3M had completed several investigations and response actions for the Woodbury site under the VIC Program; some were initiated by the company and some were requested by the MPCA. These took place previous to the signing of the Consent Order, with some of them relating to PFCs. For example, the site was regraded and capped with a two-foot cover, and a deed restriction was placed on the property to limit disturbance of the three disposal areas. Following the Consent Order, the site was transferred from the VIC program to the Superfund program. Investigations conducted under Superfund included assessing the integrity of the pipeline conveying the pump-out discharge to 3M's Cottage Grove facility to determine if it could be a possible source for groundwater contamination further south of the Woodbury site. (The pipeline was found to be intact and not leaking.) Additional soil borings were conducted in the former

3M Woodbury site and disposal area locations



excavate and dispose of PFC wastes in a permitted isolated, engineered containment facility.

waste areas to test for residual PFCs. A network of "sentinel" wells was installed between the site and

nearby residences. In addition 27 homes in the Langdon and River Acres neighborhoods of Cottage Grove and Grey Cloud Township were provided with bottled water or in-home carbon filtration of their water.

In regard to ground-water contamination at or related to the Woodbury site, the RI and previous investigations showed that the ground-water pump-out system at the site is preventing further off-site migration of PFCs as well as VOCs. There are PFCs in ground water downgradient and away from the site, but they are thought to have escaped or moved off-site before the pump-out system was in place and source-reduction activities were done.

In regard to PFCs in soil on the site, the RI and previous investigations of the site showed that some residual PFCs remained in parts of all three of the former disposal areas (Northeast, Main, and Municipal Fill). Soil concentrations of PFCs vary widely, but were deemed sufficient in some cases to be acting as possible continuing sources of PFCs to the localized ground water at the site (although contaminated ground water is not migrating off-site because it is captured by the pump-out system). In all cases, the concentrations that are above the MPCA's soil reference values are well below the ground surface (5 to 16 feet) due to earlier removal actions, backfilling, and soil cap installation (i.e. there would be no pathway for human exposure to PFCs in soil).

Feasibility study

The objective of the FS is to evaluate various response-action alternatives which address PFCs in soil and ground water at the site, and to provide a recommendation for implementation. The MPCA has reviewed the alternatives developed by 3M and is now ready to present its proposed plan for the site.

The FS for the Woodbury site was developed with guidance and screening criteria from by 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 Woodbury site is available on the MPCA's Web page at www.pca.state.mn.us/cleanup/pfc/pfcsites.html.

Summary of alternatives

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

Alternative SW-1 -- No Further Action (ground-water pump-out would continue and institutional controls are already in place). Standard baseline option evaluated at all Superfund sites. Estimated cost: \$48,000.

Alternative SW-2 – Institutional controls, access restriction, and ground-water monitoring. Would continue existing deed restrictions to prevent future development and/or soil disturbance activities, install fencing to restrict access, and develop prohibitions on new drinking-water wells. Ground-water monitoring would continue for the long term (30 years minimum). Estimated cost: \$856,000.

Alternative GW-1 – Continued ground-water recovery with carbon filtration prior to discharge. This alternative would continue to operate the ground-water extraction system to capture and prevent off-site migration of PFCs in ground water. A number of studies have concluded the existing system is an effective barrier to PFC migration. Currently four extraction wells pump continuously at a combined rate of 3,280 gallons per minute. The water is conveyed via underground pipeline to 3M's Cottage Grove facility and used as process water, then discharged to the Mississippi River. Currently only a portion of the water is treated, but under this alternative all the water would be treated with carbon filtration before discharge. The discharge would be subject to PFC effluent limits contained in an MPCA-issued permit. Estimated cost: \$2,050,000. (GW-1 was the only ground-water alternative developed in the FS because the MPCA will require it as part of any other remedies selected for the site.)

Alternative S-1 – Excavation of the former Northeast Disposal Area trenches; disposal at existing off-site landfill. The three soil alternatives all are designed to remove PFCs in soils at the site and reduce migration of PFCs from soils to ground water; they differ mainly in volume of soil removed and from where, and in degree of source reduction to ground water. S-1 would remove soils from the surface to bedrock in the area of the former disposal trenches in the Northeast Disposal Area. The soils would be trucked to a licensed landfill

permitted to accept industrial wastes. Excavated areas would be replaced with clean fill. Estimated cost: \$7,830,000.

Alternative S-2 – Excavation of the former Northeast Disposal Area trenches; disposal at existing off-site landfill; augmentation of the soil cover on the former Main Disposal Area. Same as S-1 plus additional soil cover over selected parts of the Main Disposal Area. Would bring total cover over Northeast Area to two feet. Estimated cost: \$8,190,000.

Refined Soil Alternative S-3¹ -- Excavation of the former Northeast Disposal Area trenches and selected areas in the Main Disposal Area; disposal at existing off-site landfill. Same as S-1 and S-2 but with selective excavation of soils to a depth of 18 feet or bedrock in the Northeast Area and in the Main Disposal Area to a depth of 12 feet. Final cover would be placed over all excavated areas. Estimated cost: \$12,695,000.

3M has submitted an amendment to the Feasibility Study which outlined proposed off-site disposal locations. 3M is recommending that excavated PFC-containing soils from the Woodbury site be taken to the SKB Landfill in Rosemount, Minnesota. 3M and SKB have proposed to build a separate engineered cell at the S facility to contain the excavated material. This disposal location would also be used for PFC wastes excavated from the Oakdale and Cottage Grove disposal sites. Other soils containing other constituents that may meet federal definitions of hazardous waste (e.g. PCBs, VOCs depending on concentration – PFCs alone are not classified as hazardous waste) would be segregated and transported to other disposal facilities licensed for hazardous wastes.

¹ This alternative was submitted in an addendum to the Feasibility Study on July 14, 2008, and differs slightly from the original Alternative S-3 in the FS.lie

MPCA’s recommended alternatives

The MPCA recommends implementing the following remedies at the Woodbury site:

SW-2: Institutional controls, access restriction, and continued ground-water monitoring

GW-1: Continued ground-water recovery with carbon pretreatment prior to discharge

RSA S-3 (see footnote): Excavation of the former Northeast Disposal Area trenches and selected areas in the Main Disposal Area; disposal at existing off-site landfill. The MPCA has determined that the SKB facility in Rosemount, with the separate vault for the PFC wastes, does meet the requirement of the Consent Order for an isolated, engineered permitted facility to contain the PFC waste material. As noted above, soils found to contain hazardous wastes would be disposed of at other facilities.

MPCA staff believes this combination best meets the cleanup goals for the site. GW-1 and SW-2 would be implemented regardless of other alternatives chosen. Alternative RSA S-3 will probably take two to three construction seasons to complete.

Table of alternatives (shaded = MPCA preferred alternatives)

Alternative	Description
1. SW-1	No further action
2. SW-2	Institutional controls, access restriction, monitoring
3. GW-1	Continued ground-water recovery with GAC pretreatment prior to discharge
4. S-1	Excavate NE Disposal Area to bedrock (approx. 18 feet), off-site disposal
5. S-2	Excavate NE Disposal Area, off-site disposal, cover Main Disposal Area
6. RSA S-3 (see footnote)	Excavation of the NE Disposal Area trenches and selected areas in the Main Disposal Area, off-site disposal

What are the next steps?

The 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 late 2008 or early 2009.

After the selection of the final remedy for the Site, 3M will prepare construction design documents for MPCA review and approval. These design documents will outline activities and have a more detailed schedule to complete 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 Woodbury site is an important contribution to the remedy selection process. The public is invited to submit written comments on this proposed plan through August 22, 2008. Written comments may be sent to Gerald Stahnke, MPCA, 520 Lafayette Road, St. Paul, MN 55155-4194 or email gerald.stahnke@pca.state.mn.us.

The public is also encouraged to submit written comments in person at a public meeting on July 24, 2008 at the Woodbury City Hall.

Where can I get more information?

The full FS and addenda, along with other site-related information, are 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) 296-7792 or ralph.pribble@pca.state.mn.us.