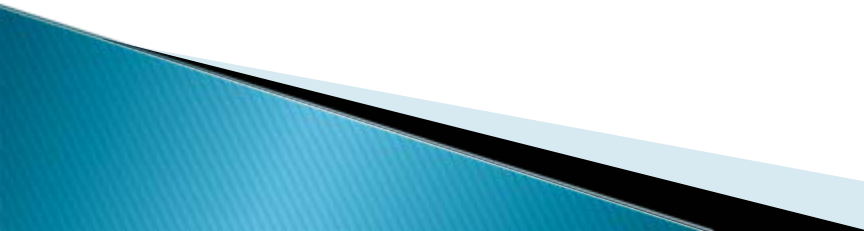


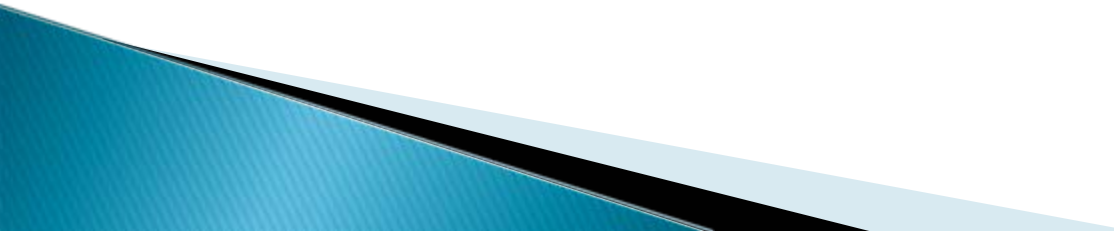
Fiscal Impacts and Implementation Strategies of a Revised Fish Consumption Standard

Municipal Perspectives on the Cost of Compliance
June 27, 2008 Workshop

Municipal Wastewater Agencies

- ▶ Represented on FIIAC by ACWA and LOC
 - ▶ Purpose: protect public health and the environment through effective collection, treatment and discharge of communities' wastewater
 - ▶ Importance of fish consumption rates relates to discharge permit requirements and human health protection
 - ▶ Discharges from wastewater treatment plants contribute relatively small amounts of toxics; what is discharged is passed through from residents and businesses
- 

Municipal Wastewater Agencies, cont'd

- ▶ Treatment plants do not own or manage activities that generate toxics found in municipal wastewater
 - ▶ Treatment plants do not effectively treat or remove toxic pollutants contributing to fish tissue contamination
 - ▶ Cities rely on pollution prevention programs and regulatory pollution reduction programs (such as Industrial Pretreatment Programs) to address industrial and commercial sources
- 

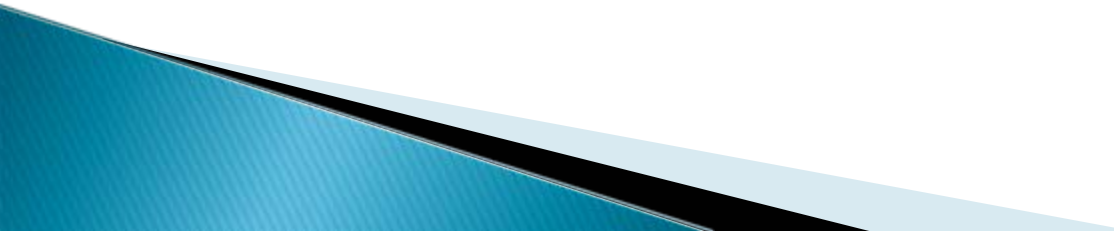
Costs of Direct Wastewater Treatment

- ▶ Removal of toxics from wastewater requires addition of sophisticated, complex technology:
 - Microfiltration, plus
 - Reverse Osmosis
- ▶ General cost estimate to treat metals through advanced technology:
 - \$6 to \$15 million per million gallons per day to treat all effluent;
 - \$2.5 to \$3.5 million per million gallons per day to meet end of pipe concentrations if blending can be used.

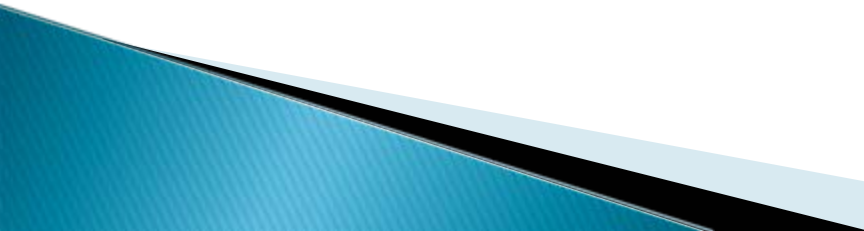
Capital Installation Costs for Four Major Wastewater Agencies

| Community | Wet Weather Flow | Capital Cost (blending) | Capital Cost (100% treat) |
|----------------------|------------------|------------------------------|------------------------------|
| Corvallis | 75 mgd | \$187.5 m to \$262.5 m | \$450 m to \$1.125 billion |
| Eugene/Springfield | 75 mgd | \$187.5 m to \$262.5 m | \$450 m to \$1.125 billion |
| Clean Water Services | 335 mgd | \$847.5 m to \$1.182 billion | \$2.010 bil. to \$5.125 bil. |
| Portland | 450 mgd | \$1.125 bil. To \$1.575 bil. | \$2.7 bil. to \$6.75 bil. |
| Total Capital Cost | | \$2.3 bil. to \$3.27 bil. | \$5.6 bil. to \$14.025 bil. |

Other Costs—Not Determined

- ▶ Operations
 - ▶ Chemicals
 - ▶ Energy (Reverse Osmosis is highly E-intensive)
 - ▶ Disposal Costs for Byproducts of RO
 - ▶ Greenhouse Gas Emissions
- 

Pollution Prevention Approach

- ▶ Pollution prevention/source control programs have proven track records in Oregon
 - ▶ Biosolids Quality—dramatic declines in metals concentrations from 1996 to 2006
 - ▶ Photoprocessor BMPs = silver reduced
 - ▶ Dental industry BMPs = mercury reduced
 - ▶ Many applications of P2 exist to address point sources and non-point sources
- 

Cost and Effectiveness Bottom Lines

- ▶ Traditional end of pipe treatment:
 - Expensive to treat all flow for such small amounts in the wastewater
 - Unknown whether numeric limits can be met or whether effectiveness can be measured
 - Major sources not addressed or responsible for pollutant reduction
- ▶ Pollution prevention toxics reduction:
 - Targets effective programs to pollutant sources
 - Avoids large capital and operating costs incurred for little measurable benefit
 - Shows more promise for achieving water quality improvement