Outfall Condition Assessment Project

May 2016
Peninsula Drainage District 1

- Columbia River
  - 31 outfalls
    - 18 inspected
    - 9 still to be inspected
    - 4 inactive (do not require inspection)

- Columbia Slough
  - 2 outfalls/force mains
  - Pump station
Summary of Work to Date

- 20 outfalls inspected, 8- to 30-inches in diameter
- Approximately 2,500 LF inspected
  - 2,000 by AIMS PVIC
  - 500 by City of Portland
- Pipes still to be inspected
  - Outfalls 9 and 15 – outfall underwater
  - Outfall 2 – access agreement needed
  - Up to six outfalls – Graphics Packaging outfalls require flow bypass; LRC staff exploring options
Inspected Outfalls – Overview
Inspected Outfalls – Columbia River

Outfall Totals:
- Inspected (18)
- To Be Inspected (9)
- No Inspection Required (4)
Inspected Outfalls – Columbia Slough

Outfall Totals:
- Inspected (2)
- To Be Inspected (0)
- No Inspection Required (0)
# PACP Grading System

<table>
<thead>
<tr>
<th>Condition grade</th>
<th>Grade description</th>
<th>Defect description</th>
<th>Structural condition grade implication</th>
<th>Operational condition grade implication</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Immediate attention</td>
<td>Sewers requiring immediate attention</td>
<td>Failure likely within the next 5 years</td>
<td>Unacceptable infiltration or blockages; surcharging of pipe during high flow with possible overflows</td>
</tr>
<tr>
<td>4</td>
<td>Poor</td>
<td>Severe defects that will continue to degrade with likely failure in 5–10 years</td>
<td>Failure likely in 5–10 years</td>
<td>Pipe at near surcharge condition during high flow; overflows still possible at high flows</td>
</tr>
<tr>
<td>3</td>
<td>Fair</td>
<td>Moderate defects that will continue to deteriorate</td>
<td>Failure unlikely in near future; further deterioration likely</td>
<td>Surcharge or overflows unlikely but increased maintenance required</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
<td>Minor and few moderate defects</td>
<td>Minimal near-term risk of collapse, potential for further deterioration</td>
<td>Routine maintenance only</td>
</tr>
<tr>
<td>1</td>
<td>Excellent</td>
<td>No defects, condition like new</td>
<td>Good structural condition</td>
<td>Good operational condition</td>
</tr>
</tbody>
</table>
Structural Defects

Outfall 10: holes with voids visible at discharge point

Outfall 29: surface reinforcement visible

Outfall 25: broken pipe with heavy debris

Outfall 25: deformed pipe
Structural Defects (continued)

Outfall 18: broken pipe with steep grade break

Outfall 22: sag

Outfall 22: open and offset joint

Outfall 12: broken pipe
Operational Defects

Outfall 11: settled deposits

Outfall 13: heavy debris – 100% blockage

Outfall 28: heavy debris – 100% blockage with fine roots
PACP Grades – Columbia Slough

PACP rated grade 4 or 5 in the following category:
- Structural
- Operational
- Both Structural and Operational
- Neither
- No Inspection Conducted

No PACP Grade 4 or 5 Defects
PACP Grades – Columbia River

PACP rated grade 4 or 5 in the following category:
- Structural (3)
- Operational (4)
- Both Structural and Operational (6)
- Neither (5)
- No Inspection Conducted (13)
## Costs

- **Decommission:** $15,000/Outfall
- **Emergency spot repairs:** $15,000 – $20,000
- **Rehab/Repair**
  - Planned open-cut spot repairs: $5,000 – $10,000/outfall
  - **CIPP:** $100-$300/LF
- **Variables**
  - Access issues
  - Traffic control
  - Diameter
  - Private property coordination
Next Steps

- Determine final ownership
- Correlate hydraulic need
- Inspect remaining outfalls
- Update report
- Implement similar condition assessment to other districts