



GROUNDWATER MANAGEMENT STRATEGY

Michigan Chapter Soil & Water Conservation Society Seminar
Wednesday, March 6, 2019

1. AWARENESS

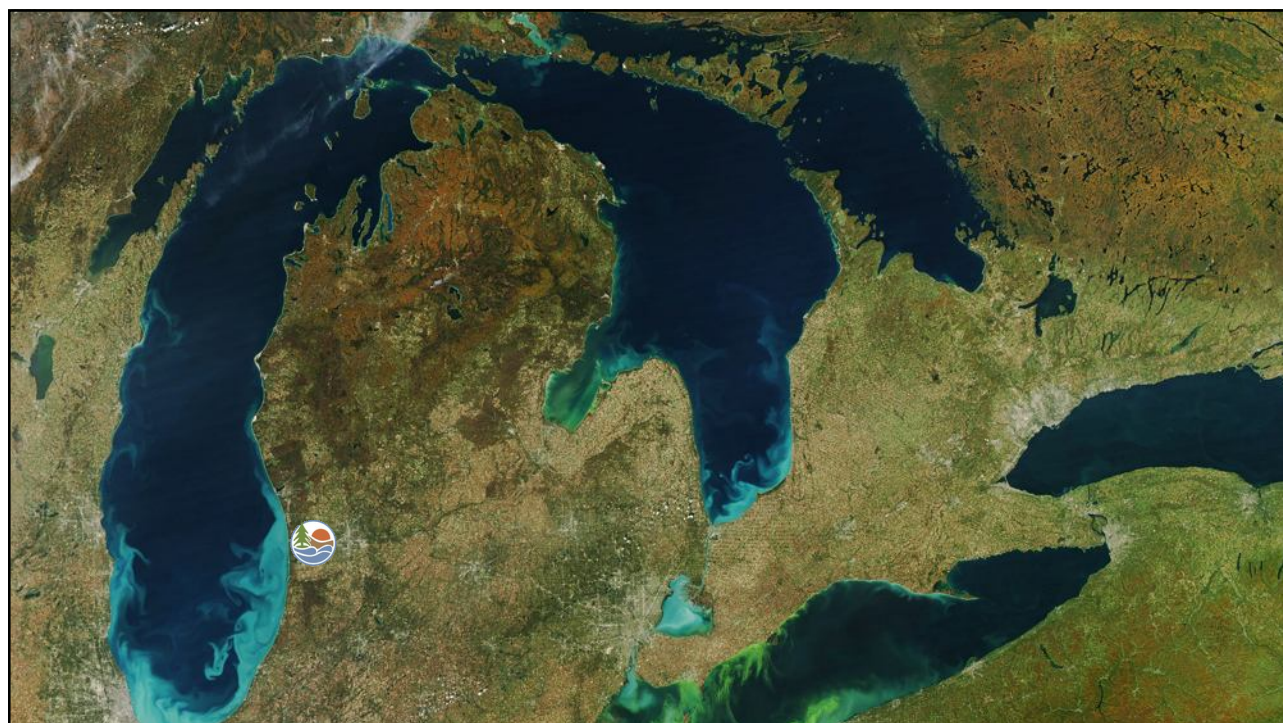


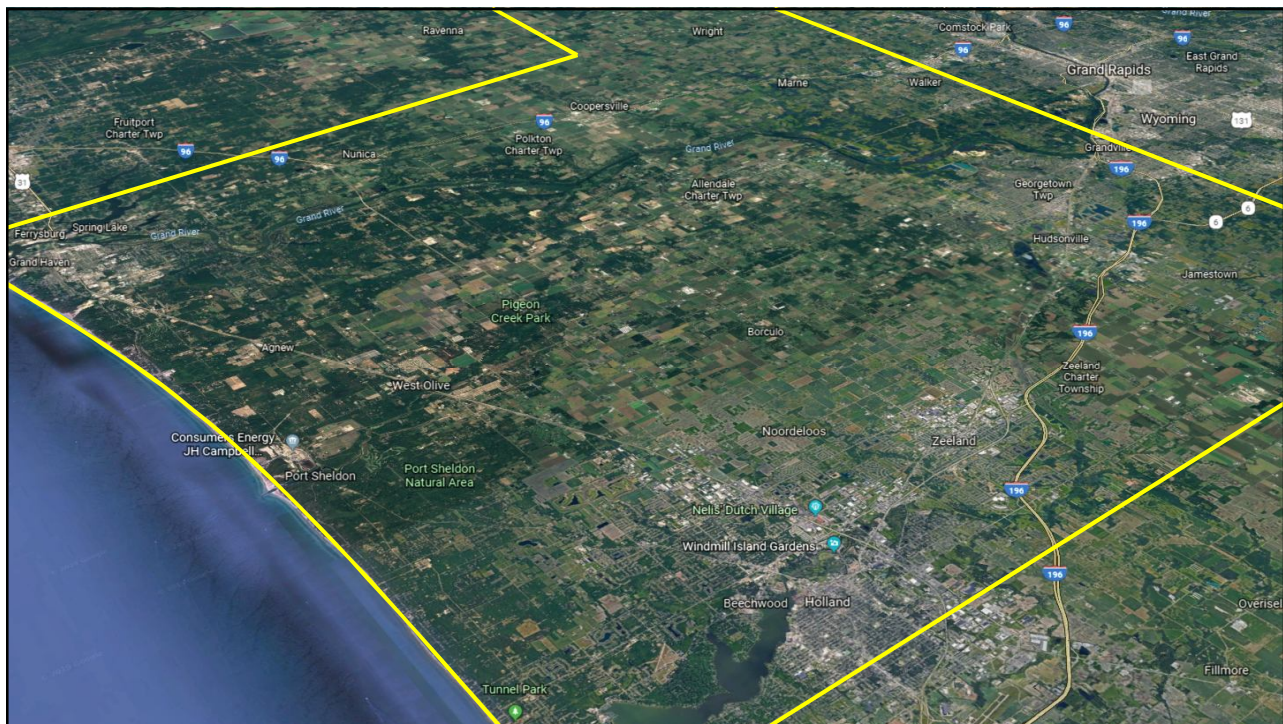
2. PARTNERSHIPS



3. STRATEGIES







GROUNDWATER MEETINGS — LOCAL UNITS, FEBRUARY 2018



GROUNDWATER MEETINGS — ALLENDALE, MAY 2018



GROUNDWATER MEETINGS — BLENDON/ROBINSON, SEPTEMBER 2018



GROUNDWATER MEETINGS — ENVIRONMENTAL GROUPS, OCTOBER 2018



GROUNDWATER MEETINGS — WATER QUALITY FORUM, NOVEMBER 2018



GROUNDWATER MEETINGS — GVSU/COUNTY FORUM, DECEMBER 2018



GROUNDWATER MEETINGS — LANDSCAPERS/IRRIGATORS, JANUARY 2019

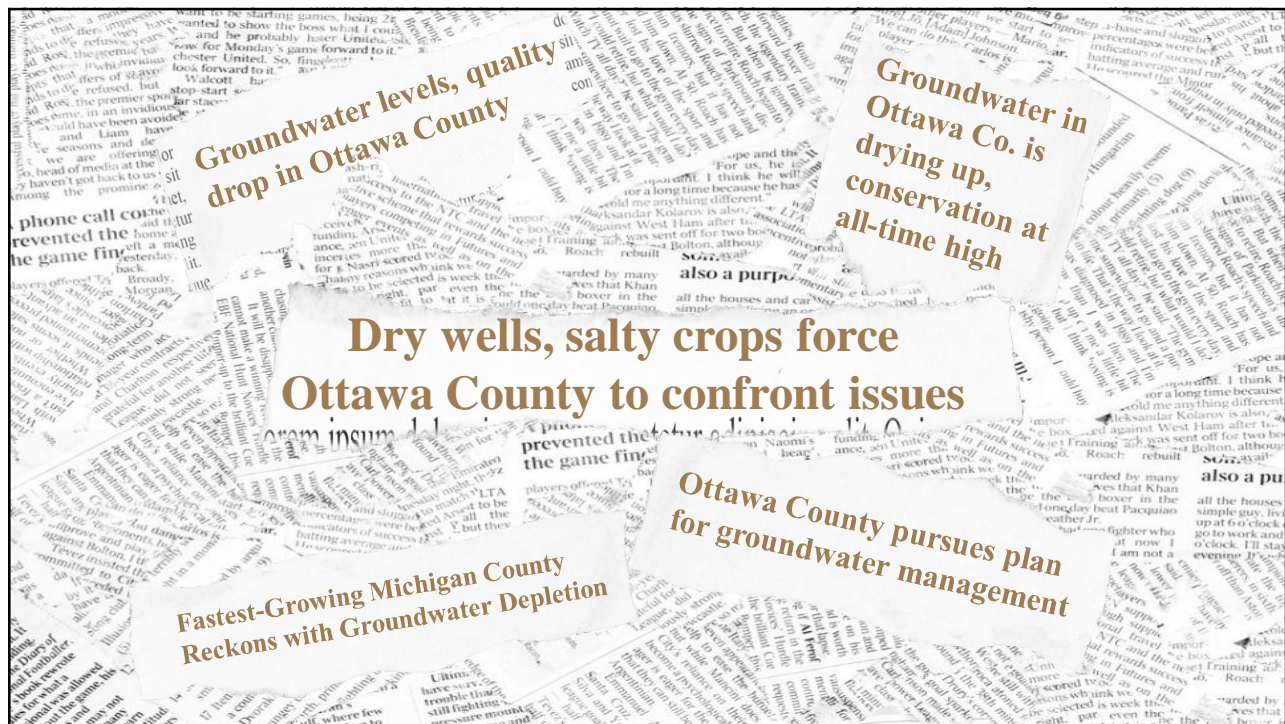


GROUNDWATER MEETINGS — OTTAWA FARM BUREAU, JANUARY 2019



OTHER OUTREACH





PUBLIC PRESENTATIONS — OTTAWA COUNTY LIBRARIES AND ROTARIES



**COOPERSVILLE AREA
DISTRICT LIBRARY**

333 Ottawa St. Coopersville MI 49404 616-837-6809



Herrick
District Library



Loutit District Library



**Georgetown Township
Public Library**



**ALLENDALE
TOWNSHIP
LIBRARY**
www.allendalelibrary.org



SPRING LAKE DISTRICT LIBRARY



**LIBRARY OF
HUDSONVILLE**

LEARN MORE — WWW.MIOTTAWA.ORG/GROUNDWATER

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Ottawa County Groundwater

🏠 / Ottawa County Groundwater

Ottawa County is the fastest growing county in Michigan. It is also one of the most agriculturally diverse and productive counties in the State, and nationally. As the County's population continues to grow and its agricultural industry flourishes into the future, access to abundant, fresh water is essential.

Over the last decade, Ottawa County residents and businesses have experienced issues related to groundwater, including reports of diminishing capacity and the presence of elevated levels of sodium chloride in some water wells. In light of these issues, Michigan State University (MSU) was hired to conduct a comprehensive groundwater study for Ottawa County. This study confirmed the anecdotal reports: water levels in the deep bedrock aquifer system have been gradually declining over the last 20 years and, in certain areas of the County, sodium chloride levels in the bedrock aquifer are rising above recommended standards for drinking water and agricultural irrigation.

Now that MSU's comprehensive groundwater study is complete, Ottawa County is in the process of developing a Comprehensive Groundwater Management Plan to help guide communities, residents, and businesses in sustaining our groundwater. The Plan will contain educational outreach materials, water conservation strategies, land use planning techniques, well-water monitoring procedures, and water and wastewater infrastructure expansion recommendations.

- Managing Our Groundwater: An Educational Brochure - (print and display in your office)
- Managing Our Groundwater: A Written Synopsis

Ottawa Groundwater

Project Partners

The Groundwater Study

Groundwater Mapping

The Management Plan

Conservation Strategies

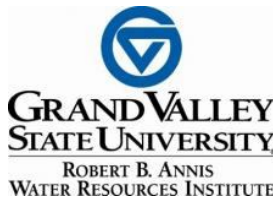
Planning & Performance

PARTNERSHIPS

WITH ESSENTIAL STAKEHOLDERS



EXECUTIVE COMMITTEE — SCIENTISTS, ENGINEERS, HEALTH, LEGAL, POLICY



*mi*Ottawa Department of
Public Health





GRAND VALLEY
Lanthorn
Allendale and Grand Rapids, Michigan

GVSU partners with Ottawa County for
 groundwater management plan



HASP
 HOPE ACADEMY OF
 SENIOR PROFESSIONALS



OTTAWA AREA ISD — GROUNDWATER CURRICULUM DEVELOPMENT



OTTAWA COUNTY PARKS — EXHIBITS, INTERPRETIVE SIGNAGE, EVENTS



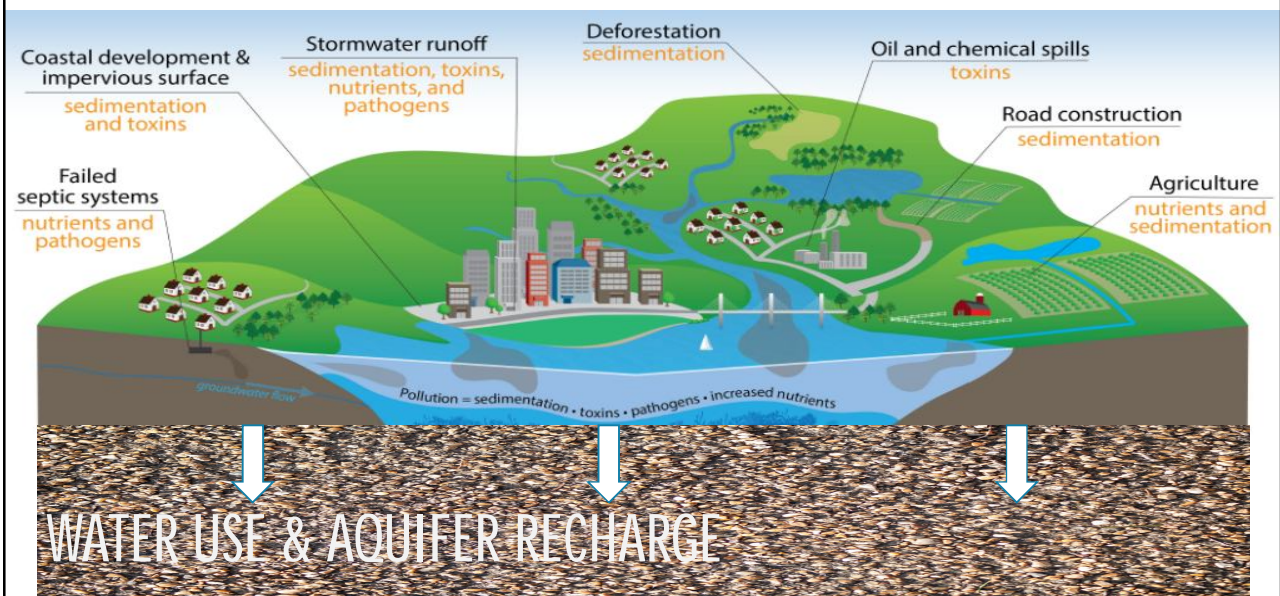
WATERSHED & ENVIRONMENTAL GROUPS

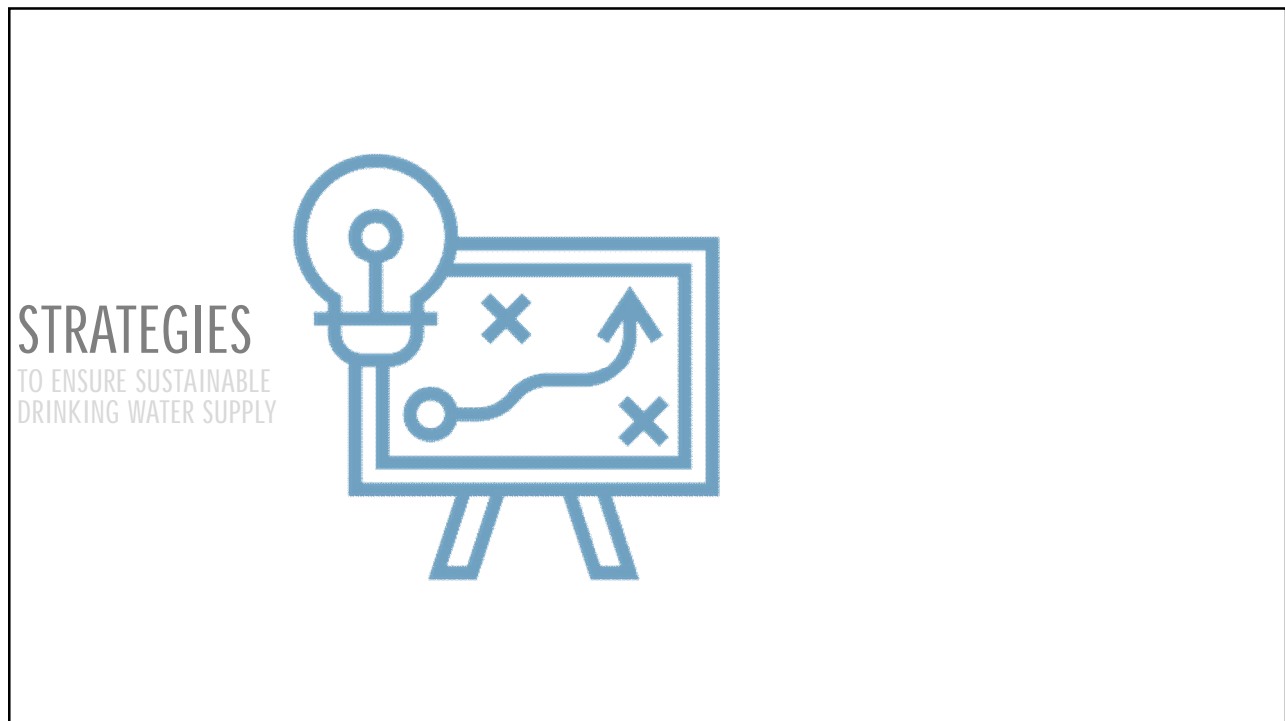


**Macatawa Area
Coordinating Council**
A Cooperative Effort Among Units of Government



WATERSHED PARTNERSHIPS





LAND USE PLANNING

BUILDING & SITE DEVELOPMENT

WATER USE

29





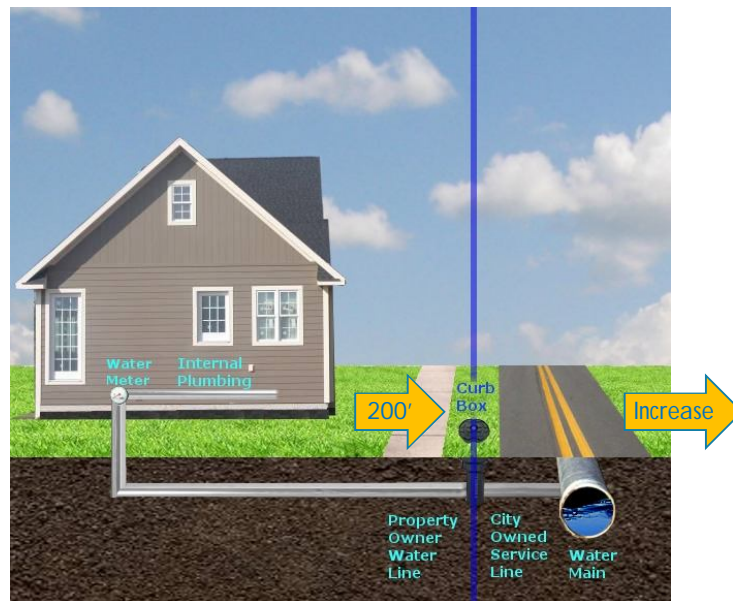
PRIMARY GOAL

1) Reduce dependency on deep bedrock aquifer system

Objectives:

- a) Implement creative solutions to offset new withdrawals from bedrock aquifer
- b) Protect and enhance recharge of bedrock aquifer
- c) Embrace water conservation and reuse

ADJUST MUNICIPAL SYSTEM CONNECTION STANDARDS



Ottawa County community bans new housing developments on well water



ALLENDALE TOWNSHIP, MI -- [One of Michigan's fastest-growing communities](#) has banned all further housing developments not connected to municipal water amid concerns that groundwater is drying up.

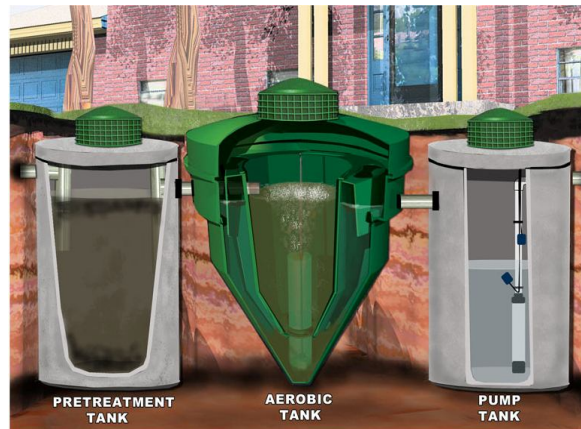
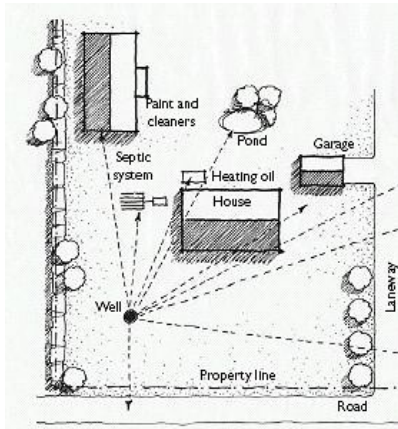
CONCEPTUAL...WATER CREDITS PROGRAM



CONCEPTUAL...SEWER CREDITS PROGRAM



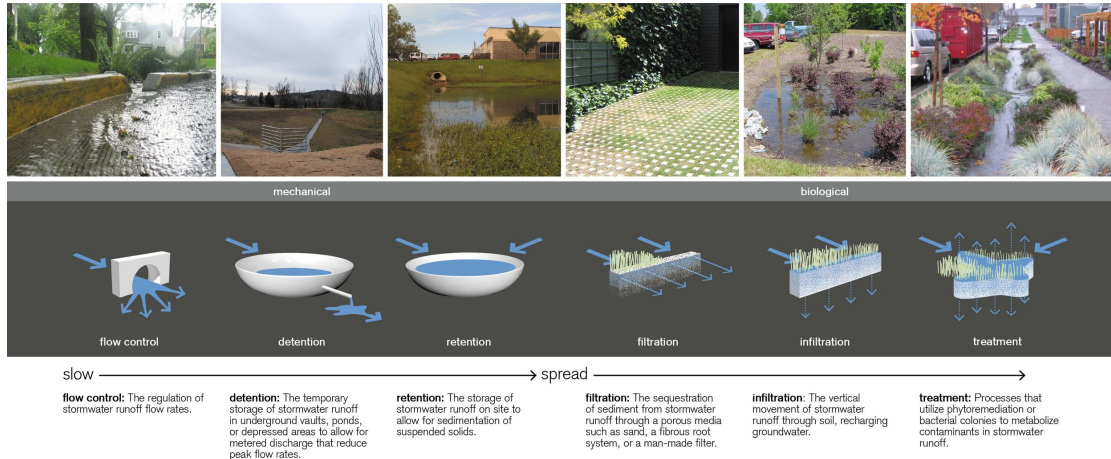
SEPTIC DESIGN AND ISOLATION DISTANCES



REAL ESTATE TRANSFER PROGRAM ENHANCEMENTS



LOW IMPACT DEVELOPMENT STANDARDS



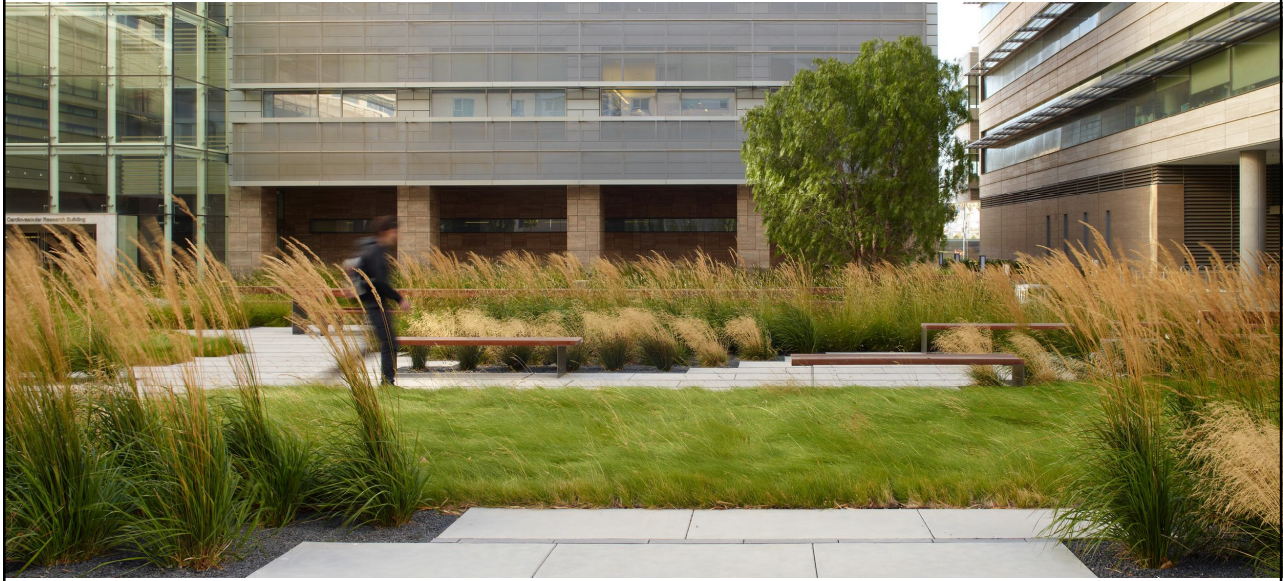
WATER RE-USE: IRRIGATION



WATER RE-USE: IRRIGATION



GO NATIVE

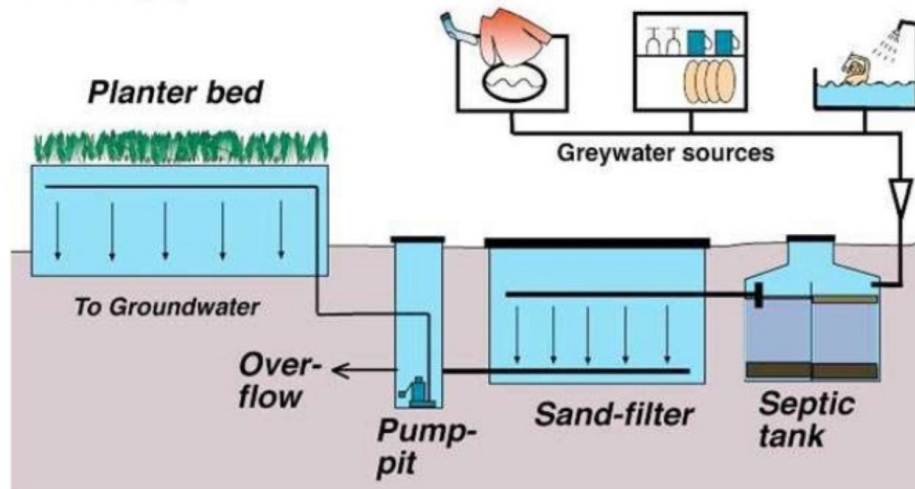


GREYWATER REUSE COMMERCIAL



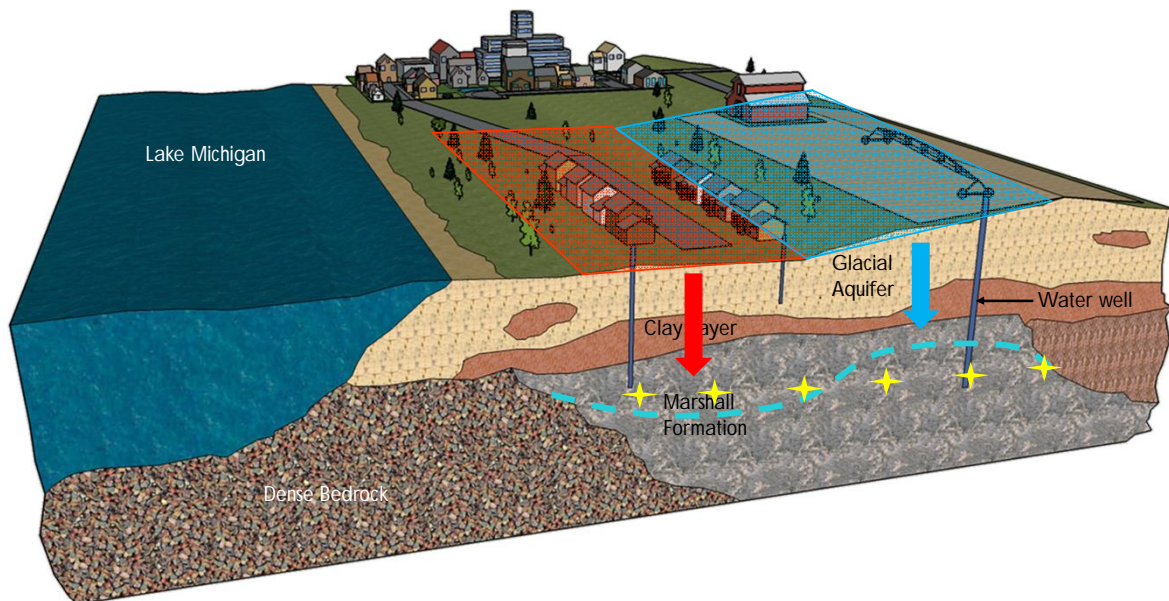
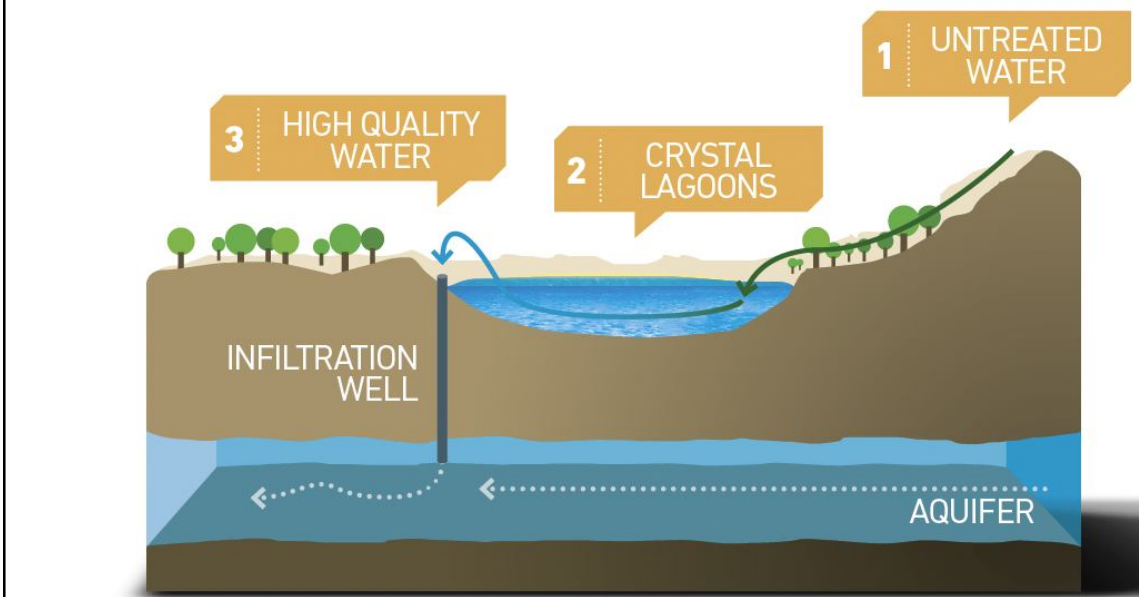
GREYWATER REUSE RESIDENTIAL

Advanced greywater treatment

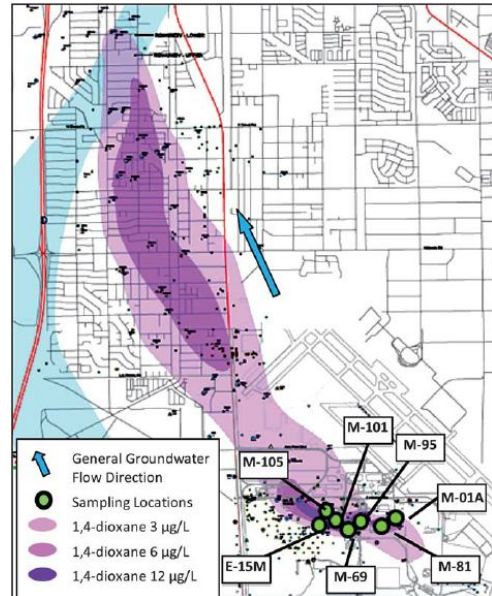


SENSITIVE AREA OVERLAYS (RECHARGE)





DATA-DRIVEN INFRASTRUCTURE PLANNING



WATER RESOURCE ASSESSMENT AND EDUCATION COMMITTEE





BEST MANAGEMENT PRACTICES — RAINWATER STORAGE



BEST MANAGEMENT PRACTICES — WEATHER MODELING, SENSORS



USDA **NRCS**
U.S. Department of Agriculture
Natural Resources Conservation Service

OTTAWA COUNTY
FARM BUREAU®





STARTS WITH: EDUCATION



TRY XERISCAPING — WITH NATIVE PLANTS



DON'T WATER YOUR LAWN WHILE IT'S RAINING



BE SMART. USE A RAIN GAUGE



WATER IS A
VALUABLE
COMMODITY

EDUCATION

+

OPERATE
DIFFERENTLY



