

Lake Whatcom Watershed Total Phosphorus and Bacteria Total Maximum Daily Loads Volume 2.

Water Quality Improvement Report and Implementation Strategy

Conclusions

Dissolved oxygen and total phosphorus

- Watershed and lake models were developed, calibrated and reviewed in the TMDL study (Volume 1) and are deemed adequate for development of a TMDL in Lake Whatcom.
- Modeling of Lake Whatcom with CE-QUAL-W2 and its watershed with HSPF, shows land use changes from additional development of the watershed without full controls on phosphorus loading will lead to additional degradation of lake oxygen levels.
- A cumulative volume approach was used to evaluate the conditions under which Lake Whatcom could meet dissolved oxygen standards. Modeling determined that water quality standards would be met if 87% of the existing developed area in the watershed were to hydraulically function like a forest.

Bacteria

- Eleven streams and drains that are tributary to Lake Whatcom were found to not meet state water quality standards for fecal coliform bacteria during the monitoring surveys for this TMDL.
- Bacteria reduction targets from 2003 levels for the eleven tributaries ranged from a 0% to a 92% reduction in the dry season, and from a 37% to a 96% reduction in the wet season.

Findings

- Reductions in fecal coliform bacteria are necessary in most watersheds.
- Deficits in dissolved oxygen are linked to excess phosphorus.
- Excess phosphorus is linked to increased stormwater runoff associated with development.
- Existing development needs to be modified to restore stormwater retention, infiltration and treatment.
- When 87% of the existing developed area functions like a forest, the lake will meet water quality standards.

Implementation

- The primary parties responsible for implementing the TMDL are Whatcom County and the city of Bellingham.
- The implementation will involve a continuous improvement strategy with five-year cycles tied to the Municipal Stormwater Permits.
- Five-year cycles for development of the detailed implementation plans are geared to creating long-range plans, milestones for the near term (ten years) and budgets to implement the plans.
- Five-year cycles of model improvement are geared to narrowing uncertainty in the ability to meet water quality standards.