

IOWA STATE UNIVERSITY

---

MUNICIPAL SEPARATE STORM SEWER SYSTEM  
2018 ANNUAL REPORT

Permit Number 85-03-0-04

March 2019

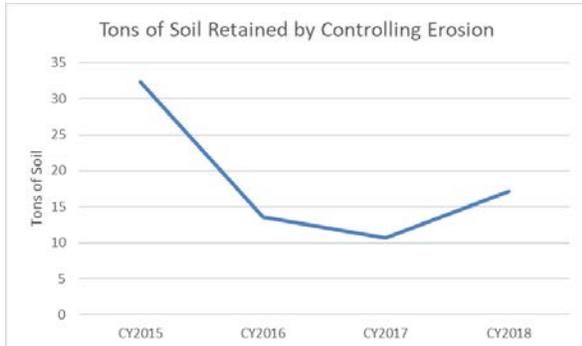
Prepared by  
Department of Environmental Health and Safety  
and  
Facilities Planning and Management  
2408 Wanda Daley Drive  
Ames, Iowa 50011-3602

# IOWA STATE UNIVERSITY

## Storm Water 2018 - Quick Facts

“Essentially, all life depends upon soil ... There can be no life without soil and no soil without life; they have evolved together.” – Charles E. Kellogg

### KEEPING SOIL IN ITS PLACE



EH&S completed 348 storm water inspections at 10 construction sites covering a total of 36 acres. Construction teams implemented erosion prevention and sediment control practices that prevented 17 tons (that’s 120 wheelbarrow loads) of soil from entering our waterways. Keeping soil on site and out of our local creeks and streams improves water quality.

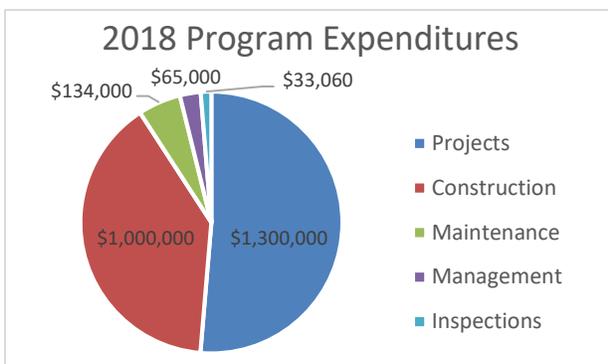
### POLYETHYLENE RETENTION CELLS AT BESSEY ADDITION



Polyethylene retention cells installed under the roadway to help control the additional amount of storm water in the area.

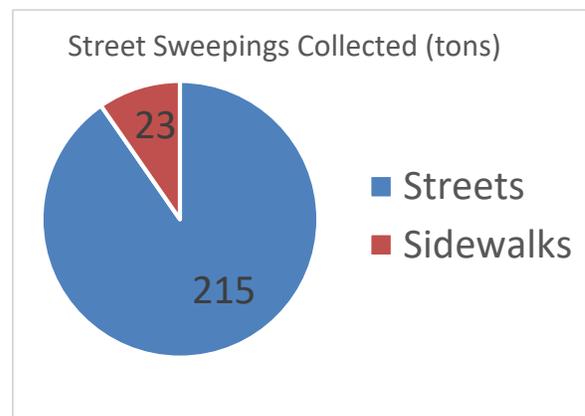
### STEWARDSHIP COSTS

Storm water management expenditures include project design, implementation, inspection, and maintenance.



### A CLEAN SWEEP

In 2018, Iowa State University collected **238** tons of sweepings from **69** miles of streets, sidewalks, and bike paths, and **178** acres of parking lots.



---

## INTRODUCTION

---

The *2018 Annual Storm Water Report* for Iowa State University (ISU) was prepared by Environmental Health and Safety (EH&S) in accordance with Part III of the facility's Municipal Separate Storm Water System (MS4) permit, number 85-03-0-04. This report summarizes storm water compliance activities within the boundaries of ISU and outlying farm properties, including Central Campus, North Campus, South Campus, Applied Science Complex, Arboretum, Southwest Athletic Complex, College of Veterinary Medicine, Dairy Teaching Farm, and the BioCentury Research Farm.

### ***STATUS OF IMPLEMENTING THE COMPONENTS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT***

---

ISU was issued a National Pollutant Discharge Elimination System (NPDES) permit on February 6, 2004. The permit was renewed in 2009, 2014, and 2019. The current permit expires on January 31, 2024.

#### **Inspection and Maintenance Program – Mike Murray, PE, Chief Mechanical Engineer**

MS4 Permit Section F.4 Inspection and Maintenance Program requires ISU FP&M to inspect the entire storm system every 5 years, recording areas inspected, dates, methods, individual conducting inspection, observations, and corrective actions.

There are approximately 2,100 manhole structures (junctions and intakes) covered under the ISU MS4 permit. These structures are labelled on the ISU Campus utility maps based on map grid and a sequential number. To date, the exact location of approximately 1,500 of structures are confirmed on utility maps utilizing a global positioning system surveying device. ISU Utilities will continue to survey service entry covers to improve map accuracy, and inspect each manhole every five years, averaging 420 inspections per year.



Since 2013, ISU Utilities have visually inspected the entire system, concluding the 5-year inspection process with 468 inspections completed in calendar year 2018. Additionally, ISU Utilities televise lines where needed to verify cleaning or investigate sewer backups. In 2018, five areas representing approximately 1,200 feet were televised. A typical photo still from a video is shown.

ISU Utilities employs a facilities management program (FAMIS) to store all maintenance records, including dates, location of maintenance, assigned staff, descriptions of repairs and maintenance, cleaning, associated cost, and materials. FAMIS works well to capture metrics and document maintenance and repair activities.

To document that the University is inspecting each manhole once every 5 years, ISU Utilities has implemented a separate data collection process. Utility crews systematically inspect the MS4 system based on campus map grid sheets. The data are kept on paper forms recording manhole number, date, person inspecting, method of inspection, and observation. The paper forms are scanned and maintained in electronic format. This combination of systematic inspections and digitized record keeping ensures that ISU Utilities satisfies MS4 permit requirements. In addition, Utilities is prototyping new methods to collect and store information electronically to evaluate cost effective choices for the MS4 system.

The primary maintenance item identified thru 2018 inspections was a manhole that had both storm and sanitary pipes running through it. While each line had an individual trough separated by a short wall, ISU Utilities felt it was an unacceptable risk and removed the storm line from the open portion of the sanitary manhole. Also, eight other storm manholes were grouted, tops rebuilt, or other modifications made as a result of these regular inspections

### Campus Volunteer Activities - Merry Rankin, Director of Sustainability

On June 27, 2018, more than 50 volunteers, donating a combined 178 hours of service, filled 52 garbage bags with trash from campus sections of College Creek on June 23. This summer's [George Washington Carver interns](#) in the College of Agriculture and Life Sciences partnered with ISU's [Live Green](#) initiative to lead the way.



The content of the bags weighed an estimated 700 pounds. Items retrieved include a Guitar Hero set, two inflatable pools, one tire and two construction barricades.

***STATUS OF ANY COMPLIANCE SCHEDULE ESTABLISHED BY THIS PERMIT OR BY ANY MODIFICATIONS TO THIS PERMIT***

---

Modifications to the permit requested by ISU and approved by the Department included eliminating the requirement to publish quarterly the telephone number for the storm water hotline. This number is posted on the EH&S web page.

***SUMMARY OF THE MONITORING DATA ON STORM WATER QUALITY IMPROVEMENTS***

---

***Water Quality Monitoring Data***

ISU is investigating new options for monitoring stream water quality. The discontinuation of the IOWATER program has temporarily eliminated this resource for tracking water chemistry and ecological health. Historic records are still available, but a source of new data and a mechanism for collecting it has not yet been identified.

***AN ESTIMATE OF THE PREVIOUS FISCAL YEAR EXPENDITURES FOR IMPLEMENTATION OF THE MANAGEMENT PROGRAM AND THE BUDGET FOR THE CURRENT FISCAL YEAR***

---

The storm water management budget for calendar year 2018 was funded “as needed” by several campus entities:

- EH&S dedicated ½ fulltime equivalent (FTE) staff time to storm water activities, that included regular inspections of all permitted construction sites. EH&S conducted 348 weekly site inspections in 2018 at a total expenditure of \$33,060.
- EH&S staff maintained the storm water website, managed quarterly storm water hotline advertisements in the student newspaper, attended storm water training, and developed ISU staff training programs, at an estimated expenditure of \$65,000 in salary and benefits.
- Construction of new storm water management projects and design fees associated with capital site, parking and building projects is estimated at \$1,000,000.
- FP&M expenditures associated with storm water project design/BMPs, project support, implementation, maintenance, MS4 televising and cleaning, and seeding/sodding were approximately \$1,300,000.
- FP&M maintains 45 lane miles of paved institutional roads, 15 lane miles of gravel roads, 191 acres of parking lots, and 51 miles of sidewalks and bike paths throughout campus. To ensure safe passage of all vehicles, sweeping of pedestrian and cyclist roadways, parking lots, and bike paths resulted in an expenditure of \$134,000. The 238 tons of sweepings included 215 tons from streets and 23 tons from sidewalks.

Total estimated storm water management expenditures were \$2,532,060. No annual amounts are appropriated by ISU, as storm water expenses are funded on a per-project basis.

## Iowa State University Polyethylene Retention Chambers

ISU installed polyethylene retention chambers under the roadbed near the new Bessey Addition.

### Advantages of polyethylene retention chambers:

- Allows for more controlled infiltration into the ground.
- Replenishes the surrounding soil and aquifer.
- Decreases health liability issues such as West Nile breeding grounds for mosquitoes, or drowning.
- Avoids redirecting storm water to a watercourse and potentially overloading or polluting natural surroundings and resources.
- Chambers effectively serve environmentally sensitive areas while making valuable land available for parking lots, athletic fields and other applications.
- The high capacity, open bottom chambers provide greater storage and much higher infiltrative capability than conventional pipe and stone systems.
- Serves as a replacement for retention ponds and loss of valuable land area.
- Minimizes surface area and reduces the need for crushed stone compared to conventional systems.



## ***SUMMARY DESCRIBING THE NUMBER AND NATURE OF INSPECTIONS, ENFORCEMENT ACTIONS AND PUBLIC EDUCATION PROGRAMS CONDUCTED DURING THE REPORTING PERIOD***

---

### Permitted Site Inspections by ISU Staff

348 inspections were conducted by Environmental Health and Safety on all Iowa State University construction sites requiring a National Pollutant Discharge Elimination System General Permit Number 2. The inspections evaluated contractor compliance with BMPs as described on the site-specific Storm Water Pollution Prevention Plan (SWPPP). EH&S and FP&M staff coordinated mitigation efforts with site contractors when deficiencies were noted. The Revised Universal Soil-Loss Equation shows that almost 17 tons of soil was retained through proper site preparation and BMPs on ISU permitted construction sites.

### Active and Discontinued Construction Sites

During the 2018 calendar year, 10 construction sites operated under NPDES General Permit No. 2 authorizations. The status of these permits is summarized in Table 1.

<u>Facility</u>	<u>Permit</u>	<u>Status</u>
ATRB- Industrial Ed II Demolition	IA-28103-27854	Discontinued 6/27/2018
Hilton Coliseum Parking Expansion	IA-32407-32116	Discontinued 10/31/2018
Jack Trice Stadium Green Space	IA-28751-28483	Discontinued 10/31/2018
MWL Recreation Fields Improvement	IA-32525-32236	Discontinued 10/5/2018
Reiman Gardens SW Corner Improvements	IA-32531-32242	Active
Student Innovation Center	IA-30467-30197	Active
Utilities Chilled Water Expansion (West)	IA-32354-32061	Discontinued 10/5/2018
Utilities Chilled Water Expansion	IA-30469-30198	Discontinued 10/5/2018
Vet Med Parking Lot 96 Extension	IA-32533-32244	Discontinued 10/31/2018
Welch/Union Roads Reconstruction	IA-32363-32071	Discontinued 10/31/2018

Table 1 – Status of Construction Permits

Eight sites reached final stabilization, as defined in the permits, and Notices of Discontinuation were submitted to the Iowa Department of Natural Resources (IDNR). Two permitted sites were still active as of December 31, 2018 (See Attachments A and B).

### Notices of Discontinuation

Eight construction projects reached final stabilization as defined in General Permit. (Refer to Active and Discontinued Sites, Table 1).

### Outfall Inspections by ISU Staff

MS4 Permit Section F.4 Inspection and Maintenance Program requires inspection of the entire storm water system every five years. FP&M tracks inspection dates, methods, observations, and corrective actions. ISU has approximately 2,000 service structures consisting of junctions and intakes. Structures are identified on campus utility maps with updated locations of 1,340 structures utilizing global positioning survey (GPS). During 2018, FP&M inspected 468 MS4 structures. ISU continues to inspect and GPS structures at an average rate of approximately 400 per year.

EH&S conducted annual dry flow inspections of MS4 campus storm water outfalls throughout 2018. EH&S staff visually inspected storm water outfalls to public waterways and dry land with no illicit discharges detected during the inspections. A review of the annual outfall inspection process was conducted; no changes were made to the inspection program.

### Storm Water Management Committee

In 2018, ISU's Storm Water Management Committee met each semester and once during the summer. Further communications between individual team members occurred regularly, concerning storm water policies and project sites. In addition, EH&S Staff and FP&M staff met in March to discuss storm water management practices on ISU construction projects.

### IDNR Inspections

ISU had no formal MS4 inspections IDNR during the calendar year 2018. However, ISU invited Joe Griffin to the ISU Campus to discuss renewal of the ISU MS4 permit.

### Reported Spills and Releases

ISU reported the following incidents:

- 050818-ACH-0741. Gasoline leak from parked vehicle on ISU main campus.
- 051518-WCG-1500. Diesel leak from trailer-mounted fuel tank at the BioCentury Research Farm.
- 060418-BJB-0851. Fertilizer spill from commercial vehicle near ISU research farm.

### Community Education and Public Outreach

Members of the Storm Water Committee, Environmental Health and Safety, and Facilities Planning and Management's Design and Operations group participated in programs to improve storm water management knowledge. Iowa State University public education and outreach activities included:

- EH&S staff member Clay Miller presented at the 2018 Iowa Water Conference on student involvement in campus stormwater management efforts.
- Clay Miller presented a lecture to first-year undergraduate students on campus stormwater management efforts, to include water quality sampling efforts through the IOWATER program.
- EH&S and FP&S staff participated in periodic storm water lunch and learn webinar series.
- Clay Miller is President Elect of the Board of Directors of the Iowa Storm Water Education Partnership.

### Storm Water Education Program

EH&S staff trained 166 employees during calendar year 2018. Training topics included storm water regulatory compliance, construction site BMPs, storm water hotline, NPDES General Permit No 2, and SWPPP compliance and review.

### Storm Water Web Page

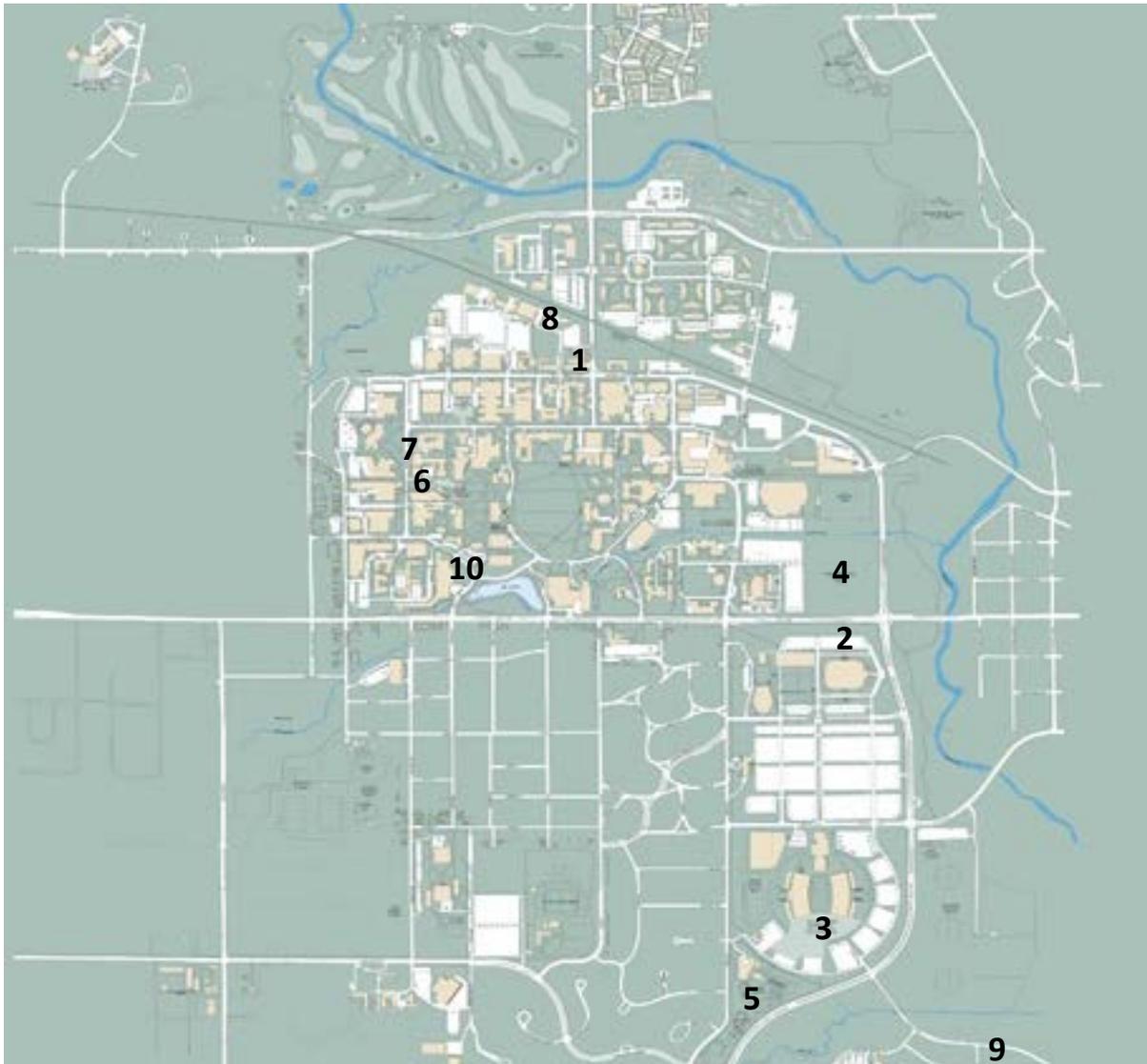
The storm water web page consists of storm water facts and information, Storm Water Management Policy statements, storm water hotline telephone number, publications and forms, links to pre- and post-construction activities, and a storm water survey. In 2018, the storm water web page was viewed 723 times, an increase of 24% from 2017. (<https://www.ehs.iastate.edu/services/environmental/stormwater>)

### Storm Water Hotline (515-294-7229)

The storm water hotline received the following reports related to storm water activities on campus:

- **July 2018: Parking Lot 23 motorcycle spill clean up**  
ISU was notified of a motorcycle gas tank leaking while parked at parking lot 23. Staff arrived at the location and were assisted by ISU Police shutting off the gas flow and cleaning the spill. ISU Police contacted the owner to fix the leaking tank.
- **October 2018: Traffic accident at Stange and Pammel**  
The Storm Water Hotline was used to notify ISU of a traffic accident at the intersection of Stange and Pammel. ISU staff responded, spread oil dry, and collected the material for disposal.
- **November 2018 Sanitary sewer blockage at Iowa State Center Scheman Building**  
ISU discovered a blocked sewer line overflowing onto the grass at the Scheman Building. The area was a large grass lot that sloped to the east to a storm drain intake leading to another grass area east of Lincoln Way before entering Squaw Creek. The sanitary waste volume was less than 300 gallons. ISU notified IDNR of the situation as crews worked to clear the blockage. Ultimately, the situation rectified and the release was defined by IDNR as an emergency sanitary sewer bypass.

**Attachment A**  
**NPDES-Permitted Construction Sites on ISU Campus**



**Key:**

- |   |                |
|---|----------------|
| 1. Advanced Teaching Research Bldg.         | IA-28103-27854 |
| 2. Hilton Coliseum Parking Expansion        | IA-32407-32116 |
| 3. Jack Trice Stadium Green Space           | IA-28751-28483 |
| 4. MWL Recreation Fields Improvement        | IA-32525-32236 |
| 5. Reiman Gardens SW Corner Improvements    | IA-32531-32242 |
| 6. Student Innovation Center                | IA-30467-30197 |
| 7. Utilities Chilled Water Expansion (West) | IA-32354-32061 |
| 8. Utilities Chilled Water Expansion        | IA-30469-30198 |
| 9. Vet Med Parking Lot 96 Extension         | IA-32533-32244 |
| 10. Welch/Union Roads Reconstruction        | IA-32363-32071 |

## Attachment B Campus Storm Water Management Projects

