

# “Implementing an Environmental Stewardship Program for Your Sports Facility”

David Minner

Iowa State University

Jim Sluiter

Audubon International

# OUR OFFICE IS OUR ENVIRONMENT



You're not just a field...





# You're part of a whole system



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Eye alt 5035 ft

Imagery Date: 5/27/2010 1994

42°00'51.98" N 93°37'53.60" W elev 896 ft

## Why Worry?: Science-Based Concerns

- Habitat loss
- Habitat fragmentation
- Invasive species
- Unsustainable resource use (water, oil)
- Air quality issues
- Water quality issues

## Why Care?: Public Concerns

- Pollution of Drinking Water (84%)
- Pollution of Water Bodies (83%)
- Toxic Waste in Soil & Water (80%)
- Having Fresh Water for Homes (80%)
- Air Pollution (76%)
- Extinction of Plants and Animals (65%)

*(Gallup Poll, March 2009 - % represents those that are worried a great deal or a fair amount)*

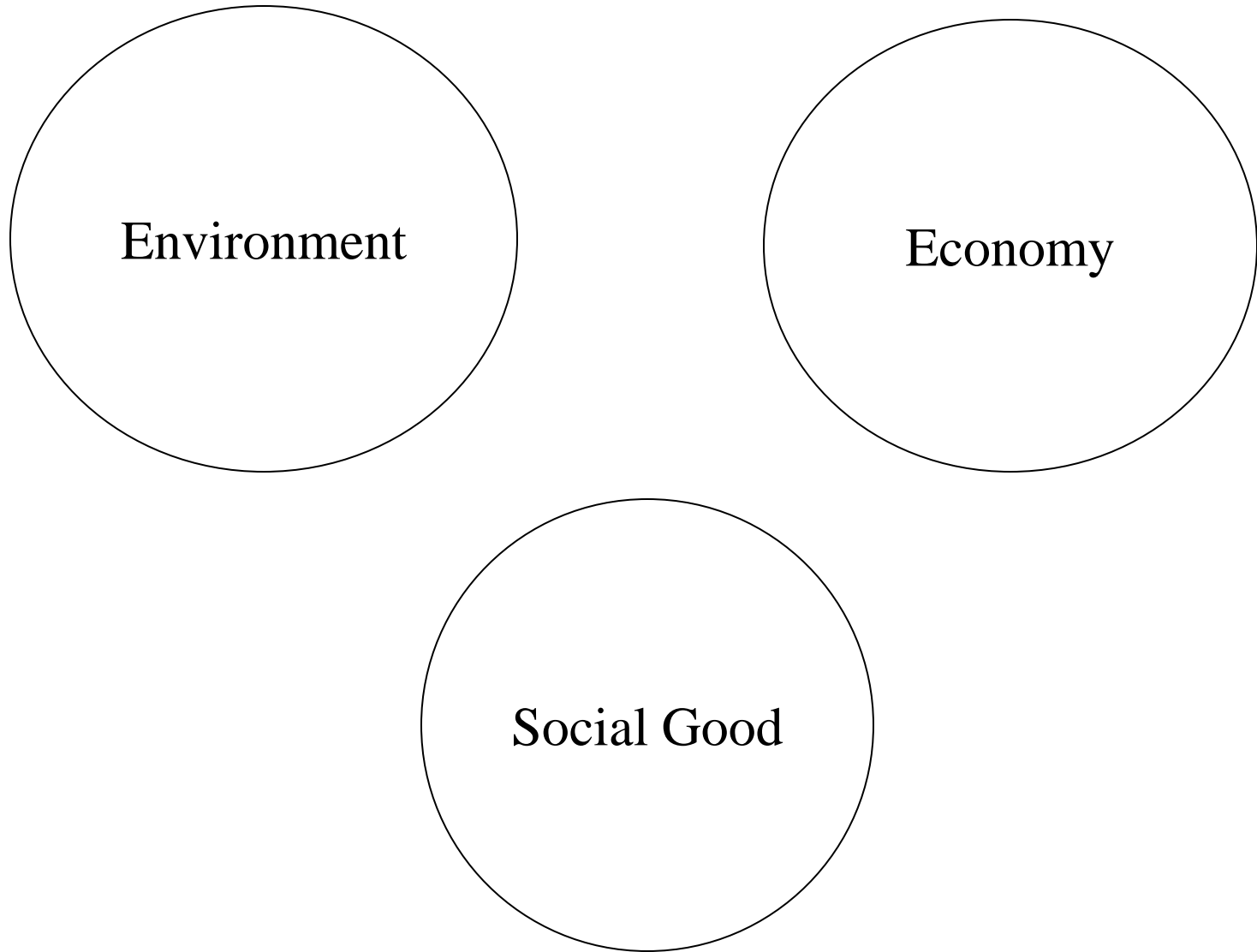


# Why Care? Public Perception

- The general public, government agencies, and environmental community look at numbers and results to evaluate an organization's environmental performance

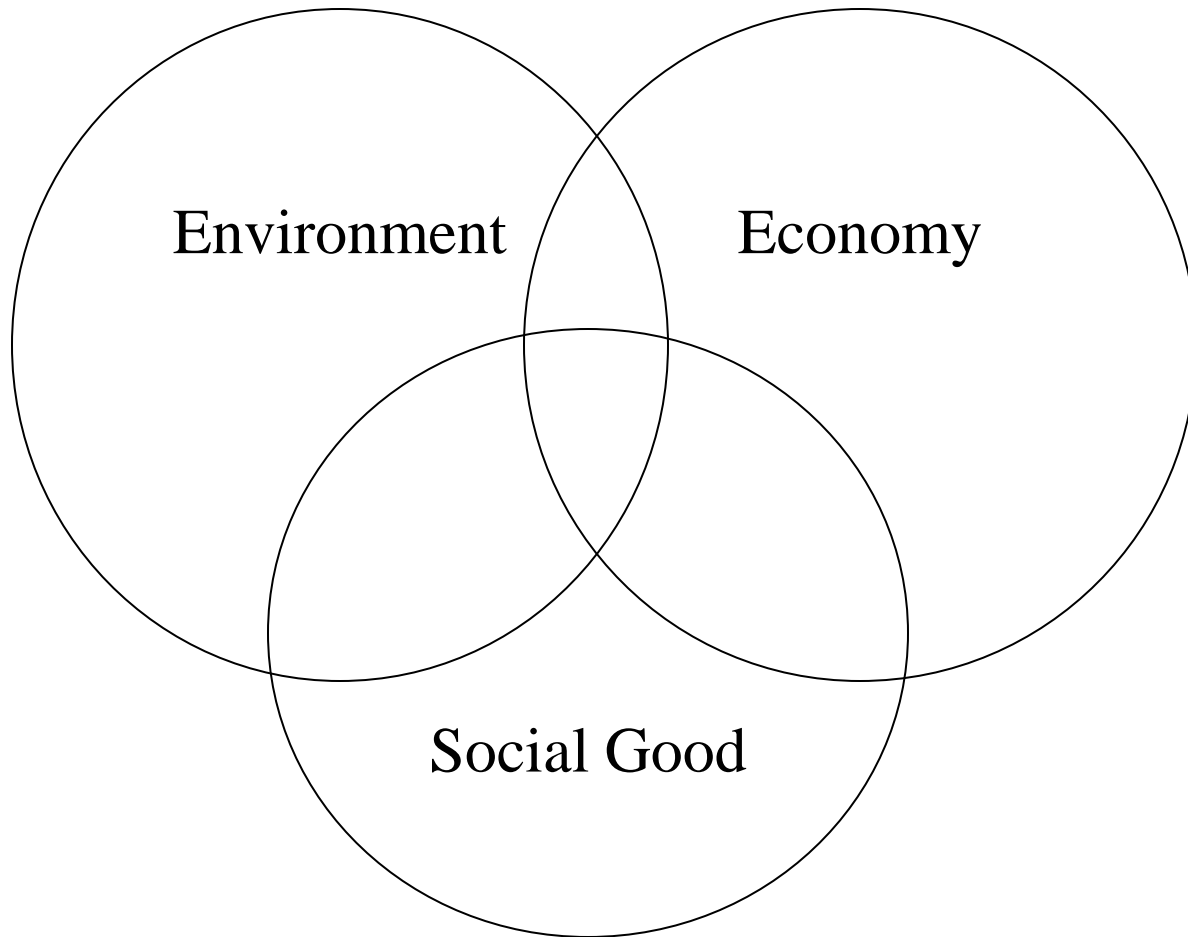


# Evolution of Business Environmentalism: “Then”





# Evolution of Business Environmentalism: “Now”



# The Business Value of Being “Green”

- Reduced Pesticide Use and Cost
- Reduced Fuel and Labor Expenditures
- Improved Community Relations
- Positive Marketing Value and Media Perception
- Long-Term Savings in Equipment Wear
- Reduced Water Consumption and Energy Costs
- Improved Patron Satisfaction and Pride

# Environmental Components of a Sports Facility

- Chemical Use Reduction and Safety
- Water Conservation
- Water Quality Management
- Resource Management
- Outreach and Education

# Audubon Cooperative Sanctuary Program

## Environmental Components of a Sports Facility

- Chemical Use Reduction and Safety
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# Chemical Use Reduction and Safety

- Environmentally-sensitive turf management
  - Integrated Pest Management
  - RECORD KEEPING
  - Slow release and natural organic fertilizers
  - Protect natural areas and water features
    - Vegetative buffers and naturalized vegetation
    - No-spray zones
    - Low maintenance areas
  - Reduce amount of managed turfgrass

# IPM Tool Kit

- Sound cultural practices
- Scouting
- Monitoring Records
- Setting Thresholds
- Evaluating Controls
- Considering Environmental Impacts
- Changing Underlying Stresses
- Communication, Communication, Communication



# White Grub Scouting on High School Athletic Fields

Dave Minner, Horticulture Dept  
Mark Shour, Entomology Dept  
Iowa State University









# Integrated Pest Management

- Develop a strategy
- Communicate with activists
- Influence decision makers
- Use common sense





# Grub Scouting





# White Grub Scouting Technique

- General white grub threshold 9 grubs/sqft (lawns, golf course fairways, non-traffic)
- Updated white grub threshold specifically for football fields 1-4 grubs/sqft.  
[www.hort.iastate.edu/turfgrass/extension/school.pdf](http://www.hort.iastate.edu/turfgrass/extension/school.pdf)
- No time for turf recovery if damage occurs in August.
- Loss of surface traction from grub damage causes and unstable surface.

# Pesticides

“Pesticides play an important role in an IPM program when cultural and biological control efforts are insufficient to maintain pest populations at an acceptable level or other factors conspire to raise pest populations above threshold levels.”

# Chemical Use Reduction and Safety

- Maintenance Facility and Equipment
  - To ensure that chemicals are properly stored and handled, and equipment is properly maintained to reduce the potential for negative environmental impacts.



# Water Conservation

- Maintain irrigation equipment for maximum efficiency and minimal water waste
- Maintain soil and turf health to maximize water absorption and minimize water loss due to evaporation and runoff



# Water Conservation

- Incorporate weather or evapotranspiration data into irrigation scheduling
- Install part circle heads around peripheries, water features, paved surfaces
- Reducing amount of irrigated turf
- System adjustments/upgrades to maximize efficiency



# Water Conservation Tools

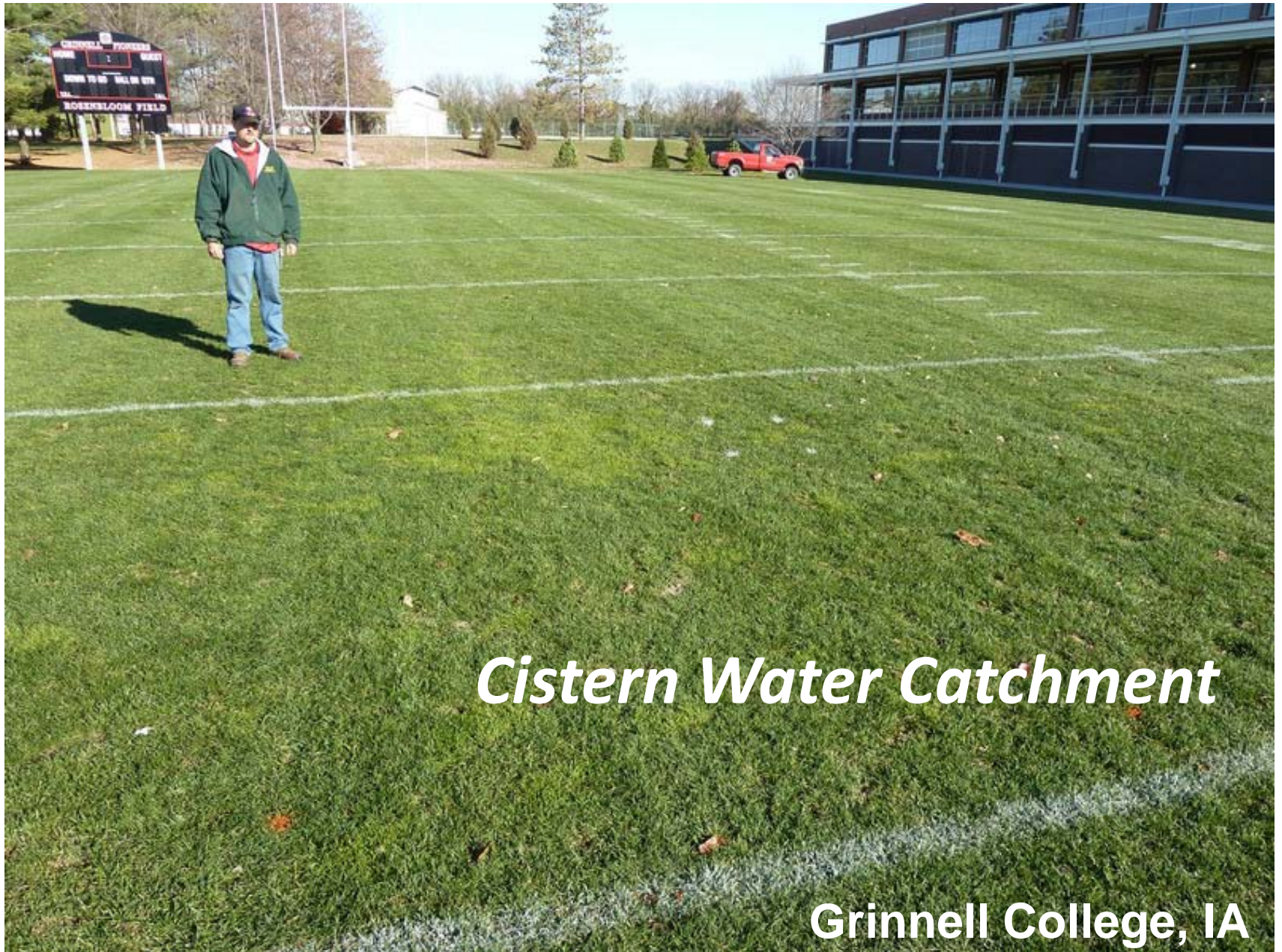


# Irrigation Audit





# Water Conservation

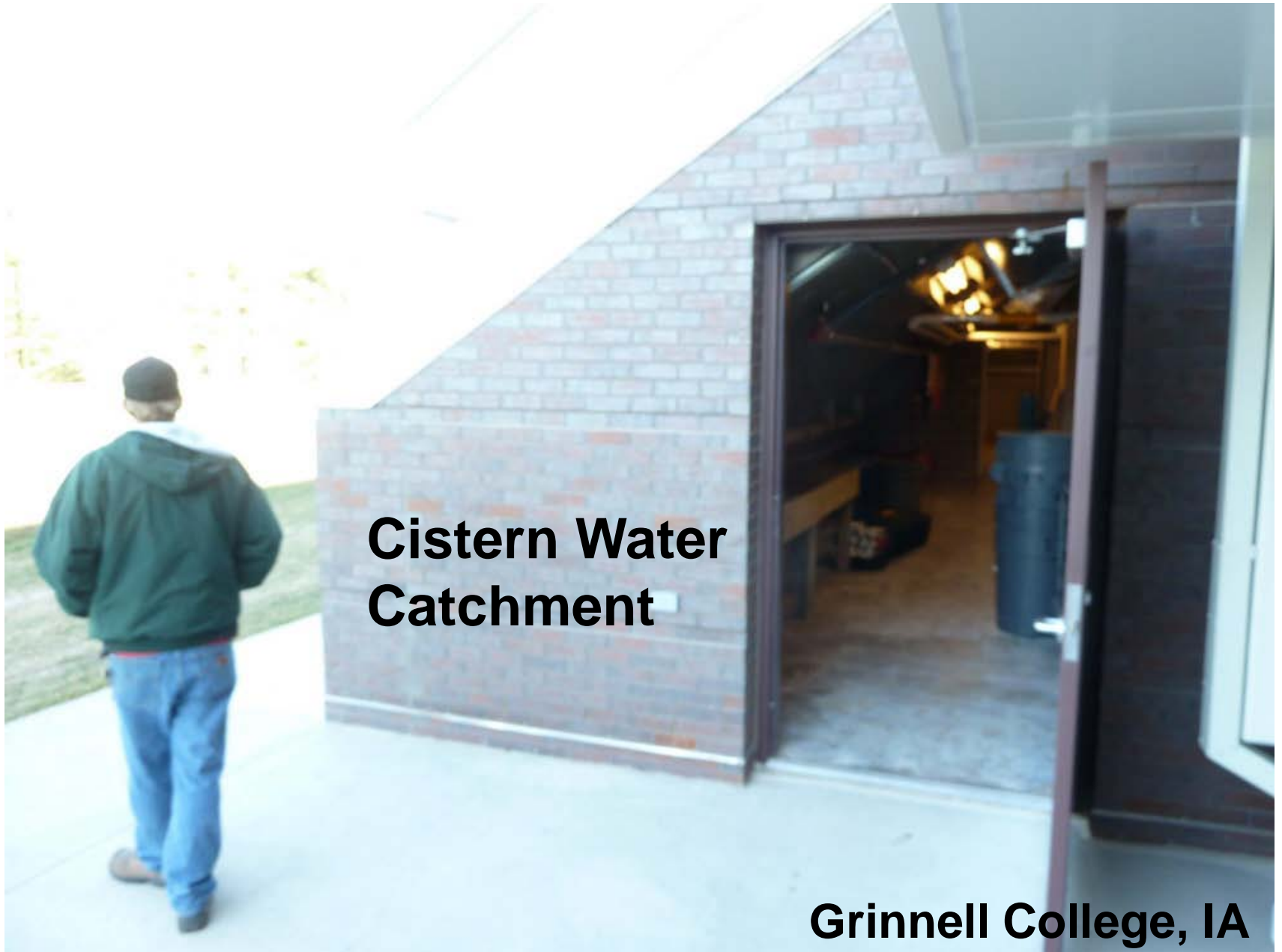


*Cistern Water Catchment*

Grinnell College, IA



# Water Conservation



**Cistern Water  
Catchment**

**Grinnell College, IA**

# Water Conservation



**Cistern Water Catchment**

**Grinnell College, IA**

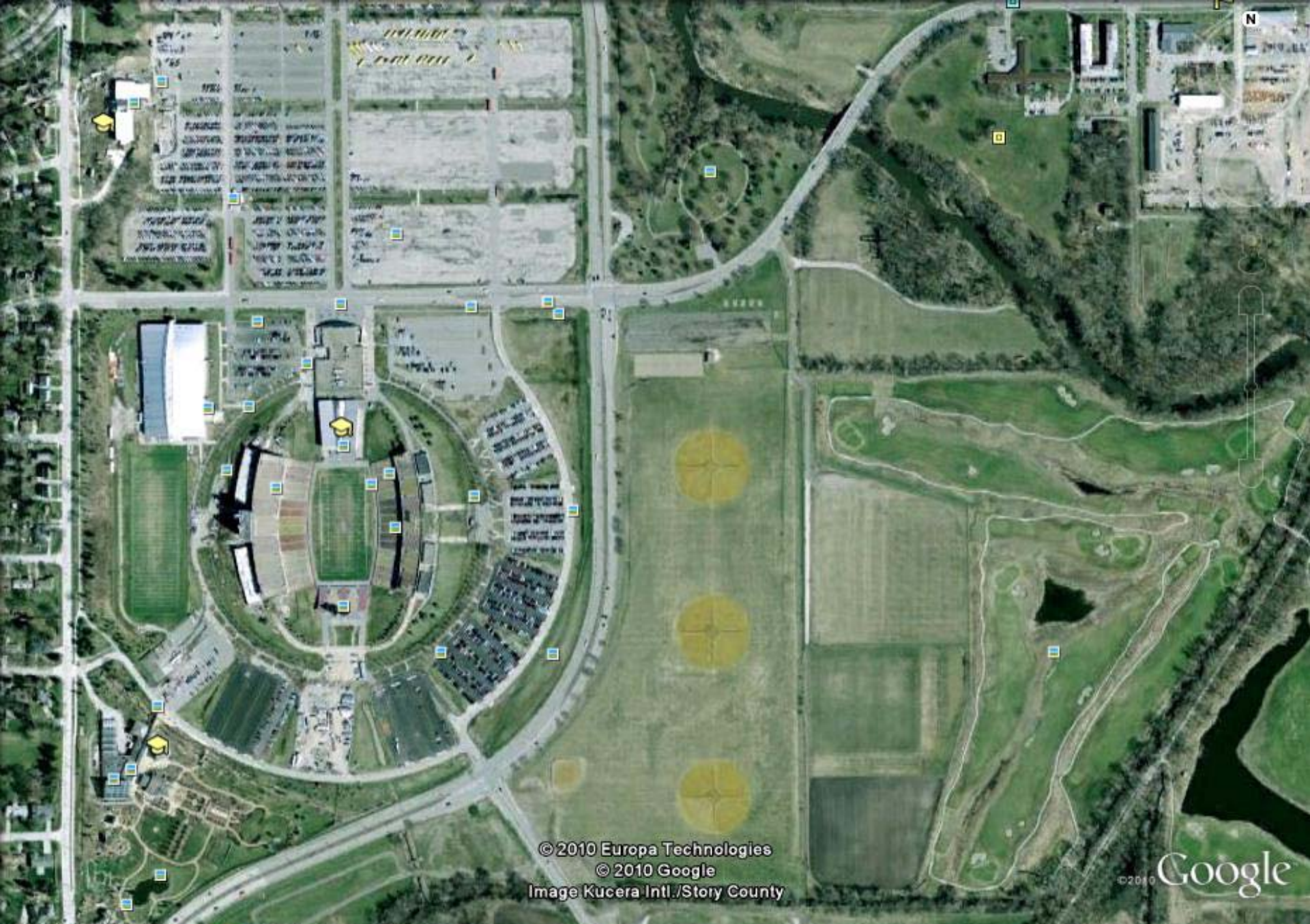


# Water Quality Management

- Employ Best Management Practices (BMP's) or structural controls to control stormwater and minimize potential for chemical runoff, nutrient loading, and drift







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# Storm Water



# What pollutants are found in storm water ?

*Metals (and other chemicals)*

*Phosphorus: attached to soil particles possibly from household, business or municipal operations and fertilizers*

*Nitrogen: dissolved in water column from fertilizers and atmospheric deposition*

*Coliform: pathogens, possibly from illicit discharges or pet wastes*

*Suspended Solids: smaller soil particles that make the water cloudy, possibly from construction, soil erosion and municipal operations*

*Oil and Grease: possibly from illicit discharges or runoff from roads and parking lots*



# Buffering Storm Water Runoff







# Fertilizer Environmental Impacts Research

- Effects of nitrite and nitrate levels on tadpole development - Oregon State University
  - Five frog species tested
  - Half of all five species tested were killed at levels of nitrites well below what the EPA considers safe for warm water fishes
  - Over half of the Oregon spotted frog tadpoles were killed after 15 days of exposure to levels of nitrite considered safe for human drinking water.

Marco, Adolfo, Consuelo Quilchano, Andrew R. Blaustein, 1999: **SENSITIVITY TO NITRATE AND NITRITE IN POND-BREEDING AMPHIBIANS FROM THE PACIFIC NORTHWEST, USA.** *Environmental Toxicology and Chemistry*: Vol. 18, No. 12, pp. 2836–2839.



We mix and use paint in the turf industry





Where  
does  
the  
paint  
go?



# You tell me...





# Water Quality Management



*Wash pad  
chemical/clipping  
containment*

# Recycled wash rack system





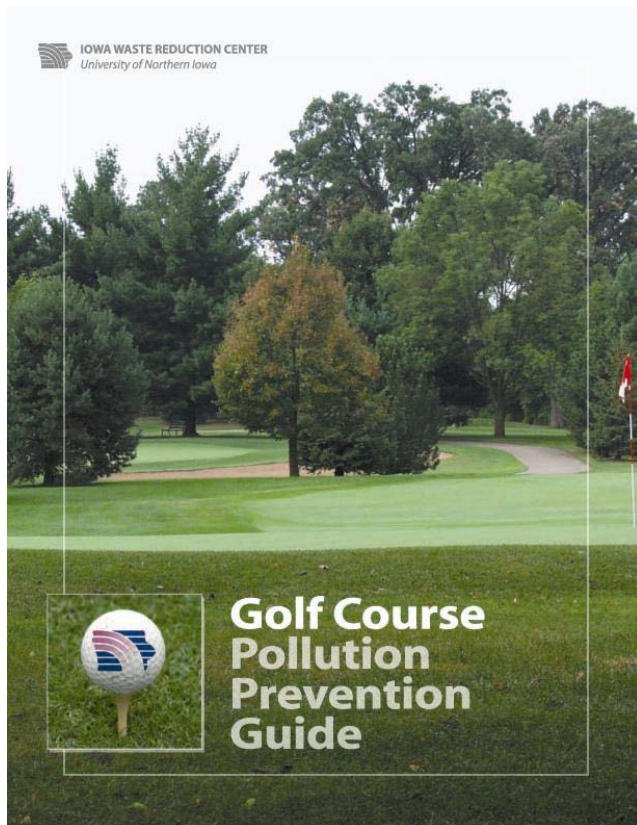
# Resource Management

- Recycling
- Energy Use
- Waste Reduction



# Iowa Waste Reduction Center

## Golf Course Pollution Prevention Guide



- Waste: Hazardous or Non-Hazardous
- Parts Washing
- Used Oil and Oily Wastes
- Used Antifreeze
- Wastewater & Sludge
- Batteries
- Aerosol cans/Empty Paint Containers
- Fluorescent Bulbs
- Petroleum Product Storage
- Pesticides
- Fertilizers
- Compost
- Audubon International: IPM







# Before Picture of Compost





# After Picture of Compost







# Soil before Compost



# Soil after Compost









# Compost works!



# WASTE OIL HEATER



# Fluorescent Bulb Crushers / Compactors





# You can use sensors for...



Vending Machines



Lights



Air-Conditioning



# Outreach and Education

- Communicate Your Environmental Commitment
- Educate Others
- Provide Volunteer Opportunities
- Use Community Resources



# It's a Group Effort







This shoreline is being managed to protect water quality.

AUDUBON INTERNATIONAL

A proud member of the Audubon Cooperative Sanctuary System



### Stormwater Pond Habitat

St. Mary's College of Maryland

Canada Goose  
*Branta canadensis*

Eastern Snapping Turtle  
*Chelydra serpentina serpentina*

Osprey  
*Pandion haliaetus*

Dragonfly

AUDUBON INTERNATIONAL

St. Mary's College of Maryland is the first college in Maryland to be certified by Audubon International's Cooperative Sanctuary Program. This means we're committed to managing our campus in an environmentally sensitive manner. We use innovative practices like bat houses and purple martin birdhouses to help control pests naturally. By managing stormwater runoff, using organic fertilizers, and creating green spaces, we encourage wildlife habitat and contribute to the health of the ecosystem.

At least nine species of wildlife now frequent this manmade wildlife habitat. They are the most recent residents on this hillside which was home to Slovakian farmers in the early 1900s and part of the St. John's plantation in Maryland's 17th-century capital.

This stormwater pond manages stormwater runoff from nearby buildings. Incoming water is filtered by settling in this shallow pond where cattails absorb nutrients. The pond also irrigates the adjacent turf which was moved from our stadium field in 2007. These natural processes reduce and clean the stormwater before it runs downhill to the St. Mary's River to join the Chesapeake Bay watershed.

The great blue heron lives close by and stalks this pond for prey. Our College mascot, the seahawk or osprey, frequents the skies in the spring and summer. Be still and listen for the throaty bullfrog and the trill of the red-winged blackbird. Look closely for snapping turtles sliding along the edge. And watch for students recording the calls and documenting the range of blackbirds, among many research projects here. (Wildlife photography by Jay Penn Fleming '09.)

Great Blue Heron  
*Ardea herodias*

Red-winged Blackbird  
*Agelaius phoeniceus*

Osprey  
*Pandion haliaetus*

Stormwater Pond

Destinations  
From north to south:  
(Pick up a map below)

Point of contact for the Executive Director:  
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# Audubon Cooperative Sanctuary Program

- Audubon Cooperative Sanctuary Program for:
  - State and Municipal Parks
  - Golf Courses
  - Athletic Complexes
  - Businesses
- The goal of each program is educating and assisting land managers in practicing good environmental stewardship and sustainable land management.



# Add value to your facility...

- Environmental Quality
- Image and Reputation
- Customer Satisfaction
- Financial Performance
- Worker Safety and Reduced Liability
- Improved Efficiency
- Increase personal/job satisfaction





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