

TRIAL LAKE



Introduction

Trial Lake was a small natural lake, but it was enlarged by construction of an earth-fill dam to create an intermediate-sized artificial impoundment. This has been a common practice in the Uintas. Many such lakes have been similarly augmented, including Wall and Washington Lakes, both near Trial Lake and both included in this

inventory.

Trial Lake is at the headwaters of the Provo River, in the Mirror Lake area of the Uintas. The shoreline is owned by the Wasatch-Cache National Forest, and public access is unrestricted. The dam and dike were built in

Characteristics and Morphometry

Lake elevation (meters / feet)	2,999 / 9,840
Surface area (hectares / acres)	39.7 / 98
Watershed area (hectares / acres)	891 / 2,202
Volume (m ³ / acre-feet)	
capacity	3,022,075 / 2,450
conservation pool	0
Annual inflow (m ³ / acre-feet)	
Retention time (years)	
Drawdown (m ³ / acre-feet)	
Depth (meters / feet)	
maximum	18.3 / 60
mean	8 / 26.5
Length (meters / feet)	731 / 2,378.45
Width (meters / feet)	366 / 1,201.22
Shoreline (meters / feet)	1.950 / 6,398

Location

County	Summit / Wasatch
Longitude / Latitude	110 57 15 / 40 41 00
USGS Map	Mirror Lake, UT 1967
DeLorme's Utah Atlas & Gazetteer™	Page 54, B-3
Cataloging Unit	Provo (16020203)

1914, but the dike failed in the late 1980's, and both were rebuilt in 1990. Water use is primarily for irrigation, but can be used as supplementary culinary water. Completion of the CUP will probably include water level stabilization of several of the lakes in this area but Trial Lake will continue to be operated as an irrigation reservoir. This lake stabilization program should improving the scenic and recreational value, but

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eliminate some of the lakes' ability to function as a reservoirs.

Recreation

Trial Lake is accessible from U-150 about four miles east of Mirror Lake and 32 miles west of Kamas. The lake is about 1/4 mile from the paved highway, and is marked.

Fishing, camping, picnicking, scenic beauty and hiking are all popular. This is one lake that has a perennial stream of significant size to support a fishery of natural reproducing brook trout (*Salvelinus fontinalis*). This stream leads to Wall Lake, which will be stabilized as a nonirrigation reservoir. Air and water temperatures are too cold for most swimmers. The backdrop of high, barren peaks are reflected in the still water of the lake.

The area receives heavy recreational use throughout the summer. Please tread lightly so that the area remains relatively pristine. U-150 is closed during the winter and much of the spring, but groomed for cross country skiers, snowmobilers and hikers. The low water level from late summer to the following spring leaves some areas of mud exposed. As with most mountains reservoirs, recreation is hindered not by water *quality* but by water *quantity*. Before the lake was enlarged, the surrounding area was forested. Now the forest extends down to the high water line.

Trial Lake Campground is on the east shore of the lake, with 60 campsites, picnic areas, and primitive toilets. There are several other USFS campgrounds along U-150 throughout the area.



Watershed Description

Trial Lake is in a large area of lakes and meadows interspersed with high, alpine peaks. In this area of the Uintas, most of the high peaks have been scoured away, leaving isolated peaks, rather than the ridgelines characteristic of the central part of the range. Defining the north and west edge of the watershed are Notch Mountain and Mount Watson, respectively. The remainder of the

watershed area is difficult to determine, as the area is covered with uneven glacial moraine, leaving many lakes, most of which have no surface drainage. Wall Lake, another enlarged natural lake and numerous other unmodified lakes are in the watershed.

The watershed high point, Mount Watson, is 3,509 m (11,512 ft) above sea level, thereby developing a complex slope of 21.1% to the reservoir. There are several perennial streams flowing into the lake, the largest of which is from Wall Lake. The outflow is, in its infancy, the Provo River.

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

The vegetation communities consist of pine, oak, maple, spruce-fir, aspen, and alpine. The watershed receives 76 - 102 cm (30 - 40 inches) of precipitation annually. The frost-free season around the reservoir is 0 - 20 days per year.

Use of watershed land is 100% recreation.

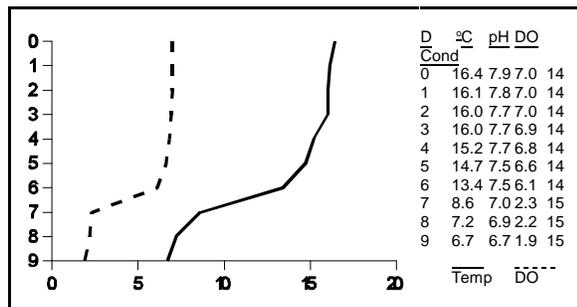
Limnological Assessment

The water quality of Trial Lake is very good. It is

Limnological Data			
Data sampled from STORET site: 591646			
Surface Data	1981	1990	1992
Trophic Status	O	M	O
Chlorophyll TSI	-	32.39	37.64
Secchi Depth TSI	46.8	44.17	43.02
Phosphorous TSI	20.8	52.20	33.20
Average TSI	33.8	42.92	37.95
Chlorophyll <i>a</i> (ug/L)	-	1.2	2.1
Transparency (m)	2.5	3.0	3.3
Total Phosphorous (ug/L)	5	28	8
pH	8.2	6.5	7.0
Total Susp. Solids (mg/L)	5	<3	<3
Total Volatile Solids (mg/L)	-	-	0
Total Residual Solids (mg/L)	-	-	3
Temperature (°C / °f)	6/43	15/58	15/58
Conductivity (umhos.cm)	11	20	16
Water Column Data			
Ammonia (mg/L)	0.05	0.03	0.03
Nitrate/Nitrite (mg/L)	0.09	0.03	0.02
Hardness (mg/L)	10	8	8.5
Alkalinity (mg/L)	4	5	7
Silica (mg/L)	-	-	2.2
Total Phosphorous (ug/L)	5	28	10
Miscellaneous Data			
Limiting Nutrient	P	N	N
DO (Mg/l) at 75% depth	7.3	3.9	3.3
Stratification (m)	NO	5-6	5-8
Depth at Deepest Site (m)	10	9.0	9.0

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considered to be very soft with a hardness concentration value of approximately 9 mg/L (CaCO₃). Those parameters that have exceeded State water quality standards for defined beneficial uses are pH, total phosphorus and dissolved oxygen. Trial Lake has extremely soft water with very low alkalinities. As a result it is very sensitive to shifts in pH. On June 27, 1990 the profile taken showed pH values throughout the water column below 6, with a low value of 5.2 reported near the bottom of the lake. All of the other profiles that have been obtained during our surveys indicate that the pH values



are normal. It should be emphasized that this is one of those lakes in this area that is sensitive to acid deposition and should continue to be monitored to assess any affects related to this phenomenon. The average concentration of total phosphorus in the water column was only elevated for one period, 1990, above the recommended pollution indicator for phosphorus of 25 ug/L at 28 ug/L. Elevations of phosphorus concentration in the hypolimnion can occur, but it does not appear that nutrients are causing a problem in the lake at this time. Dissolved oxygen values decline in the water column but not to the point that a significant impairment is occurring. Additional winter monitoring needs to be done to determine dissolved oxygen impacts under ice coverage conditions.

Current data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is probably oligotrophic. The lake was mesotrophic in 1990 due in large part to the elevated phosphorus levels that year which appears to be atypical for the lake. The reservoir was stratified during on August 4, 1992 as the profile indicates. A thermocline developed at a depth of 5-7 meters.

According to DWR no fish kills have been reported in recent years. The reservoir supports populations of brook trout (*Salvelinus fontinalis*), albino rainbow and rainbow trout (*Oncorhynchus mykiss*). The Division of Wildlife Resources introduced grayling (*Thymallus arcticus*) into the reservoir some years ago. The grayling have established a stable population there, which is periodically stocked. Also present are mountain suckers

(*Catostomus platyrhinchus*) which are indigenous to the lake. The lake has not been treated for rough fish competition, so populations of native fishes may still be present in the lake.

The DWR stocks the lake annually with 6,500 catchable rainbow trout and 2,600 catchable albino rainbow trout. In 1992, 8,000 fingerling brook trout were also stocked.

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

Species	Cell Volume (mm ³ /liter)	% Density By Volume
<i>Quadrigula lacustris</i>	2.224	39.82
<i>Gloeocystis sp.</i>	1.168	20.90
<i>Coelastrum sp.</i>	1.112	19.91
<i>Peridinium sp.</i>	0.723	12.94
<i>Merismopedia glauca</i>	0.250	4.48
<i>Dinobryon divergens</i>	0.037	0.66
<i>Ankistrodesmus falcatus</i>	0.031	0.55
Pennate diatoms	0.027	0.48
<i>Scenedesmus bijuga</i>	0.011	0.20
Centric diatoms	0.004	0.07

Total 5.585

Shannon-Weaver [H'] 1.52
 Species Evenness 0.66
 Species Richness 0.40

The phytoplankton community is dominated by the presence of green algae indicative of lower productivity and good water quality.

Information	
Management Agencies	
Mountainland Association of Governments	377-2262
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Wasatch-Cache National Forest	524-5030
Kamas Ranger District	783-4338
Recreation	
Mountainland Travel Region (Provo)	377-2262
Reservoir Administrator	
Timpanogas Canal Company	654-1346

Pollution Assessment

Nonpoint pollution sources include the following: sedimentation and nutrient loading from grazing, and litter and wastes from recreation.

Grazing takes place around the reservoir and throughout the watershed.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).