



UNIVERSITY OF MINNESOTA
TWIN CITIES

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September 4, 1984

Mr. Bruce S. Davis, Project Leader
Responsible Party Unit, Site Response Section
Division of Solid and Hazardous Waste
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, Minnesota 55113

Dear Mr. Davis:

Pursuant to your request for information dated August 2, 1984, the University of Minnesota submits the following information, comments, maps and copies of documents related to solid and hazardous waste disposal at the University of Minnesota Rosemount Research Center. The responses presented here represent our best information to date. Since it is possible that more details will be uncovered as this study proceeds, we will continue to inform you of any new information we receive regarding the points raised in your request.

The following documentation is presented in the same order and format as were your questions. We will be glad to try to answer any further questions you may have.

Sincerely,

Fay M. Thompson, Ph.D.
Assistant Director, Department of
Environmental Health and Safety

Enc.

September 4, 1984

University of Minnesota Rosemount Research Center

REQUEST FOR INVESTIGATION AND THE PRODUCTION OF DOCUMENTS

A. General

1. Provide a history of the site and the nature of business conducted by the University from date of purchase to present.

The following information is excerpted from a document prepared by the University of Minnesota's Office of Physical Planning in 1977 for use in planning for development of the Rosemount Research Center (RRC).

"The Rosemount property was originally the Gopher Ordnance Plant constructed during World War II for munitions production. The land, buildings, and some equipment were acquired by the University through Quitclaim Deeds of the United States Government Farm Credit Administration in August, 1947, and through the War Assets Administration in March, 1948. The terms and conditions by which the property was conveyed were based on a University proposal of July 1, 1946, to use the land and "facilities for development of research, education, public health, reforestation and State purposes of a similar nature." This land which was to be abrogated over a 25 year period has since been released to the University and is no longer subject to the conditions of the original Quitclaim Deeds. Based on the original negotiations, the property was developed into two research areas: the Agricultural Experiment Station, located on the western one-third of the property, and the Rosemount Research Center which occupies the eastern two-thirds of the site."

"AGRICULTURAL EXPERIMENT STATION: In 1947, 1450 acres were allocated to the Experiment Station to accommodate expanding research programs within the Institute of Agriculture. The Station has since grown to 2700 acres, making it the largest of the branch stations. Its concept and operation are different from that of other branch stations. The outstate stations have a resident research staff, while staff members of Rosemount coordinate their work through their respective departments on the St. Paul Campus, being administratively responsible to the Rosemount Station Superintendent. Research work is of first priority at the Station followed by seed production for research use. Land not committed to research is operated as a general farm to produce feed for herds and flocks at Rosemount and on the St. Paul Campus. Research is conducted by University Departments, the

majority of which have an assigned site at the Station. Research is also carried out in cooperation with various governmental and community agencies concerned with agricultural and natural resource development and information."

"RESEARCH CENTER: The Center now comprises 5300 acres. In addition to being a support facility, the Center also serves as a land bank for expanding Experiment Station programs. In the past the Center housed several programs including the Aeronautical Research Laboratories, public health programs, cancer research programs involving animals, and Army and Navy ROTC programs. It now accommodates a Veterinary Medicine research farm, provides animal housing facilities for University Hospitals, is the site for the Institute of Technology energy conservation house, and affords storage areas for University Departments. Excess tillable land is leased to farmers. Serviceable Ordnance Plant facilities are leased to private industry as storage or production space on a year-to-year basis when not in use by the University."

The University has also used certain locations within the RRC for waste disposal, generally either demolition debris, hazardous chemical waste of various types, or agricultural waste. These waste disposal activities will be discussed in succeeding sections.

To the best of our knowledge, disposal of any type of waste from the Twin Cities Campus at RRC did not begin until somewhere around 1959. Prior to that time, demolition waste from RRC itself and agricultural waste would have been disposed on-site, but it is not clear at what locations.

2. Provide a map or aerial photo of the area showing boundaries past and present.

A map of the RRC, showing present boundaries as well as the original boundaries of the Gopher Ordnance plant, is appended as Attachment 1.

3. Provide a list of all past tenants utilizing the UMRRC and describe the nature of their business.

A list of past tenants who have rented space at RRC as well as a list of current tenants is appended as Attachment 2. This information was compiled from records available in the RRC office. The RRC records provide only a very cursory description of each tenant's business.

4. Provide copies of all documents that serve to identify any solid or hazardous wastes or in any way describe previous disposal practices or disposal locations on the UMRCC property.

Copies of documents which describe some early waste disposal operations, some of the philosophy behind waste disposal at RRC, and a survey of liquid waste disposal are appended as Attachment 3. Other documents are appended in sections B, E, F and H as appropriate.

Unfortunately the burial location of the items mentioned in the 1963 letters is uncertain, although we have reason to believe that all chemical burial has taken place in the general vicinity of the chemical burn pit. Leroy Dilley, who has been employed at RRC since 1953, is of the strong opinion that chemicals were not buried at any other location. Mr. Dilley does remember that for one to two years pathological specimens were disposed at the 155th St. dump site on the Agricultural Experiment Station. This site has not been used for dumping for many years. The site is indicated on Attachment 4.

5. Provide copies of all well logs and locations for all wells on University of Minnesota Rosemount property.

Well logs taken from the Labno thesis are appended as Attachment 5. Location of these wells is indicated on a map of the Agricultural Experiment Station and on a map of the chemical waste disposal area. Also located on Attachment 5 are disposal areas for sewage sludge which have been utilized in the past. The only active site is the southernmost one.

6. Provide details of all radioactive storage known to have taken place on UMRRC property and details of any incident which may have taken place.

The University of Minnesota has operated a low-level radioactive waste storage facility at the Rosemount Research Center since the mid-1950's. The original storage facility (the present Building D, 914-A) was used for low-level radioactive waste storage until 1980. See Attachment 9 for building locations. From 1980 to the present, Building A (401-A) has been used for storage of these wastes. A portion of Building C (401-B) has been used for storage of deregulated scintillation vial wastes which are now classified as organic solvent chemical wastes. These low-level radioactive waste facilities are used only as temporary holding facilities where the waste is held in Department of Transportation approved transport drums until a sufficient number of drums to constitute

a truckload are accumulated. The drums are then loaded on a transport vehicle and shipped to a licensed low-level radioactive waste disposal facility. For the past several years all of the University's low level radioactive waste has been shipped to the U.S. Ecology Inc. Radioactive Waste Disposal Facility located in Richland, Washington.

Following the termination of the use of Building D as a radioactive waste storage building in 1980, the University Radiation Protection Program conducted a closeout survey prior to transfer of the building to Physical Plant for use as a chemical waste storage facility. Results of this survey indicated no residual contamination remaining at the site following transfer of the radioactive waste drums to Building A. Routine surveys are also conducted at Building A by the Radiation Protection Program and to date there is no radioactive contamination of the Building A facilities.

B. Waste Disposal Burn Pit

1. Provide construction details of the disposal pit.

The waste disposal burn pit was constructed in 1968 or 1969 by filling in an existing east-west drainage ditch at two locations about 80 feet apart. The resulting pit was about 35 feet by 80 feet by 12 feet deep. (These are surface dimensions. Since the pit walls were sloped, the actual pit bottom was smaller than given here.) The pit was enclosed with a chain link fence having two gates (on north and south sides) to permit disposal and burning from an upwind direction. Two combination blast shield-chutes were used to protect employees disposing of waste.

2. Identify the person or persons who were in charge of the UMRRC disposal burn pit as well as any UMRRC employees who would have knowledge of past disposal practices.

Oversite of the chemical burn areas was generally under the charge of Warren Soderberg of Physical Plant, and William Cook and Norm Ellingson (deceased), Superintendents of the RRC. Actual disposal and burning of chemical waste was carried out by Ed Zipoy (deceased) and Bob Logsdon, employees of Physical Plant. Assistance was given to these two individuals by many employees of Physical Plant. Other RRC employees who occasionally had contact with chemical disposal are Leroy Dilley and Bob Ferguson. Maurice Tipcke, John Teske, Jim Phoenix, Gustave Scheffler, Roger DeRoos, Robert Reid, and Dio Brock were all periodically involved in planning for or participating in waste disposal.

Although the burn pit did not require a permit, Floyd Forsberg, Blaine Seaborn and Larry Kramer of the Minnesota Pollution Control Agency all followed the disposal process and approved the operation as the best available alternative. MPCA partially funded the monitoring project instituted in 1971.

3. Identify which facilities or departments of the University of Minnesota utilized the disposal facilities at the Rosemount Research Center.

Laboratory facilities on the Minneapolis and St. Paul campuses (including but not limited to chemistry, health sciences, agriculture, etc.) were the major contributors to the chemical burn pits. Periodically small amounts of used solvents from maintenance operations and some oil would also have been burned. See Attachment 6 for summary of activity in 1971, when a special effort was made to collect information on quantity and disposal of chemical waste.

4. Identify persons or companies other than University of Minnesota who may have utilized the UMRRC disposal burn pit.

No one outside of the University has contributed wastes to this burn pit.

5. Identify waste types and quantities of waste disposed of at the UMRRC disposal burn pit and periods of time disposal occurred.

Wastes disposed in this burn pit cover the range of laboratory chemicals - solvents, corrosives, salts, heavy metals, organics and inorganics. Quantities of waste were estimated by Saint and Reid to be approximately 7000 gallons per year. Employees who estimated the volume of waste collected considered only the size of the container, not the amount of material in the container. Therefore this estimate is the upper limit of quantity since many containers are not full (and may be virtually empty). See Attachment 6.

Disposal in this burn pit occurred from its construction (1968 or 1969) until mid-May, 1974. (See memorandum from DeRoos in Attachment 6.) After 1974, the burn pit was used only twice. A one week load of waste was brought to the pit sometime in 1975 when Pollution Controls could not accept it. A second use occurred in 1976 when a wooden box saturated with solvent (pentane) was destroyed.

6. Identify any and all users, generators and haulers who shipped waste to the UMRRC disposal pits.

See items 2 and 3. Hauling was done by the same personnel who collected and disposed of waste.

7. Provide copies of all water quality sampling analysis conducted around the UMRRC disposal burn pit or on UMRRC property or on U of M Agricultural Research Center property.

Water quality analysis of samples taken from the burn pit monitoring wells is recorded in the Saint thesis (pp. 206-209) for the period April 1971 to September 1972 and is included in Attachment 7. Subsequent sampling and analysis yielded the following results, shown in Table I.

Sampling of the burn pit monitoring wells was accomplished by use of standard laboratory containers. Analysis for total hydrocarbon was done by direct injection of well water into a flame ionization gas chromatograph. Detection limit was usually about 1 ppm.

TABLE I

Summary of Organic Analysis of Monitoring Wells

<u>Date</u>	<u>Well # 1, mg/l</u>	<u>Well # 4, mg/l</u>
3-74	< 5	
4-74 to 5-75 (33 samples)	< 1	
6-6-75	2	
6-22-75	4	
4-2-76	< 5	< 5
5-2-76	< 5	< 5
7-13-76	< 5	< 5
10-1-76	< 5	
9-12-77	< 0.1	0.9
4-6-78	6	4.2
11-28-79	< 1	4
8-20-80	< 1	< 1
4-1-81	< 1	< 1
4-82	< 1	< 1
4-83	< 2	< 2
6-15-84	4 chlorinated hydrocarbons, ranging from <0.2 to 2.9 µg/l	all VOC below limits of detection

Wells at the Agricultural Experiment Station are routinely sampled for bacteriological quality. In almost every instance, coliform levels were less than 1/100 ml. Any positive coliform result has been directly related to servicing or other invasion of the well and was promptly corrected by disinfection. Records are available from 1973 to present, although sampling has been done since acquisition of the site. An example of these reports is found in Attachment 7.

Sampling for nitrate was performed on two wells in 1977. Results are also included in Attachment 7.

8. Describe the condition of the disposal burn pit prior to closure and provide details of and steps taken to close the disposal pit.

Prior to closure, this burning pit had existed in an unused, uncapped state for 6-1/2 years. Broken bottles and cans were present on the surface of the pit, concentrated in areas beneath the two disposal chutes. During closure, lime was applied to a depth of 6" over the entire surface of the pit. After liming, the pit was filled with dirt and capped with a clay mound. The fence and blast shields were removed, leaving the four corner fence posts to mark the location. The pit was closed in November 1980, under the supervision of Steven Barker.

9. Describe in detail the operation of the waste disposal burn pit on a day to day basis.

The usual routine for chemical disposal involved a weekly collection of waste from generating locations on campus. Waste was collected in the morning and hauled directly to Rosemount, generally arriving by noon. For a number of years, collection was performed on Fridays. The great majority of the waste was contained in glass bottles packed in cardboard boxes. Boxes and bottles were off-loaded directly into the burn pit by sliding them down the blast shield-chute provided for worker protection. Frequently ignition would occur during disposal; if not, a lighted flare was thrown into the pit after all of the chemicals had been dumped. When the fire had died down, the gates were locked and the area was left until the following week.

10. Describe chemical disposal in areas other than formal burn pit.

Although records do not exist, the recollections of several employees (Logsdon, Tipcke, Dilley) indicate that chemical waste was first burned in a trench area immediately east of the previously-described burn pit. Apparently the east-west trench from which the burn pit was constructed originally extended all the way to the borrow pit to the east (approximately 100 feet). Beginning in the early 1960's chemicals were tossed into the trench near the outlet (east end) and were burned. Fill was added periodically to level the trench and the active area was moved continually westward. Quantities estimated by Logsdon are on the order of 100 gallons or less per week. See Attachment 8 for map of chemical disposal area.

In the east borrow pit indicated on Attachment 8 several types of waste have been disposed. In the southeast-southwest portion, detonation of unstable and shock sensitive materials has taken and continues to take place. Detonation is accomplished by digging a trench, placing chemicals, detonation cord and explosives in it, and refilling the trench before ignition. The trenches are not reopened. Trench locations are marked by stakes. The detonation area has been used by explosive experts at the University as well as by Minneapolis and St. Paul Bomb Squad personnel. The University performs detonation about twice a year. The Bomb Squads use the site as necessary, which is generally quite infrequently, except for the period of time a few years ago when picric acid was being removed from many high schools. The materials most commonly detonated are old ether and picric acid.

The northwest corner of the east borrow pit was used until about 1976 to bury pathological specimens preserved in formaldehyde. This burial apparently began about 1963 after the 155th St. site was no longer used. Specimens buried were either tissue samples or teaching laboratory samples from biology or fisheries and wildlife classes or medical school areas.

Demolition debris has also been deposited on the surface in the northwest corner. Residential trash from unknown sources is visible along the west side of this borrow pit. It is likely that the pesticides mentioned in the 1963 memo in Attachment 3 are also buried in this borrow pit but the specific location is not known.

It is possible that wastes from some of the tenants on the RRC site were occasionally burned in the trench used by the University for burning. No specific information is available on this point, although several employees believe it probably occurred.

There is also a borrow pit south of the burn pit area. As far as can be determined from records and especially recollections of employees, nothing has been buried in that area.

C. Minnesota 49'ers Training Program

1. Identify all areas used by the Minnesota 49'ers training program.

Attachment 9 is a map of the present RRC. Areas used by the 49'ers in their training program are indicated in red on the map. Location A is the area presently being worked and Location B is the area used from 1979-83.

2. Identify all persons in charge of the training program at the UMRRC since inception of the program.

This training program is a joint project of the International Union of Operating Engineers Local 49 and Associated General Contractors of Minnesota. The present director is Roger Carlson. Previous director (1979-83) was Arnie Jensen.

3. Provide copies of all maps, sketches or line drawings utilized by the Minnesota 49'ers training program related to the disposal of solid, or hazardous waste.

To the University's knowledge, and according to Mr. Carlson, there are no maps, sketches or line drawings used by the 49'ers related to the disposal of solid or hazardous waste. Attachment 9 shows a location, labelled area E, where debris has been levelled on two occasions, at the University's request. The debris was largely the result of illicit dumping by local area residents as well as some demolition material from the RRC. Included in the debris were bituminous road rubble, stumps, wood, roofing, paper, glass, furniture and metal pieces. The goal is to return this area to agriculture to stop the dumping.

4. Identify names of persons who may have knowledge of past activities of the 49'ers at the UMRRC property.

The persons best able to provide information relating to 49'ers activities are the director and former director. See item 2.

5. Identify waste types, quantities of waste disposed of, how material was disposed, i.e., burial, incineration, etc., and location of disposal sites.

Other than the instance cited in item 3, we are not aware of any waste disposal by the 49'ers.

D, George's Used Equipment

1. Identify the nature of business conducted at George's Used Equipment both past and present and indicate periods of time for each.

The area presently occupied by George's Used Equipment was occupied by Porter Electric from 1-1-68 to 3-31-71. RRC office records indicate that the usage of Building 716-A was "storage of electrical supplies and equipment", although the recollection of employees is that reprocessing of transformers was a part of the business. George Moe (George's Used Equipment) began leasing that space on 4-1-71. His lease is also listed for storage although the use has evolved into a salvage operation, covering cars, rail, railroad ties, cattle and assorted junk. In the mid to late 1970's, Building 716-A was struck by lightning and burned to the ground. It was replaced by Building 301-A, which was moved from a different location.

2. Identify all areas utilized by George's Used Equipment.

Areas utilized by George's Used Equipment are indicated in blue as area D on Attachment 9.

3. Identify all hazardous wastes used past and present, quantities of waste disposed of, specific sites where disposal occurred and method of disposal, i.e., burn, burial, etc.

The University has no knowledge of wastes produced by Porter Electric or George's Used Equipment, other than the fact that they have apparently both handled transformers. For a time Mr. Moe did operate a burner which he said was approved. He was observed burning wire in it, presumably to remove insulation. Allegations of improper management will be investigated in our proposed Soil and Hydrogeologic Study.

4. Identify names of persons who may have knowledge of past and present operations.

Persons who worked for Mr. Moe, including his sons, would have knowledge of his operations. Names of employees will need to be obtained from Mr. Moe.

E. U of M Pesticide Storage

1. Identify all areas on UMRRC property used for pesticide storage past and present.

From about 1965 until 1978 pesticides were stored at RRC in Building 303-B, presently called storage Building B. (Attachment 6 indicates that pesticides were being stored even when chemicals were burned.) Presently waste pesticides are temporarily stored either in 303-B or 401-A (Building C), depending upon their chemical nature. Both buildings are identified on Attachment 9.

2. Provide information on types of material stored, quantities stored, hazardous nature of material stored and details of any known spillage accidental or intentional.

Pesticides stored in Building 303-B were accumulated over the entire storage period. At the time of disposal, 239 55-gallon drums were filled as lab packs. (A 55-gallon lab pack contains at most 25 gallons of material, due to the requirement for absorbing material to be included.) The materials ran the entire gamut of economic poisons, including experimental pesticides as well as banned and commonly-used materials. There were arsenical, chlorinated, brominated, organophosphate and other pesticides. An inventory of one drum is included as Attachment 10. There are 239 of these inventory sheets in our files.

The hazardous nature of these materials ranged from mildly toxic to highly toxic. The only spillage which might have occurred would have been during the packing operation, at which time it is not unreasonable to expect that some small amounts of materials might have been spilled, especially from paper bags of pesticides.

Since 1978 pesticides have been routinely disposed through the chemical waste disposal system. No more than a few barrels of pesticides are present at any one time, awaiting shipment for burial out-of-state.

3. Identify individuals who were in charge of pesticide storage or who have knowledge of the pesticide storage operations.

The individuals who stored pesticides are the same one who handled chemical disposal. See response to item B-2. More recently Eugene Ruenger, Steven Barker, George Dohmann, Dio Brock, Hans Harapan and David Keyes have participated in the chemical waste program.

4. Identify disposal methods and location of disposal sites for pesticide containers previously stored,

All pesticides stored in Building 303-B were packaged as lab-packs in 55-gallon drums and were shipped on 10-5-78 and 10-13-78 to NECO (Nuclear Engineering Company) at Sheffield, Illinois. See Attachment 11. Presently pesticides are shipped with other chemical waste to a NECO facility in Beattie, Nevada.

5. Provide copies of documents related to past pesticide storage and disposal.

Pesticide burial is described in items A-4 and B-10. Relevant documents on storage, disposal and burial are included in Attachments 3, 10 and 11.

F. Gopher Ordnance/DuPont Company

1. Provide details of the waste acid lagoon and nature of materials that may have been disposed of in the lagoon.

Information regarding the waste acid lagoon and its use was well-summarized by Terry Kasen in an internal memorandum to MPCA Executive Director Louis Breimburst on February 12, 1981. Attachment 12 includes this memorandum plus a similar University memorandum from Fay Thompson to C. Luverne Carlson, Assistant Vice President, Support Services and Operations, University of Minnesota. Copies of background information used by Mr. Kasen in evaluating Gopher Ordnance activities are also included. Note that page 38 of the detailed description discusses the Sewage Acid Neutralization Plant and pH monitoring at the lagoon.

2. Provide details on any solid or hazardous waste disposal known to have occurred prior to or during the decommissioning of the site.

Recollections of decommissioning activities are provided in Mr. Kasen's letter. Records of sales of excess materials were available from the War Assets Office and are included here. Copies of 1946 news articles indicate an active attempt to return excess materials to productive use.

Since decommissioning of the Ordnance site involved burning of many wooden structures, there must have been considerable rubble produced. This certainly would have been disposed on-site, probably in several areas, although just where is not certain.

3. Identify persons who may have access to records or knowledge of the site and decommissioning activities.

Many records of the site are still available in the Rosemount Research Center office, particularly maps and plans. Other records were apparently lost in a fire.

Persons who may still be alive and may remember decommissioning activities are Clarence Chelberg, duPont's fire chief, and Carlton Lockway, of the War Assets Office.

G. U.S. Transformer

1. Provide locations of properties utilized by U.S. Transformer.

The area utilized by U.S. Transformer is indicated on Attachment 9 in green and is designated site C.

2. Identify persons familiar with U.S. Transformer's past operations and disposal practices.

Former owners David Vickmark and John Betz should be best able to provide information on their activities.

3. Provide information as to period of time U.S. Transformer operated at the UMRRC.

U.S. Transformer operated at RRC from April 1973 until January 1978.

4. Identify quantities and types of waste generated, methods of disposal and location of disposal sites.

The University has no first-hand knowledge of quantities of waste generated. The type presumably is used transformer oil. Allegations of possible disposal sites will be investigated in our Soil and Hydrogeologic Study.

H. Other

1. Provide names, locations, nature of business, incidents and any other pertinent information on any tenant past or present that handled hazardous materials on the UMRRC property.

A survey of tenants who may have had hazardous wastes was conducted in 1972. The report is included in Attachment 3.

The University is aware of two incidents involving soil contamination caused by tenants. One incident deals with an investigation by MPCA of PCB contamination at U.S. Transformer in 1978. A letter from MPCA to Mr. Vickmark is included in Attachment 13.

A second incident, involving George Moe, occurred sometime later. A quantity of used ethylene glycol was spilled. The University does not have any correspondence on this incident although it should be available in MPCA records.