Grand Rapids
Water Resource Recovery Facility
WHAT WE’RE UP TO

William R. Kaiser
Acting Environmental Services Manager
City of Grand Rapids
Water Resource Recovery Facility

- Design 61.1 MGD
- Wet Weather Peak 90 MGD
- Avg. Daily 40 MGD
- 270,000 served
- 80,000 retail customers
- 11 Customer Communities
- 1100+ miles of sewer lines
- 400+ miles of storm lines
Sanitary Sewer
- Water Resource Recovery Facility
- 54 Lift Stations
- Retention/Treatment Basin
- 1100 miles Sanitary Sewer

Stormwater
- 11 Stormwater Pump Stations
- 400 miles of drainage system

Energy, Lighting, and Communications
- 18,000 Streetlights
- Primary Circuit
- Pole, Line and Duct System
- Fiber

Air Quality
- 7 AQ Monitoring Stations in West Michigan
PARTNERSHIPS & MEMBERSHIPS

NACWA
A Clear Commitment to America’s Waters

American Water Works Association

Water Environment Federation
the water quality people

American Water Works Association
Michigan Section

LIFT

Better Buildings
U.S. Department of Energy

The Water Research Foundation
www.waterrf.org

SWAN
THE SMART WATER NETWORKS FORUM

APWA
AMERICAN PUBLIC WORKS ASSOCIATION
SMART WATERSHED VISION

AFFORDABLE & RESILIENT URBAN WATERSHED MANAGEMENT

COMMUNITY IOT

UTILITY IOT

PUBLIC ENGAGEMENT

PROTECT ADVOCATE ENHANCE
PUBLIC HEALTH & ENVIRONMENT

BUILD CONNECTED OPEN INFORMATION

SOLAR PANELS
WATER METERS
ELECTRIC METERS
Street Lighting
LIDAR SENSORS

SMART CITIES OF TOMORROW
START WITH SMART UTILITIES TODAY
PFAS Reduction Plan

Working with industrial users
- Compliance Schedule
- Sampling
- Domestic Background
- Violations
- Develop a local limit

Public Education
Source Identification - Elimination and Reductions
Landfill Leachate
Annual Progress Report
Monthly Sampling
PFAS Timeline

2018

- **Feb**: MDEQ Letter
  - Required actions
- **Mar**: MDEQ Regional Meeting
  - Answers that created more questions
- **Apr**: City submits PFAS Plan
  - Required by Feb. letter
- **April**: MDEQ Letter
  - PFAS source evaluation follow up

2019

- **Oct**: City Surveys Sent
  - Tier 2 potential sources
- **Nov**: Surveys Received
  - Tier 2 surveys reviewed
- **Dec**: Potential sources identified
  - 13 SIU Tier 1&2 sources
- **Mar-June**: Meetings with sources
  - Collaboration, requirements, solutions

2020

- **July-Nov**: EGLE landfill study
- **Apr**: EGLE Additional Requirements
- **Apr-?**: SIU compliance schedules
  - Pilot study
  - Further source ID

2018 – foreseeable future
PFAS Destruction
Monitoring and Control Platform
2010 – HYDRAULIC MODEL (SCS Type II)
• 175,000,000 gal TO REMOVE
• 175M * $5-7/gal = $1B estimate to certify

2013 – ACTUAL FLOW MODEL
• $2M Sewer FLOW METERS
• $500K Model Development

2015 – Hydraulic Model (HUFF ANGEL QIII)* or equivalent
• 6 overflow sites to review
• $60M

2017 – ACTUAL FLOW MODEL WITH INTELLIGENCE
• $500K model with AI
• 3 of the 6 sites WILL NEED TO BE ADDRESSED $30M TO REMOVE OR TREAT – SAME COST
REAL-TIME WATER QUALITY MODEL

- Real Time Water quality Monitoring
- SWMM Storm SeWER MoDELING
- Grand River Water Quality Model by Limnotech
- Targeted TMDL IMPLEMENTATION
Hycat – Full Range Water Quality
Integrated Urban Watershed

- Integrate Existing Smart System Models
- Integrate Additional Data Sources
- Optimize Inter-system impacts
- Manage as One Watershed
- Real-Time Decision Support System
- Public Display/Output
SMART COMMUNITIES
Smart Street Lighting

$20 million to replace infrastructure

Allow remote management via universal 7 pin connector

Uses less energy

Future applications will follow our established review/approval process

Supports future investments in advanced water meters, process sensors, and smart community applications.
REMOVE LOADINGS FROM WRRF
ANAEROBIC MEMBRANE BIOREACTOR
RNG is a pipeline quality gas that is fully interchangeable with conventional natural gas and thus can be used in natural gas vehicles. RNG is essentially biogas which is produced to purity standards.

- **Renewable Identification Numbers (RINS)**
- **Renewable Natural Gas (RNG)**

Bio-solids are collected and delivered to an anaerobic digester to stabilize and optimize methane production. The resulting biogas can be processed into RNG to be used in vehicle fuel.

To fuel vehicles, biogas must be produced to a higher purity standard. This process is called conditioning or upgrading and includes removal of water, carbon dioxide, hydrogen sulfide, and other trace elements.

The resulting RNG has a higher content of methane than raw biogas, which makes it comparable to conventional natural gas and thus a suitable energy source for applications that run pipeline quality gas.

RNG can be used as transportation fuel in the form of compressed natural gas. RNG qualifies as an advanced biofuel under the Renewable Fuel Standard.

Source: US Gain Presentation Materials
Phosphorous Recovery
MARIJUANA
RECOGNITIONS
Thanks!

ANY QUESTIONS?
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