

Black Lake Basin

Planned Trend Scenario

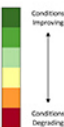
Vision

Black Lake Basin develops fully under current zoning, development, and stormwater regulations

Population increases from 5,500 residents today to almost 12,300

Summary of Model Results

	Planned Trend	Future A	Future B	
Hydrology	No change	No change	No change	
Temperature	No change	No change	No change	
Fecal Coliform	Small Local Increase	Local Improvement	Local Improvement	
Nitrate	No change	Local Improvement	Local Improvement	
Phosphorus	Local Improvement	Local Improvement	Local Improvement	
Overall Benefit to Water Resources	Mixed	Local benefits	Significant benefits	



Land Use

- More forest and agricultural areas are converted to residential uses
 - The number of homes in the basin increases from approximately 2,330 to 6,310 (a 170% increase). This is the greatest increase among all the future scenarios
- New development occurs in a similar style and density as current, subject to the jurisdictions existing regulations
- No additional conservation requirements on agricultural lands

Impervious Surfaces & Forest

- As development occurs, some open and forested areas are converted to a mixture of hard surfaces (roofs, roads, driveways, patios) and other cleared areas (lawns)
 - Total impervious area in the basin increases to 10% (from ~6% currently)
 - Forest covers 55% of the basin, down from 72% historically

Stormwater & Septics

- Rainwater runoff from small storms requires little stormwater treatment
- The number of septic systems in the basin decreases as properties within the city boundaries are connected to the sewer system
 - Number of septs at high risk for contributing bacterial pollution decreases from 660 to 350
 - Number of septs at high risk for contributing nitrogen pollution decreases from 1,170 to 560

Environmental Outcomes

Water flow

- Water flow into Black Lake does not change substantially from current conditions

Water quality

- **Bacterial pollution:**
Fecal coliform levels increase in some streams flowing into the lake from urbanizing areas
- **Temperature:**
Temperatures in streams flowing into Black Lake do not change substantially from current conditions
- **Nutrients:**
Phosphorus levels improve, as more septic systems in the urban area are converted to sewer
Nitrate levels decrease in some streams, but do not change for the lake basin as a whole

Habitat & Wildlife

- Habitat for different species becomes more fragmented as development increases

Legend

- City Limits
- Urban Growth Area
- Potential Dwelling Unit(s)
- Estimates are based on parcel's zoning, existing development and critical areas. Estimates are for planning purposes only; actual numbers are determined by City or County permitting staff.
- 2012 Aerial Images
- Current Zoning
 - Rural Low Density Residential (1/10, 1/20)
 - Rural Residential Resource (1/5)
 - Rural Residential (1/2, 1/1, 2/1)
 - Urban Low-density Residential
 - Urban Medium-density Residential
 - Urban Multifamily Residential
 - Commercial
 - Industrial
 - Parks, Preserves and Open Space

Black Lake Basin

Future Alternative Scenario A

Vision

Black Lake Basin balances low-impact development in urban areas and public access to the lake, while maintaining sensitive open spaces in rural areas

Summary of Model Results

	Planned Trend	Future A	Future B	
Hydrology	No change	No change	No change	Conditions Improving
Temperature	No change	No change	Local improvement	
Fecal Contam.	Small Local improvement	Improvement	Improvement	
Nitrate	No change	Local improvement	Local improvement	
Phosphorus	Local improvement	Local improvement	Local improvement	
Overall Benefits to Water Resources	Mixed	Local benefit	Moderate benefit	Conditions Degrading

Land Use

- Fewer forested and agricultural areas are converted to residential uses
 - The number of homes in the basin increases from approximately 2,330 to 5,970. This is around 340 fewer homes than predicted under the Planned Trend
- An area along the southeast shoreline of Black Lake is removed from Tumwater's UGA and remains in the unincorporated county and zoned for low density development (the area includes around 200 homes today and would stay the same in the future)
- New development in the basin meets a low-impact stormwater standard
- Larger parcels are preserved for farming and open space in the rural areas

Impervious Surfaces & Forest

- Less forested area is converted to cleared or hard surfaces
 - Total impervious area in the basin increases to 9%, greater than currently, but slightly less than Planned Trend
 - Forest cover remains approximately the same as today

Stormwater & Septics

- Rainwater runoff from small storms is dispersed and treated on site wherever feasible instead of flowing directly into small creeks and Black Lake
- There are more septic systems in the basin than under the Planned Trend, because an area removed from the UGA is not hooked up to sewer lines
 - Number of septs at high risk for contributing bacterial pollution increases from 360 in Planned Trend to 460, but is fewer than today
 - Number of septs at high risk for contributing nitrogen pollution increases from 560 in Planned Trend to 760, but is fewer than today

Environmental Outcomes

Water flow

- Water flow does not change substantially from current conditions

Water quality

- Bacterial pollution:** Bacterial pollution is slightly reduced, but some streams still fail water quality standard
 - Temperature:** Remains the same as Planned Trend
 - Nutrients:** Nitrate levels improve, slightly better than Planned Trend scenario in some areas, as fewer parcels are developed in the basin
- Very slight reduction in phosphorus loads in some areas compared with Planned Trend scenario

Habitat & Wildlife

- In the rural section of the basin, larger parcels, and less dense development preserve habitat and travel corridors for wildlife

Legend

- City Limits
- Urban Growth Area
- Potential Dwelling Unit(s)
- Estimates are based on parcel's zoning, existing development and critical areas. Estimates are for planning purposes only; actual numbers are determined by City or County permitting staff.
- 2012 Aerial Imagery
- Possible Zoning Change
 - to Residential 1/10
 - to Long-term Forestry / Residential 1/40
 - Potential Area to Remove from UGA

Black Lake Basin

Future Alternative Scenario B

Vision

Black Lake Basin is a model for restoration through incentives and investments in pollution reduction, habitat conservation, and stormwater infrastructure

Summary of Model Results

	Present 2012	Future A	Future B
Hydrology	No change	No change	No change
Temperature	No change	No change	Local improvement
Fecal Coliform	Small Local Increase	Local improvement	Local improvement
Nitrate	No change	Local improvement	Local improvement
Phosphorus	Local improvement	Local improvement	Local improvement
Overall Benefits to Water Resources	Mixed	Local benefit	Moderate benefit

Conditions Improving
↑
Conditions Degrading
↓

Land Use

- Fewer forested and agricultural areas are converted to residential uses
 - Undeveloped parcels in sensitive areas are preserved through voluntary incentive programs (such as transfer or purchase of development rights)
- Increased education and outreach to landowners encourages best management practices for healthy streams

Impervious Surfaces & Forest

- Total impervious area in the basin increases to 8%, slightly greater than today, but less than Planned Trend or Alternative A. Runoff from these surfaces is more likely to be slowed and treated before entering a stream
- Some historic wetland areas in the basin are restored, and provide more natural storage of water
- Vegetation along stream channels and the lakefront is restored
 - Forest cover for the basin increases slightly

Stormwater & Septics

- Stormwater infrastructure along roads and in older neighborhoods is retrofitted to reduce runoff and provide more water quality treatment
- Septic systems in the basin receive regular maintenance, and polluting septs are identified and repaired more quickly than currently

Environmental Outcomes

Water flow

- Water flow does not change substantially from current conditions

Water quality

- Bacterial pollution:** Fecal coliform levels in streams flowing into Black Lake are slightly reduced
- Temperature:** Restoration of vegetation along stream corridors reduces temperatures of streams flowing into lake
- Nutrients:** Nitrate and phosphorus levels are reduced

Habitat & Wildlife

- More habitat for aquatic species is protected and restored

Legend

- City Limits
- Urban Growth Area
- Existing Wetlands
- Potential Wetland and Riparian Restoration Areas
- Potential Stormwater Retrofit Areas
- 2012 Aerial Images