

ROYSTER CLARK SITE
Environmental Assessment – Notes

General Background

To meet state and federal labeling and quality control requirements, all fertilizer must specify its product constituents as a percentage of nitrogen, potassium and phosphorus (N-P-K).

As described in a 1997 letter to DNR from Montgomery Watson, a Madison-based environmental engineering firm, regarding Royster-Clark's stormwater discharge permit, the Royster-Clark facility at 902 Dempsey Rd "produces granular agricultural fertilizer by blending raw materials. Raw materials are received in bulk quantities by rail or truck and typically include phosphoric acid, anhydrous ammonia, sulfuric acid, potash, mononitrogen polyphosphate, and diammonium polyphosphate."

"Dry raw materials are received by train or truck and unloaded into pits, from which covered conveyors transport the materials into the blending building. Raw materials which are spilled during unloading are swept into the pit for transport into the blending building."

"Wet raw materials are received by train car and truck, and the material is pumped directly into on-site holding tanks. The truck unloading facility for wet raw materials has a spill containment structure to capture and contain spills."

"The raw material storage, fertilizer blending operations and finished product storage areas of the facility are covered, underground or enclosed. After blending inside the facility (and dried), dry fertilizer products are stored in bulk inside concrete domes or in 50-pound bags inside a warehouse."

In regard to its corporate history, Royster-Clark has operated a fertilizer manufacturing plant (one of more than 30 facilities nationwide) at 902 Dempsey Rd since the early 1950s. The company changed its name in 1992 from the Royster Company to Royster-Clark, reflecting ownership changes at that time (DFI records). On February 9, 2006, Agrium, Inc., a Calgary, Alberta, Canada agribusiness company, acquired 98% of Royster-

Clark stock, assuming all of its operations and facilities. Agrium ceased operations at the eastside Madison facility in August, 2006.

DNR Regulatory Oversight

Air Quality

Smokestack emissions resulted from the drying process used at Royster-Clark. Key regulated constituents of the air emissions from the facility have been particulates and ammonia. Although its air quality permit allowed up to 55 lbs per hour of ammonia in its emissions, later biennial stack tests showed emissions rates of 0.45 lbs per hour, about one one-hundredth of the limit. This coincided with the use of corn starch as a binder in the manufacturing process in 2002, replacing anhydrous ammonia. The dryers were fueled by a natural gas-fueled boiler. There were no VOCs or sulphur compounds released in any of the plant's air emissions. The smoke plume, especially in the later years of the facility, consisted mostly of water vapor.

A venturi scrubber was operated at the facility to control particulate emissions since the mid-1980s (?). A hearing on Royster-Clark's air quality permit was requested and held in 1999. The biggest change in the company's air quality assurance operations since 1999 was a substantial increase in water usage for the venturi scrubber, measured in gallons per minute.

Brownfield Remediation

DNR has an open, non-enforcement case involving the Royster Company that began in August, 1990.

According to documents on file at DNR South Central Offices, three underground storage tanks (USTs) were removed from the property – one, 1,000 gallon unleaded gasoline UST, one 500-gallon leaded gasoline UST, and one 1,000 gallon diesel fuel UST. The storage tanks were in poor condition, badly corroded, and one tank had a sizeable open hole. Soil samples taken at the time contained 6000 ppm of total petroleum hydrocarbons.

According to the October, 1994 Project Update to DNR from Northern Environmental Technologies, the original environmental engineering firm

selected by Royster in 1992 to perform the remediation work, a total of 1900 cubic yards of soil were excavated and removed as part of the initial remediation. Five groundwater monitoring wells were installed. Groundwater contaminants found included benzene, toluene, ethylbenzene and xylenes. A groundwater recovery treatment system was installed and operated, removing 25,600 gallons of contaminated groundwater by 1994. About 200 gallons of contaminated groundwater continued to be recovered, treated and discharged into the Madison storm sewer system each day.

Environmental engineering consultant studies identified the average linear velocity of groundwater at the site to be 2.1 feet per year, flowing in a southwest direction.

Thin layers of free product continued to be observed in two of the monitoring wells in later years of the project, and especially at monitoring well #4 from 1996-2000, but less than 2 gallons were recovered.

In March, 1997, another remediation system was installed -- a dual phase groundwater extraction/soil vapor extraction system. The system operated with 3 extraction wells until December, 1998. The system removed about 104,800 gallons of water and an estimated 685 pounds of total petroleum hydrocarbons.

Project closure requests were made by environmental consulting firms contracted by Royster-Clark in 2000, 2002 and 2004. In each instance, the DNR South Central Region Closure Committee denied these requests, stating that additional site work was necessary in order to meet statutory requirements for site closure. In 2002, for example, concern was expressed that the contaminant plume may be diving below the water table due to high concentrations of contamination, that additional piezometers be installed, and that additional monitoring for the presence of free product at several of the existing monitoring wells be accomplished.

RMT was the environmental engineering firm selected by Royster-Clark in 1998 to continue with the PECFA remediation project. In 2004, Advanced Consulting LLC was awarded the PECFA bid for continued remediation work at the site, performed the installation of two piezometers, but failed to complete any other work, including groundwater sampling. In 2006, Royster-Clark terminated its contract with Advanced Consulting and selected BT2 in the subsequent PECFA bid round. A cost cap for remedial

activities was also established. BT2 is contracted to perform the following with respect to its contract:

- Disposal of nine drums of soil cuttings.
- Sampling monitoring wells MW1 through MW5, DMW4, the two new piezometers, and extraction wells RW1, EW2 and EW3 on a quarterly basis for one year.
- Measurement of water elevations at all wells during each sampling event.
- Measurement of free product in the extraction wells during each sampling.
- Removal of free product every two weeks for two months from extraction wells with free product.
- Preparation of reports following each sampling event and at the completion of all free product removal and disposal.

The DNR contact for this project is Wendall Wojner (275-3297). Patrick McCutcheon (275-3241) is the Remediation & Redevelopment Team Supervisor at the DNR South Central Regional Office.

Stormwater Management

DNR also has regulatory jurisdiction on environmental issues and concerns regarding surface water and stormwater management on the Royster-Clark premises.

Since the advent of stormwater management regulations, DNR has issued a stormwater management permit to Royster-Clark. Chemical sampling and monitoring has been done at the site on several occasions.

According to a 1997 letter to DNR from Montgomery Watson, an environmental engineering firm contracted by Royster-Clark to address its WPDES stormwater discharge permit, runoff from the facility discharges the site at three locations:

- Outfall #1 is a retention pond located in the northeast corner of the site which holds runoff until it can infiltrate into the ground.
- Outfall #2 is a catch basin located near Dempsey Rd which drains to a City of Madison storm sewer.

- Outfall #3 is two holding ponds located along the north side of the property along the railroad tracks. These holding ponds contain the runoff until it can infiltrate into the ground.

In addition, there have been four sources of non-storm water discharge at the facility including:

- The first discharge is the boiler blow-down which discharged water while the boiler is operating. The discharge was onto the asphalt east of the blending building.
- The second discharge was a water fountain that operated continuously and discharged onto the asphalt near the boiler blow-off discharge. The water fountain used water supplied by the City of Madison.
- The third non-storm water discharge is drainage of groundwater from fountain drains located below the building. These building drains discharge into a swale west of the blending building which discharges to the holding ponds in Outfall #3.
- The fourth non-storm water discharge is discharge of treated groundwater from a groundwater extraction and treatment system located along the east side of the property along Dempsey Road. The groundwater system discharges to a catch basin along Dempsey Road. There is a WPDES permit for this discharge.

Chemical sampling of water at Outfalls #1-3 have been tested on several occasions for total nitrogen, total phosphorus, ammonia nitrogen, copper, zinc and chloride.

According to a 1991 WPDES Stormwater Discharge Permit Application addendum on file with DNR South Central Region, "natural biodegradation and nutrient uptake occurs in the wet detention ponds...Outfalls #2 and 3 route stormwater off the property. Outfall #2 drains to the City of Madison storm sewer system, and Outfall #3 is a grass swale which drains to a catchbasin channeling stormwater to a Starkweather Creek tributary... Runoff from the majority of the impervious area draining to Outfall #3 enters two wet detention ponds before discharging to the Outfall. These detention ponds act primarily as sedimentation holding ponds and have 2-4 feet of "FreeBoard" under normal conditions. Plant personnel have stated that the holding ponds discharge stormwater to Outfall #3 very infrequently.

Currently, Agrium has contracted with BT2 (Tom Culp) on stormwater management and discharge issues associated with the facility.

The DNR contact for this is Eric Rortvedt (273-5612), DNR South Central Region.

DATCP Regulatory Oversight

The Department of Agriculture, Trade and Consumer Protection has primary regulatory oversight over spills and soil/groundwater remediation at the Royster-Clark site as part of its agri-chemical management program.

DATCP began a soil & groundwater contamination investigation in 2003 at the site. A remediation workplan resulting from the site investigation was prepared and approved by DATCP in 2003. Remedial actions to date include (1) two soil excavations at the site, landspreading of the high nitrate containing soils on area farmfields, and backfilling of the excavated areas with new top soil; and (2) installation of a new rail unloading system, including concrete paving.

Prior to DATCP assumption of this environmental responsibility, Warzyn Inc was retained by Royster Company in 1991 to perform a subsurface investigation of groundwater and soils at the Dempsey Road site. The purpose of the investigation was to assess potential soil and groundwater contamination from fertilizer components at and downgradient of the facility. Six soil borings were conducted. One surface water and sediment sample was collected from the retention pond. Groundwater samples were analyzed for chloride, ammonia nitrogen, total nitrogen, nitrate+nitrite-nitrogen and total phosphorus. Elevated concentrations of nitrogen (in the form of both ammonia and nitrate) were detected in groundwater samples and downgradient of the site. Ammonia levels detected indicated potential migration of contaminants off-site. Nitrates were detected in groundwater at concentrations in excess of enforcement standards at four of five locations.

According to this 1991 study, surface water samples from the runoff pond contained relatively high concentrations of nitrogen (498 mg/L, phosphorus (71 mg/L) and chloride (642 mg/L). Sediment samples also contained high concentrations of nitrogen (1,391 mg/kg) and phosphorus (3,180 mg/kg).

“The pond is apparently perched (above the water table). However, some recharge may occur from the pond to the groundwater, and thus the pond may be a potential source of groundwater contamination.”

In 2004, remediation activities overseen by DATCP included excavation and removal of 1,330 tons of soil at the location of the rail loading dock, backfilling with new topsoil and paving with concrete.

The 2005 site summary report by the private environmental engineering firm, BT2, identified an additional 5,798 tons of soil removed from another location at the site. Two soil samples obtained from the work identified total N (nitrogen) at greater than the 150 ppm cleanup goal.

There are currently six monitoring wells that have been installed as part of this project. Wells #1 through #3 are located along the fenceline of the property to the west. Wells #4 and #6 are located by the ammonium sulphate silos by the escalator belt and rail loading dock. Well #5 is located by the fenceline of the property along Dempsey Rd.

The DATCP contact for this soil and groundwater remediation project is Rich Graham (224-4515), Division of Agricultural Resource Management, Agrichemical Management Bureau.