NEW Water Update

R2E2 Stakeholder Committee
& Customer Quarterly combined meeting
December 5, 2014
Resource Recovery and Electrical Energy: R2E2

- Current **solids handling facility** being replaced due to:
  - Environmental regulations,
  - aging infrastructure, and
  - capacity requirements
Resource Recovery and Electrical Energy: R2E2

- R2E2 implementation will yield 50% purchased energy savings
- Recovers chemical energy in wastewater to produce methane gas for electrical energy generation and heat recovery
- Recovers thermal energy in wastewater to pre-dry solids to enable incineration without supplemental fuel
- Recovers nutrients from wastewater to produce a beneficial reuse commercial fertilizer product
NEW Water 2015 Budget Drivers

• Loss of 10% of BOD loading
• Continue to build funding capacity for R2E2 project debt
• Fund other essential capital projects
• Implement adaptive management pilot
• Accommodate PSC Fox River Fiber decision
Flows and Loads

- BOD
- TSS
- Flow
2015 Proposed Expenses

<table>
<thead>
<tr>
<th>Budget Category</th>
<th>2014 Budget</th>
<th>2014 Projected</th>
<th>2015 Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations &amp; Maintenance (O&amp;M)</td>
<td>$19,468,874</td>
<td>$18,654,913</td>
<td>$19,014,538</td>
</tr>
<tr>
<td>Debt Service and Annual Capital</td>
<td>$14,298,621</td>
<td>$14,134,667</td>
<td>$16,312,247</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>$33,767,495</td>
<td>$32,789,578</td>
<td>$35,326,785</td>
</tr>
</tbody>
</table>

O&M 54%
Capital and Debt Service 46%
## Municipal Rate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>2014 Rate</th>
<th>2015 Rate</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Combined Rate (1,000 gals)</td>
<td>$2.6362</td>
<td>$2.8973</td>
<td>9.9%</td>
</tr>
<tr>
<td>Volume (1,000 gals)</td>
<td>$0.7633</td>
<td>$0.8045</td>
<td>5.4%</td>
</tr>
<tr>
<td>Biochemical Oxygen Demand (lbs)</td>
<td>$0.3347</td>
<td>$0.3933</td>
<td>17.5%</td>
</tr>
<tr>
<td>Suspended Solids (lbs)</td>
<td>$0.2987</td>
<td>$0.3482</td>
<td>16.6%</td>
</tr>
<tr>
<td>Phosphorus (lbs)</td>
<td>$0.6212</td>
<td>$0.5677</td>
<td>-8.7%</td>
</tr>
<tr>
<td>Total Kjeldahl Nitrogen (lbs)</td>
<td>$0.6874</td>
<td>$0.6536</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Fixed Charge</td>
<td>$0.4676</td>
<td>$0.5266</td>
<td>12.6%</td>
</tr>
</tbody>
</table>
The Fox River Contributes 1/3 of All Nutrients to Lake Michigan

Photo credit: Steve Seilo (www.photodynamix.com)
Sources of Phosphorus in Lower Fox River (LFR) Basin

(Data Source: Total Maximum Daily Load - TMDL Watershed Plan for Lower Fox River March 2012)
Economics of Phosphorus (P)

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimated Costs</th>
<th>Sources P TMDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal WWTF’s:</td>
<td>$400 – $500 million</td>
<td>87,160 lbs/yr</td>
</tr>
<tr>
<td>NEW Water: (capital costs 2010 and 2025)</td>
<td>($223 - $394 million)</td>
<td>26,059 lbs/yr</td>
</tr>
<tr>
<td>MS4’s storm water:</td>
<td>$200 - $400 million</td>
<td>65,829 lbs/yr</td>
</tr>
<tr>
<td>Industrial WWTF’s:</td>
<td>$200 million ??</td>
<td>114,429 lbs/yr</td>
</tr>
<tr>
<td>Agriculture</td>
<td>$ ???</td>
<td>251,382 lbs/yr</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$800 Million - $1.1 Billion</strong></td>
<td></td>
</tr>
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NEW Water WPDES Permit Timeline


2016 - Alternatives evaluation update.

2017 - Alternatives evaluation plan draft.

2018 - Alternatives evaluation plan final.  
Adaptive Management or Treatment.

2018 - Begin plan, apply for new permit.

2019- 2022 – Design and Construct to meet new permit limits if treatment is selected.

If Adaptive Management is selected, annual watershed reports are due.
Silver Creek Pilot Project 2013 -2018

- Partnerships – Oneida Tribe.
- Stream Monitoring.
- Inventory of watershed.
- Implementation.
- Project evaluation.

http://www.newwater.us/projects/silver-creek-project
Some Questions to Answer in the Pilot

- Can we demonstrate AM in a 4 yr pilot?
- Will the Pilot result in water quality improvement?
- What does compliance mean?
- Can we demonstrate AM in 20 years for permit compliance?
- What will it cost?
- Can AM be a viable permit compliance approach?
- Is this the best approach for our ratepayers?
- Are there willing stakeholders and landowners/growers?
- What barriers exist to full scale implementation? Can they be overcome?
Plans for 2015 - The Year of Planning

- Finish soil sampling and analyze data
- Stakeholder and landowner/grower meetings
- Stakeholder commitments and work planning
- Nutrient Management Plans
- Field walks and Conservation Plans
- Enrollment into programs and identify cost share needs
- Implement some best management practices (BMPs)
  - Cover crops, Residue, No-till, Manure and fertilizer application, Hay
Questions

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R2E2 Update

Stakeholder Committee
December 5, 2014
Agenda

• R2E2 Updates Since Last Meeting
  – 60% design workshops
  – Project scope reductions and increases
  – Construction Cost estimate

• Fluidized Bed Incinerator
  – 90% Workshop and Model
  – Contract 34 Package

• Contract 33 Primary Switchgear and Utility Relocation
  – Construction Status

• Schedule—What’s next?
  – Major equipment pre-purchase and pre-select
  – Final design
  – Construction

• Open Discussion
Design Workshops

- All 60% workshops complete
- Two of three 90% P&ID workshops conducted – final scheduled for next week
- Nutrient Recovery System Workshop to be scheduled January
Project Scope Reductions/Increases

• Cost reductions incorporated into documents:
  – Deductive bid item for Anaerobic basin improvements
  – Use of existing tank and outlet piping for Nutrient Recovery
  – Re-purposing existing pipe for new services

• Additive scope items were incorporated this period:
  – Thickening centrifuge
  – Adjustable frequency drives on Primary Sludge pumps
  – Density meter on FBI feed
The team continues to look for ways to manage costs within budget. Below is a summary of cost progression:

– Facility Plan = $147,000,000 in 2011 dollars
– BODR (increased FBI and dryer sizing, dropped steam turbine)
  • $124,000,000 in 2011 dollars
  • $144,000,000 in 2016 dollars (midpoint of construction)
– The 60% estimate was $146,000,000 in 2016 dollars
– The 90% estimate is $149,000,000 in 2016 dollars
Fluidized Bed Incinerator Procurement

- Fluidized Bed Incinerator (FBI) model update and 90% design workshop was held October 15, 2014
- Model changes incorporated and will be frozen next week
- Deliverable for Contract 34:
  - Draft submitted October 2014
  - Final submittal meeting December 17, 2014
- Deductive and additive change orders are being negotiated net change <$100,000
Primary Switchgear and Utility Relocation (Contract 33)

- Initial contract to transition GBF electrical supply into new switchgear, relocate utilities and access roads, and construct new storage building
  - Construction is essentially complete on primary switchgear and storage buildings
  - Primary switchgear equipment delivered and installed
  - WPS connections this week, and on-site terminations 30% complete
  - Switchover scheduled for January and February with training to follow
  - Contract Completion on schedule for July 15, 2015
Primary Switchgear and Utility Relocation

WPS strings power cable on pole for 137 feed
Primary Switchgear and Utility Relocation
Primary Switchgear and Utility Relocation
Primary Switchgear and Utility Relocation

Second section of switchgear #1 in transit
Primary Switchgear and Utility Relocation

NEI positions power cables in cable trays Cable Vault #1
Primary Switchgear and Utility Relocation

Miron completes sheathing of Switchgear Bldg.
Primary Switchgear and Utility Relocation

Performance Insulation continues duct insulation in switchgear room #2
Primary Switchgear and Utility Relocation

AW installs diffuser on supply air duct in Control Rm. #1
Primary Switchgear and Utility Relocation

NEI installs batteries in battery storage rooms
Primary Switchgear and Utility Relocation

Sommers pours concrete landscape curbing around Switchgear Bldg.
Primary Switchgear and Utility Relocation
Procurement Schedule

• Pre-selection documents to qualified vendors:
    • Pre-selection of Caterpillar was recommended and approved
    • Pre-selection of Centrysis was recommended and approved
  – Nutrient Recovery request for proposals (RFP):
    • Two proposals received September 26, 2014
    • Pre-selection of Multiform Harvest recommended and approved
Nutrient Recovery

• Two vendors submitted proposals:
  – Multiform Harvest:
    • Capital $2.375 million, 20-year life cycle $8.132 million
    • Fertilizer purchase $375/dry ton
  – Ostara:
    • Capital cost $5.225 million, 20-year life cycle $12.767 million
    • Fertilizer purchase $300/dry ton
  – Multiform Harvest selected and letter of intent executed
Design Schedule (Contract 34)

• Design completion has pushed to Spring 2015 because of Nutrient Recovery vendor selection process
  – 90% package (less Nutrient Recovery) to be posted December 15, 2014
  – Final documents (less Nutrient Recovery) February 2015
  – Nutrient Recovery design workshop January 2015
  – Nutrient Recovery final documents April 2015
• Contractor pre-qualification December 2014
• Bid late Spring 2015 with construction to start Summer 2015 and substantial completion Summer of 2018
• Digester and Solids Facility fly-through
Open Discussion
Schedule – What’s Next

• Post today’s presentation on website
  —Continue to update our customers through external newsletter and website

• Next Customer Meeting
  —Spring 2015
R2E2 Update

Thank you for coming!