# FERRON RESERVOIR


## Introduction

Ferron Reservoir is on the east side of the Wasatch Plateau at the headwaters of Ferron Creek. It is an intermediate-sized impoundment of a meadow in a glacial valley. There is a small, private resort on the south shore. It is also called Indian Creek Reservoir.

The reservoir was created in 1939 by the construction of an earth-fill dam. After Millsite Reservoir was built in the early 1970's, local irrigation companies apparently had surplus water storage in Ferron and Duck Fork Reservoirs. They sold this storage to the DWR, which currently maintains them as stabilized water bodies for recreational uses. "Stabilized" refers to the water level, which does not fluctuate. However at Ferron Reservoir, the top meter of water is still drawn off for agricultural uses. In 1992, the reservoir was drained while repairs were made to the dam.

The shoreline is owned by the Manti-La Sal National Forest with unrestricted public access. The top meter of water is consumed for irrigation, with the majority of the water being only for the non-consumptive uses of r e c r e a t i o n

**Characteristics and Morphometry**

| | |
|---|---|
| Lake elevation (meters / feet) | 2,886 / 9,472 |
| Surface area (hectares / acres) | 23.3 / 57.1 |
| Watershed area (hectares / acres) | 837 / 2069 |
| Volume ($m^3$ / acre-feet) | |
| capacity | 1,208,340 / 980 |
| conservation pool | 850,770 / 690 |
| Annual inflow ($m^3$ / acre-feet) | not measured |
| Retention time (years) | unknown |
| Mean annual vertical fluctuation (meters / feet) | 1.0 / 3.3 |
| Depth (meters / feet) | |
| maximum | 9 / 30 |
| mean | 4 / 12 |
| Length (meters / feet) | 830 / 2,710 |
| Width (meters / feet) | 580 / 1,910 |
| Shoreline (km / miles) | 2.6 / 1.6 |

**Location**

| | |
|---|---|
| County | Sanpete |
| Longitude / Latitude | 111 27 02 / 39 08 25 |
| USGS Map | Ferron Reservoir 1966 |
| DeLorme's Atlas and Gazetteer™ | Page 38, B-1 |
| Cataloging Unit | San Rafael (14060009) |

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and coldwater aquatic habitat. No changes in water use are
foreseen.

**Recreation**

Ferron Reservoir is directly accessible from the road between Ferron and Mayfield. This is an improved gravel road crossing some of the most rugged terrain on the Wasatch Plateau. From Ferron, travel west past Millsite Reservoir, and continue on the gravel road as it ascends Ferron Canyon, enters a narrow side canyon and climbs to a high bench area. Ferron Reservoir is 25 miles west of Ferron City. From Mayfield, travel up the canyon, crossing the plateau on Skyline Drive at 10,500', and descend into Ferron Canyon. Ferron Reservoir is 23 miles east of Mayfield. The Ferron Canyon route is the better

maintained road.

Although the area receives light recreational usage year round, heavy usage occurs on holiday weekends. Fishing is the primary form of recreation, however, boating, camping, swimming, nordic skiing and snowmobiling are also enjoyed. Boats can usually be

launched on the reservoir. Ferron Canyon is maintained as a snowmobile route in the winter.

Recreational facilities consist of a Forest Service Campground and a private resort, both are on the shoreline of the reservoir. Ferron Campground has 30 campsites with picnic tables, fire pits, privies, and drinking water. Trash must be carried out, so plan accordingly. Usage fees are charged. Skyhaven Resort has cottage rentals, boat rentals, horse rentals, bicycle rentals, a convenience store, and a cafe.

**Watershed Description**

The reservoir is in an area of deep glaciated basins characteristic of the southern Wasatch Plateau. Gently rolling meadows of glacial debris are in the area around the reservoir, with abrupt, forested slopes leading to high ridges. Rock outcroppings are common.

The watershed high point, the south shoulder of High Top, is 3,322 m (10,900 ft) above sea level, thereby developing a complex slope of 14.0% to the reservoir. The average stream gradient above the reservoir is 3.6% (189 feet per mile). The inflow and outlet is Indian Creek.

The soil is of limestone origin and has good permeability and moderately slow erosion and runoff. Bedrock is entirely limestone, resulting in hard, alkaline water in the reservoir. Soil associations are listed in Appendix III.

The vegetation communities are comprised of pine, aspen, spruce-fir, and alpine. The watershed receives 64 - 76 cm (25 - 30 inches) of precipitation annually with a frost-free season of 0 - 20 days at the reservoir.

Land use in the reservoir is 100% multiple use forest lands, used by humans for hunting, recreation, logging, and livestock grazing.

**Limnological Assessment**

The water quality of Ferron Reservoir is excellent. It is considered to be hard with a hardness concentration range from 111-128 15 mg/L (CaCO3). None of the parameters monitored exceeded State water quality standards for defined beneficial uses. Nutrient concentrations in the reservoir are considered low with the average concentration of total phosphorus in the water column in 1989 and 1992 was 6.9 and 8.8 ug/L which is well under the recommended pollution indicator for phosphorus of 25 ug/L. In 1981 the reservoir was characterized as a phosphorus limited system. The 1989-92 data suggest that the reservoir is currently a nitrogen limited system, but the TIN/TP ratio are near the point of transition. TSI values indicate the reservoir is mesotrophic except for 1992 when the reservoir was classified as oligotrophic with an overall TSI value of 39.99 (40.00 is considered mesotrophic) for the lake. TSI values

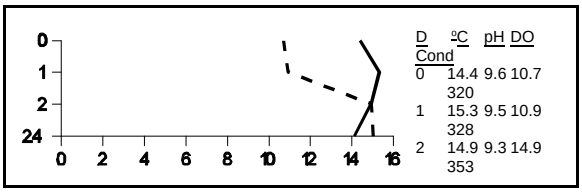
**Limnological Data**

Data sampled from STORET site: 593180

| **Surface Data** | 1981 | 1989 | 1992 |
|---|---|---|---|
| Trophic Status | M | M | O |
| Chlorophyll TSI | - | 48.34 | 34.90 |
| Secchi Depth TSI | 54.15 | 55.15 | 49.66 |
| Phosphorous TSI | 37.35 | 26.61 | 35.00 |
| Average TSI | 45.75 | 43.37 | 39.85 |
| Chlorophyll a (ug/L) | - | 6.1 | 1.6 |
| Transparency (m) | 1.5 | 1.4 | 2.1 |
| Total Phosphorous (mg/L) | 10 | 4.8 | 8.8 |
| pH | 8.3 | - | 9.0 |
| Total Susp. Solids (mg/L) | <5 | - | <3 |
| Total Volatile Solids (mg/L) | - | - | 1 |
| Total Residual Solids (mg/L) | - | - | 2 |
| Temperature (°C / °f) | 13/55 | 10/50 | 14/57 |
| Conductivity (umhos.cm) | 384 | 393 | 358 |
| **Water Column Data** | | | |
| Ammonia (mg/L) | 0.05 | 0.02 | 0.03 |
| Nitrate/Nitrite (mg/L) | 0.20 | 0.04 | 0.08 |
| Hardness (mg/L) | 220 | - | 191 |
| Alkalinity (mg/L) | 175 | - | 153 |
| Silica (mg/L) | - | - | 3.4 |
| Total phosphorus (ug/L) | 10 | 6.9 | 8.8 |
| **Miscellaneous Data** | | | |
| DO (Mg/l) at 75% depth | 8.6 | - | 14.1 |
| Stratification (m) | 4-7 | - | NO |
| Limiting Nutrient | P | N | N |
| Depth at Deepest Site (m) | 9 | 8.0 | 2.4 |

* First period data only

for transparency tend to shift the rating upward, but it should be noted that the reservoir is typically shallow and turbidity may be effecting that rating. It appears that there has been no significant rise in the concentrations of nutrients in the lake since it was originally surveyed in 1981. It should be noted that the reservoir was drained and repair work done on the dam prior to the 1992 sampling of the reservoir. The reservoir was not stratified during August 19, 1992, but the reservoir lacked sufficient depth to permit the development of a thermocline. In 1981 with an overall depth of 9 meters stratification was present in the reservoir with a weak thermocline developed near the 4-7 meter depth. Even during stratification there has been no apparent decline in the concentration of dissolved oxygen or an increase of epilimnion water temperatures to a point where they have impacted the fishery. Dissolved oxygen concentrations need to be evaluated during the winter to see if they reach a critical state during late ice on conditions due to summer drawdown. The presence of hydrogen sulfide in the outfall during late winter suggest that oxygen deficiencies could be extensive in the reservoir during the winter period. According to DWR no fish kills have been reported at Ferron Reservoir. The reservoir is typically stocked with catchable rainbow trout (*Oncorhynchus mykiss*) and has been stocked with cutthroat trout (*Oncorhynchus clarki*). DWR surveys have indicated numerous invertebrate species present with Diptera and Coleoptera commonly present. The majority of zooplankton populations were comprised of Daphnia with some copepods and those macrophytes present were sparse and submergent, usually Potamogeton, milfoil, and buttercup.




The dataset for 1989 is incomplete due to malfunction of equipment and the loss of the secchi disk.

The reservoir has not been treated for control of rough fish competition, but native fishes may have been displaced by repeated stocking of hatchery fish and periodic draining of the reservoir.

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

| Species | Cell Volume ($mm^3$/liter) | % Density By Volume |
|---|---|---|
| Pennate diatoms | 0.334 | 69.49 |
| Centric diatoms | 0.107 | 22.24 |
| *Ankistrodesmus falcatus* | 0.017 | 3.64 |
| *Scenedesmus bijuga* | 0.011 | 2.32 |
| Unknown Spherical green alga | 0.011 | 2.32 |
| Total | 0.479 | |
| Shannon-Weaver [H'] | 0.88 | |
| Species Evenness | 0.55 | |
| Species Richness [d] | 0.20 | |

The flora is fairly typical, but not particularly diverse. The dominance of green algae and diatoms indicates that the lake is reasonably healthy.

**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).

**Pollution Assessment**

Nonpoint pollution sources include nutrient loading

and sedimentation from grazing and litter and human 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.

**Information**

| | |
|---|---|
| **Management Agencies** | |
| Manti-La Sal National Forest | 637-2817 |
| Ferron Ranger District | 384-2372 |
| Six County Commissioners Organization | 896-9222 |
| Division of Wildlife Resources | 538-4700 |
| Division of Water Quality | 538-6146 |
| **Recreation** | |
| Skyhaven Resort (at Ferron Reservoir) | |
| Castle Dale Chamber of Commerce | 381-2547 |
| Panoramaland Travel Region (Richfield) | 896-9222 |
| **Reservoir Administrators** | |
| Division of Wildlife Resources | 538-4700 |
| Ferron Canal and Irrigation Company | 384-2990 |