RED CREEK RESERVOIR (Duchesne County)

Introduction

Red Creek Reservoir is a medium sized reservoir north of Fruitland in the Uinta Basin. It is an impoundment of Red Creek, a tributary to the Strawberry River. It is relatively close to the Wasatch Front and offers summer recreation. Although it is in the heart of the area served by the CUP, it is not part of the project. It should not be confused with another Red Creek Reservoir above Paragonah in Iron County, which is also included in these lake reports. It was created in 1960 by the construction of an earth-fill dam. The dam leaked, so a grout curtain was installed in 1964. The reservoir shoreline is 100% privately owned. In addition to recreation usage, reservoir water is consumed entirely for irrigation No changes are anticipated in the foreseeable future.

Characteristics and Morphometry

Lake elevation (meters / feet)	2,202 / 7,224
Surface area (hectares / acres)	57.46 / 142
Watershed area (hectares / acres)	10,252 / 25,333
Volume (m^3 / acre-feet)	
capacity	7,030,000 / 5,694
conservation pool	157,888 / 128
Annual inflow (m^3 / acre-feet)	
Retention time (years)	
Drawdown (m^3 / acre-feet)	
Depth (meters / feet)	
maximum	29 / 95
mean	12.2 / 40.1
Length (meters / feet)	187 / 614
Width (meters / feet)	564 / 1,850
Shoreline (km / miles)	4.66 / 2.89

Location

County	Duchesne
Longitude / Latitude	110 51 13 / 40 18 33
USGS Map	Tabby Mountain, UT 1962
DeLorme's Utah Atlas & Gazetteer™	Page 54, D-3
Cataloging Unit	Strawberry River (14060004)

Recreation

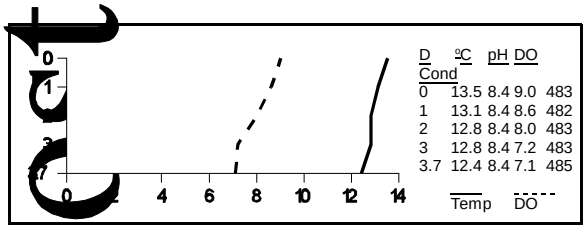
Red Creek Reservoir is easily accessible from US-40 in Fruitland. Turn north on the road across the street from the Fruitland store/gas station and continue for about

seven miles. The road essentially terminates at the

Limnological Data

Data averaged from STORET site: 593621

Surface Data	1992
Trophic Status	E
Chlorophyll TSI	52.84
Secchi Depth TSI	49.66
Phosphorous TSI	70.70
Average TSI	57.33
Chlorophyll a (ug/L)	9.7
Transparency (m)	2.1
Total Phosphorous (ug/L)	101
pH	8.4
Total Susp. Solids (mg/L)	20.5
Total Volatile Solids (mg/L)	4
Total Residual Solids (mg/L)	17
Temperature (°C / °f)	14/57
Conductivity (umhos.cm)	492
Water Column Data	
Ammonia (mg/L)	0.03
Nitrate/Nitrite (mg/L)	0.07
Hardness (mg/L)	248
Alkalinity (mg/L)	254
Silica (mg/L)	8.9
Total Phosphorous (ug/L)	138
Miscellaneous Data	
Limiting Nutrient	N
DO (Mg/l) at 75% depth	7.4
Stratification (m)	NO
Depth at Deepest Site (m)	3.7



D	°C	pH	DO	Cond
0	13.5	8.4	9.0	483
1	13.1	8.4	8.6	482
2	12.8	8.4	8.0	483
3	12.8	8.4	7.2	483
3.7	12.4	8.4	7.1	485

reservoir.

There are no services at the reservoir, but gas and supplies are available in Fruitland.

The area is entirely private land. You are a guest here, so treat the area with due respect. Any camping should be done such that there is minimal impact to the area.

Watershed Description

Red Creek Reservoir has a moderate size natural watershed. The reservoir is in the rolling hills of the Uinta Basin, but the headwaters of the watershed are in the foothills surrounding the Uinta Mountains. The foothills are hogbacks--ridges formed by inclined strata surrounding the large dome of the Uintas.

The watershed high point is Red Creek Mountain at an elevation of 3,229 meters (10,595 ft) above sea level, thereby developing a complex slope of 6.6% to the reservoir. The average stream gradient for Red Creek is 3.9% (206 feet per mile). The inflows are the Red Creek and Kersha Creek (ephemeral). The outlet is Red Creek. Two miles downstream much of the creek is diverted into an irrigation canal to irrigate crops in Fruitland.

The natural watershed is consists of undulating low mountains, while the diverted watershed is made up of high mountains and glacial valleys.

The vegetation communities consist of spruce-fir, oak-maple, pinyon-juniper, and sagebrush-grass. The watershed receives 41 - 76 cm (16 - 30 inches) of precipitation annually. The frost-free season around the reservoir is 40 - 80 days per year.

Land use is essentially 100% private grazing land and recreation. Summer home development is taking place in the watershed, resulting in increased pollution. This watershed is excluded from the Uinta National Forest, but the boundary is a series of north-south and east-west lines, so some of the forest is in the watershed. This forest land is multiple use.

Limnological Assessment

The water quality of Red Creek Reservoir is good. It is considered to be hard with a hardness concentration value of approximately 248 mg/L ($CaCO_3$). Those parameters that have exceeded State water quality standards for defined beneficial uses are total phosphorus and dissolved oxygen. The average concentrations of total phosphorus in the water column for 1992 was 138 ug/L which exceeds the recommended pollution indicator for phosphorus of 25 ug/L. The phosphorus concentration in the hypolimnion averaged 219 ug/L for the same period.

Dissolved oxygen concentrations in late summer substantiate the fact that water quality impairments do exist. As depicted in the September 2, 1992 profile, concentrations ranged from 7.5 to 4.3 mg/L downward in

the water column. The reservoir was monitored on March 15, 1991 to determine if anoxic conditions were present under ice coverage. The profile at that time indicates that anoxic conditions were present in the lower portions of the reservoir. With a maximum depth of 11 meters the dissolved oxygen was 3.4 mg/L at a depth of 5 meters with near zero conditions from 8-11 meters. These conditions support the fact that there is a large demand in the hypolimnion at the sediment interface for oxygen indicative of large accumulation of organic material usually from high productivity over an extended period of time.

The 1992 data suggest that the reservoir is currently a nitrogen limited system. TSI values indicate the reservoir is highly eutrophic with relatively high concentrations of phosphorus present. The reservoir has not been stratified during any recent monitoring trips. Even though sufficient depth is available in the reservoir, recent drought conditions and early drawdown due to irrigation requirements has not allowed a thermocline to develop.

According to DWR no fish kills have been reported in recent years. The reservoir supports a populations of rainbow trout (*Oncorhynchus mykiss*). The DWR stocks the reservoir annually with 15,000 fingerling rainbow trout. The lake has not been treated for rough fish competition, so populations of native fishes may still be present in the lake. Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm^3/liter)	% Density By Volume
Anabaena spiroides var. Crassa	11.564	92.79
Aphanizomenon flos-aquae		. 5 2 8 4.24
Pennate Diatoms	.048	0.89
Asterionella formosa	.095	0.76
Oocystis sp.	.053	0.43
Oscillatoria sp.	.048	0.39
Centric diatoms	.036	0.29
Unknown spherical green alga	.028	0.22
Total	87.028	
Shannon-Weaver [H']	0.36	
Species Evenness	0.17	
Species Richness	0.30	

The phytoplankton community is dominated by the presence of blue-green algae species indicative of eutrophic conditions and limited water quality.

Pollution Assessment

Nonpoint pollution sources include the following: sedimentation and nutrient loading from grazing; wastes or litter and from recreation; and sediments from construction associated with the development of summer homes.

Grazing takes place throughout the watershed and along the shores of the reservoir.

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).

Information

Management Agencies	
Uinta Basin Association of Governments	722-4518
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Recreation	
Dinosaurland Travel Region (Vernal)	789-6932
Fruitland Store	548-2214
Reservoir Administrators	
Red Creek Irrigation Company	548-2317