FINAL REPORT

INTERIM REMEDIAL MEASURE PROGRAM

FINAL DESIGN DOCUMENT

GRIFFIN TECHNOLOGY, INC.
TOWN OF FARMINGTON, NEW YORK
INDEX NO. B8-3158-90-01

September 25, 1996

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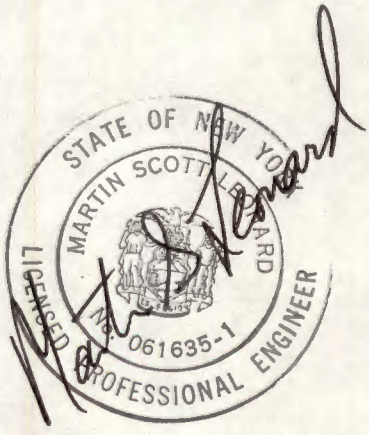

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1.0 BACKGROUND

The Griffin Technology, Inc. site (GTI) is located at 6132 Victor-Manchester Road in the Town of Farmington, Ontario County, New York. The facility formerly disposed of an unknown quantity of waste photocoating material containing small quantities of trichloroethene (TCE) on the ground surface adjacent to the west side of the GTI manufacturing building. This practice was used from 1977 until 1984, when it was ceased. In response to the voluntary disclosure of this past disposal practice, GTI entered into an Order on Consent (#B8-315-90-01, March 28,1991), with the NYSDEC to perform a Phase II Investigation of the potential impacts to soil and groundwater. Blasland, Bouck & Lee (BB&L) completed the Phase II investigation in July 1991. In order to collect additional site characterization data, a supplemental groundwater investigation was completed in March 1996.

As a result of these investigations, GTI and NYSDEC agreed to implement an Interim Remedial Measure Program (IRM) to address groundwater contamination underneath the GTI site. The IRM consists of an additional source investigation and the installation of a groundwater extraction system. Information regarding these activities is presented below.

2.0 DESIGN DESCRIPTION

The selected groundwater IRM technology consists of a network of three extraction wells located downgradient of the source area. The locations of the wells and other system components are illustrated on Drawing 1. The extraction wells will remove groundwater,

forming a hydraulic barrier to control the migration of the groundwater plume and prevent further off-site migration. Groundwater will be transported through closed conduits equipped with secondary containment and discharged into the local sanitary sewer for ultimate treatment at the POTW. This discharge will be regulated according to the discharge agreement between the Canandaigua-Farmington, New York Water and Sewer District (Farmington) and GTI. A copy of this agreement is included as Appendix A.

The recovery wells will be installed in the undeveloped parcel of land located immediately west of the site. The well configuration was determined using the results of the hydraulic conductivity tests performed by BB&L as part of their 1994 investigation activities, and modeling of the unconsolidated water-bearing zone using a two dimensional model. For modeling purposes, the arithmetic mean of the BB&L hydraulic conductivity data (2.9×10^{-3} cm/sec) was used, along with an anticipated yield of 5 gallons per minute (gpm) per well for the duration of the IRM activities. These results indicated that three wells should be sufficient to capture groundwater downgradient of the source area and form an effective hydraulic barrier in both the shallow, unconsolidated materials and the upper bedrock. The modeled radius-of-influence of each well was approximately 25 to 30 feet per well.

Groundwater will be recovered from the wells using submersible electric pumps which are capable of extracting the groundwater at flow rates ranging from 5-10 gpm. Operation of the pumps will be controlled using high and low-level switches, and flow control valves. Power will be supplied to each recovery well pump using a common underground conduit. The power will be monitored from a control panel installed inside the GTI building. The pumps will discharge groundwater through a minimum 1-inch diameter flexible tubing conduit encased in a rigid pipe for secondary containment. Extracted groundwater will be routed to a below-grade, common header located in a central access vault (See Drawing 1). This header will be designed such that additional wells, if monitoring indicates the capture zone needs to be expanded, can be readily plumbed into the line. Also the line can be easily cleaned to remove scale and other deposits. A previously stated, the header will discharge all recovered groundwater to the sanitary sewer under a discharge agreement with Farmington.

Sampling ports and totalizing flowmeters will be installed on each extraction well conduit as well as the common header prior to discharge into the sanitary sewer. The sampling ports, flow totalizers, and flow control valves will be located in the central access vault for ease of accessibility (See Drawing 2). The frequency and type of monitoring to be performed for the POTW as part of the discharge agreement, will be specified in the final discharge permit. Sample collection and monitoring activities to be performed as part of this IRM, are discussed in Section 3.3 of the Work Plan and are summarized in Section 4.0 of this document.

All recovery wells will be constructed of 4-inch diameter PVC well materials in minimum 12-inch diameter boreholes in the unconsolidated materials and minimum 8-inch diameter boreholes in the dolomite bedrock. The 4-inch casing diameter allows for installation of various models of recovery pumps and the relatively large borehole diameter will maximize groundwater recovery and the associated radius of influence. Each recovery well will be installed to a depth sufficient to penetrate the bedrock to a depth of 15 feet. The screened interval of each well will consist of 0.010 inch slotted well screen approximately 20 feet in length and will be installed to straddle the soil-bedrock interface. The solid riser pipe will consist of Schedule 40 flush threaded blank PVC casing. A typical well diagram is illustrated on Drawing 2. Recovery well drilling, construction and installation were further discussed in the Field Sampling Plan (FSP) which is included as Appendix A of the IRM Work Plan.

In addition to the proposed recovery wells, two pairs of nested piezometers will also be installed as part of this IRM. These nested pairs, coupled with the existing MW-5S/5D nested pairs, will be located approximately midway between adjacent recovery wells to monitor the depression in the piezometric surface in both the shallow and the bedrock water-bearing zones. The piezometers will be constructed of 1-inch diameter PVC, with 2-foot-long screened sections to monitor discrete subsurface intervals. Piezometer completion is also more fully discussed in the FSP (Appendix A of the IRM Work Plan).

3.0 DESCRIPTION OF INSTALLATION ACTIVITY SCHEDULE

As described in the previous sections, the IRM system consists of installing three recovery wells to remove groundwater downgradient of the source area. The flow rate from each well is anticipated to be approximately 5 gallons per minute (gpm), for a total of 15 gpm from the system. The groundwater will be routed through underground conduits into a central access vault where all three wells will be connected to a 2-inch header pipe and discharged into the Village of Farmington, New York sanitary sewer system. Upon receipt of all necessary permits, including system approval from the New York State Department of Environmental Conservation (NYSDEC), installation activities for the recovery system are expected to proceed in the following order:

1. Excavation of trenches (anticipated to be 12 inches in width for all trenches).
2. Installation of recovery wells and nested piezometers.
3. Installation recovery lines and secondary containment.
4. Installation of header and discharge pipe.
5. Connecting discharge pipe to sanitary sewer.
6. Plumbing inspection.
7. Backfill trench areas electrical conduit installation grade.
8. Installation of power supply conduits and wires.
9. Installation of access vaults and electrical junction boxes.
10. Installation of control panel inside building.
11. Installation of recovery pumps.
12. Connect all electrical system components.
13. Electrical inspection.
14. Backfill all trench lines to grade.
15. Test system.
16. System Start-up.

The anticipated schedule of these activities is illustrated in Figure 1 of this document.

Cross sections showing the proposed trench layout, wellhead installation, access vault configurations and sanitary sewer connection are illustrated on Drawing 2. All electrical components (i.e. control panel, wiring, circuit breakers, etc.) will be finalized upon selection of the recovery pumps and level sensor components.

4.0 IRM MONITORING PROGRAM

Groundwater samples will be collected from all on-site and off-site wells on a semi-annual basis for the first two years of the IRM and on an annual basis thereafter to monitor the progress of the IRM program. In addition, samples of soil and groundwater will be collected during the IRM installation activities in order to characterize the waste materials for disposal. The schedule of sample collection and reporting activities to occur during the first two years of system operation, is included as Figure 2.

The primary means for gauging the effectiveness of the hydraulic barrier is by measurement of water levels in existing wells and piezometers to be installed as part of this IRM. Water levels will be measured on a weekly basis during the first month of system operation and on a monthly basis thereafter. This information will be used to confirm that a continuous zone of groundwater depression exists along the length of the hydraulic barrier and that this zone of influence extends vertically to influence the impacted groundwater that has been detected within the bedrock water-bearing zone. The system will be operated for a 6-month performance period to evaluate its effectiveness. Progress reports will be prepared at the end of each month for the first three months and submitted to the NYSDEC. Subsequent progress reports will be prepared quarterly thereafter and submitted to the NYSDEC. These quarterly progress reports will also incorporate the semi-annual event reports previously specified. If water level monitoring indicates that insufficient groundwater control is being achieved, then the design will be optimized by increasing pumping rates, and/or by installation of additional recovery wells with the lateral spacing and well depths modified.

Effluent samples and flow measurements will be collected for analysis in accordance with the frequency negotiated with the POTW and the conditions of the discharge permit. If GTI elects to discharge treated effluent to surface water, sampling and monitoring will be conducted in accordance with the terms and conditions of an SPDES permit.

FIGURE 1
IRM Implementation Schedule
Griffin Technology, Inc

ID	Task Name
1	**Submit Design Document to NYSDEC**
2	**NYSDEC Review**
3	**NYSDEC Approval**
4	**Mobilization**
5	**Implement Field Work**
6	Obtain Permits and Approvals
7	Install Trenches
8	Install Recovery Conduits
9	Install Wells and Piezometers
10	Install Discharge Pipe
11	Connect to Sanitary Sewer
12	Plumbing Inspection
13	Backfill Trenches to Electrical Grade
14	Install Electrical Components!
15	Install Access Vaults and Electric
16	Install Recovery Pumps and Switches
17	Electrical Inspection
18	Backfill Trenches to Grade
19	Test System
20	Replace Pavement Materials
21	**System Start-up**

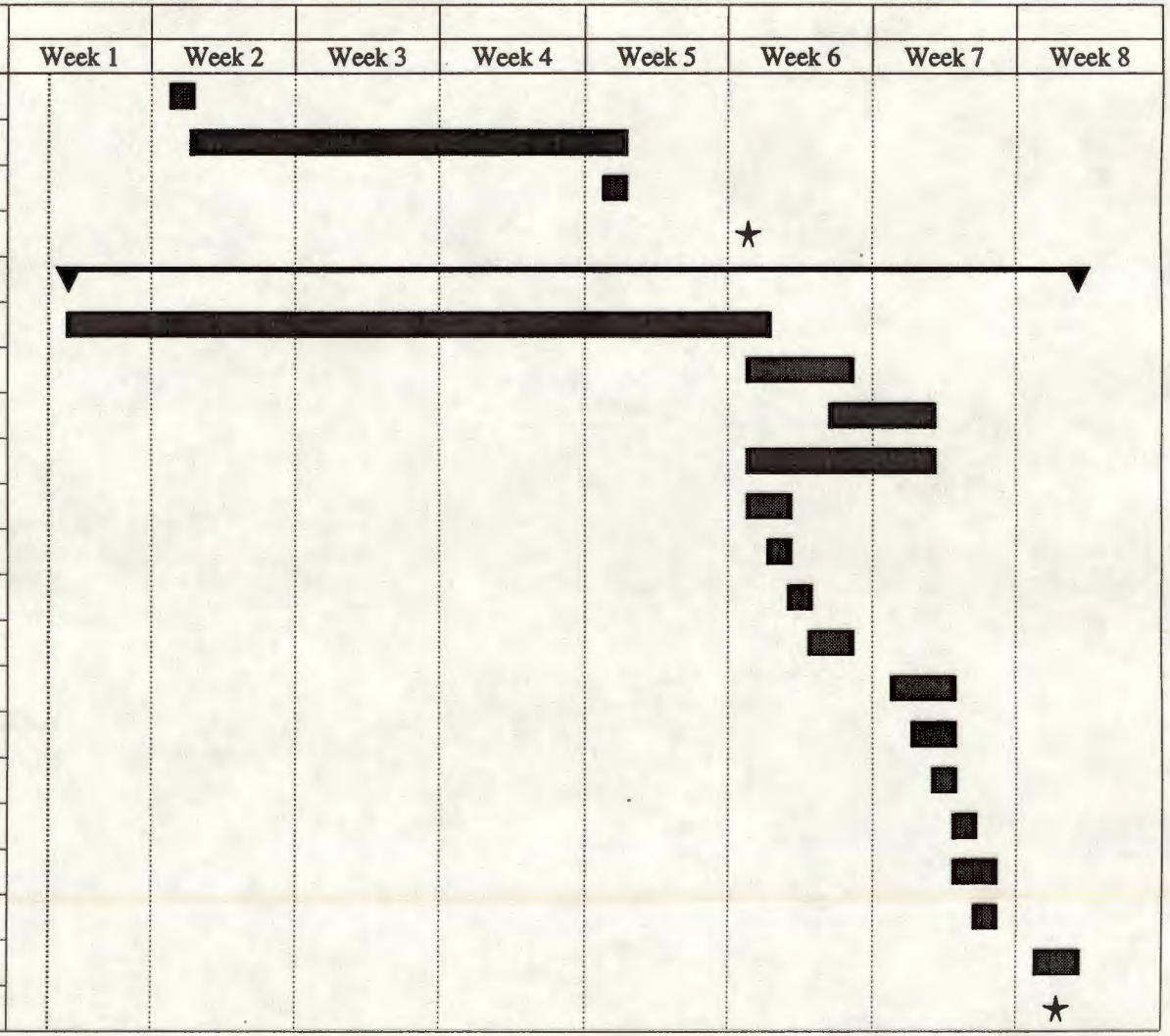

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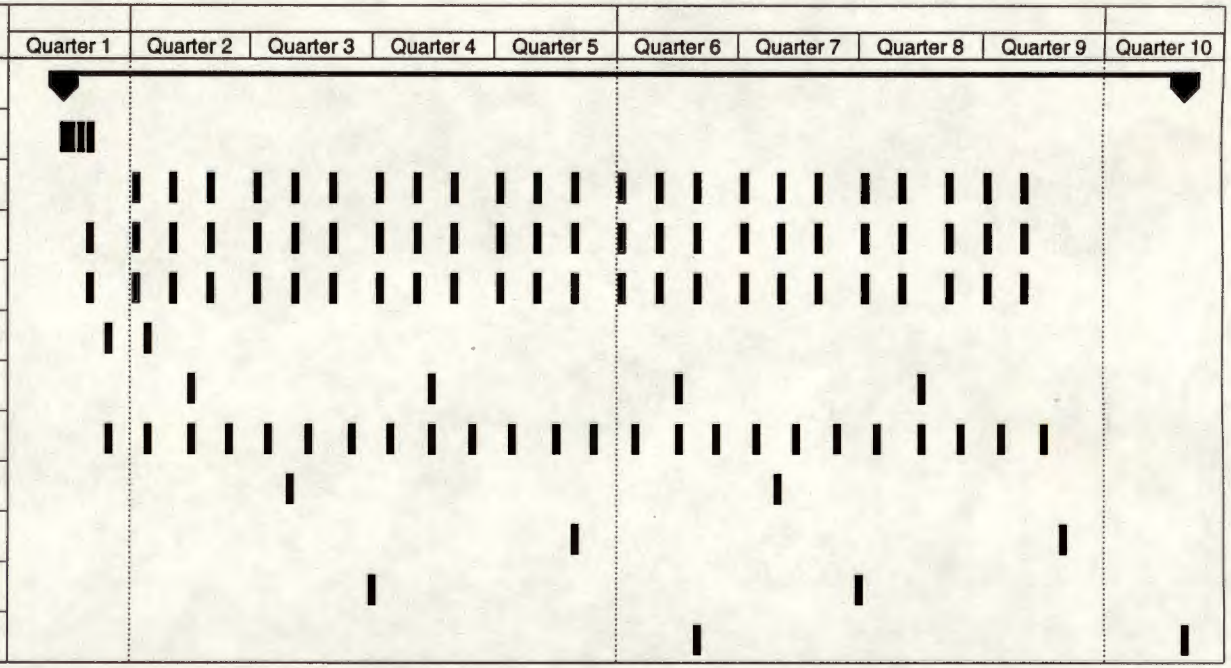
FIGURE 2
IRM SAMPLE COLLECTION AND REPORTING SCHEDULE
GRIFFIN TECHNOLOGY, INC.

ID	Task Name
1	Data Collection and Reporting
2	Water Levels (Weekly for 1st Month)
7	Water Levels (Monthly after first month)
31	Effluent Sample Collection (Monthly)
56	Discharge Flow Readings (Monthly)
81	Progress Reports to NYSDEC (1st 2mos.)
84	Quarterly Progress Reports to NYSDEC
89	Monthly Discharge Reports to POTW
119	May Semi-Annual GW Monitoring Event
122	Dec. Semi-Annual GW Monitoring Event
125	Semi-Annual GW Report to NYSDEC
128	Semi Annual GW Report to NYSDEC



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Canandaigua-Farmington Water & Sewer District

TOWN OF FARMINGTON

James E. Crane, Superintendent
1216 McMahon Road
Victor, New York 14564

May 10, 1996

HOWARD ROSSER
GRIFFIN TECHNOLOGY
1777 GREENVIEW
WALWORTH NY 14568

RE: DISCHARGE INTO PUBLIC SEWER SYSTEM

Dear Howard Rosser:

It is our understanding that Griffin Technology would like to start Phase 3 of the ground water recovery program at this time.

According to a report dated November 5, 1992 from Blasland & Bouck Engineers, the potential discharge is approximately 7,200 to 14,400 gallons per day.

As I pointed out in the past, there will be a charge for the processing of this waste material. The charge will be $ 3.00 per thousand gallons.

Sincerely,

James E. Crane

James E. Crane, Supt.
Water & Sewer Districts

Appendix A