

Multnomah County Drainage District

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

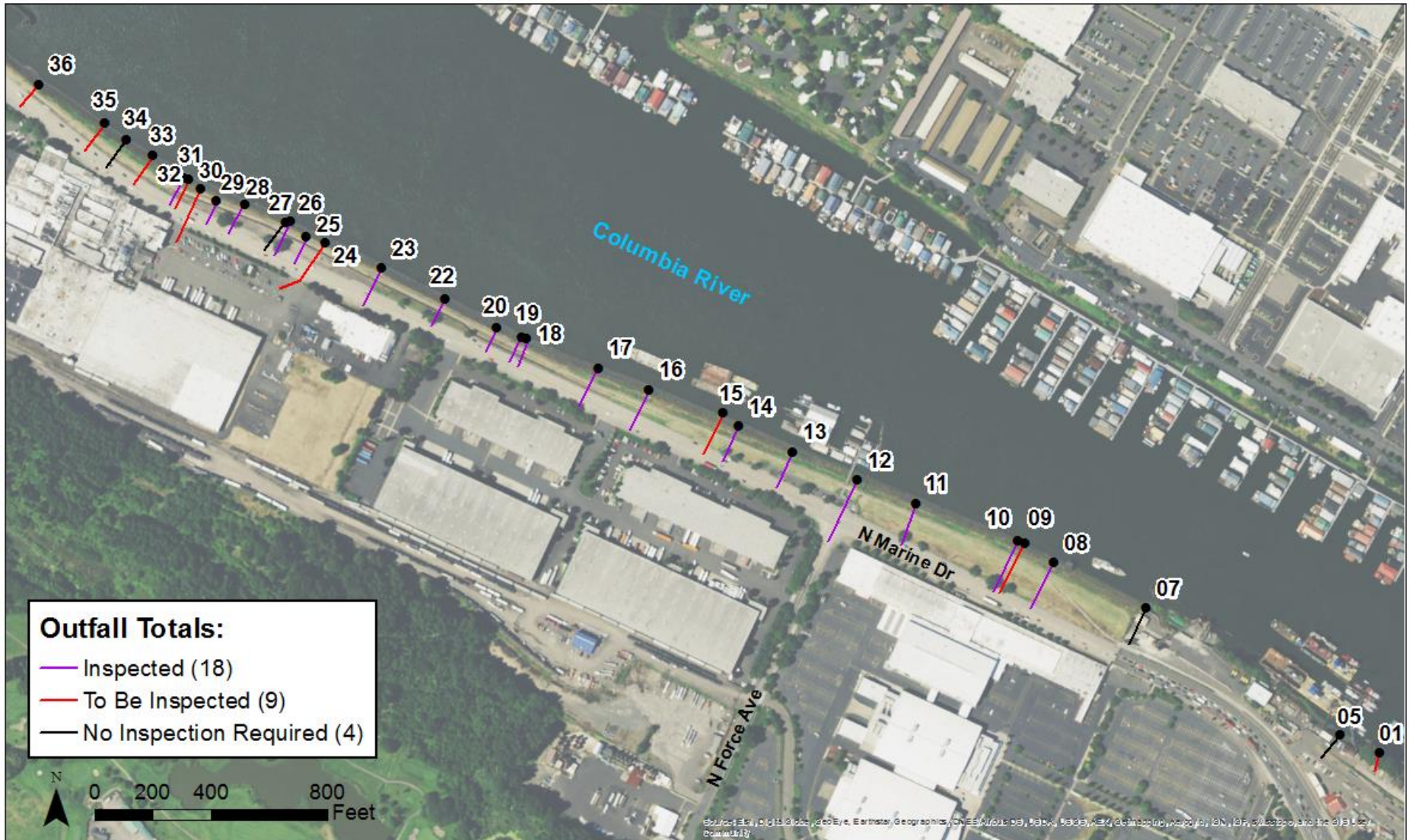
Summary of Work to Date

- 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

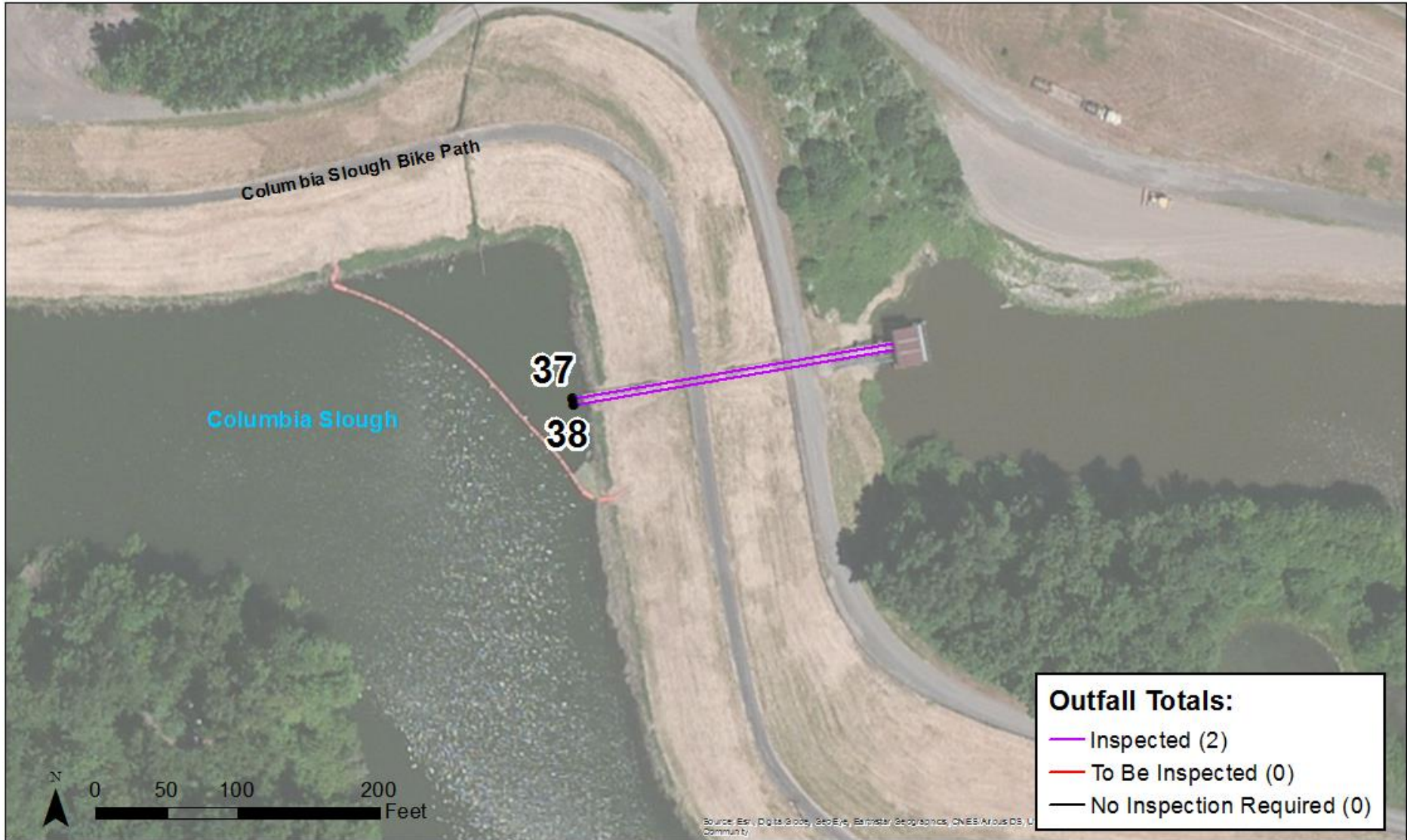
Inspected Outfalls - Overview



Inspected Outfalls – Columbia River



Inspected Outfalls – Columbia Slough



PACP Grading System

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

Structural Defects



Outfall 10: holes with voids visible at discharge point



Outfall 25: broken pipe with heavy debris



Outfall 29: surface reinforcement visible



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

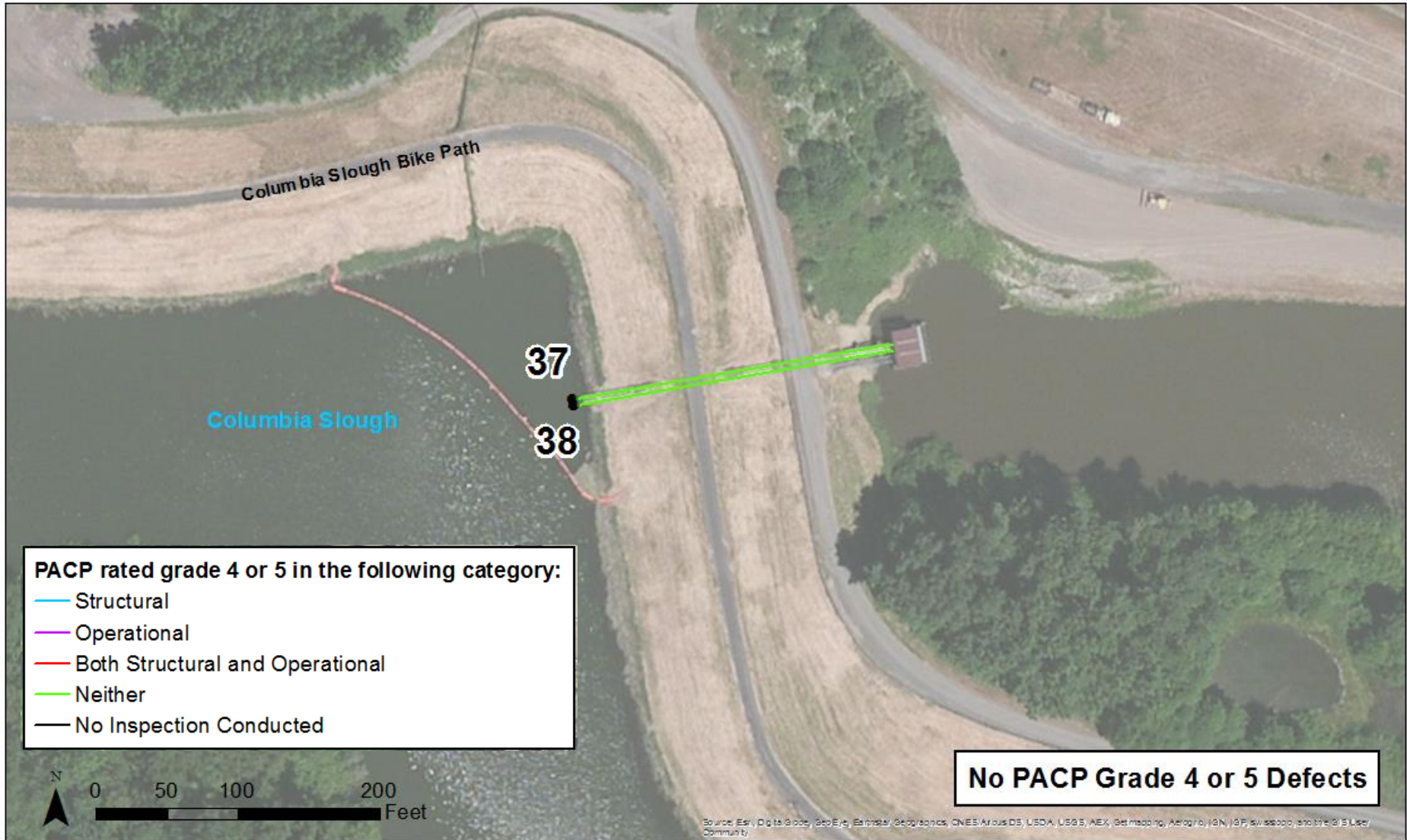


Outfall 13: heavy debris - 100% blockage

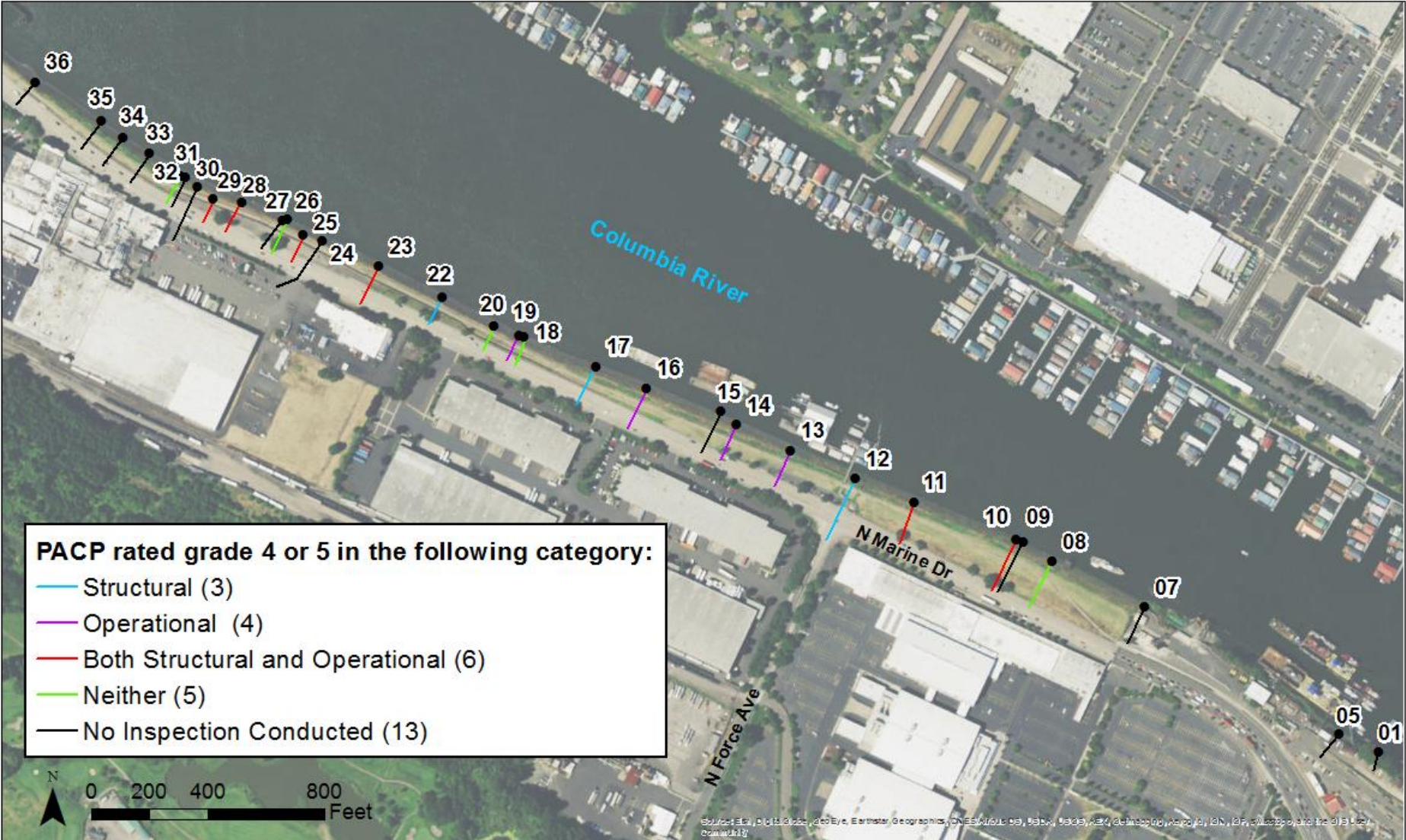


Outfall 28: heavy debris - 100% blockage with fine roots

PACP Grades – Columbia Slough



PACP Grades – Columbia River



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