

Dubuque Phase 2 MS4

Permit Compliance and Beyond

INTRODUCTIONS

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Funding the MS4

- Stormwater Utility Fee
 - Current Rate: \$5.60 SFU
 - Approx. \$3,000,000 per year
- Funds All Aspects of Stormwater
 - MS4 and NPDES Items
 - Storm Sewer Maintenance / Addition
 - Specific Projects. i.e. Bee Branch
 - Detention Basin Maintenance
 - I&I program
 - Street Sweeping and Other PW Items

MS4 PERMIT – 6 Minimum Control Measures

- Public Education
- Public Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Inspection
- Post Construction Site Inspection
- Pollution Prevention / Good Housekeeping

Public Education

Stormwater Brochure




Public Education

Stormwater Brochure - Extras



Public Education


Stormwater Brochure - Extras



The brochure titled "Concrete Washout" provides information on how to properly dispose of concrete washout. It includes a list of "What to do" and "What not to do" for concrete washout, and a section on "Reporting a Violation".

Public Education

Stormwater Brochure - CCWMA



The brochure titled "Stormwater Brochure - CCWMA" features a map of the Catfish Creek Watershed and a list of "What to do" and "What not to do" for stormwater management. It also includes a section on "Reporting a Violation".

Public Education

Stormwater Hotline

- Forwards to Cell Phone
- All Calls Logged Into Database

563-690-6200

Public Education

City Website

- Stormwater Information
- Watch Videos regarding Stormwater Projects, Etc.
- Make Requests and Complaints; Ask Questions

WWW.CITYOFDUBUQUE.ORG
WWW.CATFISHCREEKWATERSHED.ORG

Public Education

Storm Intake Labeling




The image shows a storm intake grate with a label that reads "NO DUMPING! DUBUQUE DRAINS TO RIVER".

Public Education

Educational Television Programs

- EPA Videos
 - After the Storm
 - What is Low Impact Development?
 - Reducing Runoff
 - Building Green
 - River Smart Homes
- Bee Branch Update Videos
- Watershed Management Authority Videos

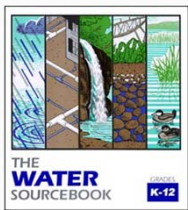


The image shows a CD-ROM with the title "Reduce Runoff: Slow it Down, Spread it Out, Soak it In!". It lists various topics covered in the videos, including "What is Low Impact Development?", "Reducing Runoff", "Building Green", and "River Smart Homes".

Public Education

Public Education Program

- Providing Educational Materials to K-12 Classes
 - The Water Sourcebook
- Help with
- Funding for Field Trips
 - Bussing Costs to the National Mississippi River Museum



Public Involvement

Environmental Advisory

- Commission of Citizens
- Meets Monthly
- Advise the Council on Environmental Issues
- Educate on Environmental Issues
- Promote Environmental Stewardship by Involving Youth
- Develop an Informational Support Network for Environmental and Business Concerns
- Establish Environmental Status Indicators

Public Involvement

Water Quality Monitoring

- Work With Water Quality Groups
- Perform Water Quality Testing
- Promote IOWATER
 - Fund IOWATER Training to Residents
 - Log Results to IOWATER and MS4 Databases



Public Involvement

Stream Bank Stabilization Program

- Material Funding up to \$500
- Matched Dollars for Labor and Equipment



Public Involvement

Rain Garden Program

- Material Funding up to \$500
- Matched Dollars for Labor and Equipment
- Iowa Rain Garden Manual



Public Discharge

Ordinances

- IDDE
 - Allows for Inspection of Any Property
 - Anything other than Stormwater is a Violation
 - Allows for Citations, Abatement, Etc.
- Pet Waste
 - Immediate Removal From Public Property
 - Proper Disposal
 - Exemptions for Horticultural Purposes

Illicit Discharge

Detection and Elimination

- All Citizen Complaints Logged and Inspected
- Routine Inspection of all Outfalls Within the City
- 21 Day Rule for Elimination of Discharge
- Reported to DNR Within 1 Day of Discovery



Construction

ESC Ordinance

- All Construction Activity Requiring a DNR GP2 Permit Must Also Obtain a City ESC Permit
- City Responsible for Tracking and Enforcing GP2 Compliance
- Allows for Citations, Abatement, Etc.

Construction

Site Review and Inspection

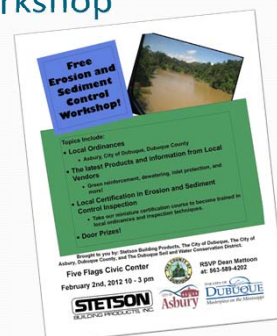
- SWPPP Review and Acceptance (DRM)
- Site Inspection Quarterly



Construction

Contractor Workshop

- Once per Year
- Contractor Certification
- Focusing on New BMP's and Regulations



Post Construction

Post Construction Ordinance

- Detention Basin Policy
 - Must Not Exceed Peak Flow of Existing Site
 - 2, 10, and 100 Year Storms
- Unified Development Code
 - Must Implement 2 Water Quality Components
 - Subdivisions Must Meet 40 Point Criteria
 - Big Box Stores Must Have Green Roof or Half of Parking in Pervious Pavement
- Moving Towards Adopting County Stormwater Ordinance

Post Construction

Site Plan and SWC Review

- Development Review Meeting
 - Stormwater Calculations Submitted and Reviewed
 - Complete Site Plan Analysis
- Unified Development Code
 - 2 Stormwater Quality Practices
 - Rain Gardens and Other Infiltrative Practices
 - Catch Basin Snouts

Post Construction

Post Construction Inspection

- Yearly Inspections for City Owned/Assessed Sites
- 5 Year Inspections for All Other Sites



Post Construction

Watershed Management Plan

- Bee Branch Drainage Basin Master Plan
- Catfish Creek WMA
 - Formed in 2012
 - Brought together multiple political jurisdictions
 - Develop plans based on the watershed and not corporate limits
 - Phase I – \$24,500
 - WMA Formation
 - Phase II – \$187,300
 - Catfish Creek Watershed Management Plan



Post Construction

LID Conference



Pollution Prevention

Operation and Maintenance

- Complete Stormwater Conveyance Inspections and Maintenance
 - Ditches and Culverts
 - Catch Basins
 - 5 Year Inspection Program
 - Storm Sewers
 - 10 Year Inspection Program
- Street Sweeping Miles Logged Yearly

Pollution Prevention

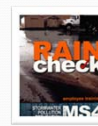
Pesticide and Fertilizer Mgmt.

- Training for all Employees that Spray
 - Storage / Application Rates / Disposal
- Limited to a Small Number of Areas that are Sprayed Within the City Limits
 - Port of Dubuque
 - Dodge Street Rose Gardens
- Fact Sheets Created for Departments

Pollution Prevention

Municipal Employee Training

- Excal Visual
- Yearly Training
 - Public Works
 - Parks and Recreation



Pollution Prevention

City Facility BMP Inspection

- Yearly Inspection of All Public Owned Sites
 - Buildings
 - Parks
- Inspection Details
 - Salt Storage
 - Outside Storage
 - Refuse Containers
 - Fueling Stations
 - Other Site Specific BMP's

Tracking Inspections

- Tracking Tools
 - GIS Based with Ipad Apps
- Esri "web based" Software
- Built in Camera
 - Links Pictures to Points
- Access to Office Computer
- Everything Attached to Map



Tracking Inspections

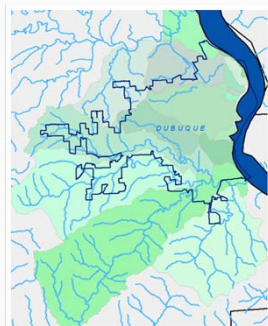


Monitoring Projects

- Monthly Monitoring
 - Chemical
 - Bacteria
 - Physical
- Summer Monitoring
 - Benthic Index of Biotic Integrity
 - Habitat Assessment
 - IDDE Monitoring
- Project Specific Monitoring
 - E-Coli
 - Chloride
- Stream Assessments



Monitoring Areas



Monthly Monitoring

- Chemical / Bacteria / Physical
- 27 Locations
- Typically 3-5 per watershed
- Split as evenly as possible



Bee Branch Watershed

Site 01
Carter Road Dam



North Fork Watershed

Site 01
Rosemont



Middle Fork Watershed

Site 01
Seippel Road



South Fork Watershed

Site 01
Cousins Road



Catfish Watershed

Site 01
Creekwood Drive



Chemical Inspections

- IOWATER Kit
 - Chloride
 - Phosphate
 - Dissolved Oxygen
 - Nitrate / Nitrite
 - Transparency
 - Temperature
- Additional Tests
 - Ammonia
 - pH
 - Conductivity



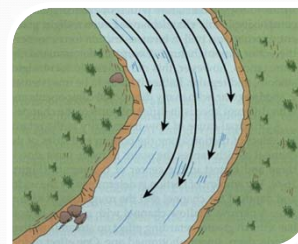
Chemical Analysis – Bee Branch 01

- Major Findings or Trends
 - pH range: 6-9
 - Ammonia range: 0-.25
 - Nitrate range: 0-2
 - Phosphate range: 0-.4
 - Chloride range: 108-383
 - DO range: 8-12



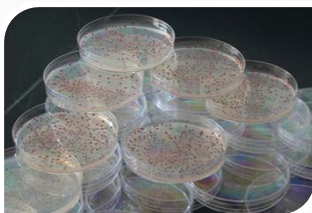
Physical Inspections

- Measures Physical Attributes
 - Width
 - Depth
 - Velocity



Bacteria Inspections

- Total Coliform
- E-Coli
- 48 hours
- 85-100 degrees



Summer Monitoring

- Benthic / Habitat / IDDE
- 27 Locations
- Typically 3-5 per watershed
- Split as evenly as possible



Benthic IBI

- Index of Biotic Integrity
- 3 times between Mid June and Mid October
- Count Each Species and Number of Each Species
- Point System to Quickly Determine the Overall Health



Biological Analysis – Bee Branch 01

- Major Findings or Trends
 - 6 Sample Times Where Benthics Were Found
 - High Pollution Tolerant Species Found in Abundance
 - Presence of Optical Brighteners



Habitat Study

- Tracking Overall Surroundings of the Stream
- Once Per Year
- Photo Taken



Illicit Discharge Detection and Elimination

- Once per year
- Inspected during low flow times
- Approximately 55 outfalls
- Tests include
 - pH
 - Ammonia
 - Conductivity
 - Nitrates
 - Chlorine
- Standards recorded for typical scenarios



Sample IDDE



Grey Hound Park Outfall

- Ammonia Spikes of 6
- Continued to test
- Lines inspected and flushed



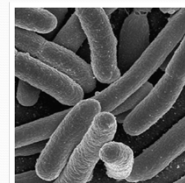
Project Specific Monitoring

- E-Coli / Chloride
- Random Projects
- Foster Partnerships
- Further Increase Knowledge Of Watersheds



E-Coli Study

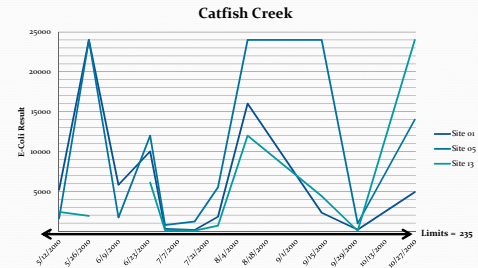
- 15 Locations in both Dubuque and Dubuque County
- May 12 to October 27
- Samples taken every 2 weeks
- Sent to Certified Lab
- QAPP
(Quality Assurance Project Plan)



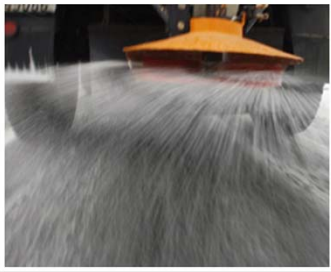
E-Coli Study



E-Coli Analysis



Chloride Study



Bee Branch Watershed

Site 01
Carter Road Dam



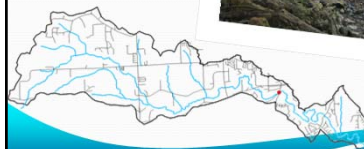
North Fork Watershed

Site 02
Key Way Drive



Middle Fork Watershed

Site 03
Cedar Cross Road



1st Run

- Occurred from June 28 to August 9
- 1 Sample from each location every week
- Tests:
 - Chloride
 - Hardness
 - Sulfate (Analyzed at City Lab)
- Results: well under state limits

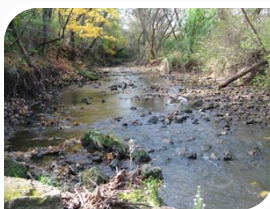
2nd Run

- Started Sampling In Winter 2013
- Partnership with Wisconsin DNR
- 5 Tests in 4 Months Plus Triggered Events
- Tests:
 - Chloride
 - Hardness
 - Sulfate
 - Ph
 - Conductivity
- Results....



RASCAL Monitoring

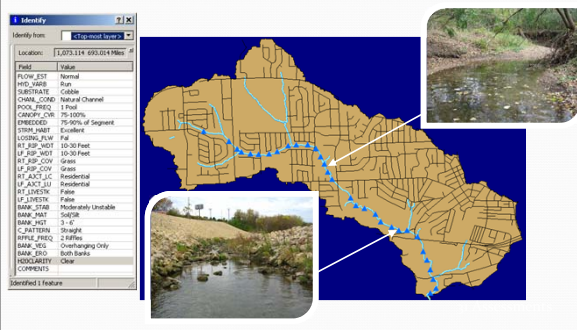
- Rapid Assessment of Stream Corridor Along Length
- Locations assessed every 500 feet
- Additional points of interest and bank erosion taken when needed



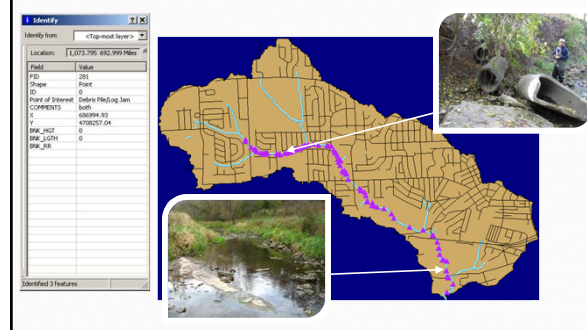
RASCAL Components

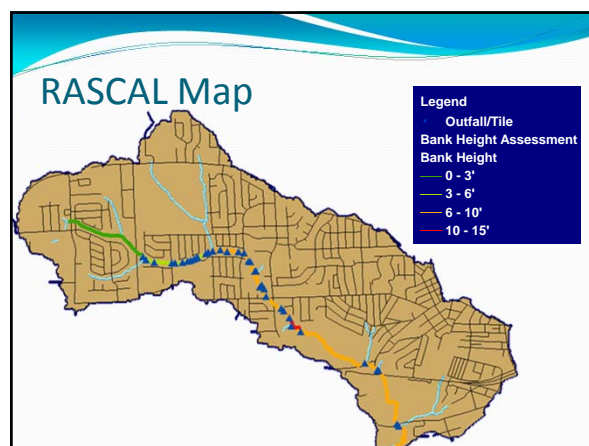
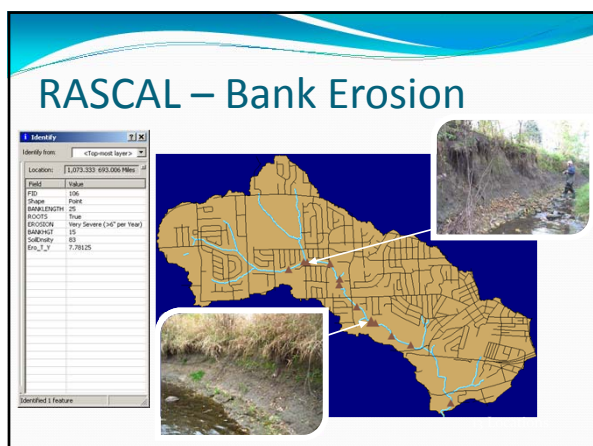


RASCAL – Assessment Locations



RASCAL - POI





RASCAL – The Good and the Bad

- Good:** 53 ½ total miles of stream
 - Catfish Creek Watershed
 - Bee Branch
- Good:** Streams are assessed in their entirety
- Bad:** 10-20 miles of stream assessed every year
- Bad:** Could be up to 5 years before re-assessing a portion of stream

New Possibilities?

- Incorporating RASCAL into IOWATER Physical Component
- Each site tested in IOWATER would include 500 feet of Corridor to inspect
- Able to see many assessments of key locations within the watershed

Conclusions

- Consistent Monitoring is Key
- IOWATER Volunteers are Imperative
- Coordinating Efforts Crucial
- Make use of the Data

Questions?

Thank You!