



Wapato Lake Water Quality Management

August 27, 2007

Metro Parks Tacoma builds a healthy community, a vibrant region and a sustainable environment by promoting active lifestyles and strong individuals and families through parks, programs and partnerships.



Historical Perspective

- *Wapato Lake is a natural lake (34 acres)*
- *Wapato Lake is the centerpiece of the park*
- *Popular Recreation Lake*
- *Excess Phosphorus leads to algae blooms*
- *Previous management efforts*
 - *Lake Renovation*
 - *Low dose Alum*
 - *Dilution*
- *Wapato Master Plan Adopted 2005*



Public Use / Value of the Lake

- *Ultimate management and plan implementation dependent upon the desired use*
- *Wapato Master Plan*
 - *Aesthetically pleasing and accessible for casual contact, passive recreational use, boating, and fishing.*
- *Strategic Plan*
 - *Goal 1: Provide accessible, safe, attractive parks and facilities.*
 - *Goal 3: Protect and restore the natural environment for conservation and learning.*



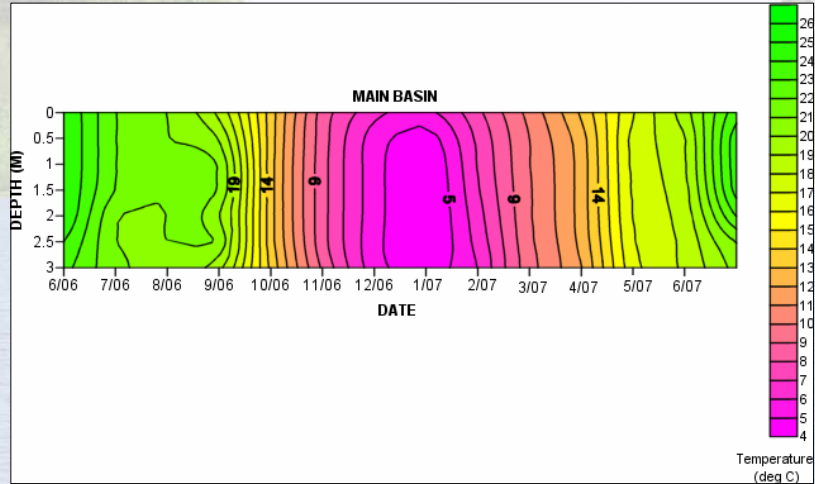
Wapato Drainage Basin (903 Acres)



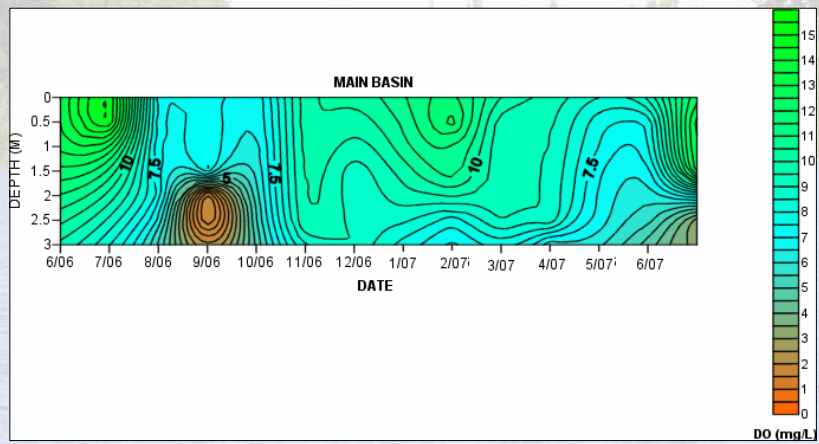
- *Primary Contributors*
 - Department of Transportation: I-5 Corridor
 - City of Tacoma: Development / infrastructure

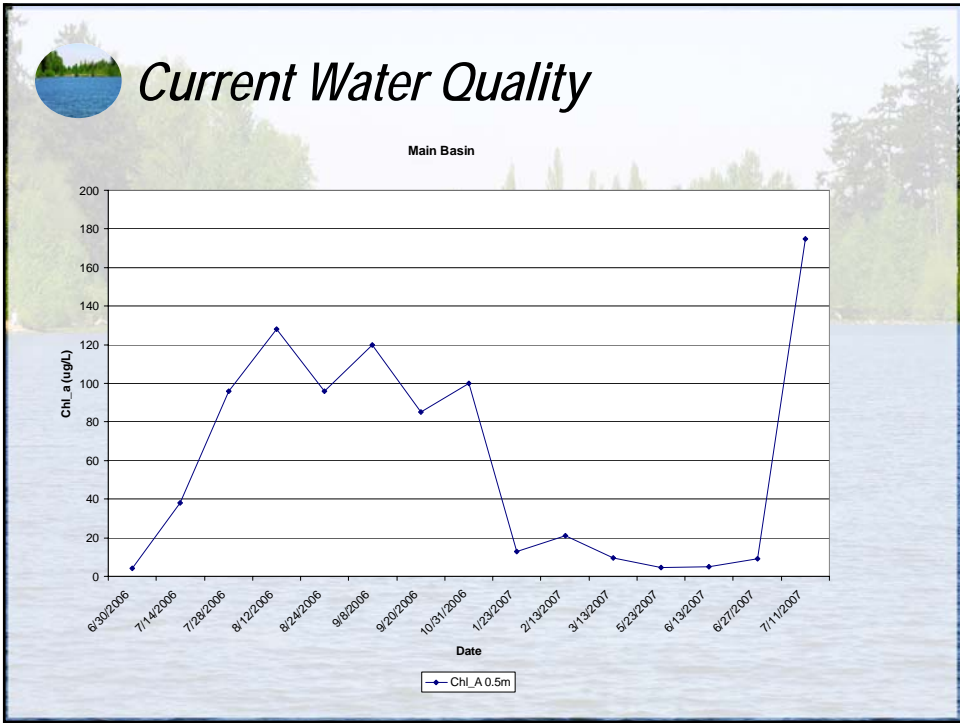
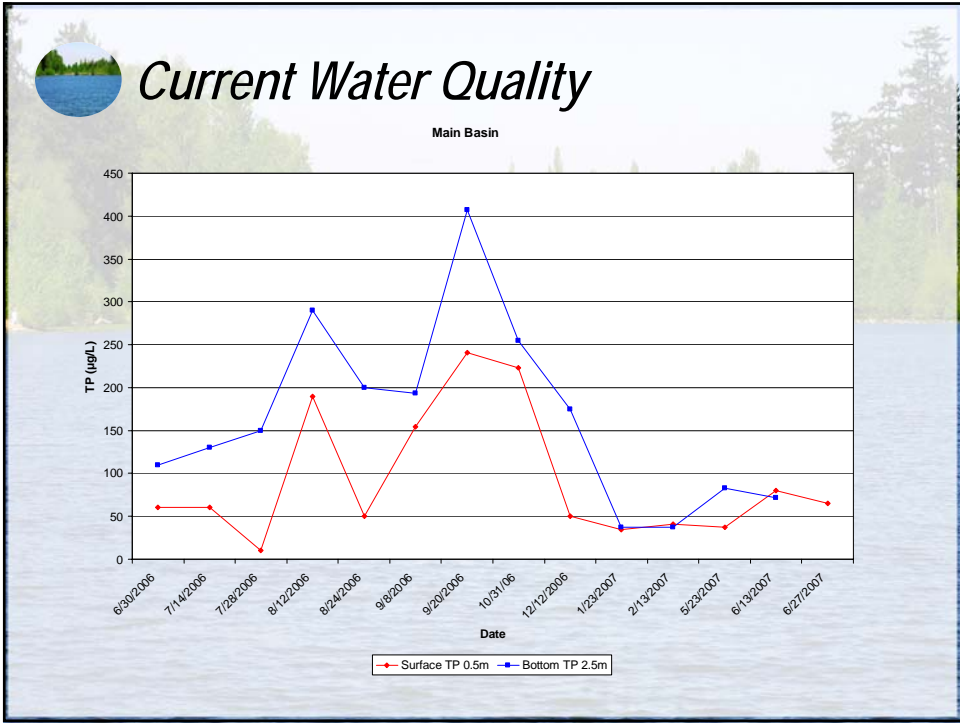


Current Water Quality



Current Water Quality







Management Alternatives

- *Capping: capping not recommended*
 - *Density of sediment*
- *Dredging*
 - *Removing 1-2 meters of lake sediment*
 - *Estimated cost between \$5 and 11 million*



Management Alternatives Cont.

- *Circulation*
 - *Too shallow for light limitation*
 - *Mixing rate*
- *Dilution*
 - *Limited low phosphorus resources*
 - *Cost*



Management Alternatives Cont.

- *Watershed-Stormwater Management*
 - *Best Management Practices*
 - *Storm water filtration*
 - *Bio-filtration*
 - *Low Impact Design*
 - *Will not reverse lakes poor water quality*
 - *Phosphorus Inactivation*
 - *Alum*
 - *Ph of sediment 6.5*
 - *68 mg of Al/L with a buffer*
 - *\$210,000*



Implementation Options

All Options include storm water management

- *Best management practices, storm water filtration, bio-filtration, low impact design, and education.*

- *Option #1 – leave lake as is, developing funding for dredging.*
- *Option #2 – alum treatment now, planting shoreline, developing funding for dredging / capping.*
- *Option #3 – Alum treatment, shoreline vegetation with increased shading and mixing reduction through vegetated islands*
- *Option #4 – Periodic alum treatments*



Implementation Options Continued

All Options include storm water management

- Best management practices, storm water filtration, bio-filtration, low impact design, and education.*
- Option #5 – Lake transformation to wetland then dry land through hypoeutrophication processes.*

• Ultimate / Long Term Solution

- Dredge the lake to deeper depths*
- Alum treatment*
- Vegetate shoreline*
- Storm water treatment systems*
- Fresh water dilution*
- Circulation*



Next Steps

- COW Meeting, September 17, 2007*
- Stake Holder Meeting / Review (Sept)*
- Board approval / recommendations for implementation.*