

MILL HOLLOW RESERVOIR



Introduction

Mill Hollow Reservoir is in the Provo River drainage south of the Uinta Mountains. It is a small artificial, stabilized lake maintained by the DWR to provide angling opportunities for Utahns. It is an isolated recreation area.

Mill Hollow Reservoir was created in 1962 by the construction of an earth-fill dam. The shoreline is owned

by the Uinta National Forest and public access is unrestricted. Water use is for recreation and habitat for aquatic life. Water is never drained from the lake for agricultural use.

Recreation

Characteristics and Morphometry	
Lake elevation (meters / feet)	2,695 / 8,843
Surface area (hectares / acres)	6 / 15
Watershed area (hectares / acres)	65 / 168
Volume (m ³ / acre-feet)	
capacity	338,553 / 315
conservation pool	
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	11 / 36
mean	5.4 / 18
Length (meters / feet)	435 / 1,426
Width (meters / feet)	354 / 1,162
Shoreline (meters / feet)	1,158 / 3,800

Location	
County	Wasatch
Longitude / Latitude	111 06 18 / 40 29 22
USGS Map	Wolf Creek Summit 1967
DeLorme's Utah Atlas & Gazetteer™	Page 54, C-2
Cataloging Unit	Provo (16020203)

Mill Hollow Reservoir is south of U-35 between Woodland and Tabiona. 11 miles east of Woodland or five miles west of Wolf Creek Summit, turn south off U-35 onto an improved gravel road to Mill Hollow Reservoir, campground, and guard station. The reservoir is 3.5 miles south on this road. The route is well marked from U-35.

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Fishing, camping, picnicking, swimming, scenic beauty and hiking are all popular. There is no boat ramp at the reservoir but the launching of small boats and watercraft is possible.

The area receives moderate to heavy recreational use throughout the summer. The road is not maintained in the winter.

There is a USFS campground at the lake which has 46 camping units, fishing areas, a swimming area, drinking water, and privies.



Watershed Description

Mill Hollow Reservoir has a small, natural watershed. It is on the north slope of Duchesne Ridge, which divides the Strawberry Basin from the Provo River drainage. The elevation is high, so the watershed is primarily spruce forest.

The watershed high point is 3,089 m (10,133 ft) above sea level, thereby developing a complex slope of 15.8% to the reservoir. The major perennial stream entering the lake is Mill Hollow Creek with an average gradient of 6.9% (363 feet per mile). The inflow and outlet is Mill Hollow Creek.

The watershed is made up of high mountains with abundant rock outcroppings and meadows. The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of aspen, spruce-fir, and subalpine meadows. The watershed receives 76 cm (30 inches) of precipitation annually. The frost-free season around the reservoir is 20 - 40 days per year.

Use of the watershed is 100% multiple use with grazing and recreation the dominant uses.

Limnological Assessment

The water quality of Mill Hollow Reservoir is good. It is considered to be soft with a recent hardness concentration value of approximately 68 mg/L (CaCO₃). The only parameters that have exceeded State water quality standards for defined beneficial uses are

phosphorus and dissolved oxygen. On occasion pH values will exceed the criteria of 9.0 when a heavy algal bloom is in progress. The average concentration of total phosphorus in the water column in 1981 and 1991 was 135 and 43 ug/L which exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The phosphorus concentration in the hypolimnion in September, 1991 reached a level of 118 ug/L. This increased concentration occurred when the reservoir was stratified, and low dissolved oxygen was present near the bottom. Dissolved oxygen concentrations in late summer substantiate the fact that water quality impairments do exist. Concentrations dropped dramatically below the thermocline to approximately 1.4 mg/L during the summer. A review of a reservoir profile obtained on March 28, 1990 indicates that anoxic conditions are prevalent throughout the winter. Concentrations of dissolved oxygen were 1.8 mg/L at 1 meter, 1.2 mg/L at 2 meters and virtually 0.0 down to a depth of 9 meters. These conditions are deleterious to the fishery rendered approximately the entire reservoir unsuitable for a fishery. It is apparent that the only carryover of fish would be in the inlet area where oxygen supplies are sufficient to maintain a limited fishery.

Limnological Data

Data sampled from STORET site: 591455

Surface Data	<u>1981</u>	<u>1989</u>	<u>1991</u>
Trophic Status	H	M	M
Chlorophyll TSI	-	46.87	41.54
Secchi Depth TSI	54.2	45.96	48.64
Phosphorous TSI	66.1	48.88	53.19
Average TSI	60.15	47.24	47.79
Chlorophyll <i>a</i> (ug/L)	-	5.3	3.1
Transparency (m)	1.5	2.7	2.2
Total Phosphorous (ug/L)	30	22	30
pH	8.9	9	6.9
Total Susp. Solids (mg/L)	<5	-	<3
Total Volatile Solids (mg/L)	-	-	2
Total Residual Solids (mg/L)	-	-	<2
Temperature (°C / °f)	13/55	14/58	15/58
Conductivity (umhos.cm)	106	148	136
Water Column Data			
Ammonia (mg/L)	0.18	0.01	0.05
Nitrate/Nitrite (mg/L)	0.39	-	0.12
Hardness (mg/L)	90.5	-	67
Alkalinity (mg/L)	87	-	68
Silica (mg/L)	-	-	16.7
Total Phosphorous (ug/L)	135	21	43
Miscellaneous Data			
Limiting Nutrient	N	N	N
DO (Mg/l) at 75% depth	1.5	2.6	5.0
Stratification (m)	2	6-8	3-7
Depth at Deepest Site (m)	9	9.7	8.0

LAKE REPORTS

Current data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is mesotrophic approaching the eutrophic range with fairly high productivity.

The reservoir was stratified during a summer monitoring trip was on August 21, 1991. The profile indicates that a thermocline developed at a depth of 3-7 meters. This is consistent with a noticeable decline in the concentration of dissolved oxygen in the water column.

According to DWR no fish kills have been reported in recent years, however it is evident that some winter kills may occur. The reservoir supports populations of brook trout (*Salvelinus fontinalis*), rainbow trout and albino rainbow trout (*Oncorhynchus mykiss*). The lake has not been treated for rough fish competition, so populations of native fishes may still be present in the lake. According to the Utah State Division of Wildlife Resources, Mill Hollow Reservoir is regularly stocked with 8,000 catchable rainbow trout, 4,200 catchable albino rainbow trout, and 7,500 fingerling brook trout. DWR also reports that the water flea, *Daphnia* is also present in the reservoir.

Species Evenness 0.68
Species Richness 0.40

The phytoplankton community is dominated by flagellates, diatoms and blue-green algae. This supports the water quality analysis of the reservoir with moderate productivity and generally good water quality.

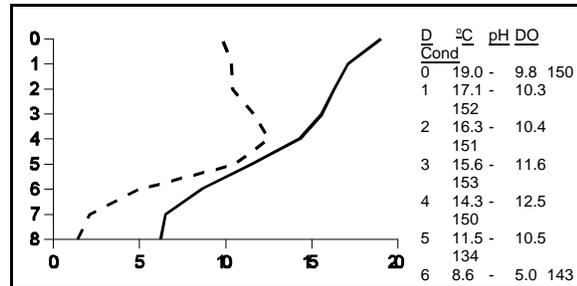
Pollution Assessment

Nonpoint pollution sources include the following: sedimentation and nutrient loading from grazing and litter or waste from recreation. Grazing takes place and throughout the watershed.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include:



Information		
Management Agencies		
Mountainland Association of Governments		377-2262
Division of Wildlife Resources		538-4700
Division of Water Quality		538-6146
Uinta National Forest		377-5780
Heber Ranger District		654-0470
Recreation		
Mountainland Travel Region (Provo)		377-2262
Reservoir Administrator		
Division of Wildlife Resources		

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume% Density (mm ³ /liter)	By Volume
<i>Eudorina elegans</i>	2.780	41.63
<i>Pandorina morum</i>	1.334	19.98
<i>Fragilaria crotonensis</i>	1.145	17.15
<i>Microcystis incerta</i>	0.767	11.49
<i>Aphanizomenon flos-aquae</i>	0.4	2.2
<i>Ankistrodesmus falcatus</i>	0.139	2.09
<i>Wislouchiella planktonica</i>	0.0	2.9
Centric diatoms	0.029	0.43
<i>Asterionella formosa</i>	0.028	0.42
Pennate diatoms	0.003	0.05
Total	6.675	
Shannon-Weaver [H']	1.57	

boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).

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