

## MONTICELLO LAKE



### Introduction

Monticello Lake is a tiny reservoir in the lower Abajo Mountains. The reservoir shoreline is publicly owned by the Manti-La Sal National Forest. Public access is unrestricted. The impoundment, an earth-fill dam, was built in 1954. Water use priorities are primarily recreation

and fishing.

### Recreation

Monticello Lake is 8 miles west of Monticello. Travel

| Characteristics and Morphometry            |               |
|--|---------------|
| Lake elevation (meters / feet)             | 2,621 / 8,600 |
| Surface area (hectares / acres)            | 1.2 / 3       |
| Watershed area (hectares / acres)          | 155 / 382     |
| Volume (m <sup>3</sup> / acre-feet)        |               |
| capacity                                   | 75,000 / 15   |
| conservation pool                          |               |
| Annual inflow (m <sup>3</sup> / acre-feet) |               |
| Retention time (years)                     |               |
| Drawdown (m <sup>3</sup> / acre-feet)      |               |
| Depth (meters / feet)                      |               |
| maximum                                    | 5.5 / 18      |
| mean                                       | 1.5 / 5       |
| Length (meters / feet)                     | 482 / 1,584   |
| Width (meters / feet)                      | 161 / 528     |
| Shoreline (meters / feet)                  | 644 / 2,112   |

| Location             |                            |
|----------------------|----------------------------|
| County               | San Juan                   |
| Longitude / Latitude | 109 28 00 / 37 53 40       |
| USGS Map             | Abajo Peak, Utah, 1985     |
| Atlas                | pg.46,B2                   |
| Cataloging Unit      | Montezuma Creek (14080203) |

west from downtown onto the Blue Mountain North Creek Road (FS-105) and goes high in the Abajos. Monticello Lake is on the right side of the road, one mile past Buckboard Campground.

The lake was once one of the only lake fisheries in southwestern Utah. In the 1980s, three large reservoirs were constructed in the region: Ken's Lake in Moab, Lloyds Lake near Monticello, and Recapture Reservoir near Blanding. These three reservoirs are much larger than Monticello Lake and offer more fishing opportunities.

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In addition to Monticello Lake, approximately 2 miles to the west is Race Track Reservoir. Monticello Lake is still popular, and its high elevation offers respite from the desert summers.

The area immediately around the lake offers primitive camping. There are two USFS campgrounds east on FS-105. Dalton Springs is 2 miles east and has 16 campsites, picnic areas, drinking water, and vault toilets. User fees are charged. Buckboard, 1 miles east, is more primitive and has 13 campsites. There are several private campgrounds in Monticello.

### Watershed Description

Monticello Lake is in the Abajo Mountains. The range is an exposed laccolith, but the lake is in the area of uplifted sedimentary rocks rather than exposed igneous rocks. The watershed high point, Abajo Peak, is 3,463 m (11,360 ft) above sea level, thereby developing a complex slope of 16.6% to the reservoir. The inflows are South Creek, Pole Creek and Shingle Mill Draw. South Creek is the only perennial inflow. The outflow is also South Creek, but immediately downstream North and South Creeks confluence to become Montezuma Creek.

The soil is of limestone origin with rapid permeability and erosion is rapid (Dakota Sandstone).

The vegetation communities are comprised of spruce-fir, pine-aspen and land grass communities. The watershed receives 51 - 76 cm (20 - 30 inches) of precipitation annually with a frost-free season of 60 - 80 days at the reservoir.

Land use is 100% multiple use. The major use of the watershed is livestock grazing, which contributes to heavy runoff and soil erosion. The watershed was trenched in 1963 in an effort to reduce and control erosion. The area around the lake is used for recreation, and since the watershed is so small, this is a large fraction of the watershed area. Recreational use does impact the lake with heavy human usage and disposal of litter.

### Limnological Assessment

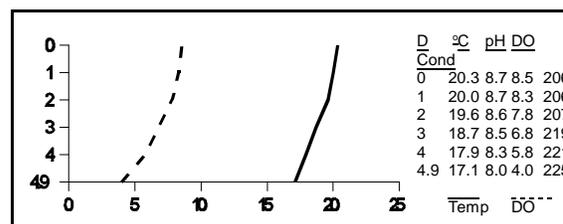
The water quality of Monticello Lake is good. It is considered to be moderately hard with a hardness concentration value of approximately 132 mg/L (CaCO<sub>3</sub>). The only parameter that has exceeded State water quality standards for defined beneficial uses is phosphorus. The average concentration of total phosphorus in the water column in 1992 was 42 which exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The decline in dissolved oxygen concentrations in late summer indicate that water quality impairments do exist due to a demand for oxygen in the water column. These conditions maybe more pronounced during the winter and probably should be surveyed.

Although in 1981 the reservoir was characterized as

| Limnological Data                     |       |       |  |
|---------------------------------------|-------|-------|--|
| Data sampled from STORET site: 595221 |       |       |  |
| Surface Data                          | 1981  | 1992  |  |
| Trophic Status                        | O     | M     |  |
| Chlorophyll TSI                       | -     | 39.97 |  |
| Secchi Depth TSI                      | -     | 43.93 |  |
| Phosphorous TSI                       | 37.35 | 56.22 |  |
| Average TSI                           | 37.35 | 46.71 |  |
| Chlorophyll <i>a</i> (ug/L)           | -     | 2.6   |  |
| Transparency (m)                      | -     | 3.1   |  |
| Total Phosphorous (ug/L)              | 5     | 37    |  |
| pH                                    | 7.9   | 8.6   |  |
| Total Susp. Solids (mg/L)             | <5    | 82.5  |  |
| Total Volatile Solids (mg/L)          | -     | 2     |  |
| Total Residual Solids (mg/L)          | -     | 81    |  |
| Temperature (°C / °f)                 | 18/64 | 17/63 |  |
| Conductivity (umhos.cm)               | 328   | 242   |  |
| Water Column Data                     |       |       |  |
| Ammonia (mg/L)                        | 0.05  | 0.03  |  |
| Nitrate/Nitrite (mg/L)                | 0.3   | 0.02  |  |
| Hardness (mg/L)                       | 151   | 112   |  |
| Alkalinity (mg/L)                     | 125   | 98    |  |
| Silica (mg/L)                         | -     | 13.4  |  |
| Total Phosphorous                     | 5     | 42    |  |
| Miscellaneous Data                    |       |       |  |
| Limiting Nutrient                     | P     | N     |  |
| DO (Mg/l) at 75% depth                | -     | 6.12  |  |
| Stratification (m)                    | -     | NO    |  |
| Depth at Deepest Site (m)             | -     | 4.9   |  |

a phosphorus limited system, the 1989-91 data suggest that the reservoir is currently a nitrogen limited system. This appears due to the shift of nitrate concentrations to a significantly lower concentration. Verification of this data will need to be obtained as monitoring continues. TSI values indicate the reservoir is mesotrophic and the reservoir doesn't stratify due to its shallow nature

According to DWR no fish kills have been reported in recent years, they indicate that problems can develop during low water years with some pH problems developing in late summer. These elevated pH values are probably



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associated with the development of an extensive algae bloom or productivity associated with extensive macrophytes which do develop in the lake. The reservoir supports populations of brook trout (*Salvelinus fontinalis*), and 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. Recent stocking reports indicate that the DWR annually stocks the lake with 6,000 catchable rainbow trout and 1,000 fingerling brook trout.

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

| Species                         | Cell Volume<br>(mm <sup>3</sup> /liter) | % Density<br>By Volume |
|---------------------------------|---|------------------------|
| <i>Sphaerocystis schroeteri</i> | 2.641                                   | 89.00                  |
| <i>Staurastrum gracile</i>      | 0.120                                   | 4.04                   |
| <i>Anabaena macrospora</i>      | 0.078                                   | 2.62                   |
| Pennate diatoms                 | 0.067                                   | 2.25                   |
| <i>Ankistrodesmus falcatus</i>  | 0.026                                   | 0.88                   |
| Unknown spherical green alga    | 0.022                                   | 0.75                   |
| Centric diatoms                 | 0.009                                   | 0.30                   |
| <i>Oocystis sp.</i>             | 0.004                                   | 0.15                   |
| Total                           | 2.965                                   |                        |
| Shannon-Weaver [H']             | 0.52                                    |                        |
| Species Evenness                | 0.25                                    |                        |
| Species Richness                | 0.32                                    |                        |

The phytoplankton community is dominated by the presence of green algae and diatoms. These are indicative of fairly good water quality and moderate productivity.

**Pollution Assessment**

Nonpoint pollution sources are sedimentation and nutrient loading from grazing, and wastes or litter from recreation. Cattle graze in the watershed and around the reservoir. There are no point pollution sources 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).

| Information                                  |          |
|--|----------|
| <b>Management Agencies</b>                   |          |
| Manti - La Sal National Forest               | 637-2817 |
| Monticello Ranger District                   | 587-2237 |
| Southeastern Utah Association of Governments |          |
| Division of Wildlife Resources               | 538-4700 |
| Division of Water Quality                    | 538-6146 |
| <b>Recreation</b>                            |          |
| Canyonlands Travel Region (Monticello)       | 587-2231 |
| <b>Reservoir Administrators</b>              |          |
| San Juan County Water Conservation District  | 678-2596 |