



January 26, 2004

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MPCA, MAR Division
PLR/SS Section

Mr. Dave Douglas.
Superfund Unit 2/Superfund Section
Majors and Remediation Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: **Consent Order Addendum and Facility-wide Fluorochemical Investigation
Work Plan, 3M Cottage Grove Site**

Dear Mr. Douglas:

Enclosed, please find both the proposed Consent Order (CO) Addendum and the revised Facility-wide Fluorochemical Investigation Work Plan.

As you requested, 3M has developed a mechanism to continue the fluorochemical investigation work under the existing CO. After review of the original CO, 3M believes that a simple addendum to the CO is the most efficient mechanism to respond to this request. The use of an addendum in this manner is anticipated in Part XVI of the CO. In accordance with MPCA correspondence dated October 16, 2003, the enclosed addendum provides language that modifies the CO specific to Part C, Part I and Part XV, as requested.

Also enclosed is the revised fluorochemical investigation work plan. The work plan had been previously submitted in draft form to the MPCA for review and comment. MPCA staff approved the draft work plan, with suggested modifications. The MPCA suggested modifications have been reviewed and have been incorporated into the final work plan. This final work plan also contains minor wording changes consistent with the CO and addendum. The work plan is an exhibit to the CO addendum and during development of the addendum the need for these minor changes was identified. Other changes were also made to more accurately reflect fluorochemical nomenclature and history at the site.

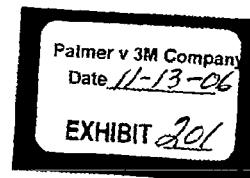
Please review the documents and provide any additional comments to Todd Fasking of my staff at 651-778-5344. If you have any significant points of concern, 3M would be happy to meet with MPCA staff at your request. Pending your approval, we will begin the work as shown in the work plan schedule.

Sincerely,

Robert A. Paschke, P.E., D.E.E.
Manager, Corporate Environmental Programs

cc: Mr. Mark Rys, MPCA
Mr. Todd Fasking, 3M
Mr. Paul Book, ERG

Enclosure



**Exhibit
1932**

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

FIRST ADDENDUM TO CONSENT ORDER

On May 30, 1985, 3M Company (3M) and the Minnesota Pollution Control Agency (MPCA) entered into a Consent Order relative to the investigation and remediation of property then known as the 3M Chemolite Site located in the City of Cottage Grove, Minnesota.

In accordance with Part XVI of the Consent Order, 3M and MPCA now desire to conduct additional activities pursuant to this First Addendum to the Consent Order (Addendum). Any provision of the Consent Order not expressly amended by this Addendum shall remain in full force and effect until terminated by the terms of the Consent Order.

1. Statement of Facts

- a. The name of the site has been changed from "Chemolite" to "Cottage Grove" and all future references shall be to the "Cottage Grove Site".
- b. By 1987, 3M satisfactorily completed a Remedial Investigation and Feasibility Study of eight former disposal areas at the site and, based on these results, the MPCA approved a Response Action Plan for these former disposal areas.
- c. Since 1987, 3M has conducted groundwater monitoring at site monitoring and production wells and submitted these results to the MPCA.
- d. In 1997, at the request of the MPCA, 3M completed additional groundwater studies in the area of the former waste disposal area D8. These studies were satisfactorily completed and approved by the MPCA in 2003.
- e. In 2003, 3M provided to MPCA staff four compact disks summarizing the physical and chemical properties, and the results of numerous health and safety studies, characterizing certain perfluorinated compounds. These substances had been produced at the Cottage Grove Site.
- f. Between 2001 and 2003, 3M completed groundwater testing of target perfluorinated compounds at select site monitoring and production wells. The results of the tests were provided to the MPCA in 2003.
- g. In 2003, at the request of the MPCA, 3M completed groundwater studies focusing on target perfluorinated chemicals in the area of the former waste disposal area D1. These studies were completed in 2003.
- h. In the fall of 2003, 3M agreed to complete a facility-wide evaluation of the waste disposal practices for perfluorinated chemical substances at the Cottage Grove Site and submitted a Facility-wide Fluorochemical Investigation Work Plan to the MPCA. The Work Plan was approved by the MPCA in November 2003.
- i. None of the facts set forth herein shall be considered admissions by either party with respect to any claims unrelated to or persons not a party to this Addendum.

2. Scope of the Addendum

The Addendum shall govern the provisions of the Facility-wide Fluorochemical Investigation Work Plan as described in Exhibit 1 to this Addendum.

3. Recovery of Expenses

As a condition of this Addendum, 3M agrees to reimburse the MPCA for expenses associated with MPCA activities relating to carrying out the provisions of the Facility-wide Fluorochemical Investigation Work Plan as approved by MPCA. The amount of reimbursement shall not exceed twenty thousand (\$20,000) dollars per calendar year or partial calendar year for the years 2004 and 2005.

4. Effective Date

This Addendum is effective upon the date the last required signature is affixed hereto.

BY THEIR SIGNATURES HEREIN, THE UNDERSIGNED REPRESENT THAT THEY HAVE AUTHORITY TO BIND THE PARTIES THEY REPRESENT, THEIR AGENTS, CONTRACTORS AND SUBSIDIARIES IT IS SO AGREED:

By: 3M Company

Signature: _____

Title: _____

Date

IT IS SO ORDERED:

By: Minnesota Pollution Control Agency

Signature: _____

Title: _____

Date

EXHIBIT 1

**Facility-wide Fluorochemical Investigation Work Plan
3M Cottage Grove**

Prepared for:

**3M Environmental Technology and Services
Building 42-2E
900 Bush Avenue
St. Paul, MN**

Prepared by:

**Environmental Resource Group, LLC
1000 IDS Center
80 South Eighth Street
Minneapolis, MN 55402**

January 27, 2004

INTRODUCTION

On September 23, 2003, the Minnesota Pollution Control Agency (MPCA) met with 3M staff to discuss perfluorochemicals (FC's) at the 3M Cottage Grove facility (site). At this meeting, both 3M and the MPCA acknowledged that though FCs were known to be present at the site during the completion of tasks agreed upon in the 1985 Response Order by Consent (CO), the technology was not available at that time to fully evaluate the presence and potential risk of FCs. Recent analytical advances and the completion of studies related to the risk of two perfluorooctanyl FCs, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonate (PFOS), now allow 3M to evaluate these and other FC compounds at the site pursuant to the CO.

MANUFACTURING

The site occupies approximately 865 acres of property. Generally, only the southeastern portion of this property has been utilized for manufacturing and testing of 3M products. The remaining portion has been used for recreation, farming or has remained as natural habitat. 3M records show that manufacturing began at the site in 1947 and that commercial production of PFOA products began about 1976. PFOS records indicate production potentially began as early as the mid 1960's. Prior to this, documents indicate FCs were being tested for product use or generated at a pilot scale in the 1950's. Generally, FC manufacturing, product storage and product testing has taken place in site buildings 7, 15, 16, and 25 (see Figure 1). In addition, FCs are a component of proprietary fire suppressant formulations tested in the area of Building 43. Production of the perfluorooctanyl FC's was phased out by the end of 2002.

SITE SETTING AND HYDROGEOLOGY

The site is located on a flat to gently undulating bluff overlooking the main channel of the Mississippi River. Both the southeast and southwest sides of the site have been steeply incised by stream activities. The site is underlain by glacio-fluvial deposits which increase in thickness from north to south across the site. These deposits are underlain by the Prairie Du Chein Group and the Jordan Sandstone Formation. The St. Lawrence Shale Formation (a confining layer) is present at the base of the Jordan Formation, approximately 200 feet below the central portion of the site (see Figure 2).

An extensive body of knowledge regarding the site hydrogeology has been developed through prior site investigations, permitting processes and in support of site operations. Figure 3, attached, provides a map of site groundwater monitoring and production well locations. Figure 4 shows the potentiometric surface from the latest round of site water level monitoring. Table 1, below, provides a summary of historic static water level elevations recorded at site monitoring wells. All site monitoring wells are finished in the upper unconfined aquifer at the site.

Table 1
Cottage Grove Groundwater Elevation Summary
1986-2002

Monitoring PL	1/1/1986	7/1/1994	4/25/1996	6/10/1996	7/30/1996	5/1/2000	6/1/2001	12/7/2001	7/1/2002
MW-1	742.57	751.07	757.6	756.46	755.02	751.64	758.90	755.69	756.54
MW-2	693.41	702.1		713.53	711.89	724.29	722.15	721.68	721.52
MW-3	679.42	689.83	705.8	703.07	702.02	696.21	710.75	713.51	713.08
MW-4	674.83	683.33	694.3	692.99		690.02	698.33	700.64	700.23
MW-5	749.23	756.31		760.6	759.54	757.36	763.16	759.13	762.52
MW-6	706.81	713.85							
MW-7		736.10		739.36	738.82	734.98	740.16	739.59	739.22
MW-8	699.15	700.11	702.3	702.12	701.06	700.58	705.50		703.93
MW-9	706.99	714.02	724.9	722.21	721.67	713.36	726.87	724.65	725.61
MW-10	683.92	688.30		692.25	691.30	691.73		696.29	
MW-11	678.62	687.63	694.28	693.23		687.57	699.47	701.43	699.53
MW-12	676.62	679.31	684.1	683.71	681.85	684.86	686.63	688.33	689.72
MW-13	685.09	687.21	689.1	689.01	688.09	689.31	690.48	690.73	690.91
MW-14									
MW-15			650.0	650.0	648.0	651.50	653.20	655.57	657.25
MW-16			664.0	664.0	662.0	664.41	666.09	667.07	668.57
MW-17			709.3	706.09	705.02		709.95	712.45	712.94
MW-18			714.6	711.05	711.05	700.79	713.96	716.30	717.05
MW-19						701.38	705.62	706.05	706.94

Six high-capacity pumping wells (PW-1 through PW-6) supply water to support operations at the site (see Figure 3). The groundwater from four of these wells (PW-2, PW-3, PW-4 and PW-5) feeds the on site water supply distribution system on a continuous basis for various site needs including production and sanitation. Bottled water has been provided for a number of years at the site for drinking water. The remaining two wells are utilized independently on a periodic basis for site-wide fire protection (PW-1) and air pollution control at the site incinerator (PW-6), respectively.

These six high-capacity wells were installed during the period 1947 to 1970. Four of the wells are drilled into the Jordan Formation and two of the wells are located in unconsolidated alluvium near the Mississippi River. However, all pumping wells obtain groundwater from the surficial, unconfined aquifer. Studies have documented that groundwater is constrained from downward vertical flow by the underlying St. Lawrence Formation (StL). Groundwater, below the StL, has been documented as being confined below the facility, and wells finished below the StL have produced flowing artesian conditions at pool elevation of the river.

Although historical water level data indicates a natural hydraulic gradient toward the river, pumping of the wells (which started in 1947) has created a persistent cone of depression in the groundwater beneath the developed portions of the site (see Figure 4). The cone of depression effectively limits movement of groundwater from the site to the adjacent river. All groundwater used for the production processes is treated after use, at

the site wastewater treatment facility, prior to NPDES permitted discharge to the Mississippi River. There is no potable groundwater use downgradient of the site and no wells are present between the site and the river. No discrete springs are present along the base of the bluff adjacent to the river; therefore, groundwater discharge from the area around the site enters the pool of the river by diffuse seepage.

REMEDIAL INVESTIGATION

On September 23, 2003, MPCA and 3M staff agreed that the Remedial Investigation (RI) process, as set forth in Part II and outlined in Exhibit A of the CO, should be reinitiated. Both parties agreed that the RI should build on the RI previously completed for the site.

The RI is to be focused on FC compounds for which analytical methods are currently available. To be consistent with the MPCA-approved NPDES site monitoring program, the following five FC carboxylate and sulfonate compounds ("target analytes") will be monitored at the site:

1. C6 Acid - Perfluorohexanoic acid (PFHA);
2. C8 Acid - Perfluorooctanoic acid (PFOA);
3. C4 Sulfonate - Perfluorobutane sulfonate (PFBS);
4. C6 Sulfonate - Perfluorohexane sulfonate (PFHS); and
5. C8 Sulfonate - Perfluorooctane sulfonate (PFOS).

Paraphrasing from Part II of the CO, as applied to target analytes, the purpose of this RI is to:

1. define the extent and magnitude of on-site contamination resulting from the past site waste disposal practices of FCs;
2. define the hydrology and geology of the site and the potential routes of exposure; and
3. provide information and data needed for consideration of response actions.

The following work plan will provide the information necessary for completion of the RI objectives. Specific tasks are developed to address each of the three objectives.

As possible, define the extent and magnitude of on-site contamination resulting from the past site use of FCs.

- Document and summarize the history of FC manufacturing, testing and disposal at the site. This will include the areas used for early product testing and large scale manufacturing, and the disposal locations associated with both processes. Identified potential source locations will be plotted on a site base map;
- Available historic information will be compiled on the treatment and disposal of FC wastes through the wastewater treatment plant. Identified potential disposal locations for sludge/ash will be plotted on a site base map;

- Available historic information on air releases of target analytes will be compiled and identified potential source locations will be plotted on a site base map;
- Historic information on any spills of FCs will be compiled and these potential source locations will be plotted on a site base map; and
- Historic information on soil and groundwater testing of target analytes will be compiled in tabular form.

Define the hydrology and geology of the site and the potential routes of exposure

- A table will be developed summarizing the construction details of all existing well points at the site and the aquifer depth monitored;
- A table will be developed documenting the pumping activity of the production wells at the site;
- A site potentiometric surface map will be constructed utilizing the most recent site-wide groundwater levels;
- A MODFLOW model will be developed that reflects the potentiometric surface map, site geographic features and the average annual pumping rates for the site production wells;
- Particle tracking will be completed to verify the potential groundwater receptor route at the site. The MODFLOW model will be used to validate groundwater flowing beneath the previously identified potential source areas is captured by the site production wells;
- Initially, a groundwater sample will be collected for target analytes analysis at all site monitoring wells;
- Thereafter, a monitoring well network will be proposed that focuses on known or suspect source areas ;
- A groundwater sample will be collected for target analytes analysis at each of the six site production wells and a sample will be collected from the "loop" at Building 116 cafeteria;
- To document potential groundwater discharge to surface water outside the defined zone of capture of the production well network, four sample locations will be established at the base of the bluff between the Mississippi River and the 3M facility on the north side of the railroad right of way. Based on access, the points will be established roughly equidistant between the facility wastewater outfall and directly south of MW-16. A "PushPoint" probe will be extended to the water table at these locations and a groundwater sample will be collected for target analytes analysis. Specific locations will be determined in the field based on access;
- A subsurface sampling plan, to evaluate potential contaminant transport from the Fire Training Area, will be developed;
- Sampling procedures, previously approved by the MPCA at the D1 area, will be utilized for sampling at all groundwater sampling locations; and
- All samples will be transported to the laboratory under appropriate chain-of-custody procedures.

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1 been marked as Exhibit 48, and ask whether 2 you recall ever seeing this particular e-mail 3 from Michael Santoro dated April 13, 2004, 4 subject meeting with MPCA Commissioner, 5 Sheryl Corrigan, with attached meeting notes. 6 MR. ARMSTRONG: Again, the 7 question is has she ever seen this? 8 MR. BILOTT: Yeah, I think that's 9 what I asked. 10 A. No, I don't believe I have. 11 Q. All right. Were you aware that 3M had 12 created notes of its meeting? 13 A. No. 14 Q. When 3M arranged to come in and meet with 15 you, was there any sign-in sheet for the 16 meeting? 17 A. I believe from a securities perspective all 18 visitors sign in at the front door of the 19 agency. So there's -- and we're given a 20 badge, an identification badge and had to go 21 through a gate. 22 Q. While you were commissioner of the MPCA, was 23 it the MPCA's practice to create lists of 24 attendees at meetings with the Commissioner? 25 A. It was not my practice, no.	1 discuss that. 2 And in the last sentence, "An answer 3 to a question, Sheryl indicated that no 4 effort was underway to classify these 5 substances (PFOS or PFOA) as 'hazardous' 6 under Minnesota Environmental Regulations." 7 Do you see that? 8 A. Yes. 9 Q. Does that refresh your recollection that, in 10 fact, the issue of the hazardous nature of 11 PFOA and PFOS was discussed with 3M? 12 MR. ASHLEY: Object to the form 13 and foundation. 14 A. Apparently, might have been discussed, and 15 the way that I'm reading this is that we had 16 a discussion about what was going on broadly 17 around environmental regulations and 18 hazardous designations. And perhaps Mike 19 asked a question about four chemicals, and I 20 would have said to my knowledge or to my 21 knowledge there was no activity. But, again, 22 that's to the best of my knowledge. And 23 others probably have much more access to more 24 accurate knowledge since I was not a part of 25 those activities.
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1 Q. Was it your practice to keep notes of any 2 kind of meetings? 3 A. No. 4 Q. Was this particular meeting with 3M recorded? 5 A. No. 6 Q. Was any -- so no videotape exists, correct? 7 A. No. 8 Q. No audiotape of any kind exists, correct? 9 A. Not to my knowledge. 10 Q. I'd like to refer you to the meeting notes 11 that are attached to Mr. Santoro's e-mail, 12 which begins on the second page. Do you have 13 those in front of you? 14 A. Yes. 15 Q. And the list of attendees Mr. Santoro 16 provides there, that is accurate, isn't it? 17 A. Yes, I think so. 18 Q. In the last page of these meeting notes, the 19 middle paragraph that begins questions were 20 asked, do you see that? 21 A. Yes. 22 Q. Mr. Santoro states that, quote, "Questions 23 were asked about the impact of the PFOA work 24 on the state agency and environment groups 25 within the state." And then he goes on to	1 Q. Do you recall 3M -- 2 A. Which Mike knew. 3 Q. Do you recall 3M raising with you their 4 concern that apparently one of the assistant 5 attorney generals, in particular Alan 6 Williams, had authored an opinion that PFOA 7 or PFOS were, in fact, hazardous under 8 Minnesota Law? 9 MR. ASHLEY: Object to the form. 10 A. I had no knowledge of that. 11 Q. The next paragraph of Mr. Santoro's notes 12 says, quote, "For the future it was agreed 13 that communication would take place as needed 14 so that there would be no surprises for 15 either the MPCA or 3M." Do you see that? 16 A. Yes. 17 Q. Did such future communications take place 18 with 3M? 19 A. After that meeting, I told Jim Warner that if 20 there were any future conversations or 21 overtures from 3M that he would be the person 22 that would deal with those. So there may 23 have been other conversations that occurred, 24 but certainly not with me. 25 Q. You agreed to this particular meeting with

65 (Pages 257 to 260)

2100 3rd Avenue North, Suite 960*Birmingham, Al 35203*
1-800-888-DEPO

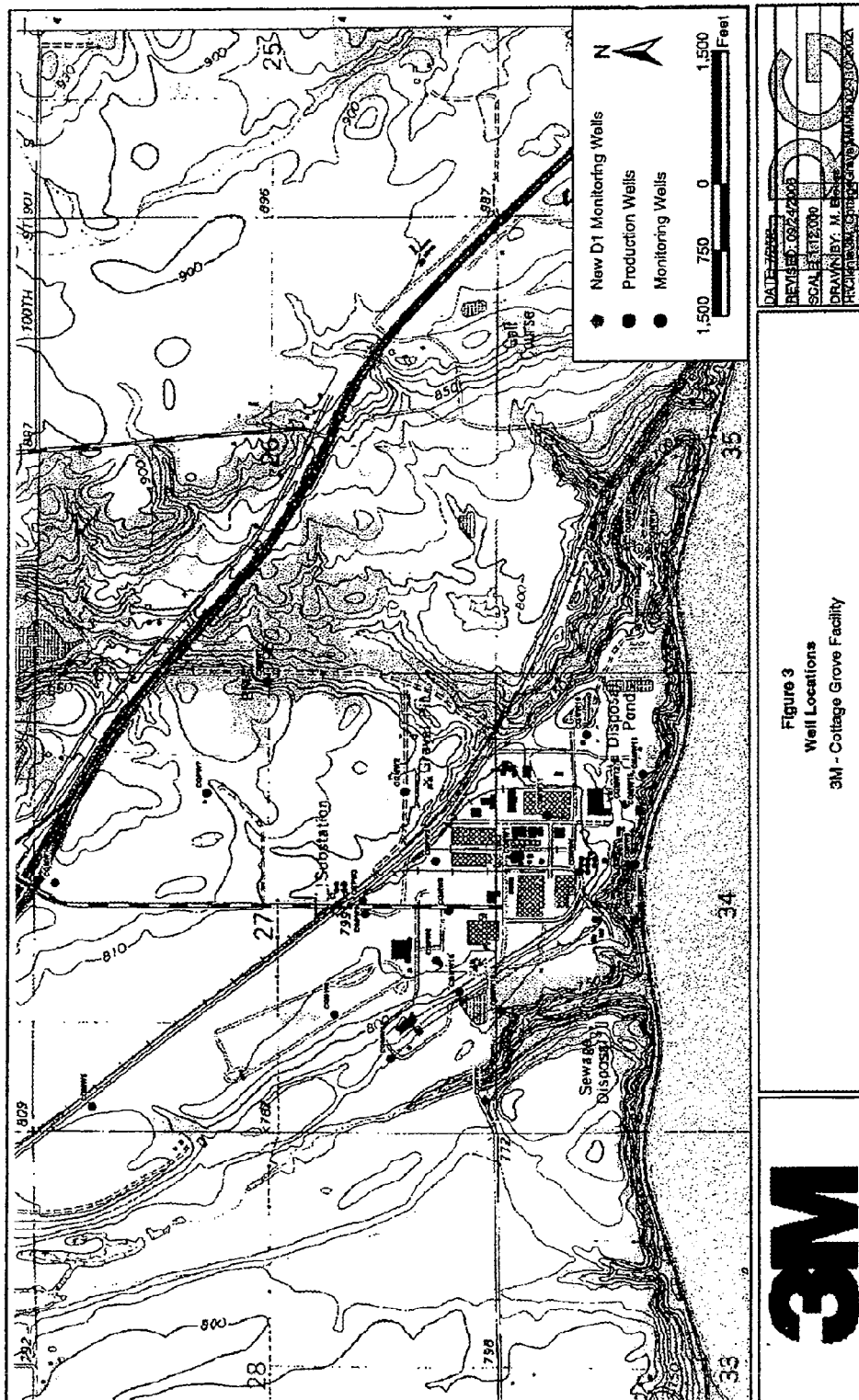
Provide information and data needed for consideration of response actions.

The results of the facility-wide assessment will be presented in a written report to the MPCA. The report will:

- Include field methodologies and analytical results;
- Compare the analytical results to the appropriate ecotoxicological test results for PFOA and PFOS;
- Discuss the implications of submitted results; and
- Provide recommendations for additional site work or response action.

SCHEDULE

The following schedule has been developed for completing these work tasks. Note, the dates are predicated on a thirty (30) day MPCA response for each deliverable.



3M

Figure 3
Well Locations
3M - Cottage Grove Facility

