FISHERIES INVESTIGATIONS IN THE YELLOWSTONE AND SHIELDS RIVER BASINS, PARK COUNTY, MONTANA

Progress Report for Federal Aid
Project F-78-R-1 and F-78-R-2

by

JOEL TOHTZ

Montana Department of Fish, Wildlife and Parks
1400 South 19th
Bozeman, Montana 59715

February 1996

CONTENTS

TITLE PAGE i

CONTENTS ii

LIST OF TABLES iv

LIST OF FIGURES v

ABSTRACT 1

OBJECTIVES 2

Program Activities and Objectives 2

Project Objectives 3

PROCEDURES 5

A. Estimates of trout abundance in the Yellowstone river based on spring sampling from 1990 to 1995 . 5

B. Estimates of brown trout abundance in the Shields river based on spring sampling in 1995 6

C. Estimates of cutthroat trout abundance in four sections of Mill creek based on mark recapture sampling in 1990, 1991, 1992 and 1994 7

D. Whirling disease test results for fish collected from the Yellowstone river 8

E. Results from eyed egg plants in Fleshman creek in 1995 9

F. Summary of Dailey lake creel data from 1991 to 1993 10

G. Summary of gillnet catches in Dailey lake from 1990 to 1995 10

RESULTS AND DISCUSSION 11

A. Estimates of trout abundance in the Yellowstone river based on spring sampling from 1990 to 1995 . 11

B. Estimates of brown trout abundance in the Shields river based on spring sampling in 1995 17

C. Estimates of cutthroat trout abundance in four sections of Mill creek based on mark recapture sampling in 1990, 1991, 1992 and 1994 17

D. Whirling disease test results for fish collected from the Yellowstone river 18

E. Results from eyed egg plants in Fleshman creek in 1995 18

F. Summary of Dailey lake creel data from 1991 to 1993 19

G. Summary of gillnet catches in Dailey lake from 1990 to 1995 20

LITERATURE CITED 22

APPENDIX A: Common and scientific names for fish referred to in this report A1

APPENDIX B: Environmental assessments of the Dailey lake development project and proposed access site modifications: October 25, 1995 ..... B1

APPENDIX C: Decision notice, Dailey lake development project: January 12, 1996 ..... C1

LIST OF TABLES

Table 1. Four reaches of the Yellowstone river sampled each spring from 1990 to 1995 5

Table 2. Two reaches of the Shields river sampled in spring, 1995 6

Table 3. Four reaches of Mill creek sampled late summer in 1990, 1991, 1992, and 1994 7

Table 4. Year of first detection of Myxobolus cerebralis as it has spread throughout the United States. 8

Table 5. Number of trout less than seven inches (TL) collected from the Yellowstone river in 1995 that were tested for the presence of Myxobolus cerebralis 9

Table 6. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1990 11

Table 7. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1991 12

Table 8. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1992 12

Table 9. Trout/mile in two sections of the Yellowstone river based on spring sampling in 1993 13

Table 10. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1994 13

Table 11. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1995 14

Table 12. Brown trout number/1,000 ft in two sections of the Shields river based on spring sampling in 1995 17

Table 13. Sampling period, interviews, and fishing pressure estimates based on creel surveys conducted at Dailey lake in 1991, 1992, and 1993 19

Table 14. Catch rates (fish/hr) and estimated harvest of rainbow trout, yellow perch, and walleye at Dailey laked based on creel surveys conducted in 1991, 1992, and 1993 20

Table 15. Summary of gillnet catches from Dailey lake based on spring sampling from 1990 to 1995 21

LIST OF FIGURES

Figure 1. Number of trout seven inches (TL) or longer in the Corwin Springs and Mill Creek Bridge sections of the Yellowstone river based on spring sampling in 1990, 1992, and 1995 14

Figure 2. Number of brown trout seven inches (TL) or longer based on spring sampling in the Mill Creek Bridge section of the Yellowstone from 1990 to 1995 15

Figure 3. Length frequency distributions of brown trout sampled from the Mill Creek Bridge section of the Yellowstone river in 1992, 1994, and 1995 15

Figure 4. Number of trout seven inches (TL) or longer in the Ninth Street and Springdale sections of the Yellowstone river based on spring sampling in 1990, 1993, and 1995 16

Figure 5. Number of rainbow trout between six and ten inches (TL) in the Ninth Street section of the Yellowstone river based on spring sampling from 1990 to 1995 16

Figure 6. Cutthroat number in four sections of Mill creek 18

ABSTRACT

Rainbow and cutthroat trout abundance (fish seven inches total length or longer) was similar the last six years in the Corwin Springs and Mill Creek Bridge sections of the Yellowstone river based on spring sampling. Brown trout numbers may have declined. Brown trout and cutthroat abundance in the Ninth Street and Springdale sections of the Yellowstone river was similar the last six years. Rainbow numbers increased slightly, especially in the Springdale section.

Brown trout (fish seven inches total length or longer) were more abundant in the Convict Grade section of the Shields river in 1995 than they were in 1991 or 1992. Brown trout abundance in the Zimmerman section in 1995 equaled 1992 estimates. Declining trends in both sections of the river may have stabilized.

Cutthroat trout abundance continued to decline in an unmodified section of Mill creek. Cutthroat numbers in three modified sections equalled or exceeded numbers existing the year before habitat structures had been placed in the creek.

Test results were negative for Myxobolus cerebralis for all fish tested from the Yellowstone river in 1995. Abundance of young rainbow trout (fish between six and ten inches total length) has been stable near Livingston based on spring sampling for the last six years.

Cutthroat eggs in mesh bags showed 75% successful hatching in artificial redds in Fleshman creek this summer. An estimated 14,500 cutthroat hatched this year from this attempt to establish cutthroat spawning in the creek.

Fishing pressure at Dailey lake increased steadily from 1991 to 1993 based on creel survey information. Catch rates remained similar for rainbow and walleye during this time, but declined for yellow perch.

The average length of walleye and yellow perch in Dailey lake has steadily increased in gillnet catches each year since 1990; their number caught has varied. Rainbow trout continue to increase in both size and number caught each spring.

OBJECTIVES

Funds for this project are provided by grants from the Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777-777k) supporting the Montana Statewide Fisheries Management Program. This program consists of two elements: Fisheries Management in Montana, and Statewide Program Coordination. The Fisheries Management element includes four activities, each with associated objectives:

Program Activities and Objectives

1. Survey and Inventory
   To survey and monitor the characteristics and trends of fish populations, angler harvest and preferences, and to assess habitat conditions in selected waters.

2. Fish Population Management
   To implement fish stocking programs and/or fish eradication actions to maintain fish populations at levels consistent with habitat conditions and other limiting factors.

3. Technical Guidance
   To review projects by government agencies and private parties which have the potential to affect fisheries resources, provide technical advice or decisions to mitigate effects on these resources, and provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources.

4. Aquatic Education
   To enhance the public's understanding, awareness and support of the state's fishery and aquatic resources and to assist young people to develop angling skills and appreciate the aquatic environment.

These statewide activities and objectives are addressed locally by ongoing fisheries investigations and management activities intended to enhance aquatic habitat and recreational fisheries in the upper Yellowstone drainage. For Montana state fiscal years 1995 and 1996, the Yellowstone/Shields drainage area workplans (state project 3301) include six objectives (Project Objectives):

Project Objectives

1. Determine the abundance, size composition, age composition, mortality rates, and angler harvest or catch rates of wild trout and other fish species in the Yellowstone and Shields rivers for the purpose of maintaining populations at existing levels and attempting to improve the present numbers of native Yellowstone cutthroat trout [1].

2. Determine the abundance, size composition, age composition, mortality rates, recruitment rates and spawning success of Yellowstone cutthroat trout in the primary tributary streams of the Yellowstone river and the Shields river for the purpose of improving or maintaining small tributary populations and possibly improving mainstem river numbers, plus enhancing some tributary populations using imprint plants of young-of-the-year and eyed eggs.

3. Determine the abundance, species structure and natural spawning success of fish populations in high mountain lakes to determine those capable of supporting selfsustaining populations: in those that do not, determine the level, species and frequency of supplemental stocking of fish that is essential to maintain a quality fishery.

4. Determine the abundance, species structure and natural spawning success of fish populations in Dailey lake and their relationship to lake water levels to insure maintenance of a stable quality fishery.

5. Provide public education and training programs and meetings to enhance the public's understanding of general environmental issues; fisheries issues; use of fisheries habitat protection laws and use of special angling regulations to insure the maintenance of the fisheries resource.

6. Provide private landowners with stream management techniques and information necessary to maintain or enhance fisheries habitat on waters within private lands.

---

1. Common names for fish are used throughout this report. Scientific names are listed in Appendix A. All fish lengths in this report are total lengths (TL).

The project objectives guide continuing efforts to maintain and enhance local fisheries. In support of these efforts, the following data collections, compilations, and analyses are reported here under separate headings:

A. Estimates of trout abundance in the Yellowstone river based on spring sampling from 1990 to 1995.

B. Estimates of brown trout abundance in the Shields river based on spring sampling in 1995.

C. Estimates of cutthroat trout abundance in four sections of Mill creek based on mark recapture sampling in 1990, 1991, 1992 and 1994.

D. Whirling disease test results for fish collected from the Yellowstone river.

E. Results from eyed egg plants in Fleshman creek in 1995.

F. Summary of Dailey lake creel data from 1991 to 1993.

G. Summary of gillnet catches in Dailey lake from 1990 to 1995.

Project objectives 1 and 2 are addressed below under headings A through E. Project objective 3 was not addressed in 1995. Project objective 4 is addressed below under headings F and G. Project objectives 5 and 6 are addressed on an ongoing basis by meetings with various angler groups, school groups, local journalists, and the public. In 1995, these meetings included committee and public sessions concerning proposed changes to the Dailey lake fishing access site (Appendix B; Appendix C), educational seminars for local elementary school children, meetings with members of the local Trout Unlimited chapter to discuss a variety of fisheries topics, and meetings with members of the local Walleye Unlimited affiliate to discuss fish management at Dailey lake. Landowner contacts and consultations occurred routinely each month in conjunction with administration of the Montana Natural Streambed and Land Preservation Act and the Montana Stream Protection Act.

PROCEDURES

A. Estimates of trout abundance in the Yellowstone river based on spring sampling from 1990 to 1995.

Several sections of the upper Yellowstone river have been sampled each year to monitor trends in fish abundance. These sections represent different habitat types that occur as the river flows through Park County, Montana. Sampling results from four of these sections (Table 1) are reported here for spring surveys conducted between 1990 and 1995.

Table 1. Four reaches of the Yellowstone river sampled each spring from 1990 to 1995.

Reach name	Length (feet)	Location\a
Corwin Springs	27,558	T8S, R7E, S2,3,11,12,13,24 T8S, R8E, S19,30
Mill Creek Bridge	30,360	T5S, R9E, S4,5,8 T4S, R9E, S28,32,33
Ninth Street	25,925\b	T2S, R10E, S5,7,18 T2S, R9E, S24
Springdale	25,212	T1S, R12E, S21,22,28,29,32 T2S, R12E, S5,6

a. Township, Range, Section
b. 17,669 feet in 1995

Fish were sampled with electrofishing gear mounted on an aluminum hulled jet boat. This gear included a 5,000 watt generator and a Coffelt Model VVP-15 rectifying unit. Anodes were metal hoops with stainless steel droppers suspended from twin booms at the bow of the boat. The boat hull served as the cathode.

Fish were collected in live cars, identified, measured to the nearest 0.1 inch, and weighed to the nearest 0.01 pound. Trout were marked with fin clips and returned to the river after marking. Recapture sampling was conducted one to two weeks later in each section.

Fish abundance was estimated using a log-likelihood model recently available for this purpose in software developed by the Montana Department of Fish, Wildlife and Parks (FWP; Anon. 1994). This model attempts to compensate for different probabilities of capture that exist for small and large fish when using electrofishing gear. It also

incorporates statistical tests that help determine whether or not the model is appropriate for data sets used to generate the estimates. Fish were separated into one inch length groups for these analyses.

Data collected from 1990 to 1995 were analyzed using the log-likelihood model and compared to show trends in fish abundance. Earlier reports (Shepard 1992, Shepard 1993a) show fish abundance based on some of these same data sets. Numbers here differ from these earlier reports because size groupings for the analyses vary, and because results in the earlier reports were based on a modified Petersen estimator.

B. Estimates of brown trout abundance in the Shields river based on spring sampling in 1995.

Brown trout were sampled this spring at two locations in the Shields river (Table 2). These sections have been sampled regularly (usually each spring) since 1986. Sampling this year was intended to continue trend information for trout populations in these areas of the river.

Table 2. Two reaches of the Shields river sampled in spring, 1995.

Reach name	Length (feet)	Location\a
Zimmerman	3,102	T3N, R9E, S8
Convict Grade	7,724	T1S, R10E, S22,23

a. Township, Range, Section

Fish were sampled in the Convict Grade section with electrofishing gear mounted on a small drift boat. This gear included a 4,500 watt generator and a Leach direct current rectifying unit. The cathode was a steel plate attached to the bottom of the drift boat; the anode was a single hand held (mobile) electrode connected to the power source by about 10 m of cable.

Fish were sampled in the Zimmerman section with gear mounted on a Crawdad utility boat. We used a 4,500 watt generator and a Coffelt Model VVP-15 rectifying unit. The cathode was a trailed cable and metal screen; the anode was the same used to sample the Convict Grade section.

Fish were collected in live cars, identified, measured to the nearest 0.1 inch, and weighed to the nearest 0.01 pound. Trout were marked with fin clips and returned to the stream. Recapture sampling was conducted about two weeks later in each section.

Data were analyzed using MR4, a computer program developed by FWP for processing electrofishing records (Anon. 1994). Fish numbers were estimated using the log-likelihood model.

C. Estimates of cutthroat trout abundance in four sections of Mill creek based on mark recapture sampling in 1990, 1991, 1992 and 1994.

In 1993, workers from the Livingston Ranger District of the Gallatin National Forest placed a series of different stream structures in three sections of Mill creek to assess the effectiveness of different approaches to augmenting and enhancing over-wintering habitat for Yellowstone cutthroat trout. In support of this effort, FWP determined fish numbers in three treatment sections and one control section before modifications were made (Shepard 1993a; Table 3), and continued this effort in 1994 to assess their efficacy after the structures were in place. Fish were sampled using a Crawdad utility boat, a hand held (mobile) electrode, a 4500 watt generator, and a Leach direct current rectifying unit.

Table 3. Four reaches of Mill creek sampled late summer in 1990, 1991, 1992, and 1994.

Reach name	Length (feet)	Location\a
Control	1,000	T6S, R10E, S19DD
Logjam	1,000	T6S, R10E, S19CD
Pool	1,000	T6S, R10E, S29BC
Debris	1,000	T6S, R10E, S29DC

a. Township, Range, Section

In each year, fish were collected in live cars, identified, measured to the nearest 0.1 inch, and weighed to the nearest 0.01 pound. In 1994, cutthroat trout were marked with fin clips and returned to the river after marking. Recapture sampling was conducted about two weeks later in each of the four creek sections involved in this study.

Data were analyzed using MR4, a computer program developed by FWP for processing electrofishing records (Anon. 1994). Fish numbers are calculated using the Chapman (1951) modification of the Petersen estimator.

D. Whirling disease test results for fish collected from the Yellowstone river.

In December 1994, Myxobolus cerebralis, a protozoan that causes whirling disease in many salmonids, was detected in rainbow trout sampled from the upper Madison river (Anon. 1995). Introduced to North America less than forty years ago (Hoffman 1990), this parasite has spread rapidly throughout many western states (Table 4). Although

Table 4. Year of first detection of Myxobolus cerebralis as it has spread throughout the United States.

State	Year detected	Source
Pennsylvania	1958	Hoffman 1990
Nevada	1958	
Connecticut	1961	
Virginia	1965	
Massachusetts	1966	
California	1966	
New Jersey	between 1966-1969	
Ohio	between 1966-1969	
Michigan	between 1966-1969	
West Virginia	between 1966-1969	
New Hampshire	1980	
New York	1984	
Oregon	1987	
Idaho	1987	
Colorado	1987	
Alabama	between 1990-1992	Markiw 1992
Washington	between 1990-1992	
Wyoming	between 1990-1992	
Utah	after 1992 ?	Anon. 1995
Montana	1994	

susceptibility to infection varies by species (Hallidy 1976, Hoffman 1990), the Madison river data indicate that the disease has the potential to reduce rainbow trout numbers (Anon. 1995) and perhaps the abundance of other wild trout species as well.

To test for M. cerebralis in the Yellowstone river, we caught young rainbow, brown, and cutthroat trout in four river sections between Corwin Springs and Springdale (Table 5). Heads were removed from each fish, placed in plastic bags, and frozen. Samples were mailed to diagnostic laboratories for M. cerebralis testing based on a homogenate of these heads, separated by the locations from which they were sampled.

Table 5. Number of trout less than seven inches (TL) collected from the Yellowstone river in 1995 that were tested for the presence of Myxobolus cerebralis.

Sample location	Sample date	Species\a			Testing laboratory\b
		RB	LL	YCT	
Corwin Springs	05/08/95	0	0	20	Fort Morgan
Mill Creek Bridge	04/19/95	18	10	0	Fort Morgan
Ninth Street	03/21/95	22	0	0	Fort Morgan
Springdale	04/07/95	26	11	0	Pullman

a. RB = rainbow trout, LL = brown trout, YCT = yellowstone cutthroat trout.

b. Fort Morgan: US Fish and Wildlife Service, Fish Disease Control Center, Box 917, Fort Morgan, Colorado, 80701.

Pullman: Washington Animal Disease Diagnostic Laboratory, College of Veterinary Medicine, Washington State University, Box 2037, College Station, Pullman, Washington, 99165.

E. Results from eyed egg plants in Fleshman creek in 1995.

In 1992, the Joe Brooks chapter of Trout Unlimited in Livingston spent time and money to reshape the lower end of Fleshman creek into better trout habitat. The goal of this project was to establish a spawning population that would contribute cutthroat trout to the Yellowstone river. To assist this effort we planted 20,000 eyed eggs in Fleshman creek on May 24, in eight artificial redds. Six hundred eggs placed in mesh bags (six bags, 100 eggs each) provided an index of hatching success.

Before planting eggs, stream gravels were stirred with shovels and by hand to help remove fine materials. Redds were built using a five gallon bucket with an open bottom to block flow while eggs were placed in each artificial redd. Eggs were covered with two to three inches of gravel placed by hand. Redds were located about 50 yards upstream from the Clark Street storm drain outflow. At 52 degrees all eggs were due to hatch in about one week. Temperature of the creek when the eggs were planted was 47 degrees.

F. Summary of Dailey lake creel data from 1991 to 1993.

In 1991, a five year fish management plan was implemented for Dailey lake that included specific goals for angler catch rates and gillnet monitoring standards to be achieved by 1995 (Shepard 1993b). This plan was based in part on a survey of anglers and other lake users that ultimately lead to controversial changes to recreational facilities at Dailey lake (Shepard 1993c; Appendix B; Appendix C). To evaluate the effectiveness of this plan, a creel survey ("census" in the older reports) was conducted variously during the summer and winter at Dailey lake from 1990 to 1993 (methods and procedures described Shepard 1993c). Earlier results are compared here with summaries of the 1993 data. By 1995, the management plan had not been adhered to and was largely abandoned. This result is not due to any deficiency in the plan: the biologist from FWP who created this plan accepted a new position in 1993 and his old position with FWP was not refilled until September 1994.

G. Summary of gillnet catches in Dailey lake from 1990 to 1995.

Gillnet sampling in 1995 at Dailey lake mimicked spring sampling during the previous five years. A single overnight set using two floating and two sinking experimental gillnets (Shepard 1993c) determined the entire sample. Results from the 1995 sample are compared with earlier gillnet catches.

RESULTS AND DISCUSSION

A. Estimates of trout abundance in the Yellowstone river based on spring sampling from 1990 to 1995.

All model outputs are reported below. Estimates were considered unreliable if probability values were less than 0.05 (Tables 6-11). In most cases, unreliable estimates resulted from the effect of a single length group on the log-likliehood model. High flows prevented recapture sampling in the Corwin Springs and the Mill Creek Bridge sections of the Yellowstone river in 1993.

Table 6. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1990. Estimates are for fish seven inches (TL) or longer.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs (April 24):								
RB	357	28.4	8	3.98	0.86	7	3.89	0.79
LL	373	27.5	10	7.65	0.66	9	7.65	0.57
YCT	312	25.9	7	9.24	0.24	6	9.15	0.17
Mill Creek Bridge (April 23):								
RB	113	10.2	8	3.49	0.90	7	2.83	0.90
LL	434	26.1	9	11.67	0.23	9	11.67	0.23
YCT	90	18.3	7	4.37	0.74	5	4.11	0.53
Ninth St (April 13):								
RB	1504	142.0	8	8.46	0.39	7	8.46	0.29
LL	452	88.9	8	16.68	0.03	5	16.59	0.005
YCT	33	29.2	1	0.74	0.38	0	----------	
Springdale (March 30):								
RB	255	29.4	9	13.64	0.14	8	13.51	0.10
LL	269	29.3	9	12.31	0.20	9	12.31	0.20
YCT	119	29.9	5	7.12	0.21	3	6.81	0.08

Species: RB = rainbow trout; LL = brown trout; YCT = Yellowstone cutthroat trout; N = estimated fish/mile; SD = standard deviation; DF = degrees of freedom; P = probability value.

Table 7. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1991. Estimates are for fish seven inches (TL) or longer. Abbreviations are defined in Table 6.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs (May 7):								
RB	497	132.1	6	3.52	0.74	3	2.27	0.52
LL	471	64.0	8	19.40	0.01	5	5.96	0.31
YCT	347	96.1	4	3.09	0.54	3	1.92	0.59
Mill Creek (May 2):								
RB	213	79.0	7	5.90	0.55	3	5.14	0.16
LL	544	56.7	11	20.93	0.03	7	14.45	0.04
YCT	169	66.1	5	7.06	0.22	4	6.99	0.14
Ninth St (April 9):								
RB	1027	62.6	11	12.63	0.32	9	12.62	0.18
LL	224	23.1	9	10.32	0.32	7	10.62	0.17
YCT	37	23.1	2	11.65	0.002	2	11,66	0.003
Springdale (April 5):								
RB	313	32.3	9	15.56	0.08	7	15.55	0.03
LL	173	15.9	10	25.65	0.004	9	24.09	0.004
YCT	250	98.2	6	4.67	0.59	4	3.70	0.45

Table 8. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1992. Estimates are for fish seven inches (TL) or longer. Abbreviations are defined in Table 6.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs (April 30):								
RB	251	28.1	7	9.34	0.23	6	9.27	0.16
LL	325	23.1	8	8.38	0.40	8	8.38	0.40
YCT	312	33.3	6	14.01	0.03	6	14.01	0.03
Mill Creek (April 27):								
RB	139	14.4	10	10.23	0.42	9	10.23	0.33
LL	428	31.6	12	12.32	0.42	9	11.38	0.25
YCT	86	14.4	6	3.92	0.69	5	3.10	0.69
Ninth St (April 6):								
RB	1585	86.6	12	27.01	0.01	11	24.46	0.01
LL	308	35.0	11	4.79	0.94	8	3.03	0.93
YCT	227	183.1	2	1.70	0.43	0	----------	
Springdale (March 26):								
RB	450	37.4	11	11.32	0.42	10	8.01	0.63
LL	213	19.5	13	20.48	0.08	10	12.00	0.28
YCT	121	18.6	6	6.93	0.33	5	6.88	0.20

Table 9. Trout/mile in two sections of the Yellowstone river based on spring sampling in 1993. Estimates are for fish seven inches (TL) or longer. Abbreviations are defined in Table 6.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs	---------- sampling not completed ----------							
Mill Creek Bridge	------- sampling not completed ----------							
Ninth St (April 13):								
RB	1338	87.2	11	12.31	0.34	9	11.57	0.24
LL	267	31.3	12	9.29	0.68	9	7.07	0.63
YCT	91	48.7	3	3.28	0.35	2	2.85	0.24
Springdale (April 5):								
RB	282	25.7	9	7.57	0.58	8	7.30	0.51
LL	206	22.4	10	6.92	0.73	9	6.26	0.71
YCT	157	29.7	5	6.92	0.23	3	5.12	0.16

Table 10. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1994. Estimates are for fish seven inches (TL) or longer. Abbreviations are defined in Table 6.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs (May 2):								
RB	412	120.5	6	3.47	0.75	4	2.95	0.57
LL	511	93.2	7	8.58	0.28	4	6.11	0.19
YCT	---------- no estimate ----------							
Mill Creek (April 25):								
RB	219	17.0	10	11.37	0.33	8	10.72	0.22
LL	381	28.7	10	10.25	0.42	9	10.08	0.34
YCT	147	37.3	6	8.05	0.23	4	7.42	0.12
Ninth St (April 15):								
RB	1580	148.9	12	20.30	0.06	10	20.05	0.03
LL	426	65.5	9	11.77	0.23	7	11.30	0.13
YCT	121	41.8	4	2.48	0.65	2	2.23	0.33
Springdale (April 11):								
RB	533	60.3	9	15.34	0.08	8	15.34	0.05
LL	305	30.8	12	20.29	0.06	10	20.05	0.03
YCT	244	50.9	5	9.12	0.10	3	4.26	0.23

Table 11. Trout/mile in four sections of the Yellowstone river based on spring sampling in 1995. Estimates are for fish seven inches (TL) or longer. Abbreviations are defined in Table 6.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Corwin Springs (May 2):								
RB	329	50.5	7	6.01	0.54	6	5.10	0.53
LL	226	32.9	7	11.84	0.11	4	4.23	0.38
YCT	293	33.5	7	13.98	0.05	5	5.22	0.39
Mill Creek (April 27):								
RB	130	70.0	8	10.47	0.23	6	8.43	0.21
LL	214	18.2	12	14.37	0.28	9	11.98	0.21
YCT	114	19.7	7	5.84	0.56	6	5.30	0.51
Ninth Street (April 26):								
RB	1629	352.9	8	10.50	0.23	6	10.50	0.11
LL	346	63.8	9	5.51	0.77	7	5.51	0.60
YCT	144	41.3	2	1.53	0.47	1	0.63	0.43
Springdale (April 7):								
RB	411	43.7	9	6.32	0.71	6	6.28	0.39
LL	300	30.5	13	12.41	0.49	9	7.72	0.56
YCT	138	21.3	6	3.85	0.70	5	3.71	0.59

Rainbow and cutthroat trout numbers in the Corwin Springs and Mill Creek Bridge sections have been relatively stable the last six years (Figure 1). Brown trout numbers may have

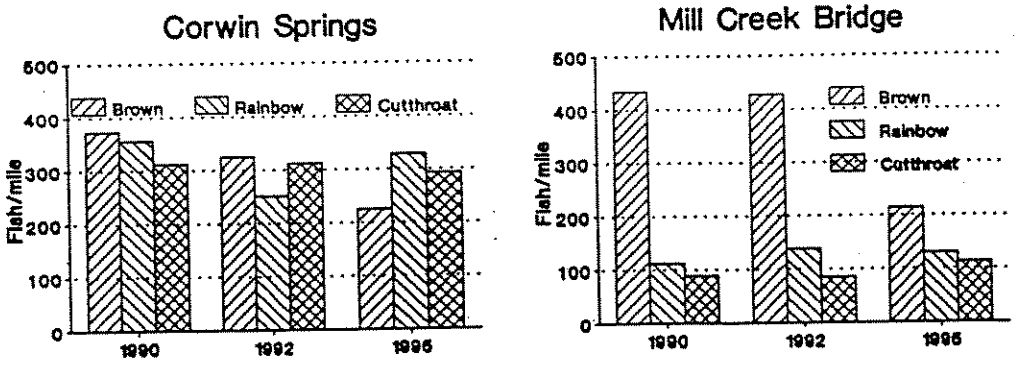

Figure 1. Number of trout seven inches (TL) or longer in the Corwin Springs and Mill Creek Bridge sections of the Yellowstone river based on spring sampling in 1990, 1992, and 1995.

declined during this same period, particularly in the Mill Creek Bridge section. This decline could reflect genuine reductions in the number of brown trout in this area of the river. However, sampling in 1995, when the decline first

gained statistical significance (Figure 2), was limited by low flows: often it was impossible to sample near banks where many fish would be expected to be found. The low estimate in 1995 could reflect our inability to sample as much of the utilized habitat as we were able to sample in previous years.

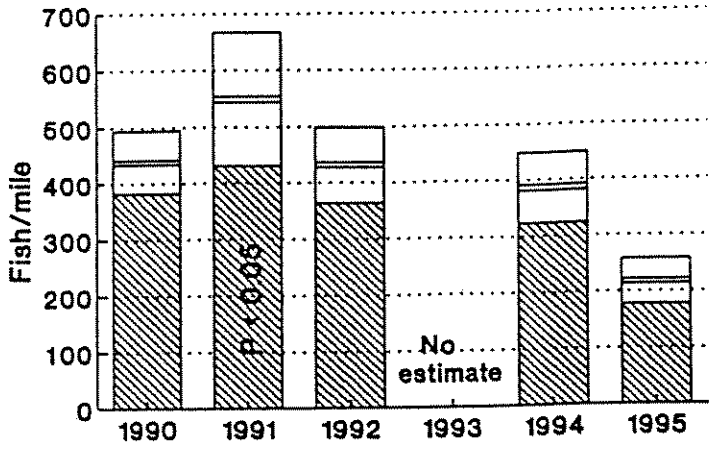

Figure 2. Number of brown trout seven inches (TL) or longer based on spring sampling in the Mill Creek Bridge section of the Yellowstone river from 1990 to 1995. Open intervals are +/- 2 SD of each estimated number.

Length frequency distributions show that similar size brown trout comprised the sample each year, for example in 1992, 1994, and 1995 (Figure 3; sampling was interrupted in 1993). However, fewer fish, especially fish larger than 13 inches, were captured in 1995. Again this result may simply reflect our inability to sample key areas in 1995 where many large fish would be found.

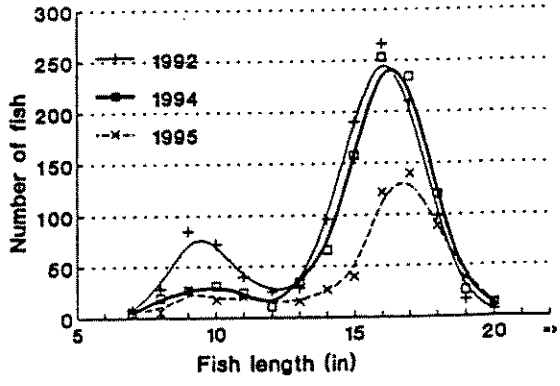

Figure 3. Length frequency distributions of brown trout sampled from the Mill Creek Bridge section of the Yellowstone river in 1992, 1994, and 1995.

Brown trout and cutthroat numbers in the Ninth Street and Springdale sections were similar over the last six years (Figure 4). Rainbow trout numbers increased slightly, especially in the Springdale section. The number of rainbow trout between six and ten inches has been stable near

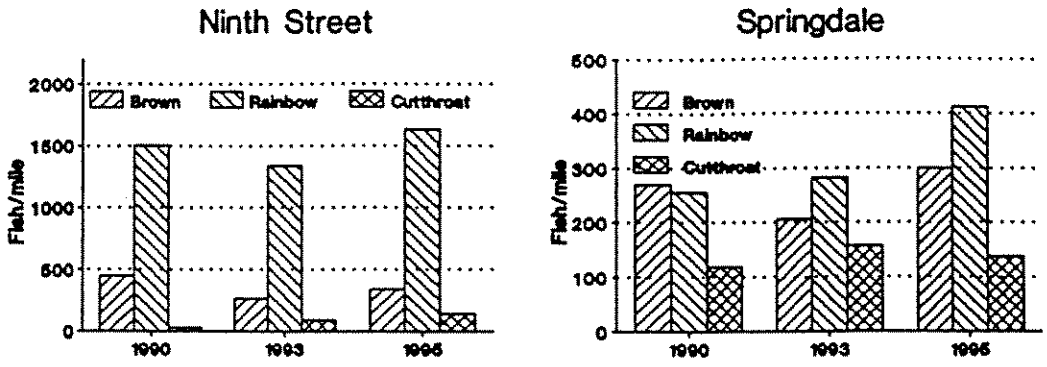

Figure 4. Number of trout seven inches (TL) or longer in the Ninth Street and Springdale sections of the Yellowstone river based on spring sampling in 1990, 1993, and 1995. Vertical scales differ.

Livingston for the last six years (Figure 5). This result suggests good recruitment and survivorship of young fish. This is one indication that whirling disease is not yet established in the upper Yellowstone river (also see part D below). Low survivorship of young rainbows attributed to whirling disease in other Montana rivers (e.g., Anon. 1995) is not evident in our samples at this time.

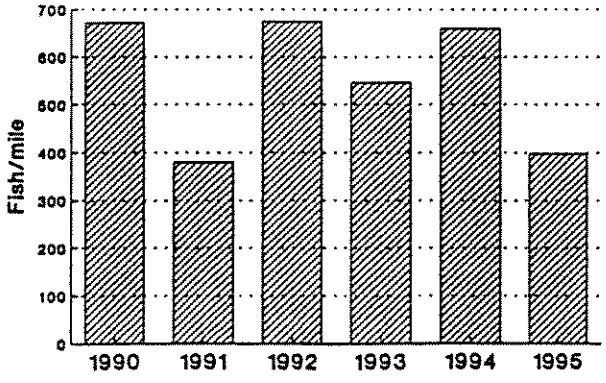

Figure 5. Number of rainbow trout between six and ten inches (TL) in the Ninth Street section of the Yellowstone river based on spring sampling from 1990 to 1995.

B. Estimates of brown trout abundance in the Shields river based on spring sampling in 1995.

Brown trout greater than seven inches were slightly more abundant in the Convict Grade section in 1995 (Table 12) than estimates based on sampling from 1989 to 1992 (Shepard 1992). This result indicates that a general trend in population decline of fish less that 14 inches observed since 1989 (Shepard 1993a) may have stabilized. Better survivorship of younger fish could explain this observation: especially good flows in 1994 and 1995 probably increased survivorship of most age classes of fish.

Table 12. Brown trout number/1,000 ft in two sections of the Shields river based on spring sampling in 1995. Estimates are for fish seven inches (TL) or longer.

Reach (mark date):			Overall model			Pooled model		
Species	N	SD	DF	Chi-square	P	DF	Chi-square	P
Zimmerman (March 15):								
LL	102	12.6	8	13.09	0.11	6	11.58	0.07
Convict Grade (March 16):								
LL	52	15.2	7	10.22	0.18	5	7.89	0.16

Species: LL = brown trout; N = estimated fish/1,000 ft; SD = standard deviation; DF = degrees of freedom; P = probability value.

Brown trout greater than seven inches in the Zimmerman section in 1995 (Table 12) equaled numbers in 1992, but were less than numbers in 1991 and 1990 (Shepard 1993a). As in the Convict Grade section, brown trout numbers in this portion of the river may have stabilized after a period of decline. Perhaps, again, this observation is attributable in part to favorable flows in 1994 and 1995.

C. Estimates of cutthroat trout abundance in four sections of Mill creek based on mark recapture sampling in 1990, 1991, 1992 and 1994.

Cutthroat trout numbers continued to decline in the control (untreated) section of Mill creek each year since samples were first collected in 1990 (Figure 6). In contrast, cutthroat numbers in each of the three treatment sections in 1994 equaled or exceeded numbers existing the year before habitat structures were constructed. The debris treatment section in particular had significantly more fish four inches and longer in 1994 than were present in either 1991 or 1992. These results are confounded by upstream and downstream effects of the close proximity of each sample section: it is difficult to separate changes in fish numbers in one section from their effects on the other sections.

However, it does appear that the treatments measurably stabilize or improve fish numbers: apparently this portion of Mill creek can benefit from the intentional construction of habitat features.

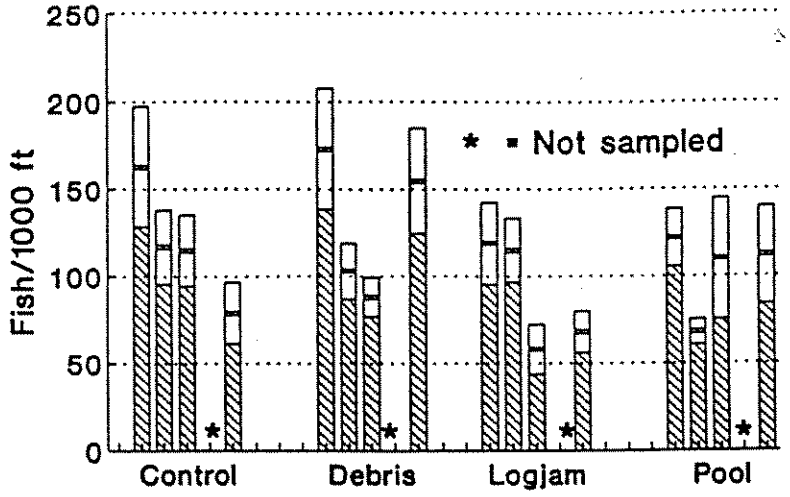

Figure 6. Cutthroat number in four sections of Mill Creek. Bar groups left to right are the estimate for 1990, 1991, 1992, (1993, not sampled), and 1994. Open intervals are +/- 2 SD of each estimate.

D. Whirling disease test results for fish collected from the Yellowstone river.

Results were negative for M. cerebralis for all fish tested. Sampling is limited, but so far M. cerebralis has not been detected in the Yellowstone river. More fish will be sampled this year from more locations in the Yellowstone river, and also from two locations in the Shields river.

E. Results from eyed egg plants in Fleshman creek in 1995.

Our index measure (eggs contained in mesh bags) showed 75% successful hatching in six of the artificial redds on June 20, 1995. At this rate, about 14,500 cutthroat would be expected to have hatched from the total egg plant this year. Redds were located so that young fish would emerge near edge and bank cover in low current with back eddy areas providing protection. Cutthroat can be successfully hatched in this portion of the creek by artificial means: rearing success and survivorship need to be monitored over the next few years to evaluate how successful the egg planting program is establishing a cutthroat trout population that contributes fish to the Yellowstone river.

F. Summary of Dailey lake creel data from 1991 to 1993.

Fishing pressure at Dailey lake increased steadily during survey periods from 1991 to 1993 (Table 13). Catch rates

Table 13. Sampling period, interviews, and fishing pressure estimates based on creel surveys conducted at Dailey lake in 1991, 1992, and 1993. Survey methodology is detailed in Shepard 1993c.

Survey parameter	Sample year/a (survey period) 1991 (5/11-10/13)	1992 (5/8-9/7)	1993 (5/1-9/5)
Days in survey period	46	39	41
Days sampled	23	14	21
Number of counts	230	179	252
Number of interviews	470	385	540
Hours fished			
Shore anglers	2.6	2.7	1.9
Boat anglers	3.4	3.7	3.3
Mean	3.2	3.3	2.8
Pressure			
Angler hours	4,642	5,996	7,085
Angler days	1,451	1,817	2,530

a. Summaries for the 1991 and 1992 creel survey data are adapted from Shepard 1993c.

remained stable for rainbow trout and walleye, but declined during this period for yellow perch (Table 14). Less success catching yellow perch may reflect less abundance now that walleye are a significant predator in the lake. It is also possible that the increased fishing pressure observed during the creel surveys includes a larger number of inexperienced, less successful, anglers. Perch feeding patterns may have changed, particularly in response to increasing predation pressure from walleye and rainbow trout: yellow perch may now be more difficult to catch. By 1995, the recent, inadvertent, introduction of the brook stickleback also seems to be a factor influencing the lake's fishery: walleye and rainbow trout may prefer eating the stickleback instead of yellow perch. Survivorship of yellow perch may have increased since these creel surveys were conducted, as fish predators switch from perch to stickleback prey. Perch abundance could increase as a result of less predation, or at least be less directly controlled by walleye and trout abundance (see Part G below). It remains to be assessed whether or not perch abundance is actually changing, however, and whether or not increasing perch abundance would affect current catch rates

for perch anglers.

Table 14. Catch rates (fish/hr) and estimated harvest of rainbow trout, yellow perch, and walleye at Dailey laked based on creel surveys conducted in 1991, 1992, and 1993.

Species	Sample year/a (survey period) 1991 (5/11-10/13)	1992 (5/8-9/7)	1993 (5/1-9/5)
Rainbow trout			
Catch rate (anglers catching fish):	0.03	0.03	0.02
Catch rate (anglers keeping fish):	0.02	0.03	0.02
Harvest/survey period	126	180	134
Yellow perch			
Catch rate (anglers catching fish):	1.48	1.29	1.00
Catch rate (anglers keeping fish):	1.14	1.07	0.70
Harvest/survey period	8,632	6,962	5,248
Walleye			
Catch rate (anglers catching fish):	0.04	0.03	0.03
Catch rate (anglers keeping fish):	0.02	0.01	0.01
Harvest/survey period	145	54	95

a. Summaries for the 1991 and 1992 creel survey data are adapted from Shepard 1993c.

G. Summary of gillnet catches in Dailey lake from 1990 to 1995.

The average length of walleye and yellow perch in Dailey lake has steadily increased in gillnet catches since 1990 (Table 15). Bigger yellow perch may result from walleye predation and associated reductions in yellow perch abundance as suggested by Shepard (1993c): stomach contents indicate that walleye eat many yellow perch each year in this lake; walleye size probably reflects the continuing maturation of these fish each year since their stocking in 1990. The numbers of yellow perch and walleye caught each

Table 15. Summary of gillnet catches from Dailey lake based on spring sampling from 1990 to 1995.

		Rainbow trout		Yellow Perch		Walleye	
Year/a	Set date	Fish/ net	Mean TL (in)	Fish/ net	Mean TL (in)	Fish/ net	Mean TL (in)
1990	4/30	8.2	12.8	48.7	7.4	4.7	11.4
1991	5/14	5.3	14.8	21.8	7.5	3.0	12.0
1992	5/04	7.3	15.1	58.3	7.7	4.5	12.7
1993	---------- no information ----------						
1994	5/12	9.3	15.2	32.3	8.7	11.5	11.3
1995	5/18	13.5	14.6	71.5	8.0	2.5	13.7

a. Summaries of data from 1990 to 1992 are from Shepard 1993c.

year in the nets, however, do not mirror this density dependent relationship as would be expected if fish size was determined only by species abundance. Perch numbers caught each spring are erratic and extreme, whereas walleye numbers, except for an exceptionally high number in 1994, are stable and low (Table 15). Gillnet sampling is quite limited: other factors, including the recent introduction of brook stickleback, seem likely to have influenced fish population trends in the lake at this time.

Rainbow trout continue to increase in size and abundance in spring gillnet catches since 1990 (Table 15). Dailey lake is apparently ideally suited to trout growth and survival. Natural reproduction has not yet been documented for these fish. Stocking plans will accommodate this lack of natural reproduction by maintaining current stocking levels unless natural reproduction is confirmed in the future. Stocking levels of rainbow trout would be adjusted at that time.

LITERATURE CITED

Anonymous. 1994. MarkRecapture version 4.0: a software package for fishery population estimates. Montana Department of Fish, Wildlife and Parks, Bozeman.

Anonymous. 1995. Whirling disease and Montana's wild trout. Montana Department of Fish, Wildlife and Parks, Helena.

Chapman, D. G. 1951. Some properties of the hypergeometric distribution with applications to zoological censuses. University of California Publications in Statistics 1:131-160.

Hallidy, M. M. 1976. The biology of Myxosoma cerebralis: the causative organism of whirling disease of salmonids. Journal of Fish Biology 9:339-357.

Hoffman, G. L. 1990. Myxobolus cerebralis, a worldwide cause of salmonid whirling disease. Journal of Aquatic Animal Health 2:30-37.

Markiw, M. E. 1992. Salmonid whirling disease. U.S. Fish and Wildlife Service Fish and Wildlife leaflet 17:1-11.

Shepard, B. B. 1992. Fisheries of the upper Yellowstone river including tributary recruitment: annual report for 1989, 1990, and 1991. Progress report for federal aid project F-46-R-2, Job I-f, Montana Department of Fish, Wildlife and Parks, Bozeman.

Shepard, B. B. 1993a. Fisheries of tributaries to the upper Yellowstone river system: annual report for 1991 and 1992. Progress report for federal aid project F-46-R-2, Job I-f, Montana Department of Fish, Wildlife and Parks, Bozeman.

Shepard, B. B. 1993b. Dailey lake management plan 1991-1995. Montana Department of Fish, Wildlife and Parks, Bozeman.

Shepard, B. B. 1993c. Fisheries of Dailey lake: annual report for 1991 and 1992. Progress report for federal aid project F-46-R-2, Job II-c, Montana Department of Fish, Wildlife and Parks, Bozeman.

APPENDIX A: Common and scientific names for fish referred to in this report.

Common name	**Scientific name**
Brook stickleback	Culaea inconstans
Brown trout	Salmo trutta
Rainbow trout	Oncorhynchus mykiss
Yellow perch	Perca flavescens
Yellowstone cutthroat (cutthroat)	Oncorhynchus clarki bouvieri
Walleye	Stizostedion vitreum

APPENDIX B: Environmental assessments of the Dailey lake development project and proposed access site modifications: October 25, 1995.

Montana Fish, Wildlife & Parks

ENVIRONMENTAL ASSESSMENTS OF THE DAILEY LAKE DEVELOPMENT PROJECT AND PROPOSED ACCESS SITE MODIFICATIONS

OCTOBER 25, 1995

TABLE OF CONTENTS

TITLE PAGE i

TABLE OF CONTENTS ii

LIST OF TABLES iii

LIST OF FIGURES iv

BACKGROUND AND INTRODUCTION 1

PART A: THE DAILEY LAKE DEVELOPMENT PROJECT 3

ENVIRONMENTAL REVIEW: PHYSICAL ENVIRONMENT 8

ENVIRONMENTAL REVIEW: HUMAN ENVIRONMENT 12

PART B: PROPOSED MODIFICATIONS FOR THE DAILEY LAKE DEVELOPMENT PROJECT 17

ISSUES 17

ALTERNATIVE ACTIONS 19

ENVIRONMENTAL CONSEQUENCES 25

ATTACHMENT A: LAND ISSUES AT DAILEY LAKE 26

OPTIONS 28

ATTACHMENT B: SUMMARY OF RESPONSE TO THE 1990-1991 DAILEY LAKE RECREATIONAL USER SURVEY 30

ATTACHMENT C: THE STATE HISTORICAL PRESERVATION OFFICE CONCURRENCE REGARDING ARCHEOLOGICAL SITE ELIGIBILITY 37

ATTACHMENT D: DAILEY LAKE EA COMMITTEE MEMBERS 38

DOCUMENT HISTORY 38

LIST OF TABLES

Table 1. Land resource considerations 8

Table 2. Air quality considerations 9

Table 3. Water quality considerations 9

Table 4. Local vegetation considerations 11

Table 5. Fish and wildlife considerations 11

Table 6. Noise and electrical considerations 12

Table 7. Current land use considerations 13

Table 8. Human health risk considerations 13

Table 9. Community impact considerations 14

Table 10. Public services, taxes, and utilities considerations 14

Table 11. Aesthetics and recreational considerations 15

Table 12. Cultural and historic resource considerations 15

Table 13. Summary evaluation of the Dailey lake development project 16

Table 14. Cost of modifying existing road barriers to allow more access to traditional camping areas at Dailey lake 24

Table 15. Consequences of alternative actions 25

LIST OF FIGURES

Figure 1. Location of Dailey lake, near Livingston, Montana. 2

Figure 2. Construction areas at Dailey lake 4

Figure 3. Detail of modifications completed in 1994 in construction areas A and F 5

Figure 4. Detail of modifications completed in 1994 in construction areas B and D 6

Figure 5. Detail of modifications completed in 1994 in construction areas C and E 7

Figure 6. Proposed modifications in construction areas A and F 21

Figure 7. Proposed modifications in construction area B 22

Figure 8. Proposed modifications in construction area C 23

Figure 9. Land ownership at Dailey lake 27

ENVIRONMENTAL ASSESSMENTS OF THE DAILEY LAKE DEVELOPMENT PROJECT AND PROPOSED ACCESS SITE MODIFICATIONS

BACKGROUND AND INTRODUCTION

Dailey lake is located in south-central Montana, about thirty miles from Livingston (Figure 1). This 200 acre lake supports a popular recreational fishery that includes walleye, rainbow trout, and yellow perch [1]. Because low elevation lakes in this area are rare, Dailey lake attracts a variety of recreationists, especially from nearby communities. Anglers, picnickers, campers, boaters, water skiers, windsurfers, wildlife viewers, hikers, and many others visit the lake. The lake's popularity results in intensive use. Lakeside facilities and traffic controls are now necessary to minimize harmful impacts associated with increasing numbers of recreational users.

Land surrounding the southern half of Dailey lake (T7S, R7E, S1-S2) [2] is a wildlife management area owned by the Montana Department of Fish, Wildlife and Parks (FWP). Land around the northern half (T6S, R7E, S36) is owned by the Montana Department of Natural Resources and Conservation (DNRC). Currently, FWP has no authority to manage lands at the north end of the lake. FWP is negotiating with DNRC to settle this land ownership problem (Attachment A). At this point, all new decisions by FWP are contingent on obtaining authority to manage activities on DNRC land.

Presented here under separate headings are environmental assessments of two proposed actions to upgrade and expand recreational amenities at Dailey lake:

Part A concerns work largely completed in the summer of 1994, although some work continues in 1995 to correct improper installations. Unfortunately, no assessment document for this action was prepared before construction began. Failure to produce this document was an oversight, and an error, by FWP. Because of this oversight, construction in 1994 was not in strict compliance with the Montana Environmental Policy Act. The assessment now provided in Part A shows the rationale that lead to the current access site development. This assessment is based, to the extent possible, on effects that were anticipated prior to actual construction.

---

1. Stizostedion vitreum, Oncorhynchus mykiss, Perca flavescens

2. Township, Range, Section

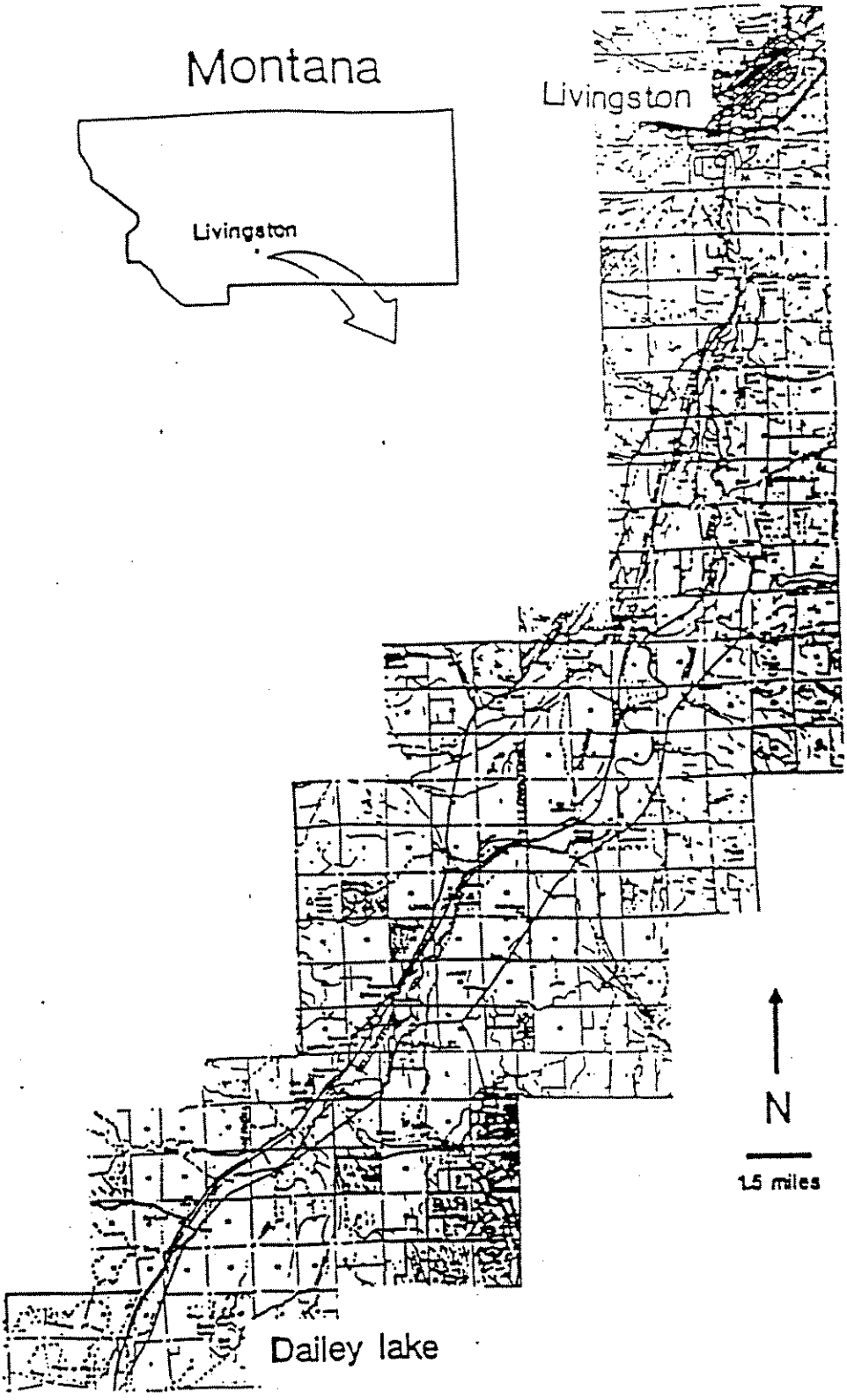

Figure 1. Location of Dailey lake, near Livingston, Montana.

Part B concerns the newly proposed action to modify the present Dailey lake access site development. Protecting the site is still a priority, but some changes may better accommodate the needs of a growing and diverse recreational public.

PART A: THE DAILEY LAKE DEVELOPMENT PROJECT

FWP constructed new facilities at Dailey lake to better accommodate more recreationists (Figures 2, 3, 4, and 5). New latrines, a new boat ramp, new roads, barriers to confine vehicles to roadways around the lake, concrete parking slabs and walkways for disabled users, a new headgate at the outlet of the lake, and a platform to provide fishing opportunities for disabled individuals, were intended to increase recreational opportunities for a growing number of lake users while still preserving the site.

Construction plans were developed in part from assessment of public desires. A questionnaire mailed to lake users in 1990 and 1991 determined recreational needs, fishing preferences, levels of conflict between different recreationists, and the extent and the type of development respondents deemed appropriate (Attachment B). Construction options were refined during presentations to local sport groups, and to members of the Dailey lake steering committee, including members of Trout Unlimited, Walleye Unlimited, Yellowstone Fly Fishers, Montana Sportsmen Incorporated, Livingston Rod and Gun Club, and also people with no club affiliations who had special interests in perch angling and windsurfing. Comments from people attending two open meetings (in Bozeman on April 23, 1992; in Livingston on January 13, 1993) were also considered when determining public concerns about these modifications.

Funds available for construction, potential environmental consequences, and the protection afforded by these modifications were other, equally important, factors considered during planning phases of this project. A summary assessment of anticipated impacts is provided below.

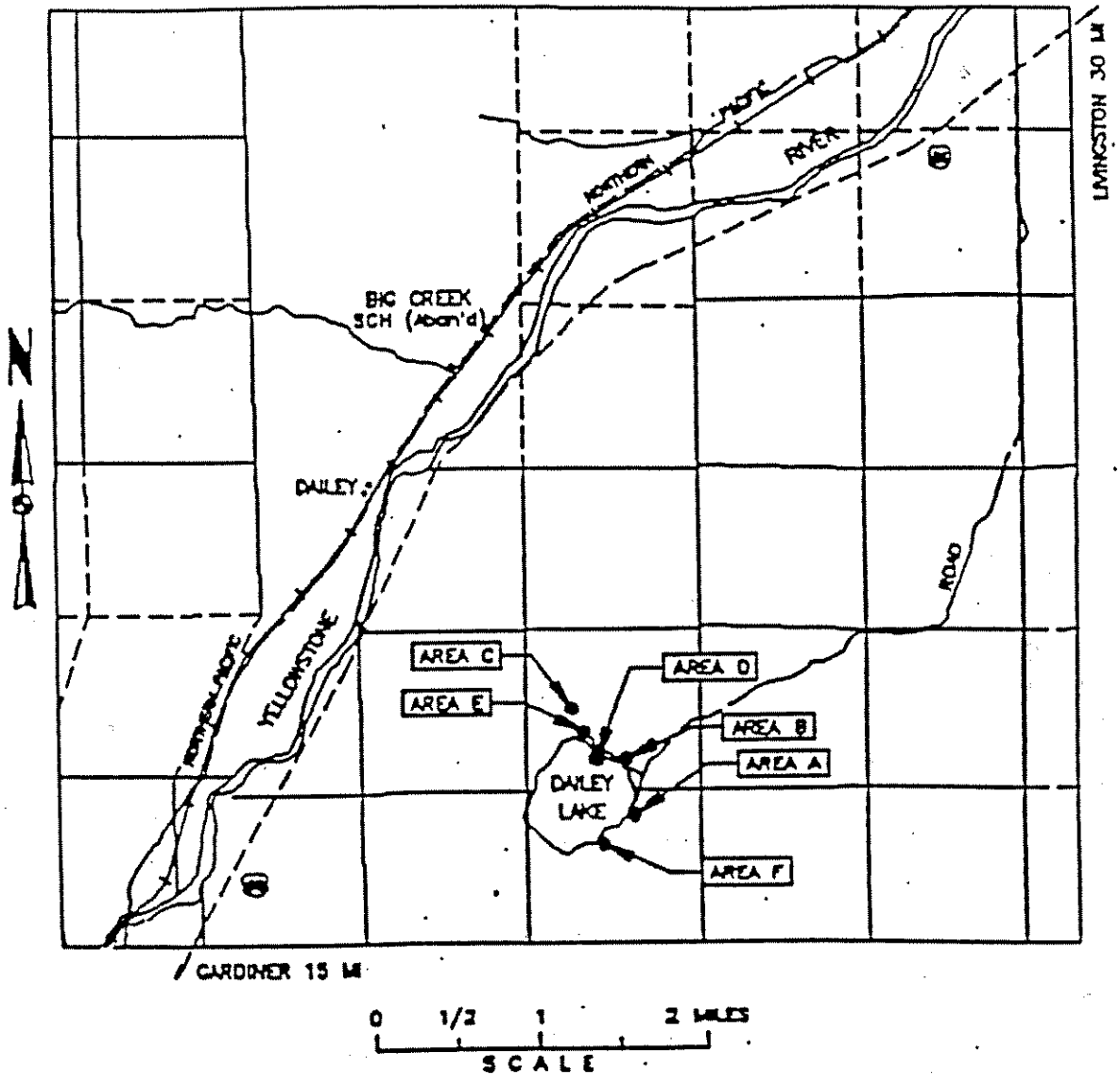

Figure 2. Construction areas at Dailey lake.

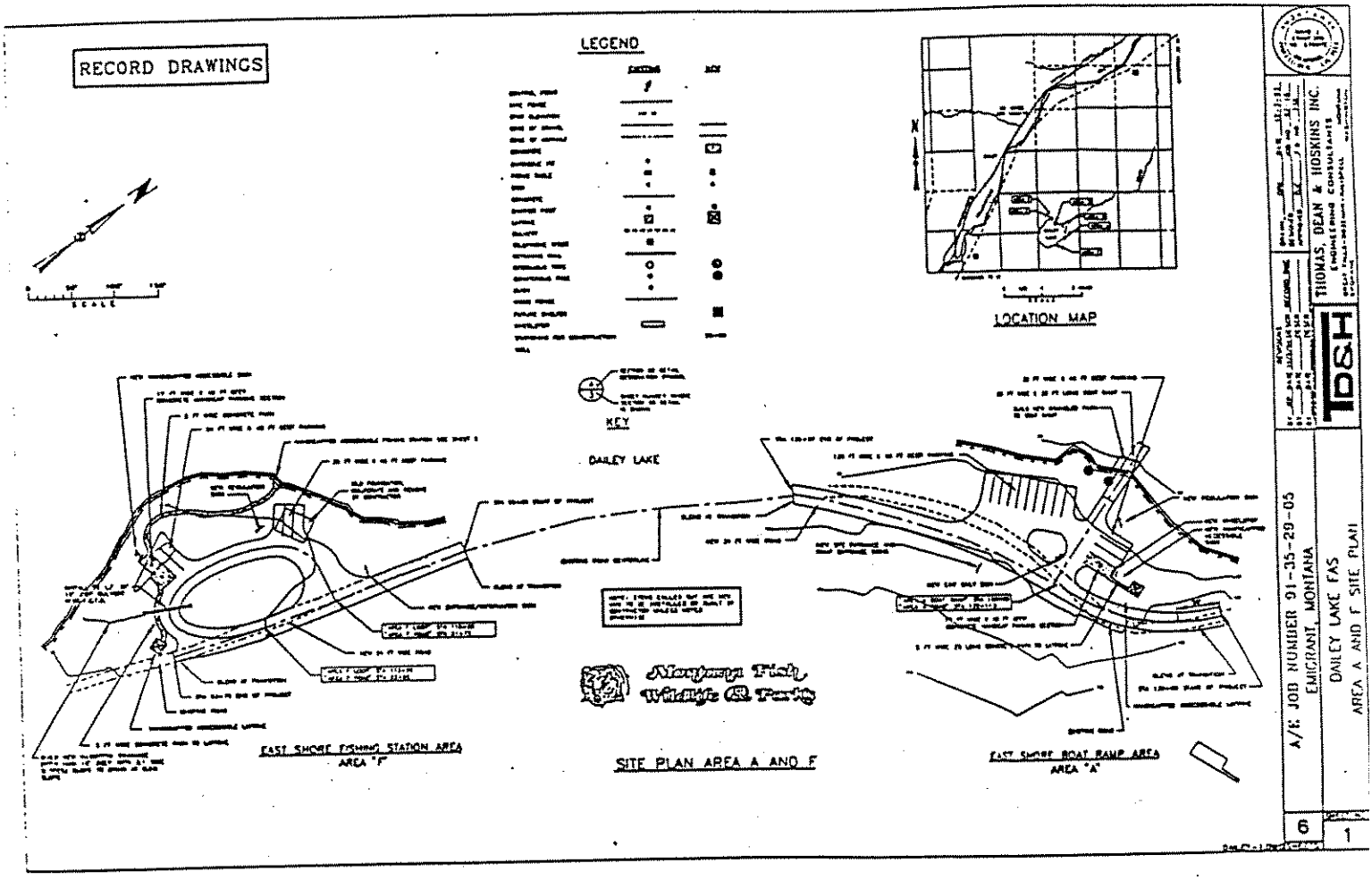

Figure 3. Detail of modifications completed in 1994 in construction areas A and F (site drawing from Thomas, Dean, and Hoskins, Inc.).

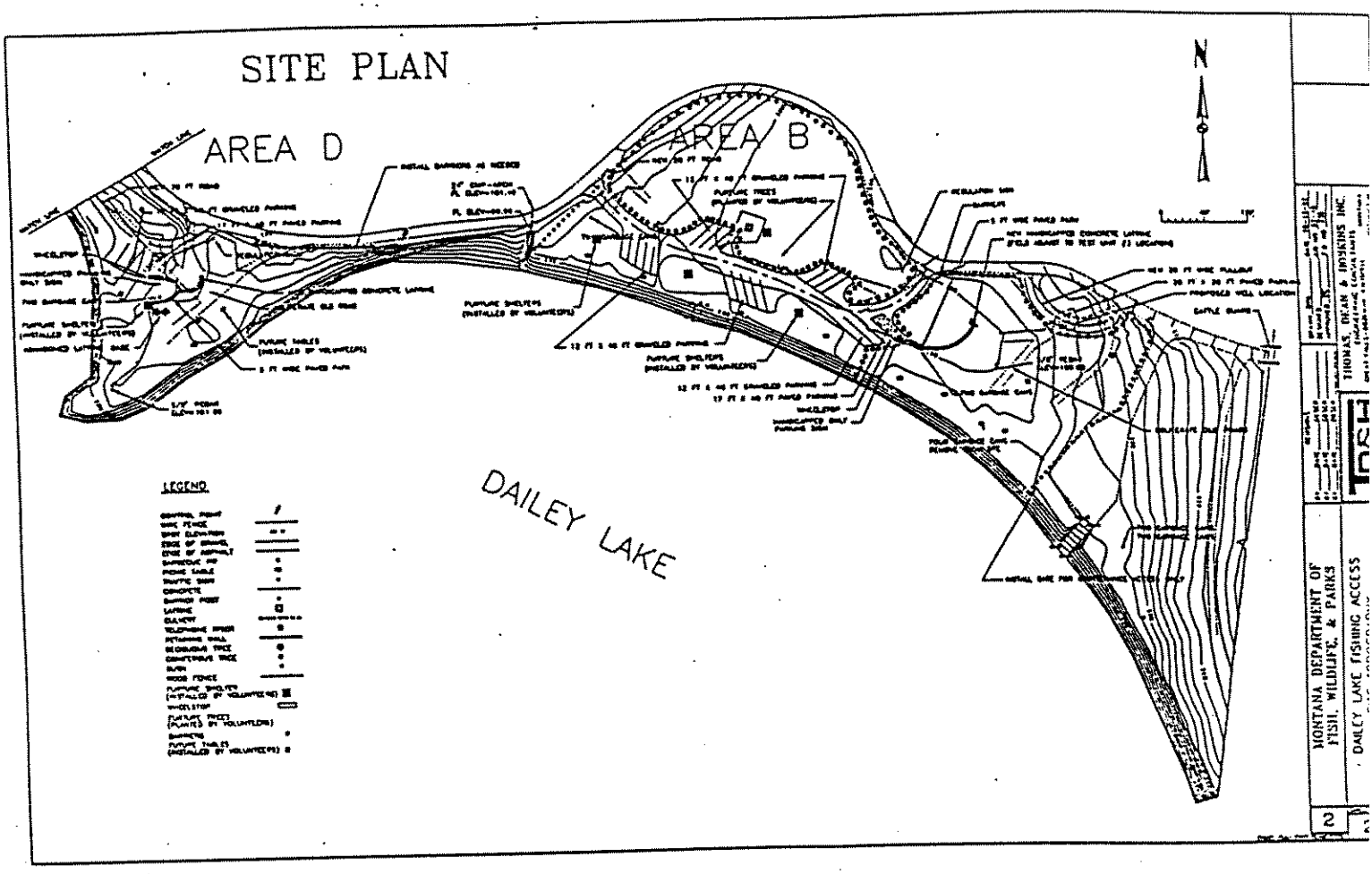

Figure 4. Detail of modifications completed in 1994 in construction areas B and D (site drawing from Thomas, Dean, and Hoskins, Inc.).

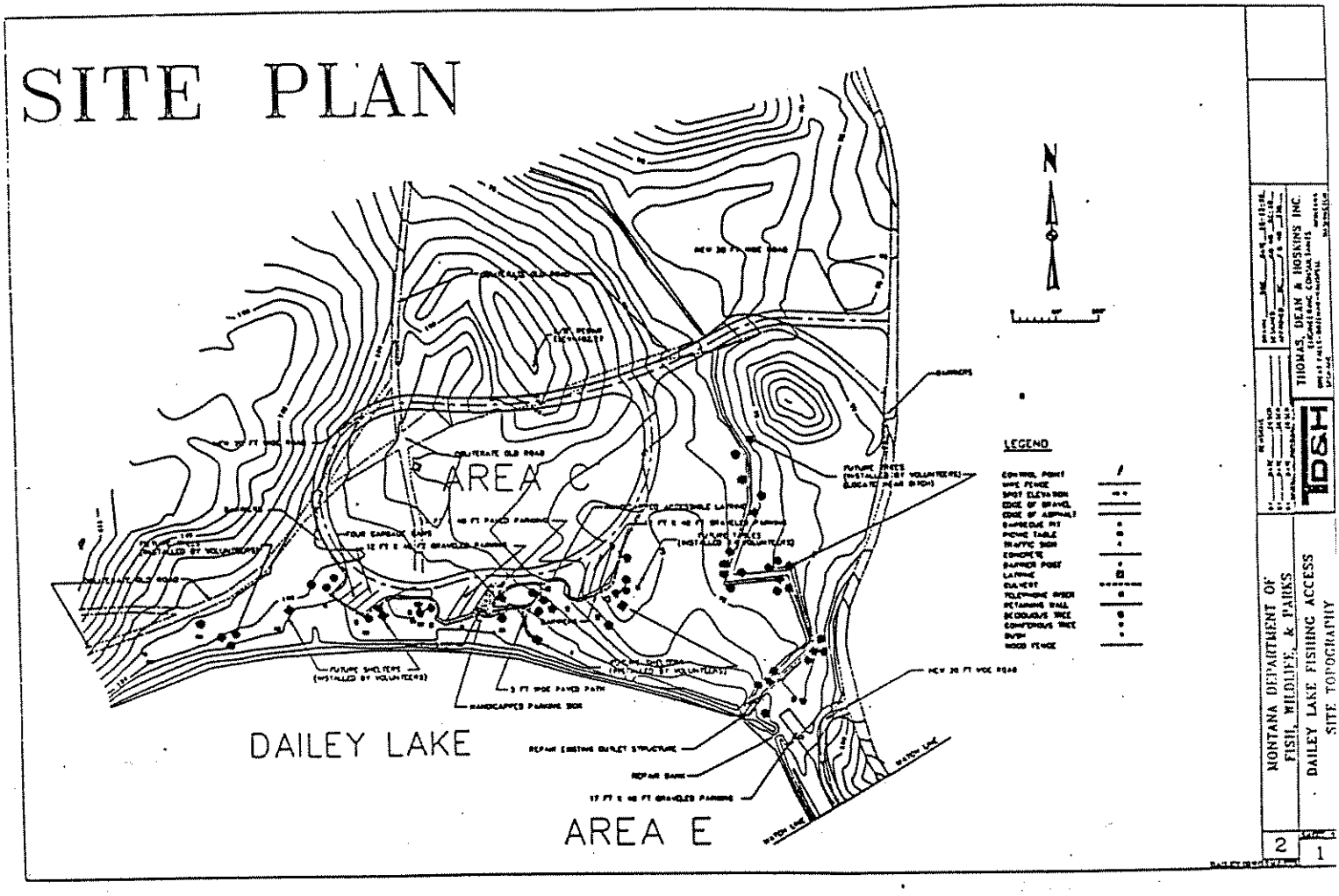

Figure 5. Detail of modifications completed in 1994 in construction areas C and E (site drawing from Thomas, Dean, and Hoskins, Inc.).

ENVIRONMENTAL REVIEW: PHYSICAL ENVIRONMENT

Minor impacts to land resources are expected at the construction site (Table 1). New road construction is primarily responsible for most potential adverse effects. Soil will be compacted in the immediate vicinity of these roads. Construction may produce short term increases in erosion that could increase sediment loading to Dailey lake. None of these effects is expected to have long term negative consequences. Minor effects during construction are offset by the protection that designated roadways will provide after new construction is completed.

Table 1. Land resource considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Soil instability or changes in geologic substructure?			X	
Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?			X	
Destruction, covering or modification of any unique geologic or physical features?		X		
Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?			X	
Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X		

Air quality should not be adversely affected except for the usual exhaust emissions and dust associated with heavy equipment operations (Table 2). None of these effects will last beyond the actual construction period.

Table 2. Air quality considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Emission of air pollutants or deterioration of ambient air quality?			X	
Creation of objectionable odors?			X	
Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X		
Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X		
Discharge which will conflict with federal or state air quality regulations?		X		

Water quality should be unaffected by construction, although gas and oil spills from equipment are possible, and sediment runoff may increase when the site is disturbed during construction. Road surfaces will change infiltration rates and runoff patterns. These potentially adverse effects can be minimized by using equipment in excellent mechanical condition, and by the proper design of road grade, slope, and drainage so that runoff does not increase sediment loading to Dailey lake (Table 3).

Table 3. Water quality considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X	
Changes in drainage patterns or the rate and amount of surface runoff?			X	
Alteration of the course or magnitude of flood water or other flows?		X		

(continued page 10)

Table 3. Water quality considerations.

(continued from page 9)

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Changes in the amount of surface water in any water body or creation of a new water body?		X		
Exposure of people or property to water related hazards such as flooding?		X		
Changes in the quality of groundwater?		X		
Changes in the quantity of groundwater?		X		
Increase in risk of contamination of surface or groundwater?			X	
Effects on any existing water right or reservation?		X		
Effects on other water users as a result of any alteration in surface or groundwater quality?		X		
Effects on other users as a result of any alteration in surface or groundwater quantity?		X		
Changes to a designated floodplain?		X		
Discharge that will affect federal or state water quality regulations?		X		

Some loss of existing vegetation is anticipated from new roads and concrete structures, including latrines, walkways, and parking slabs. These losses should not affect community structure or species diversity (Table 4). No threatened or endangered plant species is identified at this site. Reducing offroad traffic and restricting some recreational activities to daytime only should benefit most plant communities in the area.

A serious concern is the potential that noxious weeds will establish during construction. Efforts to revegetate disturbed areas will help minimize this threat. Limiting traffic to existing roadways will also help prevent the spread of noxious weeds.

Table 4. Local vegetation considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X	
Alteration of a plant community?			X	
Adverse effects on any unique, rare, threatened, or endangered species?		X		
Reduction in acreage or productivity of any agricultural land?		X		
Establishment or spread of noxious weeds?			X	
Changes to wetlands, or prime and unique farmland?		X		

Construction at Dailey lake should have no serious adverse effects for fish or other wildlife in the area (Table 5). Bald eagles fly through the area, but construction activities should not be more disruptive than normal recreational activity at the lake. The potential to disturb elk on their winter range in the FWP wildlife management area is offset by restricting activities to daytime on the eastern shore of the lake. Adequate facilities, in general, should help limit adverse effects associated with increasing numbers of people.

Table 5. Fish and wildlife considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Deterioration of critical fish or wildlife habitat?		X		
Changes in the diversity or abundance of game animals or bird species?			X	
Changes in the diversity or abundance of nongame species?			X	

(Continued page 12)

Table 5. Fish and wildlife considerations.
(Continued from page 11)

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Introduction of new species into an area?		X		
A barrier to the migration or movement?		X		
Adverse effects on any unique, rare, threatened, or endangered species?		X		
Increase in conditions that stress wildlife populations or limit abundance?			X	
Adverse effects for any T&E species or their habitat?			X	
Introduction or exportation of any species not presently or historically occurring at the site?		X		

ENVIRONMENTAL REVIEW: HUMAN ENVIRONMENT

Noise levels should not exceed those expected when heavy equipment is operating. Nuisance noise levels will end when construction is completed. No electrical risk or problem with electrical interference is expected (Table 6).

Table 6. Noise and electrical considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Increases in existing noise levels?			X	
Exposure of people to severe or nuisance noise levels?			X	
Creation of electrostatic or electromagnetic effects detrimental to human health or property?		X		
Interference with radio or television reception and operation?		X		

Current land uses in the area should not be impacted adversely (Table 7). Proposed improvements are being made at an already established recreational site. No conflict is anticipated [3].

Table 7. Current land use considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Alteration or interference with the productivity or profitability of any existing land use?		X		
Conflict with a designated natural area or area of unusual scientific or educational importance?		X		
Conflict with any existing land use that would constrain or prohibit the proposed action?		X		
Adverse effects on or relocation of residences?		X		

Human health risks and hazards are primarily those associated with construction activities using heavy equipment. No explosives or chemical poisons will be used. Standard safety practices, and care during construction, should prevent serious adverse consequences (Table 8).

Table 8. Human health risk considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Risk of an explosion or release of hazardous substances?			X	
Affect existing emergency response or emergency evacuation plan or create a need for a new plan?		X		
Creation of any potential human health hazard?			X	
Will any chemical toxicant be used?		X		

3. The ownership conflict between the Department of Natural Resources and Conservation (formerly Department of State Lands) and Fish, Wildlife and Parks (Attachment A) was not recognized until after construction in 1994 was completed.

No adverse community impacts are anticipated (Table 9).

Table 9. Community impact considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Alteration of the location, distribution, density, or growth rate of the human population of an area?		X		
Alteration of the social structure of a community?		X		
Alteration of the level or distribution of employment or community or personal income?		X		
Changes in industrial or commercial activity?		X		
Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X		

No adverse effect on local taxes, or need for additional public services, is anticipated (Table 10). Funding for this work is provided by FWP budgets and federal access site development programs.

Table 10. Public services, taxes, and utilities considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Required changes in governmental services?		X		
An effect on local or state taxes and revenues?		X		
A need for new facilities or substantial alterations of any major utilities?		X		
Increased used of any energy source?		X		

Due to the level of public involvement deciding which improvements to implement, no serious conflict concerning aesthetics or recreation is anticipated (Table 11).

Table 11. Aesthetics and recreational considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X	
Alteration of the aesthetic character of a community or neighborhood?		X		
Alteration of the quality or quantity of recreational/tourism opportunities and settings?		X		
Impacts to any designated or proposed wild or scenic rivers, trails or wilderness areas?		X		

A significant archeological site is identified at Dailey lake by the Sate Historical Preservation Office (SHPO, Attachment C). A potentially serious threat to valuable historic and cultural resources exists if construction occurs in this area. To prevent harm, no site development is planned for this location. People will be excluded from the area when access site improvements are completed. For these reasons, significant impacts to cultural resources are avoided. Adverse effects should be minor, or non-existent (Table 12).

Table 12. Cultural and historic resource considerations.

Will the proposed action result in:	Impact			
	Unknown	None	Minor	Potentially significant
Destruction or alteration of any site, or feature, of cultural or historic importance?			X	
Physical change that would affect unique cultural values?			X	
Effects on existing religious or sacred uses of a site or area?		X		
Will the project affect historic or cultural resources?			X	

In general, improvements proposed for Dailey lake will enhance recreational opportunities for most lake users, including handicapped individuals. Adverse effects from construction should be minor. Long term benefits include recreational access to more users, less offroad travel, and less disturbance to wildlife. No substantial controversy is anticipated, now, or in the future (Table 13).

Table 13. Summary evaluation of the Dailey lake development project.

Will the proposed action, considered as a whole:	Impact			
	Unknown	None	Minor	Potentially significant
Have impacts that are individually limited, but cumulatively considerable?		X		
Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X		
Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X		
Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X		
Generate substantial debate or controversy about the nature of the impacts that would be created?			X	

PART B: PROPOSED MODIFICATIONS FOR THE DAILEY LAKE DEVELOPMENT PROJECT

FWP proposes to modify construction presented in Part A, so that new improvements are better suited to a greater number of lake users.

Recent complaints about FWP improvements at Dailey lake prompted FWP to reevaluate the Dailey lake development project. In general, people who complained said that changes were too extensive, or that particular improvements were different than what they had expected. FWP implemented a process to identify new issues and concerns after a public meeting was organized by dissatisfied lake users on January 25, 1995. After this meeting, a committee of state agency employees and community representatives (Attachment D) was established to discuss issues and possible alternatives to the current access site development. This committee met three times (February 22, March 2, and March 30, 1995). Based on these committee meetings, and the January 25 public meeting, the following issues to address were identified:

ISSUES

A. Recreational opportunities, particularly camping, are too limited now compared to opportunities that existed before the recent site development.

New road barriers and day-use-only areas preclude traditional camping and other uses of the lakeshore areas. In the past, people have had essentially unrestricted access to most of the lakeshore. Typically, people would drive to a favored spot and set up camp, or engage in other activities directly along the lakeshore. Now, many of these areas can not be reached by full size car or recreational vehicle. Creosote posts were used as barriers in many areas and have raised an additional concern that their preservative will have adverse environmental effects.

Most of the restricted access to motor vehicles is intentional. Site planners were attempting to limit offroad damage to lakeshore areas, and especially to prevent the establishment and spread of noxious weeds that have become a serious problem at other recreational sites. This concern is especially urgent as the number of people using these sites have increased.

During routine inventories, an archeologist hired by FWP identified a significant (national registry eligible) site on the shores of Dailey lake. Because the SHPO agreed that the site was significant, and because Dingell-Johnson funds were requested to improve this access area, FWP consulted with the US Fish and Wildlife Service (USFWS) to establish appropriate protection for the site. An agreement between FWP, USFWS, and the National Advisory Council on Historic Preservation now requires barriers and use restrictions that eliminate traditional access to the lakeshore at this location.

B. New latrines are improperly positioned with respect to prevailing winds.

Dailey lake is known for predictably windy conditions. Strong winds will often exceed thirty miles per hour, and often blow from the south. These winds make opening doors on the new latrines very difficult.

C. Garbage service that was discontinued should be reestablished.

Before the summer of 1994, garbage service was provided at Dailey lake by FWP. Costs for this service and labor were provided by the Parks Division of Region 3. Because of limited budgets, increasing use, and inflationary costs associated with maintaining all access sites in the region, garbage removal was discontinued at Dailey lake in 1994. People are now asked to carry their own garbage out when they leave the lake, a common cost saving policy at many access sites. Some people feel that this situation will promote enough carelessness that the risk of harm to the site outweighs the costs of reinstating routine garbage service.

A decision whether or not to modify the existing site and operations in light of these issues must now be made. This decision is necessary in order to satisfy disgruntled lake users, and to meet obligations of FWP to its lake using public. In addition to its proposal to modify existing improvements, FWP is also considering the alternative actions of making no changes at the site, or removing all improvements that were recently installed. Each alternative is described below:

ALTERNATIVE ACTIONS

A. Leave site alone; no further modifications.

Leaving the site unchanged is the least expensive alternative since no new money is required. All funds from federal sources are accounted for in expenditures to date; no reimbursement of these funds would be necessary. Costs associated with this alternative are only those required to maintain the facilities in their existing condition. At present, about $2,100.00 is budgeted each year for this purpose. This budget does not include a garbage removal service.

The controversial improvements are new and the site has been used only once during a peak recreational season. No one knows how satisfactory the current development might be over time. Leaving the site alone would allow more time to evaluate user preferences and concerns, and would avoid spending money inappropriately and prematurely if most people using the lake are satisfied with the current situation. This alternative minimizes new impacts to the area, since no new construction is required. However, this alternative also fails to address the concerns and dissatisfactions of many people that prompted this reevaluation in the first place.

B. Remove all access site modifications.

Removing all access site modifications at Dailey lake is the most expensive alternative because of the loss of money used to establish these improvements initially, and the additional cost of removal. By March 7, 1995, new construction at Dailey lake cost $139,363.00. Removing everything established in 1994 would add 70% to 80% more to this total, as much as $111,490.00. Federal funds would need to be reimbursed if the project is abandoned. These funds amount to as much as $101,184.00. Total costs of removing the project therefore would be about twice the cost of establishing these improvements in the first place.

Total removal of the improvements satisfies most controversies here, simply because complaints are about these recent changes. However, none of the original objectives to protect this access site from damage would be met. Also, removing all improvements would have the greatest local site impact because extensive new construction would be required.

C. Modify the existing access site to accommodate each concern raised in issues that have been identified for the site.

Costs for this action exceed the no action alternative, but are much less than the expense of complete removal. Slight modifications to existing barriers, and minimal road improvement, would allow access between barriers for more traditional camping and day use activities. As presently proposed, these modifications would cost about $10,840.00 (Table 14).

Two sites in project area A (Figure 6) would have ditches filled and access areas graveled; two sites in area B (Figure 7) would have barriers removed, ditches filled, and access areas graveled; three sites in area C (Figure 8) would have ditches filled and access areas graveled, and three other sites would have barriers removed, ditches filled and access areas graveled. Five sites in area F (Figure 6) would have ditches filled and access areas graveled, and one site would have the ditch filled and access graveled after installing a 60 foot culvert.

Day use restrictions would be changed to allow overnight camping. Except where removed to provide new access, creosote posts would remain in place. Although the Environmental Protection Agency does not list creosote as hazardous near water on posts like those used at Dailey lake, each post could eventually be replaced with rock, if time and money allow.

The new latrines are properly positioned with doors facing south so that their ventilation systems work as designed to reduce odor. However, each latrine will be fitted with wind deflectors for about $1800.00 each to make opening doors in strong winds easier.

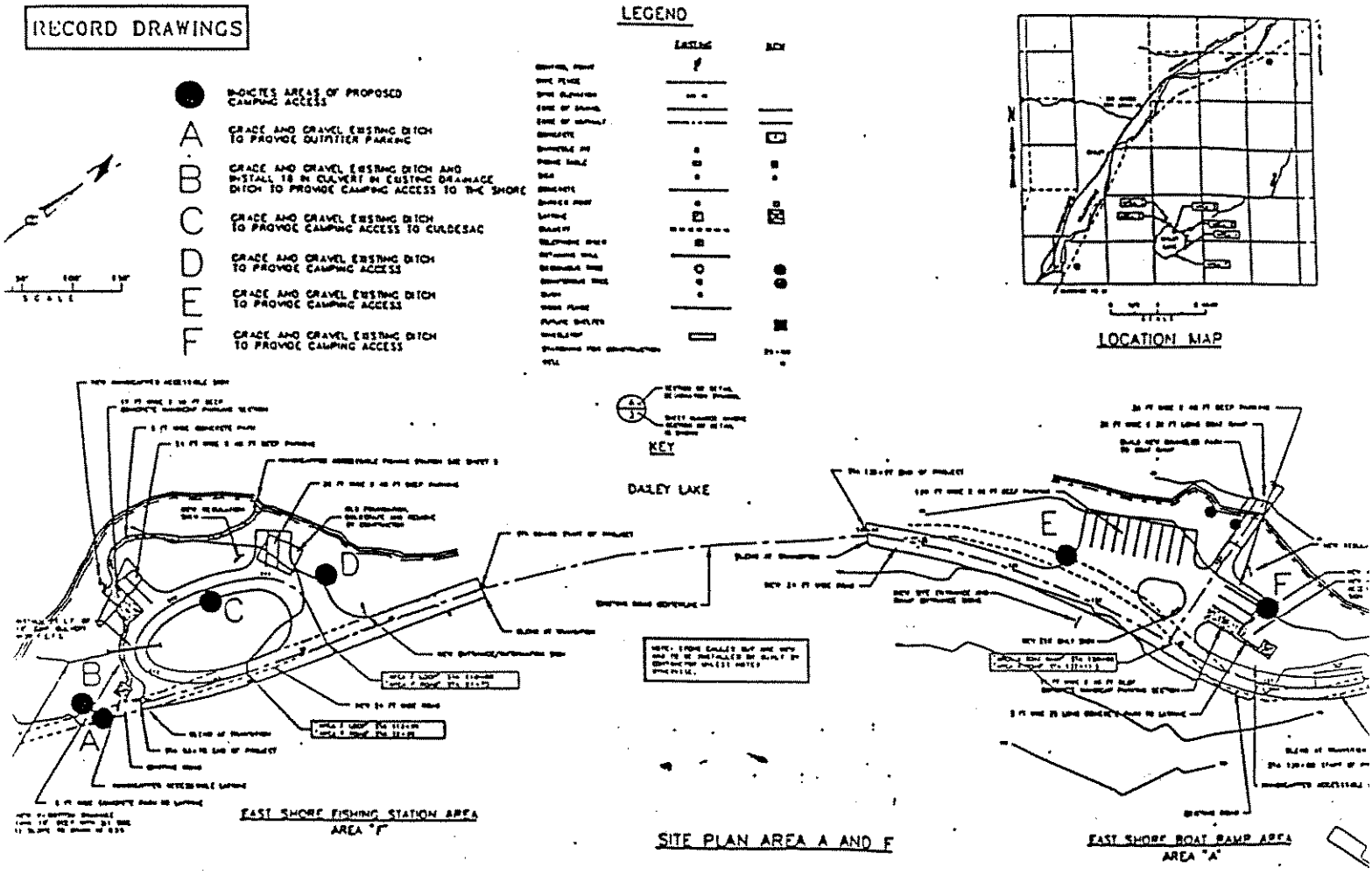

Figure 6. Proposed modifications in construction areas A and F (site drawing from Thomas, Dean, and Hoskins, Inc.).

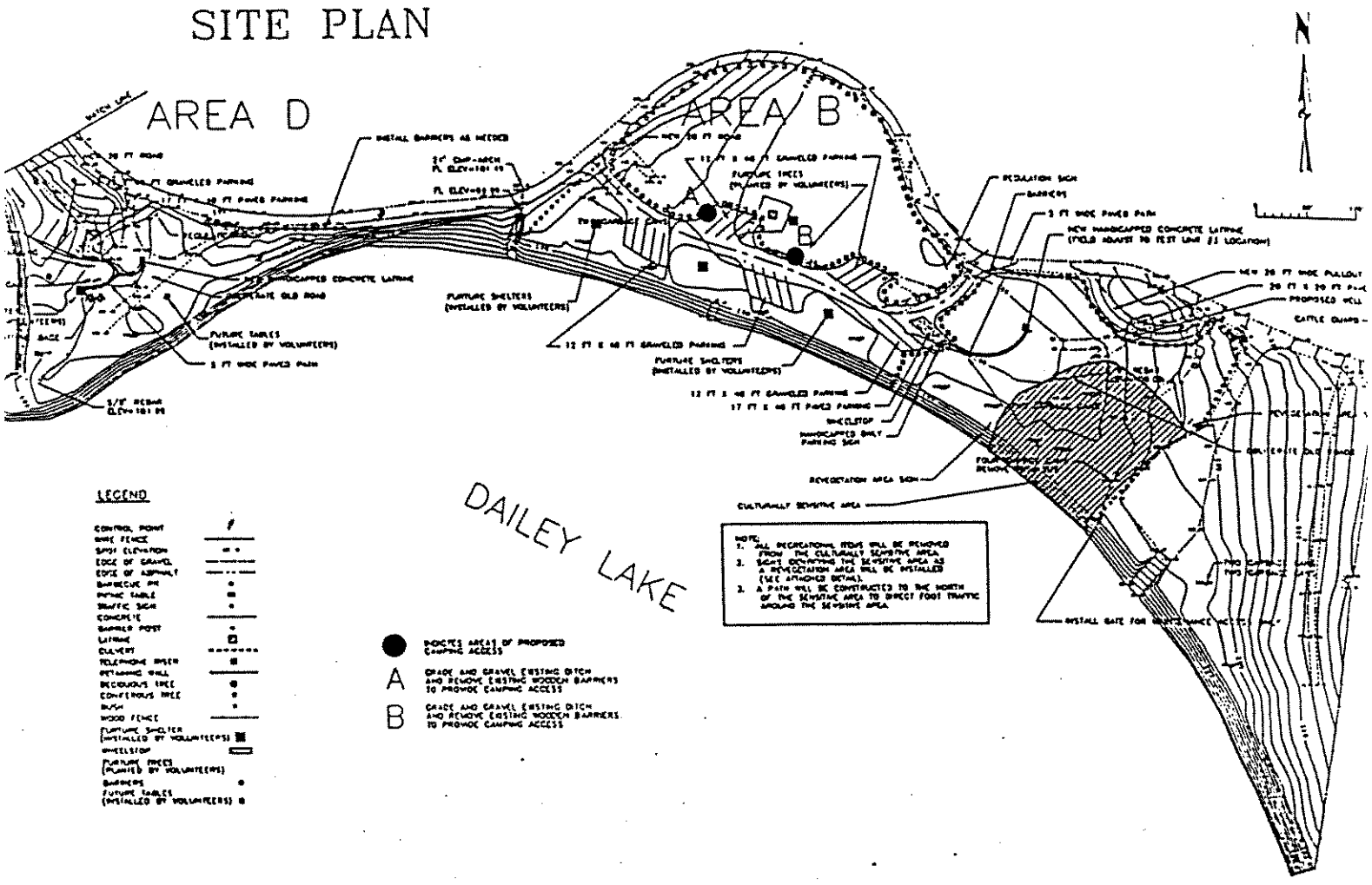

Figure 7. Proposed modifications in construction area B (site drawing from Thomas, Dean, and Hoskins, Inc.).

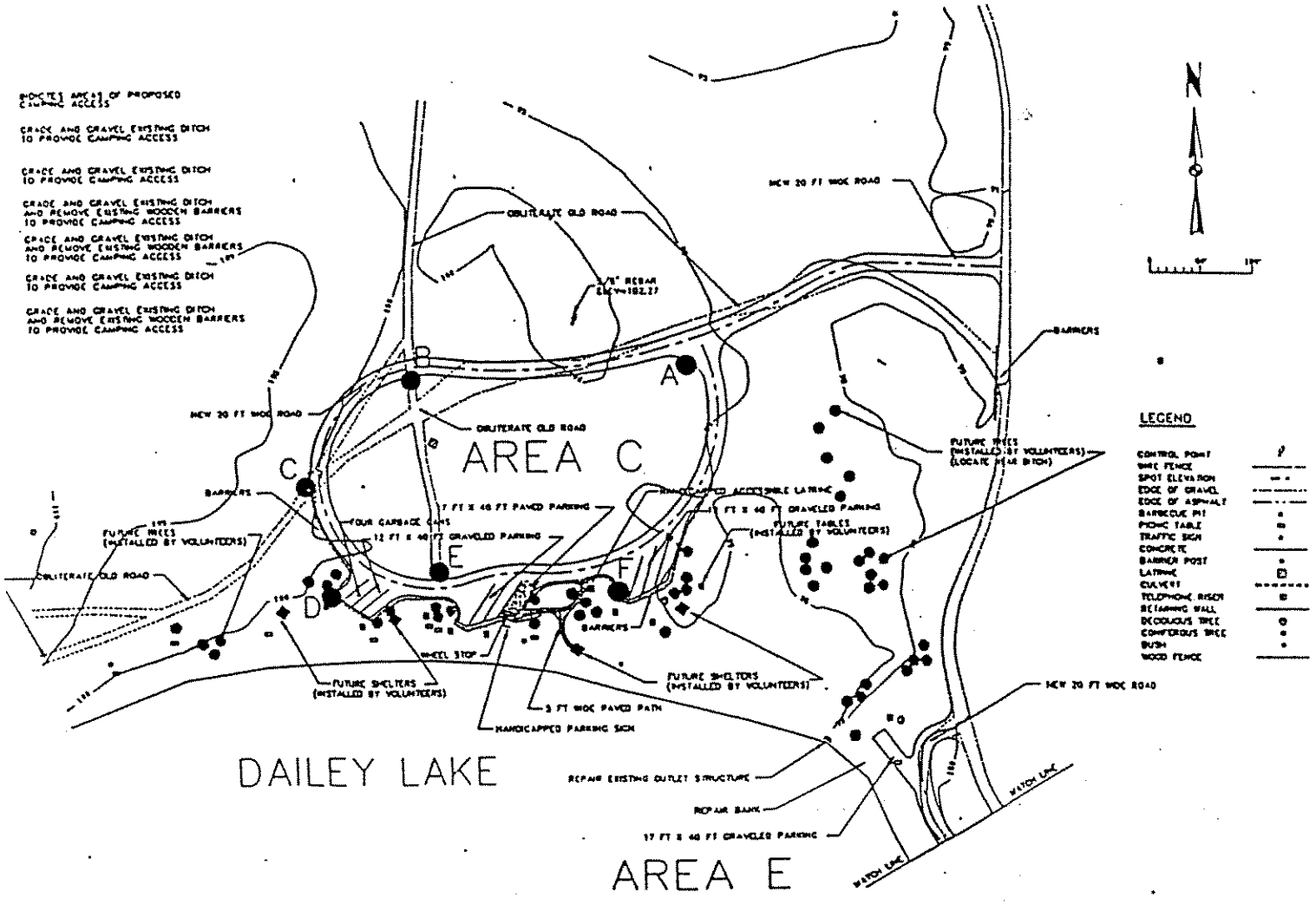

Figure 8. Proposed modifications in construction area C (site drawing from Thomas, Dean, and Hoskins, Inc.).

Table 14. Cost of modifying existing road barriers to allow more access to traditional camping areas at Dailey lake.

Area	Type of access	Number	Materials and labor	Total cost
A	Fill ditch Gravel Access	2	Fill dirt-3 cy @ $15/cy = $45.00 Gravel-10 cy @ $20/cy = $200.00 Backhoe-2 hr @ $80/hr = $160.00 Cost each = $405.00	$810.00
B	Remove barriers Fill ditch Gravel Access	2	Remove barriers- 1 hr @ $80.00/hr = $80.00 Fill ditch-as above Gravel access-as above Cost each = $485.00	$970.00
C	Remove barriers Fill ditch Gravel Access	3	Remove barriers-as above Fill ditch-as above Gravel access-as above Cost each = $485.00	$1,455.00
C	Fill ditch Gravel Access	3	Fill ditch-as above Gravel access-as above Cost each = $405.00	$1,215.00
F	Fill ditch Gravel Access	5	Fill ditch-as above Gravel access-as above Cost each = $405.00	$2,025.00
F	Fill ditch Gravel Access Add 60 ft culvert	1	Fill-12cy @ $15/cy = $540.00 Gravel (100)(20)(6/12)/27= 37 cy @ $20/cy = $740.00 culvert(18" diameter)- 60'@$35/ft = $2,100.00	$3,380.00

Total all construction: $9,855.00

Add 10% contingency: $10,840.00

Garbage service can be reestablished for about $500.00 each year. Because it is unlikely that FWP will have the staff to provide a garbage collection service at this site, volunteer help, perhaps from local sporting groups, will be necessary to reestablish this service.

At this point the archeological site will be addressed separately from other proposed site modifications. FWP acknowledges that the site is significant, and will protect the site as required by law. Challenges to the site's significance can go forward, of course, and mitigation plans can be developed, without having to delay progress on other problems at the site.

ENVIRONMENTAL CONSEQUENCES

Alternative A provides the greatest protection to the access site because it provides the greatest restrictions on recreational activity, and because it eliminates the need for new construction at the lake. However, this alternative does not address any issue raised in public comment and committee meetings to date (Table 15). For this reason, this alternative may be inconsistent with FWP goals to provide adequate facilities and to satisfy the needs of most lake users.

Alternative B satisfies each issue raised in discussions to date, but it also eliminates traffic control protection that is already in place. This alternative requires extensive new construction and has the greatest potential to harm the site because of disturbances associated with this type of activity.

Alternative C leaves some protection in place while satisfying each public concern identified to date. Barriers that will be opened to allow greater access to traditional camping areas, however, may have to be closed periodically, or perhaps permanently in some cases, if noxious weeds become a problem at the site.

Table 15. Consequences of alternative actions.

Concern:	Alternative		
	A Leave alone	B Remove all	C Modify
Does the alternative satisfy each issue raised in comment and committee discussion ?	No	Yes	Yes
Does the alternative involve new construction ?	No	Extensive	Moderate
Is the alternative consistent with goals of preserving the site ?	Yes	No	Yes
Is the alternative consistent with goals of providing adequate facilities for most lake users ?	Unknown	No	Yes

ATTACHMENT A: LAND ISSUES AT DAILEY LAKE

Within the last year, the Department of Natural Resources and Conservation (DNRC), formerly Department of State Lands (DSL), and the Department of Fish, Wildlife and Parks (FWP) have been attempting to resolve a contentious issue at Dailey Lake. That issue is the result of changes in the interpretation of appropriate responsibility for resource and land management of Government Lots 1, 2, 3 and 4 of Section 36, Township 6 South, Range 7 East, Park County. The area in question is owned by the State of Montana and encompasses 122.7 acres adjacent to other lands owned by FWP (Figure 6).

DSL leased this property to FWP from 1931 to 1970, first for waterfowl and later to provide public fishing and boating activities. In 1944, Section 36 was patented as "Common School Grant Land" by the U.S. Government. In 1969, FWP requested from Ted Schwinden, Commissioner of State Lands and Investment, that the area be "set aside for public recreation purposes" as allowed at that time by state law. The State Board of Land Commissioners granted this request in 1970 and discontinued the requirement for any monetary compensation from FWP to manage the area. This action, which at that time secured FWP's continued management, also allowed FWP to utilize federal funds to make improvements on the site. FWP and several local volunteer organizations have continued jointly to improve and maintain the "set aside area" since that time.

In 1976 the Attorney General issued a formal opinion regarding school trust land which was interpreted by DSL to preclude continued recreational use without full market value compensation to the school trust. This opinion was further interpreted by DSL to negate the effects on any lands formerly "set aside for recreational purposes." Although FWP has continued its involvement based on the original Land Board set aside and commitments to provide recreational use at Dailey Lake, the agency's management of that portion of Dailey Lake in Section 36 is now considered unleased or unlicensed use. All site improvements located on this portion of the lake property are no longer considered by DNRC to be the property of FWP.

This has become a difficult issue for both agencies and we are struggling to resolve the problem in a manner that will be equitable for the state and public. Several alternatives are currently under consideration. A brief discussion of the options with their pros and cons follows:

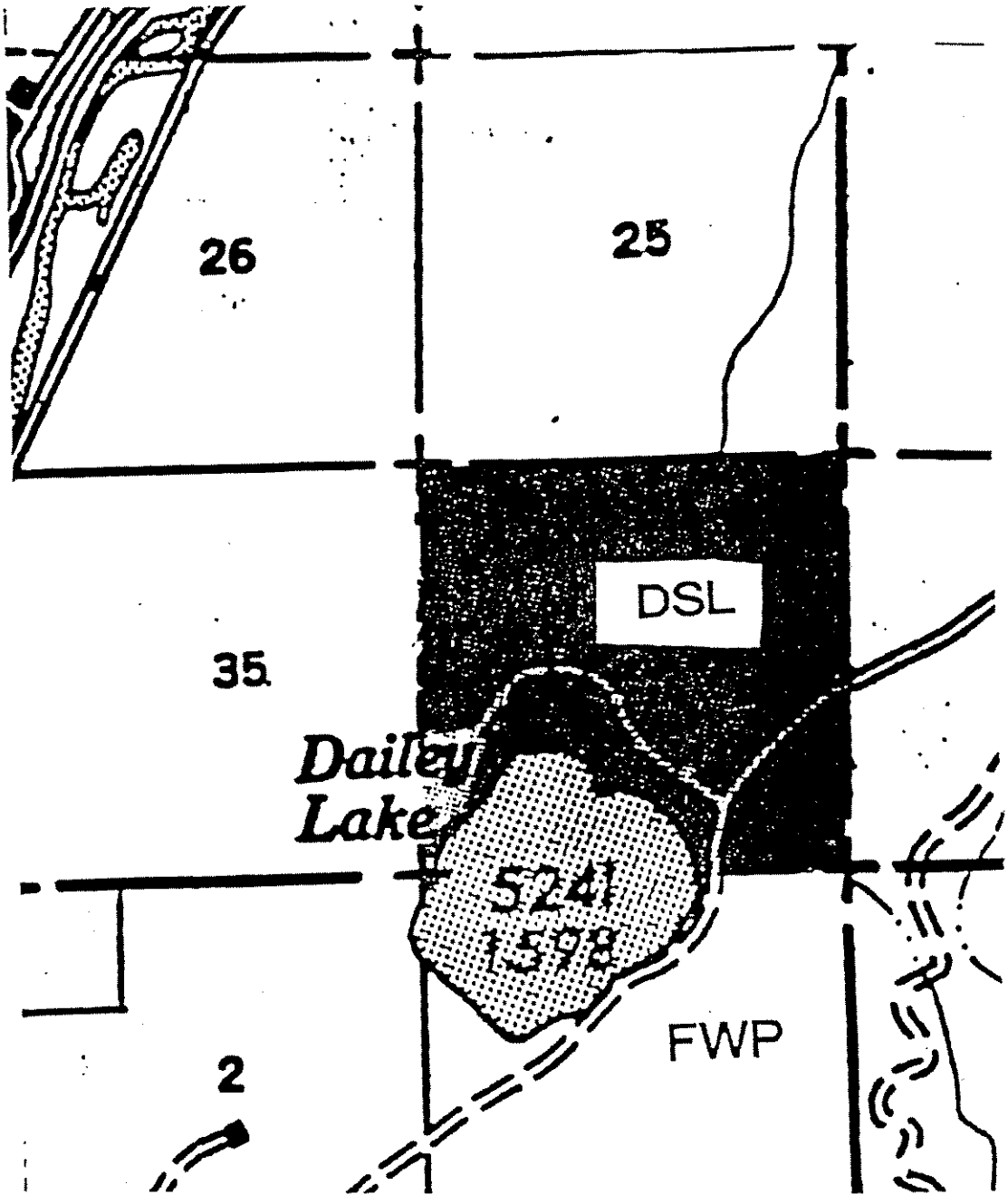

Figure 9. Land ownership at Dailey lake.

OPTIONS

A. Negotiate a lease between DNRC and FWP.

In this alternative, the property would be publicly advertised for lease to the highest bidder who will continue to manage the site for recreational use. FWP would need to exceed all written monetary offers and would not be afforded preference rights as former interest holder. The cost of the lease would be subject to change every five years by DNRC and the terms of the lease may be very restrictive. The maximum lease term is 20 years. If FWP should not be the successful bidder or if the lease cost should become too expensive for FWP, past development costs and public management of the site could be lost. All site improvements would be available to the new lessee or subsequent lessees if the lease is not awarded to FWP. On the surface this route may initially be the quickest and cheapest to secure, but the long-term continued open public use of the site is at risk.

B. Purchase the property from DNRC.

FWP's acquisition of title to the land would settle the problem in a conclusive manner. DNRC has informed FWP that the Land Board may be hesitant to sell this property for a number of reasons. However, if DNRC should approve the sale alternative, FWP would be required to outbid other potential purchasers in a competitive, oral bid process. It would need to bear sale costs such as surveying and environmental assessments in addition to the land cost. FWP would not be afforded any preference rights nor would it be considered the owner of improvements or structures presently on site. As a state agency, FWP acquisition statutes would make it extremely difficult to participate in an oral bidding process. This alternative could be very costly and there is risk involved if FWP should not be the successful bidder particularly if the site were sold to a private developer.

C. Acquire an easement from DNRC.

DNRC does not feel the Land Board has the authority to issue such an easement to FWP.

D. Exchange land with DNRC.

FWP would be required to submit an exchange proposal to DNRC personnel who would review and evaluate the proposal against recently established exchange criteria. The minimum value of the land FWP would need to offer in exchange would have to be at least equal in value and have the same potential for future appreciation in value. Exchanges like this take considerable time (in excess of 3 years) and staff to complete. FWP would need to find land that it considered exchange potential and have that land approved for disposal or acquire other private land that DNRC would accept in exchange. This option is also expensive but there is little risk of loss of the lake site since there is no competitive bid process required.

E. Abandon FWP's interest in the site.

With this alternative, FWP would surrender its interest in the management and improvements currently constructed at the site. DNRC could conceivably allow uses of the site which FWP may not consider in the best public interest such as fee camping, fee boat launches, or multiple uses such as stock grazing and recreation in the same area. There would be a loss of value to FWP and the other volunteer organizations who have invested time and money on the site. FWP would be required to reimburse the federal aid agencies who have helped support past capital improvements. FWP would also need to secure an easement from DNRC to access its remaining property located on the south side of the lake.

ATTACHMENT B: SUMMARY OF RESPONSE TO THE 1990-1991 [4] DAILEY LAKE RECREATIONAL USER SURVEY

Table 13. Number of responses (percentage) for Dailey Lake angler user survey conducted during 1990.

Question / Response options	No rank	Rank 1	Rank 2	Rank 3
Fish Dailey				
Yes	200 (81)			
No	40 (16)			
No answer	7 (3)			
Total	247			
Days fished/year				
1 to 5	82 (41)			
6 to 10	48 (24)			
11 to 20	49 (24)			
20 +	23 (11)			
Total	202			
Species preference (206 responded)				
Rainbow trout	23 (35)	82 (46)	35 (26)	28 (31)
Yellow perch	23 (35)	45 (25)	52 (38)	26 (29)
Walleye	18 (28)	43 (24)	46 (34)	27 (30)
Any fish	0 (0)	7 (4)	3 (2)	4 (4)
Other species	1 (0)	1 (1)	1 (1)	4 (4)
Total	65	178	137	89

4. Source:

Shepard, B.B. 1993. Fisheries of Dailey lake: Annual report for 1991 and 1992. Project F-46-R-4, no. II-c. Montana Department of Fish, Wildlife and Parks, Bozeman.

Table 13. (continued).

Question Response options	No rank	Rank 1	Rank 2	Rank 3
Number or size (204 responded)				
Both number and size	128 (62)			
Size of fish	37 (18)			
No preference	22 (11)			
Number of fish	18 (9)			
Number responding	205			
Seasons fished (204 responded)				
Summer	164 (80)			
Spring	107 (52)			
Winter	79 (39)			
Fall	72 (35)			
Number responding	204			
Species preference (203 responded)				
Rainbow trout	1 (5)	72 (36)	27 (14)	
Walleye	6 (33)	69 (35)	32 (16)	
Yellow perch	4 (22)	26 (13)	40 (20)	
Brown trout	1 (5)	7 (4)	22 (11)	
Kokanee salmon	0	8 (4)	17 (8)	
Crappie	1 (5)	3 (1)	18 (9)	
Cutthroat trout	1 (5)	5 (3)	13 (7)	

Table 13. (continued).

Question Response options	No rank	Rank 1	Rank 2	Rank 3
Smallmouth bass	1 (5)	3 (1)	12 (6)	
Largemouth bass	0	5 (3)	7 (4)	
Bluegill	1 (5)	0	5 (2)	
Tiger muskie	0	1	3 (1)	
Other	2 (11)	1	1	
Total	18	200	197	
National organization member	(237 responded)			
Trout Unlimited	50 (25)			
Walleye Unlimited	36 (18)			
Federation Fly Fishers	22 (11)			
Other	7 (3)			
None	149 (74)			
Number anglers	202			
Local organization member	(238 responded)			
Joe Brooks TU	41 (20)			
Livingston WU	32 (16)			
Park Co. Rod and Gun	11 (5)			
Montana Sportsmen	3 (1)			
Other	14 (7)			
Number anglers	202			

Table 14. Number of responses (percentage) for Dailey Lake recreational user survey conducted during 1990.

Question Response options	No rank	Rank 1	Rank 2	Rank 3
Type of Activity (231 responded)				
Fish	21 (24)	160 (77)	13 (10)	3 (3)
Wind surf	4 (5)	21 (10)	1 (1)	1 (1)
Camp	16 (18)	9 (4)	50 (37)	21 (22)
Motorboat	8 (9)	1	24 (18)	7 (7)
Water ski	3 (4)	3 (1)	4 (3)	15 (16)
Swim	7 (8)	1	5 (4)	17 (18)
Row boat	5 (6)	0	12 (9)	5 (5)
Bicycle	2 (2)	5 (2)	4 (3)	2 (2)
Hike	4 (5)	3 (1)	7 (5)	8 (8)
Sunbathe	5 (6)	0	6 (4)	8 (8)
Canoe	4 (5)	0	4 (3)	6 (6)
Other	9 (10)	5 (2)	4 (3)	2 (2)
Total	88	208	134	95

Conflict experienced (232 responded)	
No	136 (59)
Yes	96 (41)
Total	232

Table 14. (continued).

Question Response options	No rank	Rank 1	2	3
User which caused conflict	(103 responded)			
Water skier	51 (50)	(26 also motorboat)		
Motorboat driver	45 (44)			
Wind surfer	40 (39)			
Angler	17 (17)	(6 also motorboat)		
Camper	7 (7)			
Swimmer	1 (1)			
Canoeist	1 (1)			
Row boat	1 (1)			
Hiker	1 (1)			
Bicyclist	0			
Sunbather	0			
Suggested alternatives to reduce conflict	(131 responded)			
No restriction	49 (37)			
Ban certain user groups	37 (28)			
Restrict user group to portions of lake	22 (17)			
Restrict user group to specific time	12 (9)			
More than one restriction	11 (8)			
Total	131			

Table 15. Number of responses (percentage) for Dailey Lake survey conducted on needed facilities during 1990.

Question / Response options	No rank	Rank 1	Rank 2	Rank 3
Are facilities adequate	(230 responded)			
Adequate	137 (60)			
Less than needed	83 (36)			
More than needed	10 (4)			
Needed additional facilities	(146 responded)			
Trees	21 (20)	27 (28)	18 (24)	10 (16)
Toilets	13 (12)	15 (15)	12 (16)	4 (7)
Boat ramp	9 (9)	19 (19)	7 (9)	7 (11)
Drinking water	19 (18)	13 (13)	7 (9)	12 (20)
Picnic tables	7 (7)	7 (7)	7 (9)	3 (5)
Boat dock	5 (5)	2 (2)	7 (9)	2 (3)
Wind meter	4 (4)	2 (2)	6 (8)	5 (8)
Picnic shelters	7 (7)	2 (2)	4 (5)	5 (8)
Better beaches	2 (2)	3 (2)	1 (1)	2 (3)
Barbecues	4 (4)	0	4 (5)	5 (8)
Trailer hook ups	2 (2)	3 (3)	0	1 (2)
Showers	2 (2)	1 (1)	0	1 (2)
Swimming buoys	2 (2)	0	0	2 (3)
Other	7 (7)	4 (4)	3 (4)	2 (3)
Total	104	98	76	61

Table 15. (continued).

Question Response options	No rank	Rank 1	Rank 2	Rank 3
Willing to do following	(125 responded)			
$2 per visit	4 (22)	28 (24)	8 (21)	0
$10 per year	2 (11)	23 (20)	8 (21)	1 (10)
Donate time	7 (39)	23 (20)	9 (24)	4 (40)
Nothing	0	15 (13)	2 (5)	2 (20)
$20 per year	2 (11)	12 (11)	4 (11)	0
$5 per visit	1 (5)	9 (8)	3 (8)	1 (10)
Pay for and install the facility	1 (5)	0	3 (8)	1 (10)
Other	1 (5)	4 (4)	1 (3)	1 (10)
Total	18	114	38	10

ATTACHMENT C: THE STATE HISTORICAL PRESERVATION OFFICE CONCURRENCE REGARDING ARCHEOLOGICAL SITE ELIGIBILITY

State Historic Preservation Office
Montana Historical Society
Mailing Address: 225 North Roberts • Helena, MT 59620-1201
Office Address: 102 Broadway • Helena, MT • (406) 444-7715

August 14, 1992

Paul Valle
Montana Department of Fish, Wildlife and Parks
1420 East Sixth Avenue
Helena, MT 59620

RE: Dailey Lake Fishing Access Site, 24PA975, Evaluation Report.

Dear Mr. Valle,

Based on a review of "Evaluation Phase Testing of 24PA975 at the Dailey Lake Fishing Access Site" we concur with the archaeologist's techniques methods and report (except for his ability to spell John Colter's name and his sexual fantasies involving stone tools). There also seems to be adequate information to agree that 24PA975 could be considered as eligible to the National Register of Historic Places.

In regard to the proposed mitigation, there are a couple items of concern which may require a more elaborate discussion. I agree that moving the proposed latrine to the location of Test Unit 3 would have minimal impact in that area. I'm not sure why having a barrier for "walk in only" could be seen as an appropriate mitigation measure for the rest of the site area when the cultural material occurs from the surface on down. Walk ins can do an amazing amount of churning if they have the interest and the opportunity. Thirdly, the idea of site burial as a mitigative measure, as in the use of fill dirt to create the proposed road bed, has not been attempted or used yet in Montana. If that were to be the approved solution the general thought here is that it should be preceeded by some kind of controls, such as compaction tests and monitoring while in progress. Mark Baumler has suggested that the Corps of Engineers may know something about these matters but we don't.

Thank you for opportunity to comment on this proposed action by the Department of Fish, Wildlife and Parks.

Sincerely,

Kerry Lippincott, PhD
Temporary Archaeologist

File: FWP/Bailey Lake FAP

ATTACHMENT D: DAILEY LAKE EA COMMITTEE MEMBERS

Montana Department of Fish, Wildlife, and Parks:

Tom Greason ..... Parks Maintenance, Bozeman

Dori Passman ..... Archaeologist, Helena

Royal Rice ..... Design and Construction, Helena

Joel Tohtz ..... Fisheries Biologist, Livingston

Richard Vincent * ..... Regional Fisheries Manager, Bozeman

Department of Natural Resources and Conservation:

Jim Kalitowski ..... Unit Manager, Bozeman

Community representatives:

Ray Lee ..... Trout Unlimited, Livingston

Gene Lembcke ..... Walleye Unlimited, Emigrant

Ben Mar ..... Emigrant

Bud Pynn ..... Park County Rod and Gun, Livingston

Ted Williams ..... Walleye Unlimited, Livingston

David Wisty..... Livingston

* chairman

DOCUMENT HISTORY

1) First draft May 12, 1995
2) Revised draft June 27, 1995
3) Revised draft September 1, 1995
4) Last draft October 25, 1995

Prepared by Joel Tohtz, FWP
Attachment A prepared by Debra Dils, FWP: September 1, 1995

APPENDIX C: Decision notice, Dailey lake development project: January 12, 1996.

DECISION NOTICE
Dailey Lake DEVELOPMENT PROJECT
Prepared by Region 3, Montana Fish, Wildlife & Parks
January 12, 1996

PROPOSAL

The Montana Department of Fish, Wildlife and Parks (FWP) proposes to modify existing recreational facilities at Dailey Lake so that the access site more closely conforms with the expressed needs and desires of a majority of lake users. Road barriers will be removed in selected locations to increase vehicle access to lakeshore camping areas. Day use restrictions will be changed to allow overnight camping. New latrines will have wind deflectors installed to make opening doors in strong winds easier.

The proposed modifications were developed during meetings of FWP employees, a Department of Natural Resources and Conservation (DNRC) manager, and several community representatives. These meetings were intended to resolve conflict and address the concerns of several lake users who were dissatisfied with recent construction at Dailey Lake. Committee recommendations were included in an environmental assessment of this proposal and distributed for public review through the Montana Environmental Policy Act (MEPA) process.

MONTANA ENVIRONMENTAL POLICY ACT (MEPA) PROCESS

MEPA requires FWP to assess the potential consequences of this proposed action for the human and natural environment. The proposal and two alternative actions were detailed in an Environmental Assessment (EA) completed by FWP on October 25, 1995. FWP's proposal is Alternative C in this assessment document. A 30 day public comment period for this EA ended December 8, 1995. A public open house was held November 14, 1995 to allow interested individuals an opportunity to discuss the project directly with state and community representatives who were Dailey Lake EA committee members.

ISSUES RAISED IN THE ENVIRONMENTAL ASSESSMENT

The Dailey Lake EA describes each issue identified in public meetings and committee meetings in detail. The primary concern of most participants was that recreational opportunities, especially camping, were too limited now compared to opportunities that existed before recent new construction at Dailey Lake. A second issue was that new latrines were difficult to open during high winds. A third concern was that garbage service should be reestablished at the lake.

In addition to these particular issues, a land ownership conflict was identified at the north end of Dailey Lake. Currently this land is owned by DNRC. FWP's authority to manage recreational activities at this location is in question. This land ownership problem with DNRC must be resolved before any decision concerning Dailey Lake access site modifications can be implemented.

GENERAL SUMMARY OF PUBLIC COMMENTS

We received 30 comments on this proposal during the EA comment period: 25 in writing and 5 verbally which were recorded by FWP personnel. Of these 30 comments, 19 supported the proposal to modify the existing facility to allow more camping, 4 supported leaving the site unchanged, 2 suggested removing all recent construction, and 5 did not directly or indirectly address any action described in the Dailey Lake EA.

Sixteen comments were from individuals or groups in Livingston, 6 were from Big Timber, 4 were from Bozeman, 3 were from Billings, and 1 was from Helena.

SPECIFIC SUMMARY OF COMMENTS

Nine of 30 responses from individuals or groups directly endorsed Alternative C in the Dailey Lake EA, the plan to modify the existing access site which constitutes FWP's proposal here. These nine included Walleyes Unlimited of Montana, Inc., State Representative Bob Raney, and State Senator Lorents Grosfield. Indirect support for Alternative C came from 10 other participants that identified actions like removing posts and eliminating day use only areas as appropriate actions. In general, increasing the number of campsites was a priority. The need for noxious weed control was mentioned by three individuals supporting Alternative C.

Six people preferred leaving the site alone or removing all new construction. Four of these six people also said that they could support Alternative C. One person mentioned the need to prevent noxious weeds from spreading.

Five people expressed dissatisfaction with the lake's sport fishery and current management direction. None of these people mentioned the actions proposed in the Dailey Lake EA. Fisheries concerns were addressed in separate letters to these individuals.

A letter from the Montana Historical Society stated that none of the proposed actions would adversely affect a significant archaeological site located at Dailey Lake.

SPECIFIC QUESTIONS AND FWP RESPONSE

1) An individual asked if State Lands permits are required to use the site.

Department response: State Lands recreational permits are not required at this time to use the Dailey Lake fishing access site. However, this could change, depending on decisions by DNRC to grant a holding lease to FWP for the property.

2) An individual wanted to know who owned the lands around the southwest shore of Dailey Lake.

Department response: FWP owns this land.

3) An individual asked whether or not areas that are proposed to be opened according to Alternative C would have designated campsites.

Department response: Campsites would not be designated within these areas.

DECISION

Based on the EA and public comments, a decision whether or not to modify the Dailey Lake fishing access site must now be made that addresses the issues outlined above. This decision is necessary in order to satisfy concerned lake users and to meet obligations of FWP to its' recreating public.

After review of this proposal and the corresponding public support, it is my decision to modify existing amenities at Dailey Lake as detailed in Alternative C of the Dailey Lake EA. This alternative provides the best compromise between the need to protect the site from damage associated with increasing recreational use, and FWP's obligation to provide recreational opportunities for a growing and diverse public. Alternative C satisfies each issue raised in both public and committee meetings, except the issue of reestablishing a garbage service at the lake. Since FWP will not have the staff to provide this service, volunteer help, perhaps from local sporting groups, will be necessary to reestablish this service.

Implementation of this action will be delayed until land ownership issues with DNRC are resolved. It is recommended that FWP negotiate to obtain a holding lease with DNRC to secure FWP's interest in the site and pursue an acceptable

land exchange that would give FWP fee title ownership of the site.

I find there to be no significant impacts associated with this action and conclude an Environmental Impact Statement is not needed. The completed Environmental Assessment is an appropriate level of analysis.

APPEALS

This decision can be appealed by any person who has either commented in writing to FWP on the proposed project, or who has registered or commented orally at a public meeting held by FWP concerning the proposed project, or who can provide new evidence that would otherwise change the proposed plan. An appeal must be submitted in writing to the Director of FWP in Helena. An appeal must be postmarked or received within 30 days of the date of this decision notice.

Stephen L. Lewis

Stephen L. Lewis
Regional Supervisor
Bozeman, MT
January 10, 1996