



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

October 21, 1986

IN REPLY REFER TO: 4400

Mr. Russell L. Cerk
Vice-President, Manufacturing
Freeman Chemical Corporation
P.O. Box 247
Port Washington, WI 53074

SUBJECT: Groundwater Remediation Monitoring Plan, Saukville, Wisconsin

Dear Mr. Cerk:

We have reviewed the groundwater monitoring plan submitted by Hatcher, Inc. and dated September 11, 1986. We believe that the proposed plan will adequately monitor the groundwater remediation program established at the Saukville plant this summer. We agree with the proposed location of all new monitoring wells and urge you to install those wells this fall, if at all possible.

We request that you sample all of the monitoring and production wells in the vicinity of the plant quarterly for one year to establish baseline concentrations. Thereafter, the number of wells monitored and/or frequency of monitoring can be re-evaluated. We expect that in the future a number of wells would be monitored quarterly with all wells sampled once per year. We have several recommendations regarding well installation and construction. A table is attached summarizing the existing and proposed wells at the site and the monitoring schedule.

Recommendations

1. The new wells should be installed according to the Department's "Guidelines for Monitoring Well Installation." We recommend that new wells, particularly those placed in highly contaminated areas, be constructed of galvanized steel or other solvent resistant material. However, PVC pipe and screen is acceptable.
2. The wells monitoring the glacial and glaciofluvial overburden should be constructed with a 5 to 10 foot factory slotted screen. The overburden wells should not penetrate into the bedrock. An appropriately-sized filter pack should be placed from the well tip to one to two feet above the well screen and the annular space should be backfilled with granular material. The surface should be sealed. A vandal-proof casing should be placed over each well and immobilized with a three to five-foot concrete or cement grout plug.

3. The casing for new dolomite monitoring wells should be sealed through the glacial overburden and into the top of the dolomite with bentonite or cement grout. All monitoring and extraction wells in high traffic areas should be protected from damage by heavy equipment by placing concrete guard posts or other devices around each well.
4. Boring logs should be recorded for each new wells. The logs should include soil descriptions (based on undisturbed samples collected from each major soil layer and maximum five-foot increments), method of sampling, depth of sampling, date of boring, water level measurement and date of water level measurements. The new wells should be installed without the use of drilling fluids, which may affect future water quality analysis. Soil boring information for all wells installed should be recorded to the depth of the bottom of the well screen.
5. The new wells should be thoroughly developed soon after installation. Development methods should include use of a surge block, a bailer, a pump or an air lift pumping compressed air. Water jetting should be used only if followed by one of the other methods to remove water and fine sediments. The development method should cause water to flow rapidly in and out of the well screen, in order to dislodge and remove fine particles. Water should not be added to the well if the well can be developed adequately without it. If water is added, it should be obtained from a public or private water supply. Use water from the boring only if suspended sediments are first removed.

The development procedures should be documented in a well construction report, which should be submitted with the Site Construction Documentation Report. If any new wells are installed after the Site Construction Documentation Report is submitted, documentation of the installation and development procedures shall be submitted within 60 days of the well installation. The well development documentation should include the following items:

- a. Date, time and elevation of water levels in well, taken before and after development;
 - b. Methods used for well development;
 - c. Time spent developing the well;
 - d. Volume of water removed from the well;
 - e. Volume of water added to the well (if any);
 - f. Source of water added to the well and any chemical analyses;
 - g. Clarity of water before and after development;
 - h. Presence of sediment at the bottom of the well.
6. The well construction report should include information on the construction of each well. In addition to the well development information listed above, the well construction report should include for each well:

- a. Type of well casing.
- b. Type of joints (threaded).
- c. Type of well screen.
- d. Screen slot size.
- e. Type of filter material used (sand or gravel).
- f. Type of backfill.
- g. Type of grout.
- h. Distance from ground surface to the top of the stand pipe.
- i. Distance from ground surface to bottom of well.
- j. Thickness of concrete plug.
- k. Bentonite seal(s). Thickness and location.
- l. Distance filter pack extends above top of well screen.
- m. Length of well screen.
- n. Type of drilling method.
- o. Protective devices (e.g., pipe, locking cap).
- p. Solvents used (if any).

Much of the above information can easily be displayed on a diagram with written descriptive support. Additional elevations are needed to complete the Well Information Form (see below).

7. The groundwater monitoring Well Information Form (WIF) should be completed for all wells installed at the facility (including all existing wells, whether required in the groundwater monitoring program or not). One line of the WIF should be completed for each new well installed and submitted to the Department within 60 days of the well installation. The WIF should be submitted in addition to the well construction report and boring log; it does not take their place.
8. A plan review of the proposed facility should be submitted (drawn on 8-1/2" x 11" paper) with the original WIF submittal. It should include the location of all monitoring points and the private wells located closest to the proposed landfill. The plan view should be drawn to scale, and a grid system should be included. As with the WIF form, this plan sheet should be updated with new well locations and abandonment dates with each subsequent WIF submittal.
9. Groundwater monitoring for the Freeman Chemical Corporation, Saukville Plant, should take place quarterly for one year following installation of all new monitoring wells. All extraction and monitoring wells in the plant vicinity should be monitored for volatile organic chemicals (VOCs)

and odor within 15 days of March 15, June 15, September 15, and December 15. Analyze for VOCs using GC/MS VOC scan with quantification by purge and trap sample concentration method or GC utilizing photoionization and Hall detector. The attached table lists the wells to be included in the monitoring program.

10. After one year of monitoring, Freeman Chemical Corporation should submit a report to the Department summarizing the results of the groundwater monitoring program and proposing modifications to the program. This report may be incorporated into the annual report for the entire project requested by the Department in our May 12, 1986 project review letter. The first Annual Report should be submitted after completion of four quarters of groundwater monitoring.

If you have any questions about groundwater monitoring or well installation, please call Terry Evanson at (608) 266-0941.

Sincerely,



Richard E. O'Hara, Chief
Hazardous Waste Management Section
Bureau of Solid Waste Management

REO:pe
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Attachments

cc: Cindy Slavik/John Krahling - SED
George Bain/Roger Hatcher - Hatcher, Inc.
Rick Karl - EPA Region V - 5HE/JCK/12
Chuck Slaustas - EPA Region V - 5HS/JCK/12

TABLE 1

GROUNDWATER PROGRAM - FREEMAN CHEMICAL CORPORATION

<u>Well #</u>	<u>Quarterly VOC Monitoring</u>	<u>Well Type</u>	<u>Remarks</u>
<u>Deep Dolomite</u>			
MW-1	Yes	Village Water Supply (former)	
MW-2	Yes	Village Water Supply (former)	
MW-3	No	Village Water Supply	
MW-4	No	Village Water Supply	
W-30	Yes	Discharge Well and Cooling Water Supply	Existing To be
PW-8 (Laubenstein)	Yes	Discharge Well	Reconstructed
<u>Shallow Dolomite</u>			
W-21A	Yes	Discharge Well	Existing
W-24A	Yes	Discharge Well	Existing
W-28	Yes	Discharge Well	Existing
W-29	Yes	Discharge Well	Existing
DA	Yes	Monitoring Well	Proposed
DB	Yes	Monitoring Well	Proposed
W-7	Yes	Monitoring Well	Existing
16A	Yes	Monitoring Well	To be Reconstructed
PW-3A	Yes	Monitoring Well	To be Reconstructed
W-22	Yes	Monitoring Well	Existing
W-23	Yes	Monitoring Well	Existing
W-25	Yes	Monitoring Well	Existing
W-20	No	Monitoring Well	Existing
<u>Glacial Sediment</u>			
RC-1	Yes	Dewatering System	Existing
RC-2	Yes	Dewatering System	Existing
RC-3	Yes	Dewatering System	Existing
W-31	No	Dewatering Well	Existing
W-32	No	Dewatering Well	Existing
W-33	No	Dewatering Well	Existing
W-34	No	Dewatering Well	Existing
W-35	No	Dewatering Well	Existing
W-36	No	Dewatering Well	Existing
W-37	Yes	Dewatering Well	Existing
SA	Yes	Monitoring Well	Proposed
SB	Yes	Monitoring Well	Proposed
SC	Yes	Monitoring Well	Proposed
SD	Yes	Monitoring Well	Proposed
SE	Yes	Monitoring Well	Proposed
SF	Yes	Monitoring Well	Proposed

Glacial Sediment (continued)

SG	Yes	Monitoring Well	Proposed
SH	Yes	Monitoring Well	Proposed
SI	Yes	Monitoring Well	Proposed
1A	Yes	Monitoring Well	Existing
4A	Yes	Monitoring Well	Existing
6A	Yes	Monitoring Well	Existing
8	Yes	Monitoring Well	Existing
14A	Yes	Monitoring Well	Existing
26	No	Monitoring Well	To be Abandoned
27	Yes	Monitoring Well	Existing

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