

MINNESOTA DECISION DOCUMENT

3M Cottage Grove Disposal Site City of Cottage Grove, Washington County, Minnesota

SITE DESCRIPTION

Background

The 3M Cottage Grove Site (Site) encompasses a large industrial complex located along U.S. Highway 61 in Cottage Grove, Minnesota. 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 past manufacturing before the advent of environmental regulations, 3M disposed of various industrial wastes, including those from Perfluorochemicals (PFCs) manufacture, on the property as well as at three other Disposal Sites in Washington County. Disposal methods on the Site included burial and disposal pits.

The Site was placed on the State 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 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.

STATEMENT OF PURPOSE

This Minnesota Decision Document (MDD) presents the selected response actions for PFC contamination at the 3M Cottage Grove Disposal Site and summarizes the facts and determinations made by the Minnesota Pollution Control Agency (MPCA) staff in approving the recommended response action alternatives.

Soil and groundwater at the Site are impacted with PFCs and VOCs. Previous response actions have been taken by 3M to address VOC releases. The selected response actions in this MDD are intended to prevent human receptors and the surrounding environment from being exposed to contaminated environmental media that are currently on-site.

The Commissioner or his delegate has determined that the response actions set forth in this MDD are reasonable and necessary to protect the public health and welfare and the environment from the release and threatened release of PFCs from the Site.

PFCs at the 3M Cottage Grove Site

PFCs are a family of synthetic chemicals that were initially produced 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 (CO) in May 2007 governing investigation and cleanup of 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 was to identify any remaining threats to public health or the environment from releases of PFCs at the Site. The CO 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 the river's shore.

Feasibility Study

The objective of the FS is to evaluate various response-action alternatives which address PFCs in soil, sediments and groundwater at the Site, and to provide a recommendation for implementation. The MPCA has reviewed the alternatives and is now ready to present the selected remedy for the Site. The FS for the Site was developed with U.S. Environmental Protection Agency (U.S. EPA) guidance and screening criteria 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.

In addition, the Settlement Agreement and CO between 3M and the MPCA specified that when evaluating the response action alternatives, primary consideration should be given to the excavation and destruction of PFCs, or excavation, engineered isolation and containment of PFCs.

Summary of Alternatives

To comply with terms of the CO, 3M developed alternatives for three aspects or components of the Site: Site-Wide (SW), Groundwater, and Soils and Sediments (S/S). Specifically 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.

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 would be prohibited. Existing groundwater monitoring would continue and development of an updated groundwater monitoring plan.

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. Treated wastewater from the facility is currently discharged via a flow channel to the Mississippi River at the East Cove. Discharge to the river must meet MPCA-imposed limits for PFCs. (GW-1 was the only groundwater alternative developed in the FS because this type of system has proven effective at permanently destroying PFCs when carbon filters are thermally regenerated).

Alternative S/S-1 – Stabilize flow channel to East Cove and remove PFC-containing sediments in portions of the cove; remove portions of sandbar at cove outlet; transport excavated sediments to containment facility; the flow channel would be stabilized to prevent scouring; the removed sediments would be dewatered and placed in a newly constructed long-term containment cell at the SKB Industrial Landfill in Rosemount. Excavated land areas would be backfilled with clean soil. Cover (cap with clayey soils) Disposal Areas D1, D2, and D9, shape cover for positive drainage and re-vegetate.

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. This is consistent with soil cleanup conducted at other Minnesota Superfund or Brownfield Sites with planned industrial use.

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 the entire East Cove will be removed, not just selected areas.

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 stored 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 at SKB and taken to the 3M Cottage Grove facility for treatment.

MPCA's Recommended Alternatives

To meet terms and conditions set forth in the CO, the MPCA recommends the following remedies at the 3M Cottage Grove Site:

- Institutional controls/deed restrictions, site access controls and long term groundwater monitoring
- Enhanced groundwater recovery with carbon treatment to remove PFCs prior to discharge
- 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 sludge neutralization/disposal in Disposal Area D1 and remove additional overlying soils in that area
- Remove PFC contaminated soils in Disposal Areas D1, D2 and D9 which exceed Industrial Soil Reference Values for PFOA and/or PFOS
- Transport excavated soil, sediments and material to engineered long-term containment cell at SKB Industrial Landfill, Rosemount, Minn. All excavated material will be disposed off-site.

DOCUMENTS REVIEWED

MPCA's decision to select the remedy set forth in this MDD is based primarily on the following documents describing the Site as well as the effectiveness and cost analysis of response action alternatives for the Site.

- Facility Wide FC Assessment – 3M Company, July 2005
- Facility Wide FC Data Assessment Report – Cottage Grove Site – 3M Company, April 2006
- RI Report – Cottage Grove Disposal Site – 3M Company, July 2007
- FS – Cottage Grove Disposal Site – 3M Company, March 2008
- Addendum to the FS for the Oakdale, Woodbury and Cottage Grove Sites – 3M Company, April 2008
- FS Addendum #2 – Cottage Grove Disposal Site – 3M Company, February 2009

ESTABLISHMENT OF RESPONSE ACTION OBJECTIVES AND SOURCE AREA CLEAN-UP CONCENTRATIONS

The MPCA developed response action objectives to minimize human exposure risk. Removal of PFC contaminated soil, as well as backfilling with clean soil, will address potential human soil exposure risks. Contaminated groundwater will be controlled from migrating off-site to avoid impact to adjacent surface water bodies. Groundwater that is pumped-out will be treated with carbon as part of the 3M Cottage Grove facility waste water treatment system prior to discharge to the Mississippi River. 3M will be required to meet appropriate discharge limits for PFCs through a MPCA-issued NPDES permit. Sediments in the East Cove, which have been impacted by PFCs, will also be removed to reduce or eliminate continued migration of PFCs to the Mississippi River. The 2007 CO requires primary consideration be given to the excavation and destruction or excavation and engineered isolation and containment of PFCs. Response action objectives have been developed using Applicable or Relevant and Appropriate Requirements (ARARs) and are based on soil and groundwater contamination data present in the MPCA site files.

The ARAR and other criteria considered by MPCA in selecting a remedy for the Site are listed below:

1. 29 CFR 1926. OSHA regulations for persons engaged in site-related activities
2. 40 CFR 264. Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
3. 40 CFR 265. Interim Status Standards for Owners of Hazardous Waste Treatment, Storage and Disposal Facilities
4. 40 CFR 268. Land Disposal Restrictions
5. Minn. Stat. ch. 103A. Provides State jurisdiction over surface water features, including wetlands such as lakes and ponds, and other wetland types
6. MPCA SRVs
7. Minnesota Department of Health (MDH) Health Risk Limits and/or Health Based Values

A. Response Action Objectives

The objectives for response actions at the Site are:

1. To eliminate unacceptable human risk exposure to PFCs in soil.
2. To reduce unacceptable human or environmental risk exposure to PFCs in groundwater.
3. To control migration of PFC contaminated groundwater to adjacent surface water
4. To reduce unacceptable human or environmental risk exposure to PFCs in surface water.
5. To reduce PFC concentrations in sediments

RESPONSIVENESS SUMMARY

Pursuant to Minn. Stat. § 115B.17, subd. 2b (2008), the MPCA issued a public notice describing the MPCA recommended response actions. The public notice was published on May 20, 2009 in the South Washington County Bulletin for the purpose of soliciting comments from the community. MPCA staff also held a public meeting on May 27, 2009 at Cottage Grove City Hall to discuss alternatives and provide the public the opportunity to ask questions and provide comments on the proposed remedy. Comments made at the public meeting focused primarily on amount of material to be excavated, control of contaminated groundwater, truck traffic during excavation/construction activities and keeping the public informed of planned activities.

No written comments were received during the public meeting. Three comment letters were received during the public comment period.

One comment received from an environmental advocate group, while supporting the MPCA's recommended remedies for a majority of the project, asked that the MPCA require 3M to excavate all PFC contaminated soil for the D1, D2 and D9 areas. The MPCA makes decisions regarding the amount and concentrations of soil to be excavated based on SRVs for PFCs developed by MPCA staff. SRVs were developed to assist MPCA staff in determining risks and making cleanup decisions related to potential human exposure to contaminated soil under certain land use conditions.

In this case, all soil in the affected Disposal Areas (D1, D2 and D9) that exhibits PFC contamination above Industrial SRVs will be excavated and disposed off-site. This includes even remotely accessible soil (> 12 feet) in some of the Disposal Areas. This is consistent, and even goes beyond, what would be done at other State Superfund or Brownfield cleanup projects for industrial settings, and is consistent with cleanup remedies already approved for the 3M Oakdale and Woodbury Sites. In addition, sediments throughout the East Cove which have exhibited PFC contamination will be excavated and removed for disposal off-site.

Over 5,400 truck loads (or approximately 51,000 cubic yards) of soil/sediment will be excavated and removed from the Site. This amount of excavation will remove approximately 2,875 pounds of PFOS and PFOA or just over one cubic yard. A minimal amount of PFOS and PFOA will remain in the soil but any migration of PFCs in groundwater will be contained by the enhanced groundwater control system. In addition, PFCs will be destroyed when carbon used to filter PFCs out of the water is regenerated by thermal treatment.

3M will be required to record and comply with environmental covenants which impose land use restrictions to ensure that this area will be maintained for industrial land use only.

A second comment letter was received from the Washington County Board and the Washington County Department of Public Health, and commended the MPCA on the cleanup being proposed at the Site. One issue that the County would like to see evaluated further is the potential for beneficial re-use of the pump-out water from the groundwater control system. The current plan is to treat the pump-out water with carbon through the 3M Cottage Grove waste water treatment plant prior to discharge to the Mississippi River. While the MPCA cannot dictate the use of the pump-out water for beneficial purposes, the MPCA can relay this recommendation to 3M for further consideration.

The primary concern for the MPCA is that contaminated groundwater is appropriately treated prior to discharge to ensure that receiving waters are adequately protected. This expanded groundwater recovery system will remain in place during the entire cleanup process and until the MPCA has determined the groundwater recovery system is no longer necessary.

A second concern expressed by the County was the potential impact of the region's hydrogeology, specifically bedrock faults in the area, on the expanded groundwater system. MPCA staff has reviewed information from the Minnesota Geological Survey and information concerning site specific geology submitted by 3M. Based on that review, the proposed new extraction wells will be screened in the surficial aquifer, at or just above the upper bedrock aquifer. Thus the bedrock faults will have a minor potential impact on the expanded groundwater extraction well system.

The third comment letter received was from State Senator Katie Sieben. Senator Sieben expressed concern about the amount of PFCs planned for excavation and disposal, and stated that all remaining traces of PFCs should be removed from soils/sediments and water at the 3M Cottage Grove facility. Senator Sieben also commented on the potential risks for surface water and drinking water supplies.

As previously indicated, over 50,000 cubic yards of PFC contaminated soil/sediments will be excavated and removed from the Site, resulting in the removal of approximately 2,875 pounds of PFOS and PFOA.

All soils exhibiting concentrations above Industrial SRVs will be removed, which is consistent with approved response actions at the 3M Oakdale and Woodbury Sites. In making this decision, the MPCA has followed requirements specified in Minnesota Environmental Response and Liability Act (MERLA) and appropriate guidelines established for the cleanup of State and/or Federal Superfund Sites. As noted previously, the CO also specifies that primary consideration be given to excavation and destruction or engineered isolation of PFC contaminated material. While a minimal amount of PFC contaminated soils will remain on site in soils greater than 12 feet below the surface, any migration of PFCs to groundwater will be contained, and the PFCs will be removed and thermally destroyed through operation of the expanded groundwater control system. Thus the expanded extraction well system will prevent any future migration of PFCs to adjacent surface waters.

Another important component of the CO addresses the concern regarding PFC contamination in drinking water supplies. The CO specifies that any drinking water supply, public or private, that exhibits PFC contamination above MDH drinking water standards as a result of a release from a 3M Disposal Site, must be either replaced or treated by 3M to ensure levels of PFCs below MDH requirements.

This is not only for current standards, but any changes in standards in the future. At this time, the city of Cottage Grove's municipal wells have shown trace levels of PFC contamination below MDH standards. In addition, those private wells in Cottage Grove that have been issued Drinking Water Advisories by the MDH, have been supplied with an alternative drinking water supply, either bottled water or a whole house Granular Activated Carbon (GAC) system, at 3M's cost.

Once the MDD is finalized, 3M will be required to submit a Remedial Design/Remedial Action Plan for review/approval by the MPCA, which will specify more detailed construction activities such as hours of operation, truck traffic and controls, worker safety and noise/dust controls. The MPCA also plans to conduct air monitoring during construction activities to measure any PFC emissions. MPCA staff or a MPCA contractor will be on-site for oversight during construction activities.

MPCA's Selected Remedial Actions for the 3M Cottage Grove Disposal Site

To meet cleanup objectives for PFC releases at and from the Site, the MPCA has selected a remedy that is a combination of the following alternatives outlined in 3M's March 2008 FS and February 2009 FS Addendum:

SW-2: Institutional controls, access restriction, and groundwater monitoring. Institutional controls must be executed pursuant to the Minnesota Uniform Environmental Covenants Act, Minn. Stat. ch. 114E. A long-term groundwater monitoring plan must be submitted by 3M and approved by the MPCA.

GW-1: Enhanced groundwater recovery with treatment prior to discharge. Will 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 will be treated in the facility's existing wastewater treatment plant, which has a large GAC finishing system that removes PFCs. During regeneration of the carbon, PFCs will be destroyed. Discharge of treated water to the river must meet MPCA-imposed limits for PFCs.

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 sludge neutralization 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 in accordance with the MPCA approved Remedial Design/Remedial Action Plan; transport excavated materials to newly constructed containment facility at the SKB Industrial Landfill in Rosemount, thus isolating the PFCs; backfill excavated Disposal Areas with clean soil; shape cover for positive drainage and re-vegetate to reduce infiltration; collect leachate at SKB containment facility and take to 3M Cottage Grove facility for treatment.

These selected remedies will meet requirements specified in the CO for the excavation and destruction of PFCs, or excavation and engineered isolation and containment of PFCs.

The Commissioner or his delegate has determined that the response actions set forth in this MDD are reasonable and necessary to protect the public health and welfare and the environment from the release and threatened release of PFCs from the Site.

A copy of the Final MDD will be sent to 3M, the MDH, the city of Cottage Grove, the U.S. EPA and those who submitted written comments regarding the proposed remedy.

STATUTORY DETERMINATIONS

The selected response actions are consistent with the MERLA, Minn. Stat. §§ 115B.01-.20, and are not inconsistent with the Federal Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 *et seq.*, and the National Contingency Plan, 40 CFR pt. 300. The selected response actions are protective of public health and welfare and the environment.

Paul Eger

Paul Eger
Commissioner
Minnesota Pollution Control Agency

8/28/09

Date

Minnesota Decision Document
3M Cottage Grove Facility and PFC Disposal Locations

