

# MAHONEY LAKE ECOLOGICAL RESERVE

## PURPOSE STATEMENT

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Approved by:



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## **Mahoney Lake Ecological Reserve Purpose Statement**

### **Introduction**

Mahoney Lake Ecological Reserve is located approximately 7 kilometres south of Okanagan Falls on the Green Lake Road. The boundaries of the 39 hectare reserve take in the whole of Mahoney Lake, following the high-waterline around the northerly half of the lake and extending over the shoreline and immediate uplands along the southern half. The Green Lake road cuts through the east side of the reserve and a narrow sliver of reserve land extends between the road and private land to the east. The reserve is bounded to the north, west and south by White Lake Grasslands Protected Area.

Mahoney Lake has a depth of 18 metres and a surface area of 21.6 hectares. It occupies a glacially formed kettle depression and has no outflow. The surrounding and underlying bedrock is fractured lava of highly alkali composition. These alkali substrates, combined with the lack of outflow and high evaporation rates, result in water that has very low oxygen levels and is very high in salinity and alkalinity.

Mahoney is one of a few meromictic lakes in the province. These are lakes which have very limited water circulation. The unusual water chemistry of the lake creates strong stratification of water layers and the enclosed surrounding topography inhibits wind generated mixing of waters. The upper surface waters to a depth of 6 metres are clear and support a variety of plant and animal life, including algae, plankton and aquatic insects. Beneath this surface zone is a layer or plate of purple sulphur bacteria which extends across the lake. This layer is the most striking feature of the ecological reserve and is considered to be the best example of a purple sulphur bacteria plate in the world.

### **Primary Purpose**

The primary purpose of Mahoney Lake Ecological Reserve is to protect the unique chemical and limnological features of Mahoney Lake. The lake is noted on the world registry of meromictic (non-mixing) lakes and is recognized in the international limnological literature as one of the outstanding meromictic lakes in the world. The water chemistry and biological features of the lake have been studied for many years by aquatic ecologists from across Canada and from various other countries.

The potential for unnatural disturbance of lake stratification and water chemistry is a management concern. The whole of the reserve has been fenced to exclude cattle encroachment. The fencing as well as signage discourages public entry. Other agencies are familiar with the fragility of the site and have made special effort to minimize undue damage from outside influences. The reserve is actively patrolled by a volunteer warden.

### **Secondary Purpose**

The secondary purpose of Mahoney Lake Ecological Reserve is to protect a small representative example of dry ponderosa pine ecosystem. The reserve forms part of a large protected land base



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|  | <p>reduce potential wildfire risk to the ecological reserve.</p> <ul style="list-style-type: none"> <li>• Extension of the ecosystem restoration project into the Ecological Reserve may be considered, with due assessment of risks to the reserve values.</li> </ul> |
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## Protected Area Values and Significance Summary Matrix

### Conservation

#### Representation

##### Ecosection

Southern Okanagan Basin – .3% contribution to the protected area system representation. This ecosection is reasonably well represented (12.35%) in the protected areas system.

##### Biogeoclimatic subzone/variant

PPxh1 – small contribution (.3%) to the protected areas system of this subzone/variant. This subzone/variant is reasonably well represented (10.31%) in the protected area system.

#### Special Features

Water chemistry and the associated limnological features of Mahoney Lake; one of the few meromictic (non-mixing) lakes in the province; the best example of a purple sulphur bacteria layer in the world

#### Rare/Endangered Values

Special water chemistry, limnological features and associated biota of Mahoney Lake.

Requires species at risk inventory. Gopher snake, rattlesnake and racer snake, and potential for tiger salamanders in soil, but not in the lake.

#### Scientific/Research Opportunities

Mahoney Lake has been intensively studied since at least the early 1960's by aquatic ecologists and continues to be a key feature for ongoing research.

#### Education/Interpretation Opportunities

Unique and interesting aquatic ecology

## **Cultural Heritage**

Representation

Special Feature

## **Other Management Considerations**

Other Designations

Relationship to Other Protected Areas

The reserve forms part of a large protected land base that includes the White Lake Grasslands Protected Area, the Vaseux Protected Area and parcels of land managed by the Canadian Wildlife Service and Nature Trust.

Collaborative Management Arrangements

Partnerships

Vulnerability

Relationship to Other Strategies

### **Area**

39 hectares

### **Date of establishment**

July 5, 1990