

MILLER FLAT RESERVOIR



Introduction

Miller Flat Reservoir is located in on the east side of the Wasatch Plateau at the base of Bald Mountain. It situated in a meadow area of grass and sage surrounded by aspen and conifer forests. It is a intermediate sized impoundment. The original plan developed on August 10, 1940 called for the construction of an earth dam with a maximum height of 132 feet at a site 2,000 feet

downstream for the present dam area. The original site was abandoned after initial excavation work had begun. Initial construction was completed in 1949 at the present site. The dam was modified in 1953 and again in 1985 to

Characteristics and Morphometry

| | |
|--|-------------------|
| Lake elevation (meters / feet) | 2,579 / 8,462 |
| Surface area (hectares / acres) | 65 / 160 |
| Watershed area (hectares / acres) | 2,065 / 4,955 |
| Volume (m ³ / acre-feet) | |
| capacity | 7,885,778 / 6,393 |
| conservation pool | |
| Annual inflow (m ³ / acre-feet) | |
| Retention time (years) | |
| Drawdown (m ³ / acre-feet) | |
| Depth (meters / feet) | |
| maximum | 19.5 / 64 |
| mean | 12.2 / 39.9 |
| Length (meters / feet) | 1,520 / 4,987 |
| Width (meters / feet) | 610 / 2,001 |
| Shoreline (km / miles) | 6.7 / 4.1 |

Location

| | |
|--------------------------------|---------------------------|
| County | Sanpete |
| Longitude / Latitude | 111 14 32 / 39 32 25 |
| USGS Map | Huntington Reservoir 1978 |
| DeLorme's Atlas and Gazetteer™ | Page 46 D-2 |
| Cataloging Unit | San Rafael (14060009) |

its present condition. The primary purpose of the building the impoundment was to provide storage water for irrigation and later cooling water for a nearby electrical generation plant. The reservoir is owned and operated by the Huntington-Cleveland Irrigation Company. Of the water stored in the reservoir 75% is used for irrigation and 25% for cooling water. The shoreline is owned primarily by the irrigation company but there are certain areas owned by the USFS. Public accessibility is currently unrestricted.

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Recreation

Miller Flat Reservoir is accessible from U-31 between Fairview and Huntington. A gravel road located between Huntington and Cleveland reservoirs is the turnoff point from U-31. It is approximately 16 miles east of Fairview City and 32 miles northwest of Huntington City. The road is well marked and Miller Flat Reservoir is approximately 3-4 miles south. This road continues past the reservoir and terminates at Joes Valley Reservoir.

Although the area generally receives moderate recreational usage, heavy usage occurs on holiday weekends. Fishing is the primary activity, however, boating, camping, swimming, nordic skiing and snowmobiling are also thoroughly enjoyed.

Recreational facilities are limited and primitive in the area. Visitors are required to pack out their own trash. There are Forest Service Campgrounds in the area but not in close proximity to the reservoir.

Watershed Description

The reservoir is located on the eastern slope of the Wasatch Plateau. It lies at the base of the slope in a narrow valley adjacent to several high peaks. High mountains make up the watershed. The reservoir is filled by flow from two springs and snowmelt. The primary tributary to the reservoir is Miller Flat Creek.

The watershed high point is 3,288 m (10,789 ft) above sea level, thereby developing a complex slope of 14% to the reservoir. The average stream gradient above the reservoir is 5.8% (308 feet per mile).

The soil is of limestone origin and has good permeability and moderately slow erosion and runoff. Soil groupings are found in Appendix III.

The vegetation communities are comprised of pine, aspen, spruce-fir, sagebrush, oak and maple. The watershed receives 76 - 102 cm (30 - 40 inches) of precipitation annually with a frost-free season of 40 - 60 days at the reservoir.

Land use in the reservoir watershed is primarily multiple use forest lands for hunting, recreation and livestock grazing with some private lands for recreational development.

Limnological Assessment

The water quality of Miller Flat Reservoir is very good. It is considered to be hard with a hardness concentration value of approximately 152 mg/L (CaCO₃). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average concentration of total phosphorus in the water column in 1981 and 1992 was 10 and 23 ug/L. Neither exceeds the recommended pollution indicator for phosphorus of 25 ug/L, but the average phosphorus concentration on August 19, 1992 was approximately 40

ug/L. This increased concentration occurred when the reservoir was drawdown and in a state where resuspension of sediments with phosphorus could have occurred due to mixing from winds. These conditions probably do not indicate impaired water quality conditions. Although in 1981 the reservoir was characterized as a phosphorus limited system, the 1992 data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is mesotrophic.

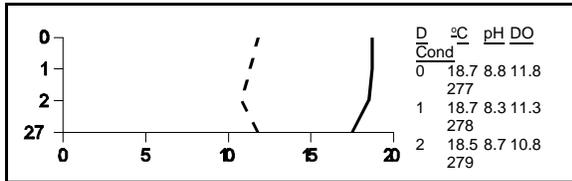
The reservoir has the potential to stratify, but under normal management of the reservoir is likely not to occur due to the rapid drawdown for downstream water needs. There is no conservation pool requirement and the release of water begins in July with the reservoir emptied in October.

According to DWR no fish kills have been reported in recent years and no problems are exhibited except for the draining of the reservoir. DWR manages the reservoir primarily as a put and take fishery. Typically, they stock the reservoir with 20,000 fingerling and 5,000 catchable

| Limnological Data | | |
|--|-------------|-------------|
| Data sampled from STORET site: 593201 | | |
| Surface Data | <u>1981</u> | <u>1992</u> |
| Trophic Status | M | M |
| Chlorophyll TSI | - | 32.79 |
| Secchi Depth TSI | 50.01 | 41.34 |
| Phosphorous TSI | 47.34 | 48.39 |
| Average TSI | 48.67 | 40.84 |
| Chlorophyll <u>a</u> (ug/L) | - | 1.3 |
| Transparency (m) | 2.0 | 3.7 |
| Total Phosphorous (ug/L) ₂₀ | 10.0 | 21.0 |
| pH | 8.5 | 8.9 |
| Total Susp. Solids (mg/L) | 100 | <3 |
| Total Volatile Solids (mg/L) | - | 1 |
| Total Residual Solids (mg/L) | - | 2 |
| Temperature (°C / °f) | 16/61 | 17/63 |
| Conductivity (umhos.cm) | 263 | 274 |
| Water Column Data | | |
| Ammonia (mg/L) | 0.08 | 0.04 |
| Nitrate/Nitrite (mg/L) | 0.27 | 0.04 |
| Hardness (mg/L) | 145 | 158 |
| Alkalinity (mg/L) | 153 | 155 |
| Silica (mg/L) | - | 3.3 |
| Total Phosphorus (ug/L) | 10 | 23 |
| Miscellaneous Data | | |
| Limiting Nutrient | P | N |
| DO (Mg/l) at 75% depth | 6 | 10.8 |
| Stratification (m) | 3-6 | NO |
| Depth at Deepest Site (m) | 13 | 2.7 |

LAKE REPORTS

rainbow trout (*Oncorhynchus mykiss*). According to a 1978 U.S.F.S. limnological inventory and 1980 DWR files, stocked rainbow trout (*Oncorhynchus mykiss*) compose 100% of the total fish population. Common invertebrates found were Hemiptera, Coleoptera, Ephemeroptera, Odonata, Diptera, and Mollusca. Other invertebrates were also found in lesser numbers. Zooplankton was mainly Daphnia, Copepods, Asterionella, and Rotifers. Potamogeton, Milfoil, and Buttercup were the dominant submergent macrophytes.



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

| Species | Cell Volume (mm ³ /liter) | % Density By Volume |
|----------------------------------|--------------------------------------|---------------------|
| <i>Sphaerocystis schroeterii</i> | 121.486 | 99.68 |
| <i>Aphanizomenon flos-aquae</i> | 0.317 | 0.26 |
| Unknown spherical green alga | 0.033 | 0.03 |
| <i>Wislouchiella planktonica</i> | 0.011 | 0.01 |
| Pennate diatoms | 0.011 | 0.01 |
| <i>Haematococcus lacustris</i> | 0.006 | 0.00 |
| <i>Oscillatoria sp.</i> | 0.006 | 0.00 |
| Total | 121.779 | |
| Shannon-Weaver [H'] | 0.02 | |
| Species Evenness | 0.01 | |
| Species Richness | 0.24 | |

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

Pollution Assessment

Nonpoint pollution sources include nutrient loading and sedimentation from grazing and litter or wastes from recreation. About 1,000 sheep graze in the immediate vicinity of the reservoir for two weeks each year. Cattle also graze the area. No mining or logging takes place in the region.

There are no point pollution sources in the watershed.

Beneficial Use Classification

The state beneficial use classification for the waters of Miller Flat Reservoir include boating and similar

| Information | |
|---|----------|
| Management Agencies | |
| Manti-La Sal National Forest | 637-2817 |
| Six County Commissioners Organization | 896-9222 |
| Division of Wildlife Resources | 538-4700 |
| Division of Water Quality | 538-6146 |
| Reservoir Administrators | |
| Huntington-Cleveland Irrigation Company | 687-2505 |

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

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