DIXIE DRAIN PHOSPHORUS REMOVAL PROJECT

December 7, 2018
In the 21st century, cities will drive change

- Infrastructure decentralization
- Infrastructure choices and evolution of “Need”
- Resource renewal
- Local government setting the pace
Water Renewal Strategic Planning

Growth

Regulatory Requirements

Resource Recovery

Water Renewal Utility of the Future

- Carbon neutral
- Resource focused
- Data driven
- Promotes economic development
- Pilots emerging technology
- Proactively manages risk

LASTING ENVIRONMENTS | INNOVATIVE ENTERPRISES | VIBRANT COMMUNITIES
OBJECTIVES

• Why This Project?
• Watershed
• Permitting
• The Facilities
• Operating Performance
• What’s Next

Watch: City of Boise - Dixie Drain
SO WHY PURSUE TRADING? GENERALLY . . .

Trading Programs Offer Specific Benefits

- Improves return-on-investment/cash flow
- Incentivizes beyond minimum requirements
- Promotes flexibility/innovative approaches
- Buys time in periods of uncertainty
- Addresses nonpoint sources
- Reductions, sooner, to improve water quality
- Promotes watershed approach
- Provides greater environmental benefit
POLLUTANT TRADING / OFFSET CONCEPT

- City required to reduce phosphorus to river by 98%
- Upgraded treatment plant removes 95%
- Final 3% is expensive with limited benefit

- Dixie Slough is agricultural drain high in flow and TP
- Remove final 3+% as cost effectively with smaller carbon footprint and greater environmental benefit
NPDES PERMIT

- Issued May 2012 with reopening clause

- Modification September 2012 to allow Dixie Drain TP Offset on West Boise Permit
  - SOC for design, construction, O&M plan, and initial operation year (2016)
  - Monitoring requirements - temperature, aluminum, flow, pH, TP, removal %
DIXIE DRAIN ELEMENTS
# 2017 Performance

<table>
<thead>
<tr>
<th>Month</th>
<th>Pounds of P Removed</th>
<th>Pounds/Day</th>
<th>Percent P Removal</th>
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<tbody>
<tr>
<td>May</td>
<td>911</td>
<td>29</td>
<td>79</td>
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<tr>
<td>June</td>
<td>1,091</td>
<td>36</td>
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<td>July</td>
<td>1,017</td>
<td>33</td>
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<td>August</td>
<td>903</td>
<td>29</td>
<td>79</td>
</tr>
<tr>
<td>September</td>
<td>985</td>
<td>33</td>
<td>81</td>
</tr>
</tbody>
</table>

**2017 Total: 4,907 Pounds Removed**
TRADING FOR CITY OF BOISE MEANS . . .

- Better environmental outcomes for the watershed
TRADING FOR CITY OF BOISE MEANS . . .

- Capital cost deferment and improved cash flow

![Chart showing capital and annual O&M costs between 2015 and 2032 for Dixie Drain and WB WWTF.](chart.png)

- Capital and Annual O&M Costs ($ Millions)
- Year

- Dixie Drain
- WB WWTF
TRADING FOR CITY OF BOISE MEANS . . .

• Temporary solution to long term discharge options

NPDES  Nutrients

Toxics

Microconstituents  PC Bs  TMDLs
COLLABORATION IS KEY

• Collaborative effort
  • Congressional Delegation
  • EPA
  • IDEQ
  • IDWR
  • Idaho Conservation League
  • Brown and Caldwell
  • J-U-B

Crystal clear water treated at the Dixie Drain facility mingles with the untreated slough water.
SUMMARY: AN INNOVATIVE SOLUTION TO A COMPLEX PROBLEM

- Removes up to 140 pounds of phosphorus per day
- Better Environmental Return on Investment
  - Removes 50% more phosphorus for same investment
- Removes phosphorus that would typically go untreated
TEMPERATURE MITIGATION: THE NEXT CHALLENGE REQUIRING INNOVATION

- The Boise River is our most prized piece of green infrastructure
- A Path Forward: Section 316a of the Clean Water Act
QUESTIONS
THANK YOU