

**THE UNIVERSITY OF MICHIGAN
MUNICIPAL STORM WATER NPDES PERMIT MI0053902
FISCAL YEAR 1999-2000 ANNUAL REPORT**

In accordance with Part III, paragraph C-1 of NPDES Permit MI0053902, the University of Michigan (University) is required to submit an annual report of activities associated with the storm water system program. This program is a requirement of the NPDES permit issued by the Michigan Department of Environmental Quality Surface Water Quality Division on December 19, 1995. This report covers the period July 1, 1999 through June 30, 2000 and follows the format identified in the permit.

1. *Provide a brief summary of the implementation status of the plans for the elimination of illicit discharges, public education, and storm water pollution prevention.*

The University has undertaken several items in the management of storm water runoff and pollution prevention.

- An on-going survey of University owned/managed facilities is being conducted by the Department of Occupational Safety and Environmental Health (OSEH) in an effort to identify discharge points into the storm and sanitary systems. The work has concentrated on the sanitary system sampling. The initial phase of this sampling was completed in the fall of 1999. Confirmation sampling was initiated in February 2000 and will continue through February 2001.
- According to the Storm Water Program plan submitted to MDEQ, the University is divided into 4 distinct areas based on geographical separation - South Campus, Central Campus, Medical Campus, and North Campus. One campus area will be selected each year for 4 years to conduct a dry weather-screening program. Last summer the screening of North Campus identified an illicit connection from the Cooley building to the storm water system. Refer to Paragraph 2 below for a description of that concern. This summer the Medical Campus has been selected for the screening. We anticipate the work to be performed during August and September, with any required follow-up activity during the ensuing months. A report of this activity will be provided in the 2001 Mid-Year Report.
- The installation of a 1 million-gallon storm water detention cistern. Refer to number 4 below for a detailed description.
- Implementation of a pumping system to allow building services personnel to empty waste water collected from floor cleaning to the sanitary drains in closet sinks.
- Education programs reported in the mid-year report are continuing. The OSEH department project with the School of Natural Resources (SNRE) has completed the storm water educational video. Distribution of the video and/or viewing of the video is underway through several channels, including staff, student & faculty new hire orientation, training sessions conducted by OSEH and building services. A copy of the video is enclosed along with this report for your viewing.

Additionally, as opportunities arise for education, training is being provided to staff. As an example, vendors during the Ann Arbor Art Festival and at University sporting events are being educated on proper disposal of gray water from the food vending operations. The Department of Public Safety has received training in their daily briefing sessions.

- The OSEH Web page at www.umich.edu/~oseh is being maintained. This site contains a variety of articles on storm water quality management.

- Pollution prevention efforts continue through catch basin cleaning, street/parking lot sweeping, and litter collection programs. Soil erosion control efforts were implemented at a variety of construction projects during this past year. These efforts all reduce the quantity of sediment that may reach the Huron River.
- A *Salt Use Quality Improvement Team* has made considerable progress in identifying and employing a variety of liquid and solid materials on campus. The goal of the team is to promote *Best Management Practices* for de-icing that minimize deterioration to buildings, infrastructures, and the environment without compromising the safety of the University's students, faculty, staff, and guests. The 1999-2000 winter season yielded many positive indications that these *new best management practices* can succeed in reducing total deicing materials usage. The primary project focus to date has been on advancing new liquid deicing/anti-icing technologies, equipment calibration and associated material distribution patterns, area closure, education, and training. These investigations will continue in the 2000-2001 winter season. Two new liquid deicers were piloted during the 1999-2000 winter. M-50, a corn based deicer similar to IceBan, and a newer generation corn based liquid deicer named Caliber M-1000. Both worked satisfactorily, with the exception of some odor and tracking problems associated with the M-50. In addition to the alternative liquid de-icers, 700 gallons of salt brine solution was also employed with great success. The use of liquids is showing immense promise in that as liquid use increases, total solids (sand and rock salt) use decreases, thus reducing potential storm water pollutants. This program will expand further in the upcoming years and additional studies will look at using various blends of deicing agents. The effect of alternative deicers on vegetation, cost benefit on infrastructure maintenance, and safety issues will also be looked at. There is difficulty in judging the success of alternative de-icers due to the variable winters conditions that we have experienced year to year. Attached are summary tables and a chart of precipitation information and de-icing material usage.
- A major initiative to evaluate the storm water system of the University has been completed, and the final draft of the report is under review. The study, conducted by CH2M Hill under contract to OSEH has accomplished several tasks including: 1) an aerial survey and digitized topographic maps to a one foot contour interval, 2) verification of invert elevations on catch basins and manholes, 3) modeling of runoff patterns across campus and through the storm drain system to evaluate capacity, and 4) preparation of a report. The report provides recommendations for both short term and long term solutions to controlling storm water runoff and flooding of campus buildings.

2. *Provide a report of illicit discharges and illicit connections removed, and schedule for illicit connections and their associated discharges yet to be removed.*

The following "illicit discharges" were identified and eliminated during this reporting period:

- As in the previous year, a field survey was performed of food vendors from Ann Arbor Art Fair during site preparation for the events to determine how gray water was handled and disposed. A central location was provided for vendors on University property for disposal into the sanitary system. Drums were also provided for the separate disposal of oil and grease. Vendors were educated on transporting gray water to the proper disposal point. Proper disposal methods of gray water have been incorporated as a condition of their contract with University to set up their booths at the festivals.
- U-M OSEH sanitarians are working on a continual basis with kitchen and food vendor personnel in facilities across campus to ensure proper waste handling and disposal methods are used.

- Cooley Building: Floor drains in a mechanical room were found to be connected to the storm water sewer system. The drains were rerouted to the sanitary sewer.
- The following “illicit connections” were identified and could not be corrected immediately.
 - ◇ Medical Science II: After completing dye testing, it has been determined that the 28 floor drains that were thought to go to the storm water system are actually connected to the sanitary sewer system. Three floor drains have been located that tie into the storm water sewer. One of the drains will be capped off when renovation begin in the MS II building. Of the remaining two, one is located within a cold storage unit and only collects condensate. A cost estimate has been put together to cap them off.
 - ◇ Mosher Jordan Dormitory: A potential cross connection was identified at the Mosher Jordan Dormitory on Central Campus though the dry weather screening program. Upon investigation, it was found that discharges from some of the bathrooms and possibly a laundry room inside the building are routed to a manhole that is split into both sanitary and storm water. University of Michigan plumbing services plans install a cap over the storm water side September 2000. This will eliminate the potential cross connection.
 - ◇ Phoenix Memorial Laboratory: A potential cross connection has been identified. Floor drains in a mechanical room may be connected to the storm water system. The suspect drains are located under large slabs of concrete that need to be moved prior to completing the investigation.

3. *Provide an evaluation and summary of the effectiveness of the Storm Water Management Program. The report shall include an assessment of the pollution reduction and probable receiving water impacts associated with program implementation. When applicable, a statement shall be included regarding any negative water quality impacts that may have occurred as a result of any illicit discharges or accidental spills during the year.*

In accordance with Part III-A, methods to evaluate effectiveness of the program can vary, depending on the type of activity undertaken. The following factors are being reported during this period; however, this may change as the program becomes more formalized.

- Item 2 above discusses the effectiveness of “illicit discharge” identification and reduction.
- During this reporting period OSEH Hazardous Material personnel responded to approximately 50 incidents, involving spills and leaks of hazardous materials that could have potentially impacted storm water. The majority of the spills were small, a few milliliters to a few gallons. At most locations, no discharge to the storm system was noted and materials were well below reportable quantities. The materials were contained with spill kits; cleaned up using absorbent materials, and removed for appropriate disposal by OSEH’s on-call emergency response team. Response activities involved leaks and spills of diesel, gasoline, hydraulic oil, latex paint, blood, and ethylene glycol based anti-freeze in parking areas, driveways, and other outdoor places. A few examples of such releases and the corresponding response actions are given below.
 - ◇ Approximately 8 to 10 gallons of diesel fuel leaked from a vehicle near the fuel dispensers in the Transportaion Services parking lot. Oil dry was used to absorb the

spilled fuel, which was then collected and sent out for proper disposal. No discharge to the storm drain was noted.

- ◇ Approximately 50 gallons of hydraulic oil/water/ash mixture leaked from a dumpster at the University of Michigan Hospital dock. Some of this mixture entered a storm drain. Response personnel used sorbent pads to clean the oil from the impacted manhole and drain and placed oil dry on the mixture that was on the asphalt. A sorbent pad was placed over the drain out fall to the retention pond as a precautionary measure. The water that remained in the drain was then removed with a vacuum and sent out for proper disposal, along with the used oil dry.
- ◇ Approximately 2 gallons of anti-freeze was released from an automobile involved in an accident near the main entrance to the hospital. The anti-freeze was moving toward a storm drain, but was intercepted prior to entering it. The spill was cleaned up using oil dry absorbent. No discharge to the storm drain was noted.
- A catch basin cleaning program has been underway during the last year. The University owns, operates, and maintains its own vacuum truck. During this past year, catch basins across the campus were cleaned and the sewer lines rodded out. The liquid waste was drained to approved sanitary locations and the remaining 29,000 gallons of sediment and debris was transported for solidification and disposal off-site at Waste Management – Venice Park in Lennon, Michigan.
- The University Parking Services and Grounds and Waste Management Department (G&WM) conduct street and parking lot-cleaning programs. During this period approximately 250 cubic yards of sediment were collected and sent off site for disposal. In addition to sweeping and vacuuming of surface lots and parking structures, Parking Services Department has involved itself in using alternate de-icers during the winter. This was done to improve customer service, decrease the damage to structures from use of salt, prevent clogging of drains due to sand, and to become environmentally friendly. The G&WM performs a litter collection program, where approximately 2000 cubic yards of litter was collected and sent for off-site disposal as normal municipal waste.

4. *Provide proposed modifications and updates to the Storm Water Management Program, including an update on areas added to the University's municipal separate storm water drainage system due to annexation or other statutory processes. Proposed modifications and updates shall include schedules for implementation when appropriate.*

The University of Michigan plans to build a 1 million-gallon storm water detention cistern under the new parking deck to be built in conjunction with the Life Sciences building. This cistern will handle storm water flow from the Palmer Drive area as well as some rerouted flow from south of the area. This will help to alleviate flooding at the Dana/Randall buildings, as well as improve the effectiveness of the Allen Creek storm water system. The university plans to install an oil/water separator in this system to remove potential floating contaminants. The cistern itself will act as a settling tank for silt and other heavier than water debris. A pump will introduce the detained storm water into the storm line after the flooding has subsided.

5. *Provide revisions, if necessary to the assessments of controls and the fiscal analysis reported in the permit application under 40 CFR 122.26(d)(2)(iv) & (v).*

No revisions are proposed at this time.

6. *Provide a summary of any data, including water testing or screening data, that has been developed since the previous annual report and which is not reported elsewhere in the annual report.*

Monitoring data on the storm water system dry weather screening for the Medical Campus will be provided in the 2001 Mid-Year Report. No other data has been developed during this period.

7. Provide the previous year's annual expenditures and proposed budget for the fiscal year following the report.

The expenditures and budget are shown in the following table.

ACTIVITY	99-00 UNIVERSITY LABOR AND MATERIALS ¹	99-00 CONTRACTOR COST OR DIRECT PAYMENTS	00-01 BUDGET ESTIMATE
Permit administration	\$20,620		\$20,000
OSEH Survey of building connections to storm system	\$43,000	\$11,000	\$60,000
Campus wide storm water runoff and flooding study		\$390,948	
Storm water detention pond construction			\$2,900,000
Storm water education program	\$10,000		\$10,000
Catch basin maintenance and cleaning program	\$383,476	\$60,000	\$500,000
Street sweeping program	\$40,354	\$6,500	\$50,000
Waste Management Department Litter collection & disposal	\$550,000	\$38,000	\$600,000
Parking structure cleaning program	\$432,694	Included with Street sweeping program.	\$433,000
Storm water utility charges paid to Ann Arbor		\$237,303	\$300,000
OSEH spill response activity		Footnote 2	
Plant Extension Division		Footnote 2	
TOTALS	\$1,480,144	\$743,751	\$4,873,000

Footnotes: 1 - University labor costs include estimated base salary, 28% for benefits, and 52% for indirect cost recovery charges.

2 - These departments and divisions have moderate storm water costs and are not tracked separately by the University budget system.

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ATTACHMENTS