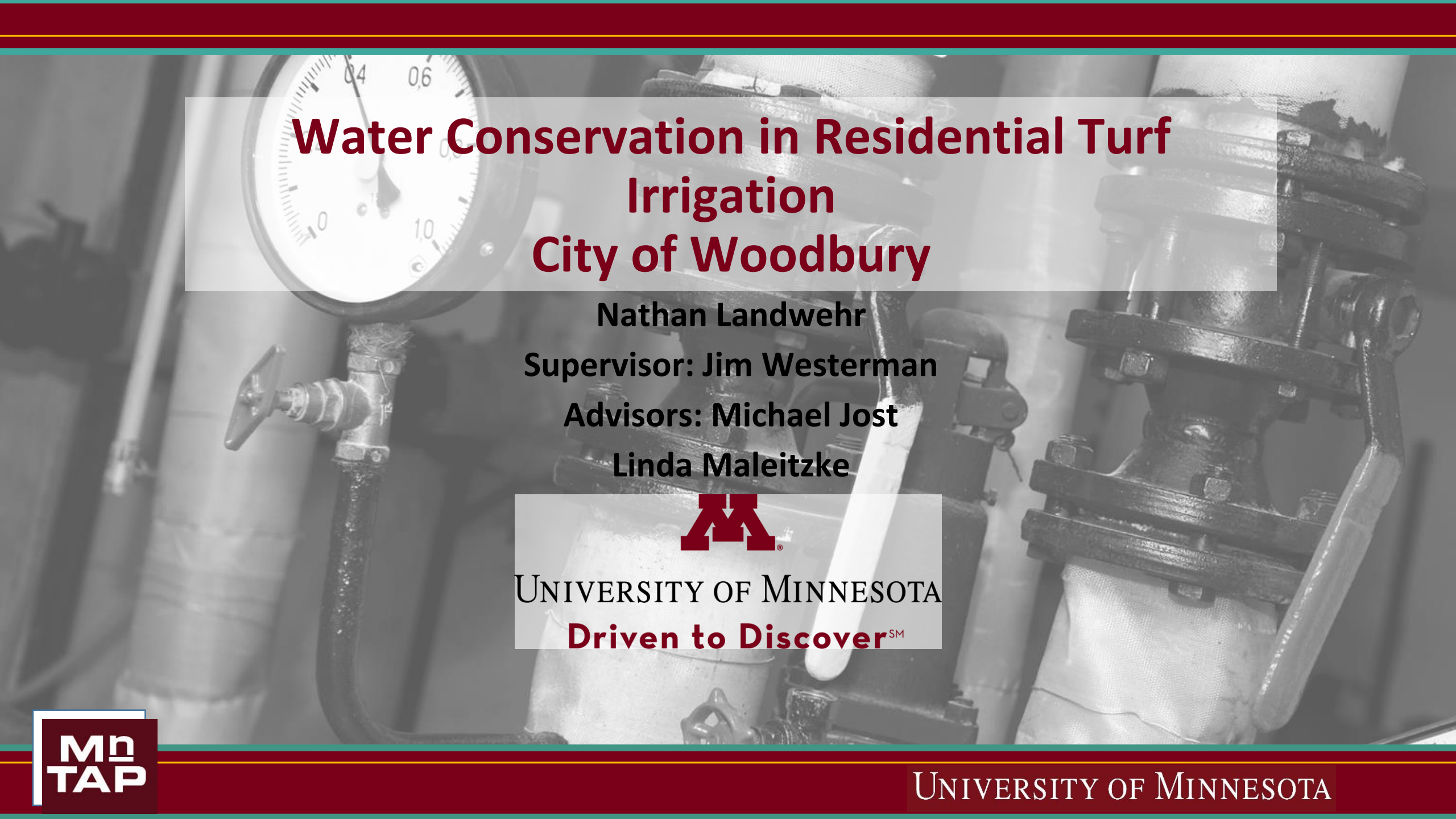

Water Conservation in Residential Turf Irrigation
City of Woodbury

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UNIVERSITY OF MINNESOTA

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MnTAP

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City Overview

- Officially incorporated in 1967
- Population of 67,855 (2015)
- 9th largest City
- Approximately 25,517 housing units
- Draws water from the Prairie Du Chien-Jordan Aquifer

CITY OF Woodbury

Incentives for Change

- **Flat Water-use by 2030**
  - Preserve the aquifer
  - Reduced need to drill more wells
  - Fostering a city-wide culture of water conservation

Reasons for MnTAP Assistance

- Improve residential water conservation through irrigation retrofits
- Developing a pilot program to distribute “smart” irrigation controllers to residential homeowners
- Evaluate the effectiveness of “smart” irrigation controllers
- Make recommendations for larger-scale distribution

“Smart” Irrigation Controller

- **Saves water in 2 ways**
  - Using lawn characteristics to optimize run-times/watering frequency
  - Skipping waterings with evapotranspiration and local weather data
- **Controlled remotely through smartphone app**
- **EPA WaterSense© Certified**
- **Smart Water Application Technologies© Tested**

Rachio Iro 2nd gen Smart Controller

WaterSense Meets EPA Criteria SM

SmartWater APPLICATION TECHNOLOGIES®

Approach

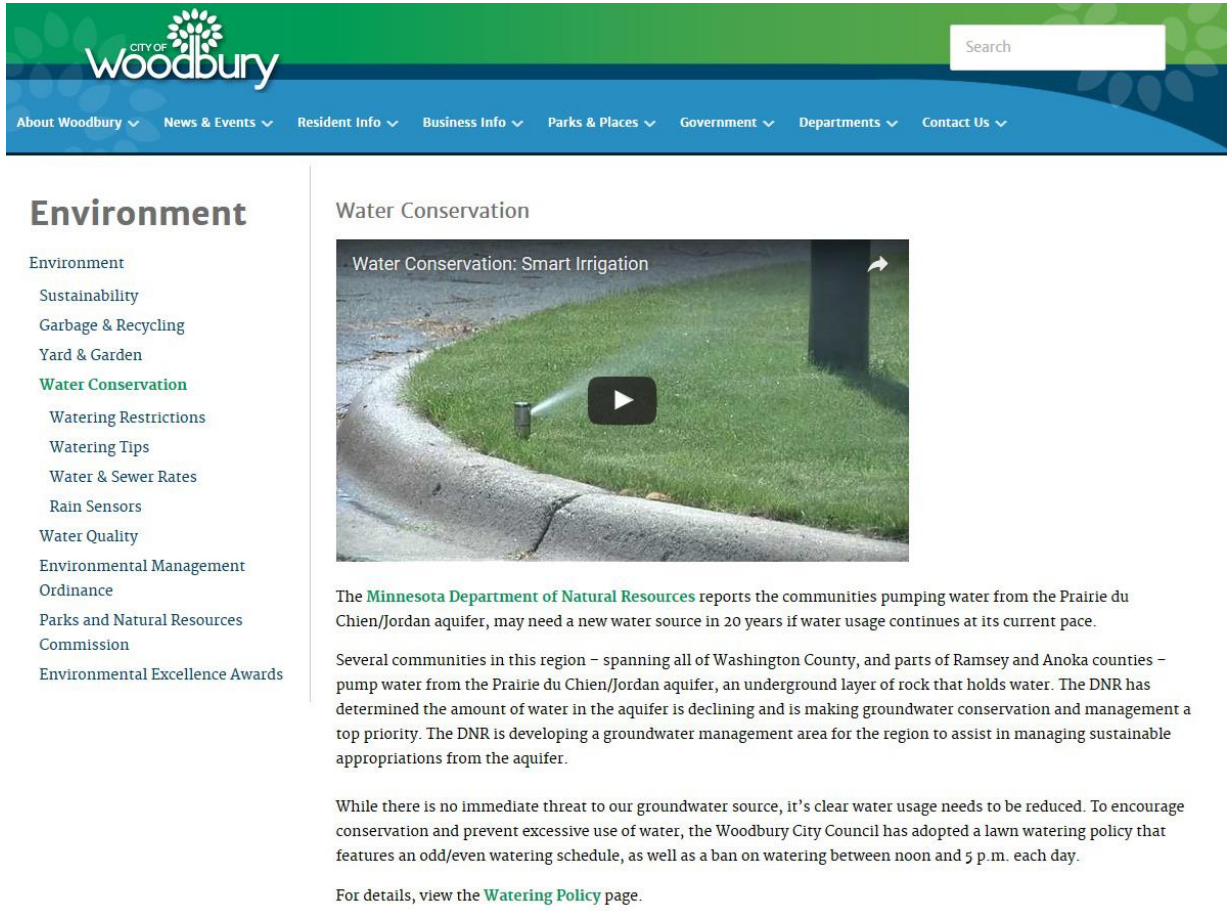
- **City purchased 100 “smart” irrigation controllers**
  - Provided at no cost to residents
- **Developed an application/project agreement to obtain controller**
- **Worked with City staff to advertise the program**
- **Organized and facilitated distribution**
- **Verified installation of all 100 controllers**
- **Provided continuous technical support**
  - Used to gauge complexity of installation/potential maintenance concerns
- **Surveyed participants**
- **Conducted irrigation audits to estimate water savings**

Program Application

- Describes the City's water conservation goals
- Gives background on the program
- Project agreement/criteria that needed to be met
- Information on existing irrigation system

Outreach

- **Email and social media as communication tools**
- **Targeted to several groups**
  - Eco-Interest Mailing List
  - Next Door Neighborhoods
- **Posted on City website**

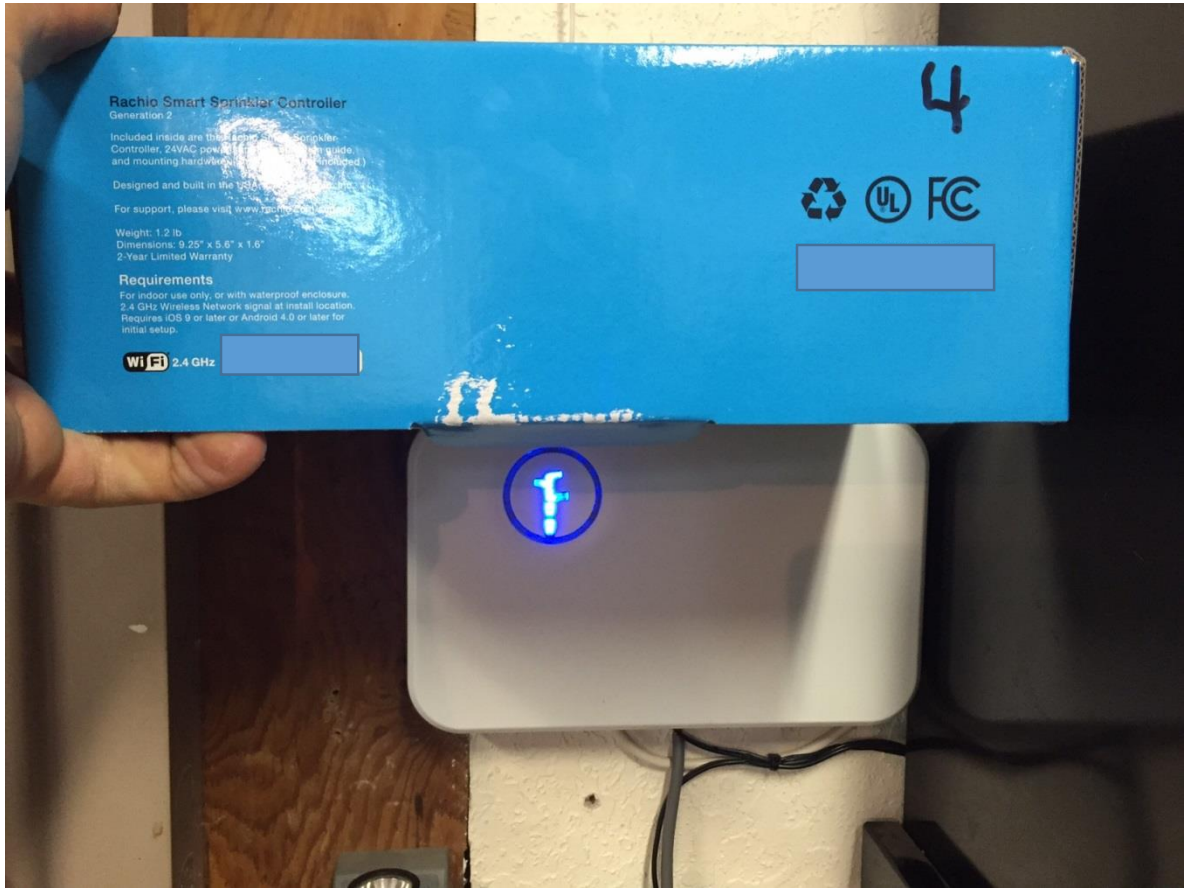


Distribution

- Controllers numbered 1-100
- Each number assigned to a participant
- Participant picked up controller at office, given further instructions
- Most picked up within 1 week of acceptance

Verification

- **Participants given 15 days to install controller**
- **Required to take a photo of their controller with box**
  - Controller number and serial number visible
- **Photo emailed to the City for archiving and tracking installation**

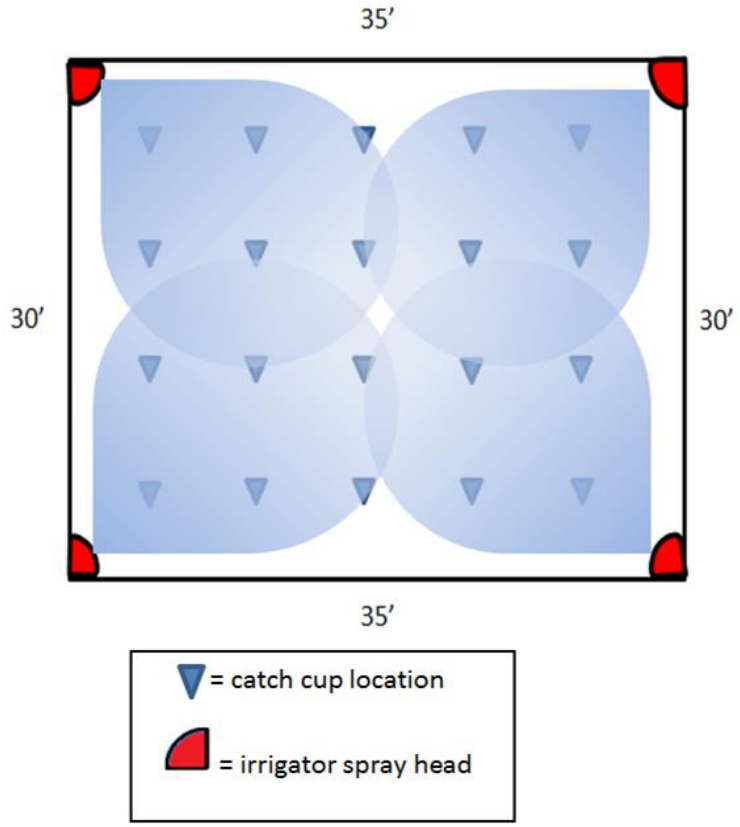


Surveying

- All 100 participants emailed a post-installation survey
- Satisfaction with controller/ program
- Comments/suggestions
- Scheduling tool for audits
- 60 responses (60% participation)

Irrigation Audits

- **5 Audits conducted**
  - Limited by weather (no rain, wind less than 5mph)
- **Catch cup test**
  - •Distribution uniformity
  - •Precipitation rate (used to calculate usage)
  - Zone by zone (usually between 6 and 8)



Audit Results

Controller ID	Average Distribution Uniformity (DU)*	Estimated Annual Water Usage (gallons)**	Estimated Annual Water Savings (gallons)**	Percent Water Savings
43	49%	53,231	30,230	56.79%
19	57.5%	76,265	48,970	64.21%
50	59%	59,154	20,840	35.23%
29	58%	95,725	44,780	46.78%
17	61%	88,421	40,550	45.86%
Average	**56.9%**	**74,559**	**37,074**	**49.77%**

**Between 50% and 60% DU is considered to be average performance*

***Based on a 5 month predicted irrigation season (May through September)*

Recommendation

- **Purchase and distribute as many “smart” irrigation controllers as desired to maximize impact**
  - Spread out purchases to maintain simplicity
  - Limit technical support
  - Continue surveying/evaluation to continuously improve program
  - Approximate savings using a five year rolling average in pumping reduction

Benefits Table

Inital Capital Investment (per unit)*	Annual Water Savings per unit (gal)**	Number of units purchased	Total cost	Total Water Savings (gal)***
$150	~37,000	100	$15,000	~3,000,000

After bulk discount of $50 per unit
****Based off of irrigation audit results***
****Conservative estimate***

Personal Benefits

- Deepened understanding of City Infrastructure
- Communication on all levels from residents to city officials
- Time management and project management skills

Questions?

This project was sponsored in part by Metropolitan Council Environmental Services