Consolidating the Genoa-Oceola and Oak Pointe WWTPs: Make the Seemingly Impossible a Reality

Greg Tatara, Ph.D.
Tesha Humphries, P.E.

Genoa Charter Township
Presentation Goals

* Provide History on Two Separate Waste Water Facilities Each Facing Operational Concerns

* Summarize Failed Efforts to Secure Outside Project Funding

* Review Techniques Utilized to Educate the Public on Importance of Investing In and Maintaining Their Infrastructure

* Demonstrate How Effective Public Education Made a Difficult Project a Reality

* Provide Photographic Tour of Construction of the Project
The Oak Pointe
and
Genoa-Oceola Facilities
History of Oak Pointe WWTP

- 1986 – Original Construction
- 1990s
  - WWTP Expanded to 4 SBRs
  - Municipal Water System Installed
    - Serves 71% of Population
    - Iron Removal & Chlorination – No Softening
    - 400mg/L CaCO₃ (24 Grains)
    - Sodium and Chloride Exceedances
- 2000 – Entered into Consent Degree
  - Sodium and Chloride Violations
  - Start Remedial Investigation
  - Source Control Attempts
Sodium and Chloride Trends

Oak Pointe Wastewater
Effluent Na and Cl Concentrations

Physical Impact of Salt
Groundwater Discharge Impacts

- ~80 Homes Located Downstream of Plant
- $500,000 Spent on RI
- Annual Residential Sampling Program
  - Temporary On Site RO
- Concerns with Upcoming Regulations
  - Pharmaceuticals
Consolidation Plan & Funding
2005 - 2008

- Consolidation Committed to State in 2005 IRAP
- Only Minimal Maintenance Completed on Plant – Moving Towards Consolidation
- Planned Unit Development Just South of Oak Pointe Was to Provide Funding
- Developer Vacated SAD
- Land Use Changed, No Planned Major Development to Fund Improvements
Minimal Upgrades to Obtain Permit 2008

- Chemical Addition for Phosphorus Removal
- Rapid Infiltration Basin Improvements
- SCADA Upgrades
- Flow Monitoring
Grants

- Met Annually with Rogers, Levin, & Stabenow Staff
- Filed 6 Appropriation Requests Between 2008 - 2011
Concerns with Long Term Operation of OP WWTP

1. **Antiquated Treatment Process**
   1. High Energy Usage – Course Bubble
   2. Labor Intensive Operation – No Automated Sludge Wasting

2. **Continued Sodium and Chloride Permit Violations**

3. **Ground Water Discharge Concerns** – Potential Additional Regulations

4. **Small RIBs** - No Room for Growth

5. **No Viable Surface Water Discharge Location**

6. **Limited Financial Resources for Repairs and Upgrades**
1988  Constructed as a Three SBR Ground Water Discharge Plant

1991  Plant Expanded to 4 SBR System with a Capacity of 700,000 Gallons

1999  Authority Enters Into Consent Judgement for Sodium and Chloride Violations

2002  Plant Upgraded to Surface Water Discharge Facility with Oxidation Ditch and Tertiary Treatment

2012  Plant Begins to Exceed Seasonal Sludge Holding Capacity Due to Land Application Challenges
Available Land & Weather Impacted Seasonal Disposal

Plant Was Designed for 6-Months Storage – Required 8 Months
Seasonal Impact on Operation – MLSS and Settleability

G/O WWTP Settling vs. MLSS

MLSS mg/L

SETTLING mls

2013

2014

2015
Alternative – More Costly Methods Implemented
Operational Concerns with G-O WWTP

1. **Sludge Storage Capacity**
   1. Weather and Land Impacted Seasonal Removal
   2. Limited Future Growth
   3. Made Operation Difficult with High MLSS and Poor Settleability

2. **Diurnal Flow Cycle**
   1. Limited biological Phosphorous Uptake
   2. Variable Oxidation Ditch DO Concentrations
Summary

Problem:
1) Oak Pointe: Antiquated, Plume, Non-Compliance for Na & Cl, Groundwater Discharge
2) Genoa-Oceola: At Sludge Storage Capacity

Solution:
1) Oak Pointe: Turn Oak Pointe Into an Equalization Pump Station & Pump Flow at Night
2) Construct Sludge Thickener at Genoa-Oceola

Barrier:
1) Township Board Unwillingness to Assess Any Debt to OP System
2)
A New Approach

* What Now?
  * No Existing Funds
  * No Success at Appropriations or Grants
  * Economy in Poor Shape
  * Township Board Up For Re-election
    * No Desire to Assess Debt
  * A Phone Call Regarding Rates with an HOA President Gave Us an Idea?
Utilizing Public Education to Make the Project a Reality
Established a Citizen’s Advisory Committee

Goals

1. Inform Citizens of History, Operational Difficulties, and Current Financial State of Their Sewer and Water Systems
2. Obtain Feedback Regarding Sewer and Water Capital Improvements
3. Get Them to Lead the Charge on Moving Project Forward

Method

* Initial Meeting Held on January 11, 2012
  * Invited 5 Residents Active in their Homeowner’s Association
  * Included Key Township Board Members in All Meetings
* Six Meetings Were Held Between January 2012 and November 2013
Public Education – Presentations

Staff Presented at 5 Public Meetings in 2012 & 2013

- Township Hosted Open House in 2012
- Presented at Various Homeowner’s Association Annual Meetings

YOUR WATER,
Sustaining The Oak Pointe Sewer and Water Infrastructure for an Economically Viable Community
Improved Drinking Water Quality

Limitations

- Only 71% Of Sewer Customers Receive Municipal Water
  - Effluent Would Still Exceed NaCl

- Need Backwash Discharge for Ion Exchange or RO Filter
  - Need to Do Wastewater Project 1st

- Interested in Municipal Softened Water
  - Yes: 86.3%
  - No: 13.7%
Customer Feedback

Water Softener Usage

- Yes: 96.6%
- No: 3.4%

Main Concern with the Existing Oak Pointe Sanitary System

- Existing Rates: 34%
- Contamination: 30%
- Violations: 27%
- Improvements Required: 9%

Amount Spent on KCl Salt per Month

- $0 - $15: 54%
- $15 - $25: 27%
- $25 - $50: 15%
- > $50: 4%

Preferred Wastewater Improvement Option

- Softened Water: 72%
- GO Surface Water: 23%
- Home Inspection: 5%
Public Education - Outreach

Quarterly Updates

- Prepared 6 Quarterly Updates
- Emailed to CAC Members
- Notification of Progress, Cost Estimates
- Placed on Website

Website Updates

Related Documents

- February 2015 Project Update Brochure
- Oak Pointe Wastewater Consolidation Project - Flat Rate Customer Brochure
- Oak Pointe Wastewater Consolidation Project - Metered Customer Brochure
Public Education - Mailings

Sent 3 Brochure Type Mailings to All Customers

2012: Invitation to Open House

2014: Notification Project is Starting & Billing Impacts

2015: Revised Water Softener Requirements & Project Update
Efforts of Citizens Advisory Committee

Recruiting - The Committee Grew to 12 Members

Best regards,
Joan
Citizens Selected Debt Assessment Methodology

* Not Everyone Agreed How to Implement Debt

Survey Results for Preferred Debt Implementation

- None: 6%
- Separate Monthly Bill: 8%
- Quarterly Utility Bill: 40%
- Annual Tax Bill: 46%

* Result: $75/Qtr. Increase with Minimal Objection

We Directed Concerned Customers to Public Education Materials

Ultimately Citizens Advisory Group Recommended Debt Method
What Was Public Reaction at Township Board Meetings?

Project Was Presented at Multiple Township Board Meetings

- Only 1 Resident in Strong Opposition to Project
- Petition Effort To Stop Project Failed
- Public Wanted Project – Did Not Sign Petition
- Board Became a Proponent of Project
- Due to Board Members Attending CAC Meetings with Residents
The Project Becomes a Reality!
Biosolids Building Construction

September 2014

October 2014

December 2014
Biosolids Building Construction

January 2015

February 2015

March 2015
Screw Press Installation

March 2015

May 2015

June 2015

June 2015
Screw Press Operation

Operation Began In May 2014
Conversion of Oak Pointe WWTP to a Pump Station

Before

May 2015

5 Miles of Force Main Directionally Drilled
Conversion of Oak Pointe WWTP to a Pump Station
Some Project Statistics

1. The Total Cost of the Project was $6,000,000

2. The Average Cost to a Residence is $300 Annually for 22 Years

3. Only 2.5 Years Passed from First CAC Meeting to Start of Project Construction
   1. 2005 – 2012 Unable to Secure Funding
In Conclusion:
What We Learned From Public Education

* Typical Customer Doesn’t Think About Wastewater
  * Concerns Focused on Drinking Water Quality
* Most Residents Supported Once They Understood:
  * Best Alternative both Fiscally and Environmentally
  * Need to Do This to Eventually Improve Drinking Water Quality
* Elected Officials Supported Debt Implementation Once the Public Supported the Project
* Homeowners Associations are Excellent Communication Tools
  * Approximately 70% of Oak Pointe Sanitary Customers are in a Homeowner’s Associations
Questions