Cutler Hydro Project No. 2420 Resource Management Plan
Five-Year Implementation and Monitoring Report
1995-2002

Volume 1: Report

Prepared for:

The Federal Energy Regulatory Commission
825 North Capitol Street, NE
Washington, D.C. 20426

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December 16, 2002

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LIST OF ABBREVIATIONS

COE	United States Army Corps of Engineers
CRP	Conservation Reserve Program
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
GPS	Global Positioning Satellite
HCS	(PacifiCorp's) Hydro Compliance Staff
NGO	Non-Governmental Organization
NRCS	Natural Resources Conservation Service
NTO	(PacifiCorp's) North Temple Office, Salt Lake City, Utah
O&M	Operation and Maintenance
RMP	Resource Management Plan
RR	Railroad
UDWR	Utah Division of Wildlife Resources

EXECUTIVE SUMMARY

This Five-Year Implementation and Monitoring Report for Cutler Hydro Project No. 2420 was prepared by PacifiCorp to meet FERC licensing requirements for Cutler Reservoir in Cache County, Utah. The Resource Management Plan (RMP) project boundaries cover approximately 9,550 acres and surround Cutler Reservoir, as well as the areas of confluence with its major tributaries: the Bear, Little Bear, and Logan rivers; Spring Creek; and Clay Slough. This report covers the period between 1995 and 2002 and included a one-year extension for completion of difficult property negotiations that affected implementation of monitoring efforts.

The report is organized into three main report sections: Section 1) RMP Project Implementation, which summarizes RMP requirements and work carried out to implement those requirements; Section 2) RMP Monitoring Plan, which details procedures being used to monitor implementation success; and Section 3) Initial Monitoring Results, which outlines the results of monitoring through the period covered by this report.

ES.1 RMP Project Implementation

Five goals were documented in the RMP:

1) Improve water quality
2) Improve wildlife habitat
3) Improve scenic resources
4) Retain and improve traditional agricultural uses
5) Improve recreational access to the project area.

Five programs were developed in order to meet the goals of the RMP:

- Vegetation Enhancement Program
- Agricultural Lease Program
- Recreation Site Development Program
- Wetland Mitigation Area Program
- Fish Habitat Structure Program

Several other project elements not assigned to one of the five specific programs were grouped together as 'Other RMP Components' and were referenced as such in annual reports prepared for this project.

Implementation of each of these components is now largely complete (Table ES-1). The development of one proposed primitive recreation site has been delayed until at least 2005, by FERC order. Also, some property boundary issues remain unresolved despite a one-year extension granted by FERC for resolution of these difficult negotiations. Legal action is pending between PacifiCorp and these adjacent landowners, with adjudication set for November 1, 2002.

Table ES-1. Summary of Implementation and Work Completed for Cutler Hydro Project No. 2420.

RMP Program/ Component	Implementation Required	Work Completed	Initial Implementation Complete?
Vegetation Enhancement			
Shoreline Buffer	Establish 125 acres of shoreline buffer. Of this, a minimum of 50 acres should be converted from tilled land to permanent grass buffer.	Approximately 1098 acres of buffer covering 38 miles of shoreline have been established, including 610 acres of tilled land converted to permanent grass buffer.	Yes
Woody Vegetation Pockets	Establish 10-15 pockets 0.5 – 3.0 acres in size.	Planted 12 pockets at a density of 5,000 shrubs/acre. Of these, 11have survived to date. Goal is at least 10 sites established.	Yes
Buffer Shrub Plots	Enhance or plant small shrubs in buffer as needed (no minimum number or size required).	Established 15 buffer shrub plots.	Yes
Bank Stabilization	Stabilize 3.5 miles of shoreline.	Stabilized 3.96 miles of shoreline. An additional 1.1 miles stabilized at RR Trail as part of the Recreation Program.	Yes
Wildlife Buffer/Fence	Construct 6 miles of fence to control cattle/conflicting uses (an additional 6 miles was required in a separate category).	Constructed 15.1 miles of fencing.	Yes
Agricultural Lease			Yes
Land Use Practices	Evaluate lease practices on 4500 acres and incorporate new conditions into new leases.	Complete for grazing, farming, and wildlife food/cover leases. Reduced current leases to 2274.4 acres.	Yes
Grazing	Evaluate practices and incorporate new conditions into grazing leases.	Incorporated new practices into leases affecting 1,735 acres. Leases reconfigured to improve practices.	Yes
Farming	Evaluate practices and incorporate new conditions into farming leases.	Incorporated new practices into leases affecting 458 acres.	Yes

RMP Program/ Component	Implementation Required	Work Completed	Initial Implementation Complete?
Wildlife Food/Cover	Evaluate practices and incorporate new conditions into wildlife food/cover leases.	Currently managing 8 fields for wildlife food/cover.	Yes
Boundary/Access Fence	Construct 6 miles of additional fence.	Constructed 58 miles of fence.	Yes
Recreation Site Development	Establish: 8 day-use sites (4 developed, 4 primitive) 2 boat-in picnic sites 1 pedestrian loop trail and bridge 2 canoe trails Conduct a visitor use survey	Completed: 7 day-use sites (4 developed, 3 primitive) 2 boat-in picnic sites 1 pedestrian loop trail and bridge 3 canoe trails Interpretive signage and information provided Recreation use policy instituted Completed visitor use survey	Yes Note: One primitive day-use site deferred until at least 2005 as per FERC order
Wetland Mitigation Area	Construct a 6-acre wetland complex on state land in South Marsh to serve as mitigation for recreation sites developed.	Completed in spring 2001, approved by COE, and turned over to Utah Division of Wildlife Resources for permanent management.	Yes
Fish Habitat Structures	Install 4-6 fish habitat structures at 2 sites.	Installed 30 structures at 3 sites.	Yes
Other RMP Components			
Erosion Control Sedimentation Basins	Build erosion control catch basins where needed in North Marsh and Reservoir Units.	Constructed 13 erosion control catch basins.	Yes
Sensitive /Unique Wildlife Habitats	Protect sensitive wildlife habitats.	Fenced colonial nesting bird habitats, implemented Recreation Use Policy, and planted roses and other shrubs along RR dike.	Yes
Property Coordination	Resolve property and boundary issues.	Resolved all issues with the exception of 5 adjacent landowners who have legal actions pending. Adjudication scheduled for November 1, 2002.	Yes Final legal issues to be resolved

RMP Program/ Component	Implementation Required	Work Completed	Initial Implementation Complete?
Water Quality Monitoring	Conduct quarterly sampling 1996-98. After that, quarterly sampling every 5th year. Analysis and results in 5-Year Reports.	As required; additional monitoring conducted in 2001 to fill earlier data gaps. Results included in Appendix G.	Yes
Water Level Monitoring	Conduct reservoir elevation study. File results of proposed operating plan with FERC	As required. FERC order with modified operating plan received 2002. New order requires annual submission of average elevation data.	Yes

ES.2 Description of RMP Monitoring Plan

The RMP required development of a monitoring plan for each of the implementation activities carried out at Cutler. FERC stipulated that monitoring results be reported at five-year intervals over the life of the license. Results of monitoring activities will be used to gauge the success and stability of implementation, but will also help frame on-going O&M needs for the project that will result in continual improvement.

Monitoring protocols were established by adopting the initial five implementation programs as the basis for monitoring activities, and adding two new ones:

- Vegetation Enhancement Program
- Agricultural Lease Program
- Recreation Site Development Program
- Wetland Mitigation Program
- Fish Habitat Enhancement Program
- Water Quality Monitoring
- Water Level Monitoring

The monitoring plans consist of a description of the protocols, tasks, and schedule required for monitoring each of the programs. A summary and schedule of proposed monitoring activities for the Cutler project is shown in Table ES-2. Monitoring will take place annually or bi-annually, with the exception of water quality monitoring, which will be conducted quarterly every fifth year. In addition, some aspects of fish habitat structure monitoring have been deferred until after the next major reservoir drawdown, by agreement with Utah Division of Wildlife Resources.

Specific data sheets were designed for several of the monitoring tasks. The Hydro Compliance Staff will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. This information will be used as documentation for each of the five-year monitoring reports required over the length of the license.

Table ES-2. Monitoring Plan Components for Cutler Hydro Project No. 2420.

Task	Start Date	End Date
Vegetation Enhancement Program Monitoring		
Shoreline Buffer	May 1	July 31
Woody Vegetation	May 1	May 31
Bank Stabilization	June 1	June 30
Buffer/Boundary Fence	May 1	July 31
Erosion Control Sedimentation Basins	April 1	May 31
Sensitive/Unique Wildlife Habitat	April 1	May 31
Agricultural Lease Program Monitoring		
Grazing Leases	April 1	Nov. 30
Farming Leases	Year-round	
Wildlife Food/Cover Plots (spring)	May 1	May 31
Wildlife Food/Cover Plots (fall)	Nov. 1	Nov. 30
Cattle Management Fence	May 1	July 31
Property Coordination	Year-round	
Recreation Development Program Monitoring		
Canoe Trail (ice off)	March 1	April 30
Canoe Trail (prior to freeze-over)	Oct. 1	Nov. 30
Boat-in Day Use Site (ice off)	March 1	April 30
Developed Day Use Site	March 1	April 30
Developed Walking Trail (spring)	April 1	April 30
Developed Walking Trail (fall)	Nov. 1	Nov. 30
Primitive Recreation Site	Annually	
Wetland Mitigation Program Monitoring	March 1	April 30
Fish Habitat Structure Program Monitoring	Resume when feasible	
Water Quality Monitoring	Quarterly, every 5th year beginning in 2003	
Water Level Monitoring	Compile average daily levels and file with FERC annually	

ES.3 Initial Monitoring Results

A summary of the monitoring results completed to date is presented in Table ES-3. Formal monitoring is currently underway for all implementation programs with the exception of the Wetland Mitigation Program and the Visitor Use Survey portion of the Recreation Site Development Program, which are now considered complete. Formal monitoring of cattle management fences is scheduled to begin in 2003, and fish habitat structure monitoring has been deferred until after the next major reservoir drawdown.

As previously described, monitoring results are presented to meet the requirements of the RMP and FERC license order, but also to help frame the O&M activities that will result in continual improvements for the project. Future five-year reports will likely cover only the information summarized in this section of the report.

Table ES-3. Initial Monitoring Results for Cutler Hydro Project No. 2420.

Monitoring Program	Time Frame	Initial Results
Vegetation Enhancement Program		
Shoreline Buffer (53 parcels)	Formal monitoring began in 2002	65% buffer parcels rated good to excellent 35% buffer parcels rated poor to at-risk *Work on at-risk buffers scheduled for fall 2002*
Woody Vegetation Pockets (12 sites)	Formal monitoring began as sites were planted (1996-2001)	7 in good condition 4 in marginal condition 1 failed/abandoned *None currently in Phase II 'established' monitoring. Supplemental planting may be needed on some sites.*
Bank Stabilization (17 areas)	Formal monitoring began in 2002	81% in good condition 2% in fair condition 17% in poor condition *Methods used appeared to dictate success. Some areas may require replacement or repair.*
Buffer/Boundary Fences (57 segments)	Annual monitoring in summer 2002	15 problem areas identified; 8 due to continued farming of buffers taken out of production, 6 due to inadvertent farming damage. *Repairs will be made during 2002/03 annual maintenance. Some damages will be reviewed in court proceedings with adjacent landowners.*
Erosion Control Sedimentation Basins (13 structures)	Annually in spring 1998-2002, again in summer 2002	12 functioning properly, although 1 is impaired. 1 inadvertently farmed over and destroyed. *Many now support wildlife during spring runoff and are currently being monitoring along with sensitive/unique wildlife habitat.*
Sensitive/Unique Wildlife Habitat Areas	Annually, some quarterly	• Shorebirds and other wildlife appear to be increasing near erosion control sediment basins. • Great blue heron rookery used continuously. • White-faced ibis colony used continuously. • Waterfowl, ring-necked pheasant, and Sandhill cranes appear to be benefiting from food/cover plots. • Shrub and willow plantings along RR Trail have experienced rapid and diverse growth and have attracted songbirds, wading birds, fish and moose. • No use of nest structures for osprey, goose,

Monitoring Program	Time Frame	Initial Results
		and burrowing owls noted yet (installed in 2001-02).
Agricultural Lease Program		
Grazing Leases	Formal monitoring began in 2002	74% in good condition 26% in poor condition *Pastures in poor condition will be targeted for improvement in fall 2002.*
Farming Leases	Formal monitoring began in 2002	Areas of noncompliance have been reported to PacifiCorp's property agents. *Some noncompliance issues resolved but need continued monitoring. Five individuals farming PacifiCorp land without a lease have legal actions pending.*
Wildlife Food/Cover Plots	Formal monitoring began in 2002	Late-season grazing has supplanted sharecropping on these lands, allowing breeding/nesting by waterfowl, pheasants, and cranes. Initial observations suggest increased goose production.
Cattle Management Fences	Annually. Formal monitoring begins in 2003.	2002 monitoring indicated need for minor repairs.
Property Coordination		Of 190 adjacent landowners, property incident monitoring forms are being used to track and document at least 20 current issues. Several areas being farmed without a lease are currently being addressed in court.
Recreation Site Development Program		
Recreation Areas	Formal monitoring began in 2002	Overall, sites are in good condition with little need for major maintenance. • *Buoys along North Marsh and Little Bear River Canoe Trail destroyed by ice or hunters will be replaced in fall 2002.* • *Noxious weeds noted near recreation site in South Marsh.* • *4-wheeler use noted at Bear River Riparian Walking Trail.*
Visitor Use Survey	Complete	22% of respondents knew of Cutler Reservoir 49% knew when location was explained 73% had never visited Cutler *Recommend adding an on-site component to the survey.*
Wetland Mitigation Program	Complete	Returned to landowner (UDWR) in 2001.
Fish Habitat Structure Program	Began with installation (1996, 1998,	Game fish present near structures in 1996. Few recorded in 1998. None in 2000.

Monitoring Program	Time Frame	Initial Results
	2000).	*Monitoring deferred until conditions improve per agreement with UDWR.*
Water Quality Monitoring Program	1996-2001	Monitoring indicates that tributaries greatly influence water quality at Cutler. This influence appears to have masked the effects of water quality improvement measures such as erosion control and improved land use practices.
Water Level Monitoring Program	Quarterly, every 5 years	Will be monitored separately, with average daily reservoir elevations compiled and reported to FERC.

INTRODUCTION

This report summarizes the work completed during the implementation phase of the Cutler Hydro Project No. 2420 Resource Management Plan (RMP) (PacifiCorp 1995), stipulated by Article 402 of the Federal Energy Regulatory Commission (FERC) license order, as well as the monitoring work proposed for the remainder of the 30-year license period. Details regarding project implementation and initial monitoring activities are available in a series of annual reports that cover all activities undertaken for the project by location and year (PacifiCorp 1993-1997; 1998; 1999; 2000; 2001). The project is located in northern Utah, along the west side of Cache Valley, in Cache County (Figure i-1). The RMP project boundaries cover approximately 9,550 acres and surround Cutler Reservoir, as well as the areas of confluence with its major tributaries: the Bear, Little Bear, and Logan rivers; Spring Creek; and Clay Slough.

This report was originally intended to document implementation and monitoring activities in compliance with the FERC's license order stipulating a Cutler RMP Five-Year Implementation and Monitoring Report, due 6 November 2001. However, FERC granted a one-year extension to 31 December 2002 in recognition of difficult property negotiations that were still underway, which affected the completion of the monitoring portions of the report. Management actions summarized herein were conducted to meet a combination of requirements from the FERC license, the FERC-required and -approved RMP, and the US Army Corps of Engineers (COE) wetland permit for mitigation related to the development of recreation facilities as part of the RMP. This report also summarizes activities related to the reservoir water level monitoring and the three-year Bear River Basin studies that were also required as license conditions and are associated with the RMP. An executive summary of this report follows.

This report is organized into three main sections:
Section 1.0 – RMP Project Implementation – A summary of the original RMP requirements and completed project implementation activities.

Section 2.0 – RMP Monitoring Plan – A description of the RMP monitoring plan.

Section 3.0 – Initial Monitoring Results – A summary of initial RPM monitoring results.

The series of annual reports detailing implementation activities (PacifiCorp 1993-1997; 1998; 1999; 2000; 2001) was organized on specific RMP program headings, as originally presented in the RMP; this organization will be followed in Section 1 of this report. However, as the program has now shifted to a focus on monitoring, some categories have been re-grouped in order to facilitate necessary monitoring activities. These changes are noted where they occur in order to minimize confusion when tracking between different sections of the report.

1.0 RMP PROJECT IMPLEMENTATION

This section documents the activities conducted in compliance with the FERC's license order requiring the development and implementation of the Cutler RMP, and the resultant report at the end of the original five-year implementation schedule. Future five-year reports will cover only the monitoring tasks, as initial implementation is complete. Initial implementation activities were conducted from 1993-2001.

The RMP established five goals set as part of the re-licensing process at Cutler. The new license stipulated development and implementation of the RMP (PacifiCorp 1995), which included descriptions of the five programs undertaken to achieve the goals for the project, set goals for defined management units, and provided the framework for the series of annual reports that detailed work completed to meet project requirements. The RMP also included a preliminary and relatively conceptual set of maps that detailed possible site locations for achieving the required mitigation measures as described in the new license and the RMP. Those maps are reproduced in Appendix A along with a set of maps that depict the project 'as built'. Most differences between the conceptual plans and those actually implemented are a result of findings during actual on-site reconnaissance, as many areas were simply not suitable for the activities proposed in the conceptual plans. Further, as a result of extensive property trades undertaken to straighten boundaries and maximize buffer ownership as well as minimize ownership of lands unnecessary to the project, the boundaries of many land parcels identified in the conceptual plans for implementation activities were altered once detailed project planning had begun.

Five goals were documented in the RMP:

1) Improve water quality
2) Improve wildlife habitat
3) Improve scenic resources
4) Retain and improve traditional agricultural uses
5) Improve recreational access to the project area.

Five programs were developed in order to meet the goals of the RMP. Although they do not necessarily track one to one, through implementation of the various programs, each of the five goals would be achieved. The five programs detailed in the RMP include:

1) Vegetation Enhancement Program
2) Agricultural Lease Program
3) Recreation Site Development Program
4) Wetland Mitigation Area Program
5) Fish Habitat Structure Program

The organization of this section is based on the five specific RMP program headings. Several other project elements not assigned to one of the five specific programs were grouped together as 'other RMP Components' (e.g., Sediment Control Dikes, Wildlife Enhancement Management Areas, and Water Quality Monitoring) and are referenced here and in the annual report series under that heading. An additional sub-component of report organization identifies the management area in which RMP components were implemented, according to the five original management units presented in the RMP (South Marsh, North Marsh, Reservoir, Bear River, and Canyon management units; see Figure i-1). Maps show locations of the RMP components completed by management unit.

An administration section was included in the series of annual reports to document agency communications, coordination meetings, and other milestone administrative activities. They can be referenced as needed and are therefore not included in this summary. Further, any pertinent FERC or agency correspondence, such as those that clarified or modified license requirements, are detailed in the appropriate sections. All detail regarding the various programs implemented, as well as site-specific detail for individual projects, is contained in the series of annual reports covering the project and available upon request from PacifiCorp Hydro Resources, North Temple Office, Salt Lake City, Utah (PacifiCorp 1993-1997; 1998; 1999; 2000; 2001).

The following sections summarize work completed for implementation and any operation and maintenance (O&M) set up initially for each of the five RMP programs listed above, as well as other RMP components that are not program specific. The implementation requirements are described for each component, as defined by the license or RMP guideline from which each was derived. Exceptions or proposed modifications to the RMP are listed, as well as the management unit in which the activity was performed. The work completed section indicates overall compliance with the license and RMP requirements, and summarizes the work carried out to meet the requirements. All detail regarding the various vegetation enhancement programs that were implemented, as well as site-specific descriptions (including dates) of individual projects, is available in the series of annual reports covering the project.

Monitoring activities were initiated as part of individual project component implementation (e.g., woody vegetation pocket monitoring), or once overall project implementation was complete in 2002 (e.g., buffer monitoring). Monitoring plans are included in Section 2.0. Initial monitoring results are included in Section 3.0.

1.1 Vegetation Enhancement Program

The Vegetation Enhancement Program emphasizes reestablishing shoreline vegetation to improve water quality, wildlife habitat, recreation opportunities, and scenic quality. The main components of this program consist of the establishment of vegetated areas to act as shoreline conservation buffers between the reservoir and adjacent farming activities, and to provide for shrub planting and bank stabilization activities within this buffer. Historically, much of the shoreline was farmed down to the water's edge, which contributed significantly to soil erosion and associated negative water quality, as well as increasing the ongoing rate of bank loss in some areas. Fencing the RMP project boundary (see Figure i-1) is another important component of the Vegetation Enhancement Program. Although the North Marsh and Reservoir management units are emphasized in placement of these components, all management units are represented to some degree. The program description that follows details these components:

- Shoreline buffer establishment
- Shrub planting (woody vegetation pockets and buffer shrub plots)
- Bank stabilization
- Fencing (wildlife/buffer fencing)

Note that because the RMP and related FERC-license orders mandate fencing in two separate categories (wildlife/buffer in this program, and boundary/access in the agricultural lease program), the amount of fencing has been tracked separately for the two categories throughout the life of the project. However, for future monitoring, the designation of fence types and categories tracked will be altered in order to facilitate required monitoring (see also sections 2.1.4 and 2.2.4 for more detail).

The RMP and related license articles stipulated establishment of **shoreline buffers** at least 100 (and up to 200) feet wide on company-owned lands around Cutler Reservoir between the Valley View Highway (Hwy 30) on the south, and extending north to the Newton Bridge on Highway 23. This encompasses roughly 10 miles 'as the crow flies' on each side of the reservoir, but entails many more miles of meandering shoreline (Figure 1-1). The RMP and associated license articles require that the shoreline buffer must cover the stipulated area, and in addition, must contain at least 50 acres of previously farmed land reseeded to a permanent grass buffer. Because early estimates indicated at least 10 miles of shoreline buffer would be established, it was anticipated in earlier annual reports that the buffer would cover approximately 125-150 acres (10 linear miles X 100 feet). However, because the 10-mile estimate did not include the meandering shoreline on both sides of the reservoir, the actual shoreline buffer acreage on company-owned lands will exceed the original estimate. In fact, on the east side of the reservoir alone, approximately six miles of buffer, ranging from 50-200 feet wide, have already been installed. Although prior Cutler annual reports list two separate types of buffers, the description presented here simplifies the accounting by treating the 50-acre requirement as a subset of the overall buffer requirement. Buffers may be delineated by wire fence or sometimes simply with wood posts in areas where marking rather than fencing the buffer provides adequate protection and control of adjacent land uses.

Two components of the Vegetation Enhancement Program involve **shrub plantings**. At least 10 large shrub plantings (referred to as woody vegetation pockets), consisting of 0.5- to 3-acre planted blocks with openings in the middle (as detailed in the RMP), are being established either within or near the buffers. Buffers may also include smaller shrub plantings (referred to hereafter as buffer shrub plots) for additional erosion control and wildlife habitat. Neither the RMP nor the related license articles stipulate either the size of, or the number of, these smaller buffer shrub plots.

Bank stabilization activities were originally envisioned as occurring within the shoreline conservation buffer, although that concept was expanded (based on more site-specific reconnaissance of need) to include some areas outside the required shoreline buffer area (e.g., one area in the South Marsh). Originally, the license articles classified bank stabilization into two types: (1) bank-gabion/rip-rap, considered a "hard" structural type (1.5 miles required); and, (2) bank-woody planting, considered a "soft" vegetative type (2.0 miles required). The total length of bank stabilization required is 3.5 miles. It is important to note that the FERC inspector (during the 1998

inspection) agreed that site-specific conditions should dictate the type of bank stabilization utilized, and that either type may be used as long as at least 3.5 miles of bank is stabilized at project completion. Bank stabilization generally has involved contouring the bank to a 2:1 slope and planting shrubs or perennial herbaceous vegetation on the slope. Large hay bales were utilized at one site in order to determine their efficacy at stabilizing banks; unfortunately, the hay bales deteriorated before vegetation could become established at those sites. The sites that utilized this technique will need to be re-stabilized in order to meet the license requirements. The best results occurred when utilizing a combination of the two types. This technique is referred to in the annual report series as the 'breakwater' type of stabilization and consisted of large rocks placed parallel to the re-contoured slope, but several feet out into the water. Willow wattles were then buried horizontally at the toe of the slope, and wetland vegetation collected from adjacent donor sites was placed in the shallow water between the rocks and the shoreline. This technique had the advantage of creating a fully functional vegetative community within the breakwater zone in less than a year, which should hold the stabilized banks over time. Historically, large numbers of cars were utilized to stabilize miles of eroding reservoir banks; therefore, bank stabilization activities in many areas have also required car removal prior to any earthwork. To date, all of the larger accumulations (more than two cars together) have been removed, resulting in over 500 junked cars being removed from over four miles of shoreline.

The RMP and related license articles also required two separate categories of **fencing** in order to address both property boundary control issues and wildlife habitat protection issues. For the Vegetation Enhancement Program, fencing (referred to hereafter in the category wildlife/buffer fence) was used to exclude cattle or other inappropriate uses from wildlife areas, buffers, and wetlands. These fences were generally either barbed wire or electric, although some areas required only wood posts to mark farming buffers. The FERC license also required a second category of fencing, boundary/access fence, which was used to delineate lease boundaries or to control property, and is described as part of the Agricultural Lease Program (see Section 1.2.5). The license articles require construction of at least six miles of fencing for each category (12 miles total). It has become apparent that more miles of fencing than were originally anticipated are necessary in order to adequately manage the grazing program, and to delineate and protect the project boundary. In fact, to date, over 73 miles of fence and/or boundary posts have been installed (note that this total includes both categories, see Section 1.2.5 for information specific to boundary/access fence).

1.1.1 Shoreline Buffer

Implementation Requirement: Establish a vegetative buffer on company-owned lands around Cutler Reservoir between the Valley View Highway (Hwy 30) on the south, extending north to the Newton Bridge on Highway 23. Trade land to straighten ownership lines and acquire shoreline buffer where possible. Buffer strips will be at least 100 (and up to 200) feet wide and cover at least 125 acres. Reseed a minimum of 50 acres of previously tilled land to a permanent grass buffer.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: Over 38 miles of shoreline conservation buffer have been established to date to fulfill this requirement (Figure 1-1). Although much of the need for buffer was originally anticipated to be on the west side of the reservoir in the North Marsh and Reservoir Management Units, it became apparent that additional efforts were necessary on the east side in the two management areas indicated, as well as around the Bear River. Approximately 8.3 of the 38+ miles of total buffer (covering approximately 170 acres) were delineated in the Bear River Management Unit. The total also includes significant miles and acreage of shoreline buffer (approximately 7.6 miles of buffer from 50-200 feet wide, covering approximately 226 acres) that was established on the east side of the reservoir as a result of additional property boundary control efforts. The current buffer work brings the total to approximately 1098 acres established to date – 610 acres of previously tilled farm land reseeded to a permanent grass buffer, and another 488 acres of shoreline vegetation protected by buffer markers but not replanted as the existing vegetation was considered suitable (or was not accessible). Installation of the shoreline buffer required intensive property negotiations due to long-held beliefs regarding the location (or lack thereof) of the boundary line between PacifiCorp and many of the adjacent land owners in the Bear River Management Unit. Because some

of these matters escalated into legal proceedings, a few boundaries were not resolved by the project completion date (end of fiscal year 2001; equated to 31 March 2002). Completion of these specific activities will be noted in future monitoring reports. Some riverbank sections along the Bear River could not be protected with a buffer as the adjacent landowners refused to trade for parcels out in the water (see annual reports for additional site-specific detail regarding buffer establishment). Although not specifically required to fulfill implementation obligations, efforts to establish buffers at several locations in the Bear River Management Area (Cardon, Falslev, Kunzler, Lindley) will continue in order to ensure adequate control of conflicting uses of company land. Delineation of these buffers should occur once property ownership issues are resolved. Final adjudication is currently scheduled for 1 November 2002.

O&M:
Because perennial grasses in the buffers can take several years to become established, O&M measures designed to augment original plantings will not take place until 3-5 years after initial planting efforts. Monitoring has shown all buffers established to date have taken at least three years to show dominance by perennial grasses. Some buffers in the Bear River Management Area (Hobbs, R. Reese, Thayne) lacking initial re-planting will be analyzed in 2002/3 for potential future implementation of reclamation activities. See sections 2.1.1 and 3.1.1 for monitoring information collected and initial results.

1.1.2 Woody Vegetation Pockets

Implementation Requirement: Establish 10-15 pockets of woody vegetation 0.5 to 3.0 acres in size. (Note that the conceptual maps in the RMP show numerous (greater than the 10 sites required) potential sites for establishment of woody vegetation pockets, which then allowed for selection of the sites most likely to support successful mass shrub and tree plantings.)

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: A total of 12 woody vegetation pocket sites have been planted to date to address this requirement (Figure 1-2). Sites were planted at initial densities of approximately 5,000 shrubs/acre given the relatively high rates of mortality observed over the implementation period (it is noteworthy that 10 of the 12 original sites were planted during the period 1998-2002, which also corresponded to a continuous period of regional drought). One of the 1997 planting sites (Larson Triangle) was determined to be unsuccessful and abandoned; it was not counted in the total number of 11 sites. Of the 11 remaining sites, three appeared to be marginal due to mortality (one was inadvertently destroyed by trespassing cattle, two others had low initial success resulting from vole predation and drought) and were augmented with additional plantings in December of 2001. One other site was rated as marginal after the first year of monitoring; monitoring conducted in 2003 will determine whether that site will also need to be augmented. Often shrubs grow back from the roots the second year, so at least two years of data indicating inadequate survival will be collected prior to re-planting. Given the high rate of shrub mortality and other unpredictable negative events observed at these sites, we believe the additional planting was warranted in order to ensure at least 10 established sites at project completion. Shrub numbers and species planted at each site, as well as initial monitoring activities and baseline transect counts, are included in the series of individual annual reports available for the project (PacifiCorp 1993-1997; 1998; 1999; 2000; 2001).

O&M:
Three sites have been re-planted or augmented, given results of initial monitoring. It is anticipated that similar O&M activities will take place as necessary until all sites are satisfactorily established. See sections 2.1.2 and 3.1.2 for the woody vegetation monitoring plan and initial results.

1.1.3 Buffer Shrub Plots

Implementation Requirement: Enhance or plant small shrub areas in buffer as needed (no specific number or size given; Figure 1-2). See Section 1.1.2 for the description of larger woody vegetation pocket sites.

LARGE-FORMAT IMAGES

One or more large-format images (over 8 ½" X 11") go here.
These images are available in FERRIS at:

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Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: A total of 15 buffer shrub plots ranging in size from 0.003-0.15 acres have been established to date. All sites were established within new or existing buffers, where perennial grasses previously planted may help to provide cover and suppress weeds in the immediate vicinity. All buffer shrub plots were located in the North Marsh or the Reservoir Management Units. Most of the buffer shrub plots were planted near the shrub plantings that line the stabilized bank.

O&M:
Annual monitoring transects have been completed at the G. Benson north sites; all other sites have been visually inspected. Initial monitoring data will be incorporated into future efforts; see sections 2.1.2 and 3.1.2 for information regarding buffer shrub plot monitoring activities.

1.1.4 Bank Stabilization

Implementation Requirements: Stabilize 3.5 total miles of shoreline. Note that either "hard" or "soft" (or a combination of the two) bank stabilization techniques may be utilized depending on which method is deemed most appropriate (i.e., most effective for a specific site).

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: Approximately 20,900 linear feet (3.96 miles) of bank stabilization have been completed to date (Figure 1-3). The bank stabilization sites completed are located primarily within the Reservoir Management Unit, although one site is located in the South Marsh Management Unit. Refer to the annual report series for additional detail regarding specific project sites and stabilization types utilized (PacifiCorp 1993-1997; 1998; 1999; 2000; 2001). Note that the project referred to as Railroad (RR) Trail was completed as part of the requirement for a walking trail, as specified in the Recreation Site Development Program, and is therefore not counted in the above total of miles/feet of stabilized bank, despite the fact that it eliminated eroding shoreline contributing to poor water quality and sedimentation along an additional 1.1 miles (5,930 feet) of shoreline.

O&M:
The farmer leasing the farm ground adjacent to the Ballard buffer is concerned that the original bank stabilization work done there was not successful and would like to consider re-stabilizing the bank with fill he would supply. Concern was expressed in late 2000; PacifiCorp replied that this determination would be made during the year 2002. See sections 2.1.3 and 3.1.3 for bank stabilization monitoring activities and results.

1.1.5 Wildlife/Buffer Fence

Implementation Requirement: Construct 6 miles of fence for control of cattle and/or other conflicting use (i.e., setback to reduce impacts to wetland and other sensitive resources). An additional 6 miles of fence were required in a separate category of the FERC license, described below in Section 1.2.5.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: Approximately 15.1 miles of wildlife/buffer fence have been constructed to date to fulfill this requirement[1] (Figure 1-4). Although no additional fence is needed to complete the required length, some fencing may yet be necessary to ensure adequate control of conflicting uses of company land. The license articles require

[1] Note that the GIS database indicates there are 18.1 miles of fence in this category. This total includes about 3.0 miles of water boundaries that were not technically 'constructed' and are therefore not included in the above totals. This discrepancy will continue in the GIS database.

construction of at least 12 total miles of fencing; however, it became apparent that more miles of fencing than were originally anticipated were necessary to adequately delineate and protect the project boundary and to meet RMP goals. In fact, although not specifically required to fulfill implementation obligations, construction of fences or buffer markers at several locations (Cardon, Falslev, Kunzler, Lindley) in the Bear River Management Area will continue in order to ensure adequate control of conflicting uses of company land. Construction of these fences should occur once the legal work is concluded. Final adjudication is currently scheduled for 1 November 2002. Additional miles of wire fence and wood posts, installed to demarcate and protect the Cutler property boundary, are documented in Section 1.2.5, below. Because many of the fences included in the distance measurement for each of the two categories function both to mark the property boundary and to protect sensitive wildlife habitats or other buffers, future monitoring activities will not differentiate between the two types of fence. They will be monitored based on whether they delineate grazing pastures, and all other boundary or buffer fences (see Section 2.1.4 for additional details regarding this change in categorization of fences types).

O&M:

- Put up/take down electrical fences and repair as needed.
- Monitor barbed wire fences/posts annually and repair as needed (see sections 2.1.4 and 3.1.4 for fence monitoring activities and results).

1.2 Agricultural Lease Program

As part of the FERC application filed in 1991, PacifiCorp proposed to modify its agricultural leasing program. which consisted of modifying lease practices on 4500 acres to accomplish land use changes and managing the new leases under three main program components (Figure 1-5):

- Grazing leases
- Farming leases
- Wildlife food/cover leases

This program also addresses a second required category of fence construction, boundary/access fences (see Section 1.1.5 for the other category of fence required by the license), to delineate leases and property boundaries, or to control access and grazing. Improvements in land use resulting from implementation of this program will be widespread across all five management areas, although some of the largest tracts that will be positively affected by these changes are located in the South Marsh (primarily grazing leases), North Marsh (both farming and grazing leases), and Reservoir (mostly farming leases) Management Units.

1.2.1 Land Use Practices

Implementation Required: Evaluate and modify agricultural lease practices on 4500 acres and incorporate new terms and conditions into all new leases to accomplish land use practice changes.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: All initially required lease modifications have been completed. Some of the current leases require ongoing annual lessee meetings, monitoring, and administration. Previous work included cancellation of initial leases, and in 1994, issuance of all new leases with new terms and conditions. Since 1994, the lease program has continued to evolve, including overall changes in lessees, parcels leased, and the acreages of individual parcels (e.g., where previously farmed lease areas have been reduced by the acreage of shoreline buffers). Agricultural land lease practices are now administered annually under three main lease categories (sections 1.2.2 through 1.2.4). Current grazing and farming leases are listed in Table 1-1.

Table 1-1. Current Leases for Grazing and Farming at Cutler Reservoir.

Lessee (Pasture #)	Type of Lease	Lease Number	Expiration Date and Term	Management Unit	Acres Leased[1]
Brett Selman (NP1, NP2, NP3, NG1, NG2, NG3, NG4, NG5, NG6, NG7)	Grazing	UTCA-0091A	Apr. 30, 2003 (1 yr.)	North Marsh	300.0
Harry Willmore (SG1A, SG1B, SG1C)	Grazing	UTCA-0151A	Apr. 30, 2005 (5 yrs.)	South Marsh	121.4
Utah State University (SG2A, SG2B, SG2C, SG2D, SG3A, SG3B SG3C, SG4A, SG4B, SG4C, SG4D, SP1A, SP1B, and SP1C)	Grazing	UTCA-0161A	Apr. 30, 2003 (1 yr.)	South Marsh	361.7
Kelly Walker (SP2A, SP2B, SP2C, SG5A, SG5B, SG5C, SG5D, SG6A, SG7A, SG7B & Spring Creek 1, 2, 3)	Grazing	UTCA-0171A	Apr. 30, 2006 (5 yr.)	South Marsh	255.0
Kelly Walker (SG6B)	Grazing	Common Area	Apr. 30, 2006 (5 yr.)	South Marsh	22.0
Heber Hardman	Grazing	UTCA-0020A	May 31, 2003	South Marsh	80.0

(SGM1 and SGM2)			(1 yr.)		
				Lease Sub-total	**1140.1**
Errol Hoopes (No Pasture No.; 300-ac parcel SW of Benson Marina)	Grazing for habitat mgmt	UTCA-0125A	Nov. 13, 2002 (1 mo.)	North Marsh	250
Odell Rinderknecht (Logan River pastures 1, 2, and 3)	Grazing for habitat mgmt	UTCA-0141B	Dec. 24, 2002 (1 mo.)	South Marsh	85.0
Rallin Anderson (Cutler Canyon)	Grazing for habitat mgmt	UTBX-0033A	June 10, 2002 (1 mo.)	Canyon	260.0
				Wildlife Habitat Management Lease Sub-total	**595.0**
				Total Grazing Lease Acreage	**1735.1**
Roundy Farms	Farming	UTCA-0080A	Dec. 31, 2004 (5 yrs.)	North Marsh and Reservoir	428.0
Ballard Hog Farms	Farming	UTCA-0141A	Dec. 31, 2005 (5 yrs.)	Reservoir	30.0
				Farming Lease Acreage Total	**458.0**
Roundy Farms	CRP Lease	UTCA-0391A	Sept. 30, 2010 (10 yrs.)	North Marsh	40.0
Darren Cox	Honey Bee	UTCA-0273A	Nov. 1, 2002 (5½ mo.)	Reservoir	1.0
Robert Munk	Buffer	UTCA-0240A	Mar. 31, 2024 (27 yrs.)	Reservoir	15.7
Paul Stewart	Buffer	UTCA-0077A	Mar. 31, 2024 (30 yrs.)	Reservoir	15.7
Heber Hardman to PacifiCorp	Misc. Property	UTCA-0020A	May 31, 2024 (30 yrs.)	South Marsh	4.9
PacifiCorp to Heber Hardman	Misc. Property	UTCA-0020A	May 31, 2024 (30 yrs.)	South Marsh	4.0
				Miscellaneous Lease Acreage Total	**81.3**

[1]Source = Property Department (available on request from PacifiCorp's North Temple Office in Salt Lake City)

1.2.2 Grazing Leases

Implementation Requirement: As part of the change in land-use practices on 4500 acres, evaluate grazing practices and apply new terms and conditions to all remaining grazing leases. Initial revisions are complete; continue to administer annual leasing.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: All grazing leases have been reconfigured to improve land use practices. Approximately 1735 acres are currently leased for grazing (Figure 1-5, Table 1-1). Of the total grazing lease acreage, approximately 595 acres were leased solely to utilize grazing as a tool for effective wildlife habitat management, in accordance with the management goals set for those areas. Because these parcels are not administered under standard grazing practices (parcels managed to enhance habitat and also provide fee revenue), they are leased only on an annual basis, and only after a determination has been made as to the need for grazing for that season.

O&M:

- Continue to improve O&M practices with RMP conditions.
- Maintain fences during the grazing period (see Section 1.2.5).
- Maintain water troughs.

- Inspect irrigation control structures; irrigate South Marsh pastures (May - October); maintain and winterize irrigation control system (November).
- Clean irrigation ditch system; maintain ditch banks.
- Fertilize grazing pastures (as needed).
- Harrow grazing pastures (as needed).
- Conduct grazing meetings in spring to coordinate with the lessees prior to the start of the grazing season (1 June 2001).
- Coordinate lease administration with Property Management (see Table 1-1 for detail regarding grazing leases).
- Utilize past leases and other pasture data to construct new grazing rotation schedules for each lease, and ensure compliance (or deal with non-compliance) with rotation schedules; adjust grazing rotations as necessary for specific pasture conditions.
- Identify additional areas in need of reseeding.
- Inspect and conduct spraying/mowing of noxious weeds.
- Monitor pastures for grazing use and target forage levels (see sections 2.2.1 and 3.2.1 for grazing lease monitoring activities and results).

1.2.3 Farming Leases

Implementation Requirement: Changes to farming leases were described as part of the change in land-use practices on 4500 acres, including modifications to new leases incorporating RMP conditions (reduce or eliminate grazing and tillage along shoreline, restrict or eliminate use of pesticides and herbicides, regulate burning and spraying). Also, crop share leases on 300 acres of tilled ground were intended to provide additional waterfowl food/cover. This issue was further addressed in the RMP by compensating farmers for waterfowl/crane crop damage.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: Initial changes in farming lease conditions have been completed. Ongoing improvements to farming lease ground continue. A total of 458 acres are currently leased for farming (Figure 1-5, Table 1-1). An additional 168 acres are classified as production pastures that are counted as part of the standard grazing leases, and are suitable for grazing after grass hay is cut. Several areas have been farmed (or grazed) without a lease. These unresolved and on-going property issues have been identified and will be addressed with the cooperation of Property Management. An additional lease category (miscellaneous property leases) has been added to track the various Conservation Reserve Program (CRP) and exclusive or trespass leases issued on project lands. The CRP lease does include some revenue shared with the lessee.

O&M:

- Continue O&M practices with RMP conditions.
- Coordinate with lessees regarding conversion of additional farmed shoreline to conservation buffer (see Section 1.1.1).
- Coordinate lease administration through Property Management (see Table 1-1 for summary of farming leases).
- Coordinate current farmable acreage with Property Management in support of farming leases.
- Update GIS database with new installed buffers.
- Coordinate with lessees to plant grass in newly converted buffers.
- Coordinate with lessees and NRCS for CRP enrollment.
- Coordinate with lessees and Property Management regarding alteration/improvements to lessees' diesel irrigation pumps containment system required by the FERC license (currently a fuel spill hazard exists with resulting liability to the company for any uncontained diesel tanks located on land owned by PacifiCorp).
- Farming leases (Ballard and Roundy) allow for crop utilization by waterfowl and cranes by providing compensation to the farmers out of PacifiCorp's revenues (see also Section 1.2.4, below).

- Monitor all farming lease areas to ensure compliance with RMP and lease conditions (see sections 2.2.2 and 3.2.2 for information on monitoring activities for farming leases).

1.2.4 Wildlife Food/Cover Leases

Implementation Requirement: Initial agricultural lease/land use revisions have been completed. Requirements included management of parts of the South Marsh for waterfowl and other wildlife food resources (e.g., decoy cereal grain crops, pheasant winter food plots, and production pastures for goose grazing) or for wildlife cover or hiding habitat. Four potential areas for these activities were indicated on the South Marsh map in the RMP (Appendix A). Additional related actions included farming leases with provisions for crop sharing and compensation for goose damage (see also Section 1.2.3).

Exceptions to the RMP: Some areas marked on the RMP conceptual maps could not be developed as indicated on the maps. However, with the two fields developed in 1998, a total of seven fields, as well as the pastures in Cutler Canyon, are now available to be managed as forage/cover for waterfowl, pheasant, or other wildlife. **Initial project implementation is complete.**

Work Completed: Currently, up to seven fields and the pastures in Cutler Canyon can be managed as food/cover resources for waterfowl and other wildlife. This number exceeds the original conceptual plan found in the RMP. Management practices are continually refined in these fields to meet the overall wildlife food/cover lease objectives.

O&M:

- Continue to refine O&M practices
- Monitor weeds in newly established wildlife food/cover fields (these fields were only established in 1998 and early monitoring indicated a need to augment the initial seeding, as well as increase weed control efforts). The 2001 re-seeding efforts will continue to be monitored, due to the extreme drought conditions that have persisted through re-establishment efforts.
- Fall standing crops in all other fields (Spring Creek #1, Logan River #1-3, and Roundy 300-ac parcel) are left for waterfowl and other wildlife food/cover until after the pheasant season (mid-November), but are grazed until late December when there is generally a snow cover that protects the plant bases but allows for sufficient grazing to achieve the desired conditions for spring waterfowl use. These areas are monitored in spring to ensure that the late fall/early winter grazing season continues to be beneficial for wildlife habitat and forage values in the specific pastures (see sections 2.2.3 and 3.2.3 for information on monitoring activities for wildlife food/cover plot leases).

1.2.5 Boundary/Access Fence

Implementation Requirement: Construct 6 miles of additional fence (both new wire fences and wood post boundary markers that serve the same function have been utilized) as required by the license articles to protect and control project lands or to delineate lease and/or property boundaries (see Section 1.1.5 for additional wildlife/buffer fence requirements).

Exceptions to the RMP: The amount of fence completed to date exceeds the 6-mile requirement; however, as detailed previously, more fence may be constructed in order to adequately control and protect PacifiCorp property. **Initial project implementation is complete.**

Work Completed: Approximately 58.0 miles of boundary/access fence and posts have been constructed to meet the license requirements for this category of fence; also see Section 1.1.5, above. Note that much of this represents electric fence installed to manage the grazing program (Figure 1-4). At several points in the Cutler Canyon area and in the Clay Slough/Church Farm area, the property line extends out into the reservoir. In order to accurately delineate the property boundary with posts in those areas, a blue and white reflector was affixed to those points where the boundary extends out into the water. The reflectors are visible at a distance (and from a boat), and will allow PacifiCorp to accurately determine the location of the boundary line in the future, by fixing the points that it

extends out into the water and the points at which the line comes back onto the shore. Because many of the fences included in the distance measurement given for each of the two categories function both to mark the property boundary and protect sensitive wildlife habitats or other buffers, future monitoring activities will no longer differentiate between the two types of fence; they will be monitored based on whether they delineate grazing pastures, and all other boundary or buffer fences (see Section 2.2.4 for additional details regarding this change in categorization of fences types). Although not specifically required to fulfill implementation obligations, construction of fences or buffer post markers at several locations (Cardon, Falslev, Kunzler, Lindley) in the Bear River Management Area will continue in order to ensure adequate control of conflicting uses of company land. Delineation of these buffers should occur once the legal work is concluded. Final adjudication is currently scheduled for 1 November 2002.

O&M:

- Inspect and maintain fences as needed (March through Oct).
- Conduct solar electric fence maintenance (May through Oct); replaced much of the old fence with Gallagher electric fence in spring 2001.

See sections 2.2.4 and 3.2.4 for information on monitoring activities for cattle management fences.

1.3 Recreation Site Development Program

The RMP stipulates that the Recreation Site Development Program improve public access and develop recreation facilities at a number of facilities around the reservoir (Figure 1-6). These include a wide range of developed uses, from major (with boat ramps and permanent restroom facilities) to more primitive sites (allowing canoe or other small boat launch only and portable restroom facilities). Additional recreation developments included construction and/or installation of boat-in sites, canoe trails and pedestrian trails. Interpretive signing and recreational use guidelines are also described as part of this program.

Implementation Requirement: Construct eight day-use recreation sites (4 major and 4 primitive sites, with at least one site in each management unit), two boat-in only picnic sites (Cutler Canyon Management Unit), an established pedestrian/biking loop trail (south of the existing Benson Marina site in the North Marsh Management Unit), and two canoe trails (North and South Marsh Management Units). Conduct a visitor use survey of the constructed recreation sites.

Exceptions to the RMP: Construction of the Logan River recreation site, proposed as a primitive canoe access area off of the Valley View Highway (Hwy 30), has been postponed until Utah Department of Transportation (UDOT) widens Hwy 30, as planned. PacifiCorp had proposed to provide a turnout from the highway to access the new site; however, UDOT indicated that a deceleration/acceleration lane would be required for public safety. Because of the narrowness of the highway, UDOT would not consider a variance. Therefore, it was infeasible and cost-prohibitive to move forward with this site. Once the road is widened, the requirement for an extra lane will be eliminated. FERC has been informed of, and has agreed to, the postponement of the construction of the Logan River day-use recreation site. **Initial project implementation is complete.**

Work Completed: All four major sites and three of the four primitive sites have been completed (Figure 1-6). Construction of the final proposed primitive site has been postponed (see above exception), bringing the total to seven completed day-use sites. Additional components of the Recreation Program that were completed include the installation of three marked canoe trails (North Marsh, Logan River, and Spring Creek trails), placement of interpretive materials and maps at several of the day-use recreation sites, construction of a pedestrian/fishing bridge and the associated trail (RR Trail and Bridge), and the development and implementation of a recreational use policy for Cutler. The policy addresses several key areas of resource enhancement or protection, including improving human safety, water quality, and protecting sensitive wildlife habitat. Final elements of the Recreation Program that have been implemented included construction of the two boat-in picnic sites (Cutler Canyon Islands), development and placement of additional interpretive information, planning and coordination of a recreation user survey (see also sections 2.3 and 3.3 and Appendix B), completion of the RR Trail surfacing, and identification of a pedestrian trail (Bear River Riparian Trail; included blocking access to off-highway vehicles [OHVs]) in the Bear River Management Unit. Note that completion of the RR Trail and Bridge included an additional 1.1 miles of bank stabilization along both the north and south sides of an abandoned railroad grade. Because the requirement for this walking trail and associated preservation of the old grade was specified in the Recreation Enhancement Program, it was not counted in the total length of bank stabilization as it was required for this project component (see also Section 1.1.4).

Other miscellaneous work completed:

- Coordinated the development of new, comprehensive interpretive information for the Cutler Hydroelectric Project with Utah State University.
- Participated in discussions with UDWR, State Parks, and adjacent landowners and hunters regarding potential additional restrictions on motorized boat travel in the area of the main reservoir near the confluence of the Bear River with Cutler.
- Maintained the Cutler Wetlands Maze website (http://www.bridgerlandaudubon.org/wetlandsmaze/), which explains the recreation policy and has maps of all the recreation sites and the entire project area. The website also contains interpretive information on wetlands and wildlife, as well as some historical information regarding the project area. This site is linked with both the PacifiCorp inter- and intranet websites.

- Coordinated with various local environmental education and conservation organizations for additional interpretive signage at several existing or planned recreation facilities.
- Implemented a recreation visitor use survey with assistance from a graduate student class from Utah State University.

O&M:

The following are conducted by Cutler Plant personnel:

- Conduct visual inspections 2-3 times per week.
- Clean restrooms and conduct maintenance as needed.
- Mow recreation areas as needed.
- Additional tasks that may be required in the future include trash removal and restroom maintenance on the east side of the Railroad Trail bridge.

Vehicle counts were conducted 2-3 times per week by Cutler Plant personnel. Data forms were filed monthly with Hydro Resources in Salt Lake City. New trees planted in fall of 2000 were monitored by PacifiCorp HCS personnel and watered for one year as part of an Eagle Scout project. On-going watering is currently being coordinated by a local conservation association. See sections 2.3 and 3.3 for information on monitoring activities for recreation sites.

1.4 Wetland Mitigation Area Program

Implementation of the Recreation Site Development Program resulted in some unavoidable impacts to wetlands and other special aquatic sites located at the edge of the reservoir where recreation sites were constructed. Although the original construction plans would have affected approximately 2 acres of wetlands, additional avoidance measures were incorporated by altering the site designs that decreased total wetland impacts to less than 0.25 acres. In order to mitigate these impacts, PacifiCorp proposed construction of a 6.0-acre wetland complex on land adjacent to the project owned by the Utah Division of Wildlife Resources (UDWR).

Implementation Requirement: Construct a 6.0-acre pond in the South Marsh on land owned by the state of Utah and establish appropriate hydric vegetation as mitigation for wetland impacts incurred during development of the various recreation sites (Figure 1-7). Monitor for five years (per COE permit), then return site to management by UDWR. Under the same permit, an additional wetland mitigation project was the removal of an old road adjacent to the Upper Bear River Recreation Site (located in the Bear River Management Unit).

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: Implementation of this program is complete, and was finalized following the spring 2001 site visit with the UDWR to ensure an appropriate transition following completion of PacifiCorp's project. In 1995, construction was completed on a 6.5-acre shallow pond with two upland islands (see Figure 1-7). The created wetland is located just outside PacifiCorp ownership in the South Marsh Management Unit on lands owned by UDWR. Wetland vegetation continues to establish and was monitored for progress on an annual basis through 2000. The year 2000 was the end of the final required monitoring season for wetland establishment; management of this wetland was returned to the land owner, UDWR. The final monitoring report was submitted to, and accepted by, the COE in the fall of 2000. In the spring of 2001, a site visit was held with UDWR that was designed to ensure an appropriate transition following completion of PacifiCorp's project. The final wetland monitoring is included with this report, as stipulated by the FERC license (Appendix C).

O&M:

- Pond levels were inspected and regulated as needed in order to fluctuate the water level initially in the spring. These duties were returned to the UDWR as planned following the June 2001 site visit (also see Cutler Wetland Planting and Monitoring Plan, PacifiCorp, 18 September 1997).
- On-going O&M measures (particularly water supply and level) are the responsibility of UDWR personnel.
- See sections 2.4 and 3.4 for information on monitoring activities for the wetland mitigation site.

1.5 Fish Habitat Structure Program

Implementation of this program was proposed to help increase the number of game fish in the reservoir and provide improved recreational angler opportunities at Cutler Reservoir. Fish habitat structure was noted to be lacking, so artificial habitats were designed, constructed, and installed in cooperation with UDWR.

Implementation Requirement: Install four to six underwater fish habitat structures at two sites (Reservoir Management Unit; see Figure 1-7).

Exceptions to RMP: More fish habitat structures than originally proposed were installed (see below under Work Completed). The monitoring plan and schedule were changed per agreement with UDWR (letter from Sorenson dated November 15, 1996, Appendix D). PacifiCorp proposed to suspend angler surveys until angler use increases to a point where adequate data can be collected (PacifiCorp 1998). **Initial project implementation is complete.**

Work Completed: Implementation of this program is complete. During project implementation, 30 underwater fish habitat structures of two different types were installed at three sites, all in the Reservoir Management Unit.

O&M:

- Visual inspection of the structures has been deferred until the next major drawdown (none are currently scheduled). UDWR concurs that reservoir turbidity precludes adequate visual inspection of the structures underwater.
- Monitoring occurred as scheduled per agreement with UDWR in 1995, 1996, 1998, and 2000 (as summarized in sections 2.5 and 3.5 of this report).

1.6 Other RMP Components

This section describes implementation of other RMP components throughout the project area (in all five management units) that are not specifically described under one of the previous specific program headings, but were implemented to help achieve the five goals of the RMP. These components include:

- Construction of erosion control sediment basins
- Protection of sensitive wildlife habitats
- Various property issues
- Water level and quality monitoring (Figure 1-7)

Note that for future monitoring efforts, monitoring activities for erosion control check dams and sensitive wildlife habitats will be included in the Vegetation Enhancement Program, as most of these mitigation features are located within buffer zones. The re-alignment of these categories will streamline future monitoring efforts. Water level and water quality monitoring activities will continue under their own program headings (see also sections 2.0 and 3.0 for descriptions of monitoring programs and results).

1.6.1 Erosion Control Sediment Basins

Implementation Requirement: Build sediment catch basins where needed in the North Marsh & Reservoir Units. The RMP does not stipulate particular numbers or locations for these structures. These structures were planned to minimize sheet flow erosion from agricultural lands and reduce sediment loading into the reservoir.

Exceptions to the RMP: None. **Initial project implementation is complete.**

Work Completed: A total of 14 functioning erosion control sediment basins were initially constructed in the North Marsh and Reservoir Management Units to satisfy this requirement (Figure 1-7). Of the 14, one was destroyed after being farmed over, and a second was inadvertently farmed over and no longer functions at its original level, but does still control erosion and sediment flow on the drainage where it is located. This program has been completed with the construction of a total of 13 functioning erosion control sediment basins.

O&M:

- Repair check dams as needed (per monitoring) on the 13 functioning erosion control structures.
- Assess the function of the sediment catch basins to determine which, if any, structures require O&M work (see sections 2.1.5 and 3.1.5 for descriptions of erosion control sediment basin monitoring activities and results).

1.6.2 Sensitive Wildlife Habitats

Implementation Requirement: Protect sensitive and/or unique wildlife habitat areas (e.g., great blue heron rookery, white-faced ibis and Franklin gull colonies, Sandhill crane nesting and roosting sites, etc.). Protect these areas where possible from disturbance due to public recreation, grazing, or other negative impacts. Provide fencing to control use and install interpretive signs by recreation sites and on edges of sensitive wildlife areas. One specific area of the Bear River Management Unit, an abandoned oxbow of the Bear River, was designated in the RMP to be planted with wild roses to enhance wildlife habitat for upland game birds.

Exceptions to the RMP: Because company ownership in the Bear River abandoned oxbow area is limited to the zone inhabited by cattails, the area was determined to be unsuitable for roses (as the soil is clearly too saturated to support rose growth). That component was moved to a more suitable site of similar size and shape, along the Benson Railroad Trail. This newly constructed trail was built on the remains of an old railroad dike extending 0.75 miles across the reservoir. The slopes of both sides of the stabilized earthen dike were planted with native shrubs appropriate to the habitat conditions (including roses) in order to meet the intent of the license order regarding planting the old oxbow for wildlife habitat enhancement. **Initial project implementation is complete.**

Work completed: Fences have been installed to protect the heron rookery, and the white-faced ibis and Franklin's gull colonies from grazing. Other sensitive waterfowl habitats have been protected/enhanced through the development of grazing management practices and the food/cover plots (see Figure 1-7). Additional fencing was completed to protect Sandhill crane nest sites, as well as sensitive riparian zones in the project area. A slide gate was installed on the Spring Creek wildlife pond to help control water levels and carp invasion, and provide improved water quality for the waterfowl and other wildlife that utilize the pond. Refinements of grazing management practices will continue, as will monitoring of recreation use of the above-listed habitats and other sensitive wildlife habitats at Cutler. The 'Cutler Recreation Use Policy' was developed and implemented to help address the need for better management and control of some sensitive wildlife habitats, particularly in regards to motorized watercraft in the South Marsh system and the associated protection of those habitats, as well as water quality values. Additional interpretive materials will be added as necessary. Roses and other shrubs were planted along both sides of the 0.75-mile-long reconstructed dike that was substituted for the oxbow planting project. PacifiCorp sponsored and coordinated the construction of two osprey nest platforms and four artificial burrowing owl nest boxes by two Eagle Scouts, respectively (see Figure 1-7 for locations). These efforts are aimed at re-establishing breeding individuals of these two species at Cutler, where both were historically present.

O&M:

- Put up electric buffer fences prior to the grazing season (see also Section 1.1.5). Inspect and maintain, as needed, all wire wildlife/buffer fences.
- Close Spring Creek waterfowl pond slide gate in July. Re-open and close as necessary in fall.
- Visually inspect fences during the grazing season as part of fence maintenance.
- Inspect new nest platforms and burrowing owl nest boxes for utilization.
- Inspect sensitive wildlife zones seasonally as part of monitoring activities (see sections 2.1.6 and 3.1.6 for the sensitive wildlife habitat monitoring plan and results).
- Coordinate additional wildlife monitoring activities (transects and point-count data) with local chapter of Bridgerland Audubon Society.

1.6.3 Property Coordination

Implementation Required: Resolve property and boundary issues (including encroachments and trespass) for implementation of the RMP. Ensure detailed tracking of property trades, acquisitions, and sales in order to facilitate an updated Exhibit G map (map showing the project boundaries). Property boundary changes are listed in Appendix E.

Exceptions to the RMP: Because several property issues involving on-going trespass by adjacent landowners had to be resolved through legal avenues, there are currently still some unresolved boundaries. Although none of these boundaries are specifically required to fulfill implementation obligations, delineation will continue in order to ensure adequate control of conflicting uses of company land. Final adjudication is currently scheduled for 1 November 2002. **Initial project implementation is complete.**

Work completed: PacifiCorp Property Management conducted surveying, staking or lease changes at multiple locations. Although many property issues have been completed, and despite an extended deadline granted for resolution of difficult property boundary matters, several remain unresolved (particularly those with impending legal and/or court involvement). Most of the remaining property issues are located in the Bear River Management Unit. Major property boundary issues remain with adjacent owners Falslev, Cardon, Lindley, and Kunzler. Delineation of these boundaries should occur once the legal work is concluded. Final adjudication is scheduled for 1 November 2002. Appendix F details the remaining property work requested and potential timelines for completion. Initial monitoring efforts in 2000 identified a number of areas throughout the Cutler project area as being farmed or grazed without a lease (trespass issues that have never been resolved). On-going resolution of these matters involves internal coordination with Property Management to assert control of trespass issues through a lease, or disallowing the farming or grazing activities. One major property boundary section, on the south side of Cutler Canyon, still needs to be surveyed so that corners can be marked and property lines posted; this work is scheduled for fall of 2002.

1.6.4 Water Quality Monitoring

The goal of this project component was to monitor the effect on water quality of the operational changes that were designed to ensure water quality in Cutler was not further degraded. For that to occur, baseline data on water quality had to be established in order to determine if water quality improvements are occurring and if the tributaries to the project get cleaned up.

Implementation Requirement: Conduct quarterly sampling in 1996, 1997, and 1998; after that, quarterly sampling every 5th year (i.e., 2003, 2008, etc.). Analysis and results to be included in this Five-Year Implementation and Monitoring Report.

Exceptions to the RMP: All sampling completed except 1st quarter sampling in 1997 and 1998, and 1st, 2nd and 4th quarters in 1996. **Initial project implementation is complete.**

Work Completed: Although no water quality monitoring was scheduled to occur in 2001, data gaps from previous year's monitoring efforts were identified and additional sampling was completed to fill these gaps. Recent and previously collected water quality data have been analyzed and the results described for monitoring purposes for inclusion into this report as required by the FERC license. The water quality report is included as Appendix G of this report.

O&M
The next scheduled date for PacifiCorp water quality sampling is 2003. Monitoring will continue quarterly every 5th year through the end of the current license (see sections 2.6 and 3.6 for water quality monitoring plans and results). Analysis and results will be submitted with each future Cutler Five-Year Monitoring Report.

1.6.5 Water Level Monitoring (Three-Year Bear River Basin Study)

This study was designed to evaluate the ability of the project to operate within the proposed mid-reservoir elevation ranges described in the RMP. The report submitted to FERC in 1999 revised the proposed operating elevation range targets.

Implementation Requirement: File the results of the reservoir elevation study with FERC by August 31,1997 (deadline extended to October 1999).

Exceptions to the RMP: In 1997, an extension to the filing date was granted by FERC. The final report was submitted by October 1, 1999; FERC indicated their acceptance of the report submitted in early 2002 with a final modified license article. Results of the water level monitoring were incorporated into the Three-Year Bear River Basin Study and Operational Plan for the Cutler Project. **Initial project implementation is complete.**

Work Completed: PacifiCorp completed the study and filed the results with FERC in 1999. On-going efforts are occurring to utilize the new information and to improve operation of the Cutler Hydro Project. FERC responded to the study results submitted in 2002 and were satisfied with the information contained. Their final order indicated their acceptance of our revised operations plan and water level targets, as well as specifying the dates by which annual monitoring data should be submitted. Average daily reservoir level monitoring data need to be submitted to FERC annually. Operating level data for 2002 will be submitted to FERC by December of 2002. The 2002 FERC order modifying the original license article is attached to this report as Appendix H. The Three-Year Bear River Basin Study and Operational Plan contains the following major points (see 28 September 1999 study for additional detail):

- Surface elevations at Cutler Dam and at Benson Marina were monitored from October 1996 through September 1998. Analysis of this data indicated that the water level was affected by various unmeasured inflows and irrigation withdrawals, the physical configuration of the reservoir, wind, and time delays. Monitoring indicated that the gauges at Benson and Cutler Dam could not be correlated well enough to make the Benson gauge useful for controlling reservoir elevations.

- A 1-year operations plan was tested to determine whether control of reservoir fluctuations from mid-reservoir (near Benson Marina) to the south end of the reservoir (South Marsh area) while maintaining the current irrigation supply was feasible. Except during the spring runoff period, the project was able to maintain elevations at Cutler Dam within the operating range but had much less control over the mid-reservoir elevations measured at Benson. The elevation at Benson was generally 0.5 feet higher than at the dam and consequently, it exceeded the proposed operating ranges throughout most of the study period.

O&M:

- PacifiCorp will monitor the operation of the project and report annually on compliance with the target ranges at Cutler Dam.

2.0 RMP MONITORING PLAN

The requirements of both the RMP and FERC's Cutler license orders relevant to this project stipulate the development of a monitoring plan for the implementation activities conducted (as summarized in Section 1.0 of this report). The license also stipulates that monitoring results be reported at five-year intervals over the life of the license; this report is the first in that series. Note that future reports will cover only results of on-going monitoring, as initial implementation is complete. The monitoring plan has been developed and is described in this section. Results of monitoring activities gauge the success and stability of implementation, but also help frame on-going O&M needs for the project that will result in continual improvement. In order to facilitate actual monitoring efforts, all data sheets developed as a part of this monitoring plan are included in Section 2.8, immediately following the descriptions of monitoring activities.

This section focuses on how the implementation activities will be monitored in order to ensure that the various program components remain as intended over the term of the license. In designing monitoring protocols for the Cutler project, several points were considered:

1) Results obtained from analysis of monitoring data should determine whether the five original project goals are being met (improve water quality; improve wildlife habitat; improve scenic resources; retain and improve traditional agricultural uses; improve recreational access to the project area).

2) The project boundaries encompass a very large area (almost 10,000 acres, with over 40 miles of buffer and over 70 miles of fences), so for monitoring to be effective over the whole project, efficient techniques need to be utilized.

3) Due to the number of adjacent landowners who continue to farm or graze or dump debris in trespass, it was deemed necessary to inspect all areas within the project boundary at least annually.

Monitoring protocols were established that generally follow the format of the RMP by adopting the initial five implementation programs as the basis for monitoring activities, and adding two new ones:

- Vegetation Enhancement Program
- Agricultural Lease Program
- Recreation Site Development Program
- Wetland Mitigation Program
- Fish Habitat Enhancement Program
- Water Quality Monitoring
- Water Level Monitoring

Although monitoring for most programs follows the categories described in Section 1.0 of this report, several notable exceptions occur. These changes are described here in order to facilitate tracking between the various sections of this report, as well as to assist in understanding changes made from previous annual reports regarding implementation activities (PacifiCorp 1993-1997; 1998, 1999, 2000; 2001). In particular, the 'Other RMP Components' section was eliminated and implementation activities formerly covered by that section were re-grouped with similar other project components in order to facilitate necessary monitoring tasks. For instance, monitoring protocols for both erosion control check dams and sensitive/unique wildlife habitats were shifted into Vegetation Enhancement Program monitoring, as related tasks were already being conducted as part of that program. Similarly, all monitoring tasks related to property management (formerly categorized as 'Other') were considered most appropriately combined with other Agricultural Lease Program monitoring activities. Two additional monitoring plan categories were added for the components of water quality and water level, as the schedule and intent of their monitoring protocols is very different from any of the other existing programs. Finally, although both the RMP and license indicate two separate categories of fence in the implementation requirements, because many of the fences in the two categories function to both mark the property boundary and protect sensitive wildlife habitats or other buffers, monitoring will no longer differentiate between these two

previous categories. Instead, they will be categorized for monitoring based on whether they delineate grazing pastures (cattle management fences), or function as boundary or buffer fences or posts (boundary/buffer fences).

The monitoring plan consists of a description of the protocols, tasks, and schedule required for monitoring each of the programs. Specific data sheets were designed for several of the monitoring tasks and are included in Section 2.8. The Hydro Compliance Staff (HCS) will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. This information will be used as documentation for each of the five-year monitoring reports required over the length of the license. Monitoring for several programs or elements within programs has already been completed. Where this is the case, the monitoring completed is described and either summarized or attached in an appendix.

2.1 Vegetation Enhancement Program

PacifiCorp Hydro Compliance staff (HCS) will conduct specific vegetation monitoring tasks as outlined below at locations where the Vegetation Enhancement Program has been implemented. Monitoring will be conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure project components remain 'established'. Any geographical (spatial) or management changes, or updates made from year to year with the monitoring plan, will be documented (GPSed if necessary) so that updates can be made in the GIS database. A vegetation enhancement monitoring key indicating monitoring location and type, establishment date and methodology, and monitoring activities to be conducted at each site is being developed to aid in the monitoring process. This monitoring data will be used as documentation for each of the five-year monitoring reports required over the length of the license.

The Vegetation Enhancement Program monitoring plan will include monitoring tasks for the following implementation categories:

- Shoreline buffers
- Woody vegetation pockets/Buffer shrub plots
- Bank stabilization
- Boundary/Buffer fences
- Erosion control sediment basins
- Sensitive/Unique wildlife habitats

2.1.1 Shoreline Buffer

There are 53 shoreline buffer monitoring areas comprising some 1098 acres located throughout the Cutler FERC project boundary (Figure 2-1). These buffer areas include both the FERC-required 50-acres of previously tilled and reseeded ground, as well as shoreline buffer areas (see Section 1.1.1 for additional detail). Each segment of the buffer has been labeled and delineated in the GIS database, and a monitoring photopoint has been established, marked on the ground (generally with a red-painted T-post), and GPSed. The permanent photo documentation stations provide an additional visual record of baseline habitat conditions contained within the buffer. Photopoints were selected in representative cover types or key areas based on results of initial site reconnaissance. Coordinates for photo points were obtained with the GPS and plotted on GIS maps. Photopoint descriptions and photo azimuths were recorded. Annual on-site photo documentation will be conducted using the specifications established for the permanent photo stations. Photos will be compared with baseline photos to ensure that buffers are maintained, desirable plant species increase, and that any encroachments are documented.

Buffer data sheets (see Section 2.8) have been used to record initial baseline conditions, and will also be used to track future changes in buffer conditions. All buffers will be monitored at a minimum annually (May-July) by HCS to check plant vigor (including estimates of dominant vegetation types), document any farming or other encroachment, record information regarding noxious weeds, note wildlife uses, and to ensure that the original intent of the RMP is being met. Additional monitoring may be utilized when warranted to resolve boundary or other encroachment issues. Supplemental information collected at each site will be acquired using photo points and by walk-through ocular assessments, which will provide further information on the survival and distribution throughout the buffer areas. Observers will meander through planted areas conducting ocular estimates of species composition, presence of noxious weeds, condition and presence of shrubs planted on small buffer plots, and noting the overall condition of the area. Observations will be recorded on the buffer data form (Section 2.8) and any needed maintenance activities will be noted and sketched on the back of the data sheet. In order to facilitate monitoring data collection, buffer data forms also note whether any other required monitoring needs to be conducted on a given parcel (i.e., presence of erosion control sediment basins, shrub plots, boundary/buffer fence [post], bank stabilization, etc).

Each buffer parcel is rated for overall condition as 'Excellent', 'Good', 'Poor', or 'At-Risk' based on the current site conditions. Although qualitative and categorical ratings scales such as these are by definition somewhat subjective, the following criteria are used to guide the rating system in order to reduce the level of subjectivity that will likely be encountered both over time and between different observers. Generally, the following site conditions would be expected for each category as noted:

- Excellent buffers—These areas are characterized by showing no active erosion, having established perennial vegetation, few or no noxious or other weedy species, and no signs of encroachment.
- Good buffers—These areas are characterized by having no or very limited signs of active erosion, or areas of improving (decreasing) active erosion; increasing and/or improving perennial vegetation; limited and scattered weedy/noxious plants; and no or previously managed evidence of encroachment.
- Poor buffers—These areas are characterized by showing active and/or increasing erosion, the presence of limited or decreasing perennial vegetation, widely established or increasing weedy/noxious species, and varying degrees of encroachment. Sites rated as 'Poor' may be referred for immediate or future remedial actions.
- At-Risk buffers—These areas often have characteristics similar to 'Poor' buffers, but are judged to be at immediate risk without remedial actions being taken. Most often, these sites have only annual or weedy vegetative covering that offers little protection form erosion, and/or the site conditions are being aggravated by continued or new and unresolved encroachment. Sites otherwise rated as 'Good' or better may also receive this rating if warranted by the threat or actual risk of encroachment. Sites rated as 'At-Risk' are automatically referred for remedial actions, either for re-planting or other reclamation, or through appropriate actions coordinated with PacifiCorp's property agents.

In order to condense the reams of data that will be collected annually for buffer monitoring, the following simplification of the buffer monitoring protocol will be carried out where possible. Once buffers have been rated as 'Excellent' for at least two years consecutively, if future annual monitoring visits do not reveal encroachments or other sign of degradation (e.g., invasion by weeds), the unchanged condition will simply be noted for that buffer site and no further monitoring data will be collected for that year. Annual visits will continue to occur, and data collection will resume if the overall site conditions degrade below the 'Excellent' rating.

The location of each shoreline buffer and the methods used to establish it have been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial buffer monitoring data collected to date.

The following tasks will be conducted during the annual monitoring visit:

- Take picture(s) at established photopoint(s)
- Make ocular estimates of plant community percentages
- Make ocular assessment of plant community change and health
- Inspect gullies in buffer to determine impacts of water runoff
- Assess noxious weed presence
- Document wildlife presence
- Document encroachment, if any
- Assess bank erosion and estimate extent, if any
- Assess overall woody vegetation pocket and/or buffer shrub plot condition, if any
- Determine overall buffer health and recommend remedial actions, if necessary

2.1.2 Woody Vegetation Pockets/Buffer Shrub Plots

There are 11 different woody vegetation pockets varying in size from 0.5-2.2 acres and 15 buffer shrub plots (ranging from 0.01-0.23 acres) located throughout the Cutler FERC project boundary (Figure 1-2; see also Section 1.1 for detail regarding the difference between these two license requirements). Monitoring of the woody vegetation pockets will be carried out in two different phases, as described below. Monitoring of seven of the

buffer shrub plots is observational only, and indicates continued presence/absence of shrub plots within their associated buffer polygon. For the remaining eight buffer shrub plots, monitoring tasks include collecting count data and permanent photopoint documentation similar to that described below for Phase I monitoring of woody vegetation pockets.

Phase I: Monitoring activities will continue with present methods through at least 2004 (all plots will be at least five years post-planting by then) or until woody vegetation pockets are deemed 'established' by HCS. Present methods include annual monitoring (conducted in May) by HCS to assess plant vigor, degree of overall plot 'establishment' or loss, and to ensure the original intent of the RMP is being met. Count data from a series of marked, established transects will be collected (Section 2.8 includes a sample data form), and a series of established, permanent photo points for each plot will be documented during each annual visit. Supplemental information will be acquired using ocular surveys.

Transect starting points and orientations were based on the size and shape of the planting area. Transects were distributed throughout the planting area to provide adequate representation of variation in the planting site. The entire planting areas were mapped showing species distribution across the plot and representative transect locations. Baseline data collected for transects at establishment included planting site name, transect name, transect dimensions, species planted, and number of individuals of each species (for the entire plot and by transect). Counted individuals on each transect were further marked with a pinflag to facilitate future counts. Count data will be collected annually during Phase I monitoring. Plot maps and baseline data are included in a binder with the vegetation enhancement monitoring key referenced in Section 2.1, above, in order to facilitate monitoring tasks. Permanent photo documentation stations (most plots have more than one) have been established for each woody vegetation pocket; photo monitoring will be conducted to provide a record of growth and vigor of shrubs in the woody pockets. The azimuth was specified for each transect and photopoint. Representative plot photopoints will be included in internal annual reports and future five-year monitoring reports. Photos will be available for inspection if requested by agencies. Walk-through ocular assessments of the overall woody vegetation planting areas will also be conducted during monitoring. Observers will meander through planting areas to identify pockets of dead shrubs or other survival risks that may not be detected on monitoring transects. Observations will be recorded as field notes and, if necessary, sketched on maps of the planting sites.

Count data that indicate marginal survival will be replicated the following year as previous monitoring results indicate that often shrubs grow back from the roots the next year, so at least two years of data indicating inadequate survival should be collected prior to augmenting plantings following marginal assessments. The woody pocket sites will be considered 'established' when ocular estimates of shrub canopy cover exceed five percent over the plot (metric based on ecological data from similar arid ecosystem shrublands), and when average species count data continue to exceed 20 percent of baseline counts (metric based on density of original plantings and potential shrub size at maturity as an indication of canopy cover once plot is considered 'established'). Once the woody pockets have been deemed 'established', the monitoring protocol will be simplified for Phase II.

Initial **Phase II** baseline monitoring tasks will include designation and demarcation of one representative transect per plot. Shrub count data will be collected for that transect. This new baseline count data will represent the number of shrubs on the plot when it is considered 'established' at the conclusion of Phase I monitoring. The simplified Phase II monitoring tasks will include annual visual inspection and documentation regarding overall woody vegetation plot condition (including significant mortality), any evidence of encroachment or wildlife damage, or invasion of the site by undesirable species. In addition, every third year, Phase II monitoring tasks will include the preceding, as well as photopoint monitoring as undertaken previously during Phase I of the monitoring, and collecting transect count data to compare to the 'established' baseline. Wildlife use of the woody vegetation pockets will be also documented. Photopoint monitoring is only deemed necessary every three years due to the extremely slow rate of growth observed over prior years of monitoring planted shrubs on the Cutler project lands. A metric of 50 percent loss of shrub numbers as compared to the 'established' transect count data, or a reduction of shrub canopy to less than 5 percent canopy cover per site will be used to determine any remedial action necessary for a particular plot during Phase II of the woody vegetation monitoring program.

The location of each woody vegetation pocket and buffer shrub plot, as well as the planting dates and supplemental site planting data (if any) have been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed supplemental planting and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial woody vegetation pocket monitoring data collected to date.

Phase I annual monitoring tasks include the following:

- Take pictures at established photopoints
- Collect count data for all transects and circle plots at each woody vegetation planting site
- Inspect overall site for encroachments or other factors that either could or have had a negative effect on the plot; document if necessary
- Assess overall plot survival; confirm marginal results with a second year of count data prior to initiating augmentation plantings
- Using Phase I metrics (greater than 5 percent canopy cover and an average of at least 20 percent survival across species, as compared to baseline transect data), determine when plots are 'established' and Phase II monitoring can begin

Once plots have been determined to be 'established', Phase II annual monitoring tasks will include the following:

- Inspect overall site for encroachments or other factors that either could or have had a negative effect on the plot; document if necessary
- Assess overall plot survival and condition (ocular survey only)
- Document incidental data regarding wildlife use of woody vegetation plot

In addition, every third year after beginning simplified Phase II monitoring cycle, tasks will include the following:

- Take pictures at established photopoints
- Inspect overall site for encroachments or other factors that either could or have had a negative effect on the plot; document if necessary
- Collect count data for the one new transect at each 'established' woody vegetation planting site
- Assess overall plot survival; compare count data to new baseline count data from transect judged 'established'
- Using Phase II metrics (greater than 5 percent canopy cover and an average of at least 50 percent survival across species, as compared to new baseline transect data from 'established' plot), ensure numbers and densities continue to meet RMP objectives.

2.1.3 Bank Stabilization

There are 17 different bank stabilization areas comprising some 20,900 feet located throughout the Cutler FERC project boundary (Figure 1-3). Most are located within designated shoreline buffer polygons. Each individual bank stabilization project has been identified with a site name, and data collected regarding initial construction dates, techniques utilized, and lengths stabilized (often multiple techniques were used on different sections of individual projects). A permanent monitoring photopoint has been established for each stabilized bank section and marked on the ground (generally with a red-painted T-post). All site data have been collected with a GPS and stored digitally in the project GIS database. These bank stabilization areas will be monitored annually (June) by HCS to ensure that bank stabilization components are still functioning, plantings remain established, to note any new bank erosion on site, as well as to note any encroachment or invasion by noxious weeds, and generally to ensure that the original intent of the RMP is being met.

Bank stabilization data sheets (see Section 2.8) have been used to record initial baseline conditions, and will also be used to track future changes in bank conditions. The permanent photo documentation stations provide an additional visual record of baseline habitat conditions contained within the stabilized bank section. Photopoints were selected in key areas based on results of initial site reconnaissance. Coordinates for photo points were obtained with the GPS and plotted on GIS maps. Photopoint descriptions and photo azimuths were recorded. Annual on-site photo documentation will be conducted using the specifications established for the permanent

photo stations. Photos will be compared with baseline photos to ensure that banks are maintained, desirable plant species increase, and that new bank erosion on stabilized sites is documented. Supplemental information collected at each site will be acquired using ocular surveys, which provide further information on the survival of the planted areas and condition of the bank. Initial monitoring tasks (conducted from 1996-2002) also included obtaining count data for shrub survival on transects located along planted, stabilized banks. Because this data was used simply to assess which species and techniques helped improve shrub establishment and survival on bank stabilization projects, this count data will likely be discontinued in future monitoring efforts. Observations will be recorded on the bank stabilization data form and any needed maintenance activities will be noted and sketched on the back.

This data will also be input into the digital database, which will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial bank stabilization monitoring data collected to date.

The following tasks will be performed during the annual monitoring visit:

- Take picture at permanent photo documentation point
- Inspect overall site for condition of bank and bank stabilization components
- Assess condition of vegetation and note whether desirable vegetation is increasing
- Assess whether bank stabilization site is still successful, or is at risk and needs remedial work
- Note presence of any new or enlarged bank failures on stabilized site
- Note incidental wildlife use

2.1.4 Buffer/Boundary Fences

As noted above in sections 1.1.5 and 1.2.5, because the Cutler project has now shifted to a focus on monitoring, some implementation categories have been re-grouped in order to facilitate necessary monitoring activities. Although the RMP and related license articles originally required two separate categories of fencing in order to address both property boundary control issues and wildlife habitat protection issues, because many of the fences built function in both capacities, monitoring activities will no longer differentiate between these two types of fence. Instead, for monitoring purposes, regardless of RMP category under which the fence or posts were erected, monitoring will occur in one of two sections: in this section for boundary/buffer fences and in the Agricultural Lease Monitoring Program, Section 2.2.4, for fences that delineate grazing pastures (hereafter, cattle management fences). Boundary/buffer fences can be either barbed wire or wood posts, depending on adjacent land management practices (posts were used where simply marking the boundary was sufficient to control uses). Although the license articles requires that at least 12 total miles of fencing be constructed, it became apparent that more miles of fencing than originally anticipated were necessary in order to adequately delineate and protect the project boundary. Although not specifically required to fulfill implementation obligations, establishment of buffer fences at several locations (Cardon, Falslev, Kunzler, Lindley) in the Bear River Management Area will continue in order to ensure adequate control of conflicting uses of company land. Delineation of these buffers should occur once the legal work is concluded.

Boundary/buffer fences and posts are located throughout the Cutler FERC project boundary and delineate approximately 42 miles of habitat or shoreline buffer (Figure 2-2). Monitoring activities will be conducted annually (May-July) in conjunction with buffer monitoring (to simplify tasks as most buffers are delineated by either fence or posts) by HCS. All segments of fence and posts will be inspected at least annually, and potentially more frequently in areas where conflicts or encroachment/removal have previously occurred. Monitoring will ensure posts (carsonite and wood) are still erect and in their proper position (utilizing the GIS database indicating original placement location), that wire fences are still intact, and will note any encroachment or other disturbance that would preclude the original intent of the RMP being met. Observations and overall conditions of the post and or fence will be recorded on a boundary/buffer fence data sheet (Section 2.8) and any needed maintenance activities will be noted and sketched on the back of the data sheet.

LARGE-FORMAT IMAGES

One or more large-format images (over 8 ½" X 11") go here. These images are available in FERRIS at:

For Large-Format(s):

Accession No.: 20030601-0443

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File Date: 12-26-02 Docket No.: P-2420

Parent Accession No.: 20030115-0241

Set No.: 2 of 3

Number of page(s) in set: 9

The location of each segment of fence and individual wood/carsonite posts have been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial boundary/buffer fence monitoring data collected to date.

The following tasks will be conducted during the annual monitoring visit:

- Inspect fences and individual posts for correct location and overall condition
- Assess and document fence/post function and any necessary maintenance
- Document any removal/encroachment

2.1.5 Erosion Control Sediment Basins

Thirteen functioning erosion control sediment basins are located on the west side of the Cutler FERC project boundary, in the North Marsh and Reservoir Management Units (Figure 1-7). Monitoring activities will be conducted by HCS at least annually (April-May) in conjunction with monitoring of some of the sensitive/unique wildlife habitats (to simplify tasks as most check dam structures are in the near vicinity or have created these habitats). Monitoring will ensure that T-posts marking the edges of the check dams are still erect and in their proper position, that the sediment basins are functional and have not been blown out by spring runoff flows or filled with sediments, note wildlife use of the created habitats (depending on water supply; includes small ponds, seasonal wetlands, and mud flats), and note any encroachment or other disturbance that would preclude the original intent of the RMP being met. Observations and overall conditions of the erosion control basins will be recorded on an erosion control check dam data sheet (Section 2.8) and any needed maintenance activities will be noted and sketched (if necessary) on the back of the data sheet.

The location of each erosion control check dam structure has been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial erosion control sediment basin monitoring data collected to date.

The following tasks will be conducted during the annual monitoring visit:

- Check for presence of T-posts utilized to mark the structures
- Assess and document condition of check dam structures; note whether water is perennial or ephemeral
- Determine whether sediment catch basin is full and needs to be re-dredged to continue to function.
- Assess and document wildlife use of created habitats
- Determine if any maintenance work on structures is needed.

2.1.6 Sensitive/Unique Wildlife Habitats

Sensitive/unique wildlife habitats are located throughout the Cutler FERC project boundary, but particularly in the North and South Marsh, Bear River, and Canyon Management Units (Figure 1-7). Monitoring activities will be conducted by HCS at least annually (April-May) in conjunction with monitoring the erosion control sediment basins (to simplify tasks as most check dam structures are in the near vicinity or have created sensitive/unique habitats). PacifiCorp HCS monitoring tasks will ensure that the fences constructed to protect the great blue heronry, ibis, gull, and egret colonies, and Sandhill crane nest areas are functional, that slide gates used to improve water quality and levels in wildlife ponds are functional, that created shrub habitat along the RR dike continues to flourish, ensure the condition of the osprey nest platforms and artificial burrowing owl nest boxes, as well as note wildlife use of created habitats (including ponds, seasonal wetlands, and mud flats), and note any encroachment or other disturbance that would preclude the original intent of the RMP being met. Observations and overall

conditions of these habitats will be recorded on a sensitive/unique wildlife habitat data form (Section 2.8) and any needed maintenance activities will be noted and sketched (if necessary) on the back of the data form. Additional monitoring of related programs (i.e., grazing management, wildlife food/cover plots, and the recreation use policy) will help coordinate results to continue to improve management of sensitive/unique wildlife resources.

Although not required to meet monitoring goals, additional monitoring is being conducted through a cooperative agreement with the Bridgerland Audubon Society, which monitors monthly transects and documents avian and other wildlife use at several locations within the project boundary. Their monitoring data is supplied to PacifiCorp in the form of annual reports detailing findings, including species lists and abundance measurements.

The location of areas delineated as containing sensitive or unique wildlife habitats has been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial sensitive/unique wildlife habitat monitoring data collected to date.

The following tasks will be conducted during annual monitoring:

- Ensure buffer fences are up and maintained prior to the grazing season; inspect fences during the grazing season as part of fence maintenance
- Assess wildlife utilization and any encroachment in sensitive wildlife zones (heronry, ibis, gull, and egret colonies, canyon wildlife pond) seasonally; document results
- Inspect Spring Creek waterfowl pond slide gate annually
- Inspect shrub plantings along RR dike
- Inspect osprey nest platforms and burrowing owl nest boxes for condition and utilization.
- Coordinate additional wildlife monitoring activities (utilizing standardized transects and point-count data methods) with local chapter of Bridgerland Audubon Society
- Coordinate results with monitoring from related programs (grazing management, wildlife food/cover plots, and recreation use policy). Continue to improve management of sensitive wildlife resources

2.2 Agricultural Lease Program

PacifiCorp Hydro Compliance staff (HCS) and/or property agents will conduct specific agricultural monitoring tasks as outlined below at locations where the Agricultural Lease Program has been implemented. Monitoring will be conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure project goals remain 'established'. Any geographical (spatial) or management changes or updates made from year to year with the monitoring plan will be documented (GPSed if necessary) so that updates can be made in the GIS database. Monitoring data will be used as documentation for each of the five-year monitoring reports required over the length of the license.

The Agricultural Lease Program monitoring plan will include monitoring tasks for the following implementation categories:

- Grazing pastures and leases
- Farming leases
- Wildlife food/cover leases
- Cattle management fence
- Other property/trespass coordination

2.2.1 Grazing Pasture and Leases

Thirty-eight separate grazing pastures comprising some 1140 acres are managed as part of the standard grazing leases (parcels managed to enhance habitat and also provide fee revenue). They are located in the North and South Marsh Management Units of the Cutler FERC project boundary (Figure 1-5; Table 1.1). An additional 595 acres can be leased for grazing solely for the ability to utilize grazing as a tool for effective wildlife habitat management, in accordance with the management goals set for those areas (located in the North and South Marsh and Cutler Canyon Management Units). Because these parcels are not part of the 1140 acres managed as part of the standard grazing leases, they are leased only on an annual basis, and only after a determination has been made as to the need for grazing for that season. All grazing pastures are managed in accordance with an intensive rotational grazing system. Monitoring is an essential activity that allows for successful grazing of these pastures, while still providing specific wildlife (primarily shorebird and waterfowl) habitats according to the goals set by the Cutler RMP. The data collected by HCS during monitoring is used for compliance assessment, monitoring habitat changes, making management decisions, and evaluating pasture improvement treatments. Depending on the goals originally set in the RMP and related standard practices for which specific species enhancements are being managed, different pastures have different forage utilization targets (information available on request from PacifiCorp's Hydro Resources, Salt Lake City North Temple Office). Monitoring occurs at the beginning and end of each grazing year (May, September-November, generally), as well as during the time period that each pasture is actually being grazed. These pastures are monitored annually by HCS to ensure that habitat enhancement goals are being met, that pasture conditions meet goals for forage utilization, to check the number of animals foraging, to note any encroachment or invasion by noxious weeds, and generally to ensure that the original intent of the RMP is being met. All pasture data, including locations of fences, gates, springs, and weed invasions and other management challenges, were originally collected with a GPS and have been stored digitally in the project GIS database.

Grazing monitoring data sheets (see Section 2.8) will be used to record initial baseline conditions, observations, and overall conditions in each set of pastures, and will also be used to track future changes in pasture and associated habitat conditions. Currently, monitoring data utilizing Robel pole measurements of forage availability (Schmidt 1996) and supplemental ocular surveys are deemed appropriate to meet management goals. Supplemental information collected in each pasture from ocular surveys provides observations on the condition of forage species, wildlife utilization, condition of river and ditch banks, presence of weeds and other undesirable plant species, as well as irrigation system condition, fence and gate repair, and other potential maintenance issues. Any necessary maintenance activities are noted, GPSed and sketched (if necessary) on the back of the data form.

These data records will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. Data will also be tracked and filed digitally, and in this case, included with new lease conditions, if necessary. Monitoring data are also used to adjust grazing rotations as necessary for specific pasture conditions; also see Section 2.2.5, below, for additional detail regarding lease compliance and monitoring information tracking in coordination with Property Management. Future monitoring will need to address grazing on company lands that is currently proposed to be leased to the Wattersons; once that property transaction is complete, a grazing management plan will be finalized and managed by HCS and administered by property agents. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial grazing pasture monitoring data collected to date.

The following tasks will be conducted during the annual monitoring visit:

- Monitor and document the number of cows present by pasture
- Collect and record visual and Robel pole estimates of forage utilization and remaining available forage (take pictures of select Robel pole measurements)
- Identify additional areas in need of reseeding or weed control.
- Assess target forage levels by pasture goals.
- Determine presence of noxious, and or annual weeds, if any; GPS patches discovered
- Monitor degree of compaction, tillage, and erosion caused by "hoof action" in varied locations throughout pasture
- Assess condition and impact of pasture treatments (weed spraying, harrowing, fertilizing etc.)
- Assess effects of grazing on wildlife and/or wildlife habitat
- Assess changes in pasture vegetation community composition, if any (in comparison to baseline percentage type data)

2.2.2 Farming Leases

Approximately 458 acres are managed by HCS under the Farming Lease Program and administered by property agents. They are located in the Reservoir Management Unit of the Cutler FERC project boundary (Figure 1-5; Table 1-1). Several areas have been identified as being farmed without a lease. These unresolved and on-going property issues will have to be addressed and monitored with the cooperation of the property agents. Farming leases will continue to be improved through application of guidelines and conditions outlined in the RMP. Monitoring by the property agents will ensure compliance with the RMP and lease conditions. Instances of non-compliance will be documented through the incident tracking protocol instituted by the property agents; also see Section 2.2.5, below, for additional detail regarding lease compliance and monitoring information tracking in coordination with Property Management. Data will also be tracked and filed digitally. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year.

The following tasks will be conducted annually or as needed:

- Coordinate lease administration through Property Management
- Monitor all farming lease areas to ensure compliance with RMP and lease conditions. Report non-compliance to property agents for documentation according to incident tracking protocol
- Coordinate resolution of incidents with property agents and legal staff, if necessary

2.2.3 Wildlife Food/Cover Plot Leases

As noted above in sections 1.2.4 and 1.2.2, up to seven fields (located in the North and South Marsh Management Units) and the pastures in Cutler Canyon are managed to provide additional wildlife foraging and cover habitats (Figure 1-7). Because grazing is the predominant management tool used to achieve desired habitat goals, much of the monitoring is done in conjunction with the grazing lease monitoring, including utilizing the grazing monitoring data form (Section 2.8). Grazing in these parcels is not considered part of the Grazing Lease Program

as these areas are grazed strictly to meet management goals for enhanced wildlife habitat. The assessments regarding whether to graze these parcels are made on an annual basis, and only after both spring and fall (May, November) monitoring tasks have been conducted.

Grazing monitoring data sheets (Section 2.8) will be used to record initial baseline conditions, observations, and overall conditions in each set of pastures, and will also be used to track future changes in pasture and associated habitat conditions. If additional information is determined to be necessary in the future, permanent photo documentation stations and /or transects may also be added to provide wider-ranging records of habitat conditions within the pastures. If utilized, photopoints will be selected in key areas based on results of initial site reconnaissance. Currently, monitoring data utilizing Robel pole measurements of forage availability (based on Schmidt, 1996) and supplemental ocular surveys are deemed appropriate to meet management goals. Supplemental information collected in each pasture from ocular surveys will provide observations on the condition of forage species, wildlife utilization, condition of river- and ditch banks, presence of weeds and other undesirable plant species, as well as fence and gate repair, and other potential maintenance issues. Any necessary maintenance activities will be noted, GPSed and sketched (if necessary) on the back of the data form.

These data records will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities. Data will also be tracked and filed digitally, and in this case, included with new lease conditions, if necessary. Monitoring data will also be used to adjust grazing rotations as necessary for specific pasture conditions; also see Section 2.2.5, below, for additional detail regarding lease compliance and monitoring information tracking in coordination with Property Management. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial wildlife food/cover plot monitoring data collected to date.

The following tasks will be conducted during the spring and fall monitoring visits:

- Document utilization by wildlife for both target (waterfowl, shorebirds, cranes) and other species (neotropical migrant songbirds, raptors, etc.)
- Monitor and document the number of cows present by pasture
- Collect and record visual and Robel pole estimates of forage utilization and remaining available forage
- Identify additional areas in need of reseeding or weed control.
- Assess target forage levels by pasture goals.
- Determine presence of noxious and/or annual weeds, if any; GPS patches discovered
- Monitor degree of compaction, tillage, and erosion caused by "hoof action" in varied locations throughout pasture
- Assess condition and impact of pasture treatments (weed spraying, harrowing, fertilizing etc.)
- Assess effects of grazing on wildlife and/or wildlife habitat

2.2.4 Cattle Management Fence

As noted above in sections 1.1.5, 1.2.5, and 2.1.4, because the Cutler project has now shifted to a focus on monitoring, some implementation categories have been re-grouped in order to facilitate necessary monitoring activities. Although the RMP and related license articles originally required two separate categories of fencing in order to address both property boundary control issues and wildlife habitat protection issues, because many of the fences built function in both capacities, monitoring activities will no longer differentiate between these two types of fence. Instead, for monitoring purposes, regardless of RMP category under which the fence or posts were erected, monitoring will occur in one of two sections: in this section for cattle management fences and in Section 2.1.4, for all fences (boundary or buffer) that do not delineate the grazing pastures located in the North and South Marsh Management Units.

There are approximately 31 miles of cattle management fence segments located in the North and South Marsh Management Units of the Cutler FERC project boundary that delineate the pastures leased for grazing under standard grazing practices (Figure 2-2). Monitoring activities will be conducted prior to the commencement of the summer grazing season (April-May, generally 1 June) by either HCS or the fence contractors. All segments of

fence will be inspected at least annually, and potentially more frequently in areas where conflicts with adjacent grazing programs have occurred. Monitoring will ensure that wire fences are still intact, and note any encroachment or other disturbance that would preclude the original intent of the RMP being met. Observations and overall conditions of the fence will be recorded on a cattle management fence data sheet (same as buffer/boundary fence data form; Section 2.8) and any needed maintenance activities will be noted and sketched on the back of the data sheet, and reported to the fencing contractors if necessary. Lessees are also responsible for monitoring the condition of the fences around their cows, and either notifying HCS of problems or making repairs themselves, as appropriate.

The location of each segment of fence has been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance and to track monitoring data over the length of the license. The completed data will be reviewed annually to assess any necessary maintenance activities and schedule them for resolution that year. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Section 3.0 of this report summarizes the initial cattle management fence monitoring data collected to date.

The following tasks will be conducted during the annual monitoring visit:

- Inspect fences for overall condition
- Assess and document fence function and any necessary maintenance
- Document any removal/encroachment

2.2.5 Property Coordination

As stated in Section 2.2.2, several areas have been identified as being farmed without a lease. These unresolved and on-going property issues will have to be addressed and monitored with the cooperation of property agents. Monitoring by the property agents will ensure compliance with the RMP and lease conditions. Instances of non-compliance will be documented through the following incident tracking protocol instituted by Property Management:

1. An incident report will be completed by property agents to document what problems exist and what solution is being proposed (see Section 2.8).
2. Concurrently with step 1, an initial letter will be sent to the corresponding landowner notifying them of the trespass or damage and the expected remedy. If appropriate, an on-site visit to the subject property will be requested to clarify both the problem and the solution.
3. If the problem happens a second time, visit with the landowner and discuss why the problem persists and if there is any needed clarification; notify them that legal action will be taken if problem persists.
4. If the problem happens a third time, a letter from an attorney will be sent with detailed expectations and specific remedies, fines or legal action.

The documents in steps 1 and 2 will become part of a tracking system implemented to log all interactions and transactions with other landowners so that anyone who needs the history on a property, specific transaction, or landowner will have accurate information and be able to deal with situations more efficiently. Copies of communications will also go to landowners, in order to eliminate problems resulting from forgotten conversations and/or personnel changes.

The above documentation will be filed according to adjacent landowner or lessee name and consist of all dates and details regarding any transactions, sales, purchases, trespasses, legal actions, written and/or verbal communications, etc. Each landowner file will be stored as both hard copy and electronic copy to be accessible by name or date to any necessary PacifiCorp staff. The HCS will file the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally.

2.3 Recreation Site Development Program

PacifiCorp HCS will conduct recreation site monitoring tasks as outlined below at the locations where the Recreation Site Development Program has been implemented. Monitoring will be conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure investments are maintained appropriately for public use. Any geographical (spatial) or management changes or updates made from year to year with the monitoring plan will be documented (GPSed if necessary) so that updates can be made in the GIS database. Monitoring data will be used as documentation for each of the five-year monitoring reports required over the length of the license.

The Recreation Site Development Monitoring Plan includes monitoring tasks for the following implementation categories:

- Recreation areas, including four 'developed' and three 'primitive' sites; two walking trails (including fishing bridge); three marked canoe trails; and two boat-in picnic sites
- Recreation Use Visitor Survey

2.3.1 Recreation Areas

The four 'developed' recreation sites are located at Cutler Canyon, Benson Marina, Upper Bear River Access, and Cutler Marsh Marina (Figure 1-6). These 'developed' recreation sites are categorized as having boat ramps suitable for motorized boat access and permanent restroom facilities, and also include: informative and interpretive signs, parking areas, picnic areas, fire pits and/or grills, and trash containers. Visual inspections will be conducted on an annual basis (April) by HCS to assess property condition, safety concerns, vegetation vigor, waste disposal, clean-up needs, and note any other necessary remedial actions as described on the 'Recreation Site Monitoring' data sheet (Section 2.8). The completed data sheet will be reviewed with plant staff to schedule major maintenance needs. Cutler plant staff will also conduct additional inspections and vehicle counts in conjunction with weekly maintenance (mowing, restroom cleaning, etc.) during heavy use periods (May-December), and then coordinate any damage or other notable findings with HCS. The following monitoring tasks will be conducted during annual HCS visits of the four developed recreation sites:

- Assess overall site condition
- Count vehicles at site during monitoring inspection
- Inspect boat launch, floating dock, and hand rails
- Inspect information and interpretive signs
- Inspect parking areas
- Inspect picnic tables and shelters
- Inspect trees, shrubs, and other vegetation
- Inspect fire pits/grill areas
- Inspect restroom facilities (inside and out)
- Inspect parking area cables, posts, fence, gates and barricades
- Inspect refuse containers

The three 'primitive' recreation areas are located at the Bear River Overlook, Clay Slough, and the Little Bear River (Figure 1-6). These sites are characterized as having no launch or small car-top boat launch only capabilities (no launch ramps), seasonal portable toilets, small parking areas, and informative and interpretive signs. Note that monitoring at a fourth primitive site—the Logan River site—will be added once it is completed. Visual inspections will be conducted on an annual basis by HCS to assess property condition, safety concerns, vegetation vigor, waste disposal, clean-up needs, and note any other necessary remedial actions as described in the 'Recreation Site Monitoring' data sheet (Section 2.8). The completed data sheet will be reviewed with Cutler plant staff to schedule major maintenance needs. Cutler plant staff will also conduct additional inspections and vehicle counts in conjunction with weekly maintenance (restroom cleaning, etc.) during heavy use periods (May-December), and then coordinate any damage or other notable findings with HCS. The following monitoring tasks will be conducted during annual HCS visits of the four primitive recreation sites:

- Assess overall site condition
- Count vehicles at site during monitoring inspection
- Inspect floating dock and hand rails
- Inspect information and interpretive signs
- Inspect parking areas
- Inspect picnic tables
- Inspect trees, shrubs, and other vegetation
- Inspect restroom facilities (inside and out)
- Inspect parking area cables, posts, fence, gates and barricades
- Inspect refuse containers

The developed walking trails are located south of Benson Marina and south of the Upper Bear River Access recreation areas (Figure 1-6). HCS will inspect these trails bi-annually (via walking, April/November). Visual inspections will assess: overall property condition (such as trespass OHV use), safety concerns, vegetation vigor, waste disposal, clean-up needs, and note any other necessary remedial actions as described in the 'Recreation Site Monitoring' data sheet (Section 2.8). The following monitoring tasks will be conducted during annual HCS visits of the two developed walking trails:

- Assess overall condition of trail and surrounding lands; document trespass OHV or other use, if necessary
- Document wildlife use of the area
- Inspect barricades
- Inspect trails for debris and obstructions
- Inspect information and interpretive signs
- Inspect bridge crossings and hand rails; also fire pit (RR walking trail only)

The three developed and marked canoe trails are the North Marsh, Logan River and Little Bear River canoe trails, located in the North and South Marsh Management Units (Figure 1-6). These trails will be monitored (via canoeing) bi-annually, once at ice off (March/April) and then again in October/November before freeze-over. Visual inspections will assess the overall condition of the river sections the canoe trails traverse, as well as the condition of the aquatic trail markers, and note any wildlife observations; data forms (Section 2.8) will be completed during monitoring visits. The following monitoring tasks will be conducted during annual HCS visits of the three canoe trails:

- Assess overall condition of each river segment traversed
- Inspect individual trail marker buoys and anchors (utilize original GPS location data to ensure presence at each location)
- Inspect interpretive signs at launch points
- Document wildlife use
- Inspect for debris and obstructions in the channel

Two boat-in day use sites located in Cutler Canyon (Figure 1-6) will be monitored by HCS (via boat) annually (March/April). Visual inspections will assess the overall condition of the boat-in sites, as well as the condition of the signs, docks, stairs, and safety markers; data forms (Section 2.8) will be completed during monitoring visits. The following monitoring tasks will be conducted during annual HCS visits of the two boat-in picnic sites:

- Assess overall condition of boat-in site, including docks, handrails, stairs, and site vegetation
- Inspect interpretive and informative signs at picnic sites
- Document any unintended use of picnic sites
- Inspect for debris, obstructions in the channel, or other safety hazards
- Inspect picnic tables
- Document incidental wildlife observations

The location of each recreation site, information or interpretive sign, dock, tree or shrub, restroom facility, gate, fence, fire pit, picnic table, canoe trail marker buoy, and trail location have all been captured with a GPS unit and stored in PacifiCorp's GIS database. This database will be used to document the location of any needed maintenance, reinstate the location of any missing items, and to track monitoring data over the length of the license. Monitoring data sheets (Section 2.8) will be completed at each scheduled visit by HCS. The HCS will file

the completed data forms noting any required maintenance activities at PacifiCorp's Salt Lake City North Temple Office in binders containing all monitoring data for a given year. Data will also be tracked and filed digitally. Recommendations regarding any necessary repair and maintenance will be made during coordination meetings with the Hydro Resource Project Manager. The completed data will be reviewed annually to assess any necessary maintenance activities. Section 3.3 of this report summarizes the initial recreation site monitoring data collected to date.

2.3.2 Recreation Visitor Use Survey

A visitor use survey of recreationists was an additional requirement of the FERC license. In order to fulfill that monitoring requirement, a survey was commissioned from a graduate-level recreation class at Utah State University. The survey questions and protocol followed are reproduced in Appendix B. Section 3.3 of this report summarizes the recreation visitor use survey data collected in 2002. Supplemental information in the form of weekly car count data has been collected by Cutler Plant staff for several years. The count data was reported monthly to PacifiCorp's Salt Lake City North Temple Office and is available upon request. This monitoring component is now complete and will not be addressed in future five-year monitoring reports.

2.4 Wetland Mitigation Program

Monitoring was conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure that the created wetlands were developed and will be maintained appropriately under the terms of the Section 404, Clean Water Act permit granted as part of the recreation site development program. The location of the created wetlands is shown on Figure 1- 7. The location has also been GPSed and is part of the PacifiCorp Cutler project GIS database.

The year 2000 was the end of the final required monitoring season for wetland establishment. The final monitoring report was submitted to, and accepted by, the COE in the fall of 2000. As noted in Section 1.4, management of this wetland was returned to the landowner, UDWR, following a site visit in spring of 2001. The final wetland monitoring is included with this report, as stipulated by the FERC license (Appendix C). Monitoring for this program is now complete, and was finalized following the spring 2001 site visit with the UDWR to ensure an appropriate transition following completion of PacifiCorp's project. It is noteworthy that on-going O&M measures (particularly water supply and level) needed to ensure the continued function of this created wetland were apparently not conducted by UDWR staff in 2001 or 2002. The PacifiCorp implementation and monitoring program is now complete; however, future monitoring and maintenance may be conducted by UDWR or local interest groups.

2.5 Fish Habitat Structure Program

Monitoring was conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure project goals were met. The location of all 26 fish habitat structures was collected with a GPS unit and added to the PacifiCorp GIS database (Figure 1-7).

The original Fish Habitat Structure Program monitoring plan had three main components:

- Electro-fishing in cooperation with UDWR in the vicinity of the new fish habitat structures immediately after their placement in 1995, and then repeated again in 1996, 1998, and 2000
- Regular visual maintenance inspections of the structures
- Completion of a creel census survey of anglers, originally proposed for 1998

The fish habitat structure monitoring plan and schedule was changed per agreement with UDWR (letters from Sorenson, Scott, and Barr; included in Appendix D). PacifiCorp proposed to suspend angler surveys (no anglers could be located during the initial sampling period for this monitoring element) until angler use increases to a point where adequate and meaningful creel census data can be collected. Further inspection of the structures was also deferred until the next major reservoir drawdown (none are currently scheduled). UDWR concurred with both recommendations, as current angling levels would not support relevant survey data, and it is apparent that reservoir turbidity precludes adequate underwater visual inspection of the fish habitat structures. Monitoring consisted of electro-fishing in the vicinity of the structures as a cooperative activity involving both PacifiCorp and UDWR biologists. Monitoring activities occurred as scheduled in 1995, 1996, 1998, and 2000. Section 3.0 of this report summarizes the fish habitat monitoring data collected.

Although all proposed electro-fishing monitoring activities have been completed, additional UDWR-cooperative monitoring could be conducted in the future if warranted by perceived changes in site conditions and/or angler success, or the need for additional information regarding aquatic game species. Currently, however, it appears that water quality limitations, as well as extremely high carp population numbers may limit both angler pressure and success in Cutler Reservoir proper. Visual monitoring of structure conditions will occur when feasible, and an angler survey can be conducted whenever angler numbers increase to the point that meaningful census data can be collected, per notification by UDWR.

2.6 Water Quality Monitoring

Monitoring has been and will be conducted to ensure compliance with the Cutler RMP, Article 402 of the FERC license order, and to ensure project goals are met. Any geographical (spatial) or management changes or updates made from year to year with the monitoring plan will be documented (GPSed if necessary) so that updates can be made in the GIS database.

The Water Quality Monitoring Plan includes the following monitoring tasks:

- Conduct quarterly sampling in 1996, 1997, and 1998. Include analysis and results of initial water quality sampling in this Five-Year Implementation and Monitoring Report
- Starting in 2003, conduct quarterly sampling every 5th year (i.e., 2003, 2008, 2013, 2018, 2023) through the end of the license. Include analysis and results in future five-year monitoring reports
- Cooperation and coordination with various state, federal, and local agencies regarding water quality issues in the Cutler project area

A separate water quality monitoring report was generated for this monitoring element because improvements in water quality and associated issues in the Bear River Basin are currently the focus of a variety of state, local, and federal agencies and non-governmental agencies (NGOs). As a result, PacifiCorp believes that the detailed discussion of water quality sampling methodology, analysis, and results produced is warranted for this project component. The complete water quality monitoring report is therefore included as Appendix G of this report and summarized below.

As stated previously in Section 1.6.4, although no water quality monitoring was scheduled to occur in 2001, data gaps from previous years monitoring efforts were identified and additional sampling was completed to fill these gaps (no first quarter sampling in 1997 or 1998; third quarter only in 1996). Water quality sampling data was collected at six locations around Cutler Reservoir (Little Bear River at Mendon Road, Cutler Reservoir at Benson Marina bridge, Logan River at bridge on Mendon Road and 2000 West, Spring Creek at double culvert on Mendon Road and ~4000 West, Bear River at bridge located at 2400 West on Utah 218, and the Bear River immediately below Cutler Plant; see Figure 1, Volume 2, Appendix G). Parameters measured include: orthophosphorus, total phosphorus, nitrate, nitrite, ammonia, total suspended solids, and turbidity. This data (1996-2001) was analyzed and the results described for monitoring purposes for inclusion with this report. Note that PacifiCorp's water quality monitoring efforts were designed to show that RMP implementation and resultant land use management changes did not impair existing water quality, and may result in benefits to water quality that will be observed in future monitoring efforts.

Future Cutler five-year monitoring reports will include quarterly water quality sampling data collected from the same six sites at five-year intervals from 2003-2023. Although that data collection and reporting satisfies PacifiCorp's water quality monitoring requirement, additional monitoring efforts by other interested parties may continue. For example, given the current focus on a variety of water quality issues in the Bear River Basin, it is likely that water quality monitoring activities currently being conducted both within and nearby the project boundaries will likely continue and increase, allowing for additional cooperative water quality monitoring opportunities for other interested parties. Also, total maximum daily loads are currently being finalized for most of the impaired reaches of the Bear, Little Bear, and Spring Creek drainages, which will provide additional information for water quality improvement projects and resultant monitoring efforts across the entire Bear River basin. Further, PacifiCorp staff knowledge of specific locations within the project boundaries where water quality challenges exist may facilitate more accurate improvement efforts, or provide targets for enforcement of existing laws and regulations. Because a variety of other agencies, NGOs, private companies, and other stakeholders (primarily agricultural and animal processing interests) are now focusing on water quality in the surrounding watershed, greater efforts through collaboration and cooperation may result in increased, measurable benefits to water quality.

2.7 Water Level Monitoring

Monitoring will be conducted to ensure compliance with the Cutler RMP, Article 401 of the FERC license order, and to ensure project goals are met. Average daily reservoir elevation data are logged for annual analysis of reservoir target elevation range goal achievement.

The Water Level Monitoring Plan includes the following monitoring tasks:

- Conduct Three-Year Bear River Basin Study. This study has been completed, and included testing an operations model regarding PacifiCorp's ability to maintain mid-reservoir elevations within the range proposed in the RMP
- Collect mid-reservoir water elevation data at a permanent site at Benson Bridge with a continuous recording device; compare to water level data from Cutler Dam for the monitoring period (three years)
- Report results of Three-Year Study to FERC. This report has been completed and filed with FERC.
- Incorporate results of the reservoir elevation monitoring into the Three-Year Bear River Basin Study and Operational Plan for the Cutler Project
- Continue to monitor and document water level data for annual submission to the FERC. PacifiCorp will monitor the operation of the project and report annually on compliance within the target ranges at Cutler Dam.
- Average daily elevations for the Cutler Dam gauge will be compiled and submitted to FERC annually per final order of Article 401

As stated previously in Section 1.6.5, the results of the Three-Year Bear River Basin reservoir elevation study were filed with FERC by October 1999. The study results and proposed operating plan indicated a revision of the proposed operating elevation range targets was necessary (see above referenced section for additional detail). The revisions were determined to be necessary as initial monitoring indicated that the gauges at Benson and Cutler Dam could not be correlated well enough to make the Benson gauge useful for controlling reservoir elevations. Results of the water level monitoring and modified reservoir elevation target ranges were incorporated into the Three-Year Bear River Basin Study and Operational Plan for the Cutler Project.

In 2002, FERC responded to the 1999-submitted study results. Their final order indicated their acceptance of PacifiCorp's modified operations plan and reservoir elevation targets, as well as specifying the dates by which annual monitoring data should be submitted.

Average daily reservoir level monitoring data need to be submitted to FERC annually. Operating level data for 2002 will be submitted to FERC by December of 2002. The 2002 FERC order modifying the original license article is attached to this report as Appendix H. A summary of the results of the Three-Year Bear River Basin Study and Operational Plan for the Cutler Project, including the modified operations plan and reservoir elevation targets, are included in Section 3.0 of this report.

2.8 Monitoring Data Forms

The following monitoring data forms are included in this section:

2.8-1 Cutler Shoreline Buffer monitoring data form

2.8-2 Cutler Woody Vegetation Pocket/Buffer Shrub Plot sample monitoring data form (data forms are not generic; one exists for each of the plots sampled and entire 15-page set is printed for use during monitoring)

2.8-3 Cutler Bank Stabilization monitoring data form

2.8-4 Cutler Buffer/Boundary and Cattle Management Fence monitoring data form

2.8-5 Cutler Erosion Control Sediment Basin monitoring data form

2.8-6 Cutler Sensitive/Unique Wildlife Habitat monitoring data form

2.8-7 Cutler Grazing Pasture monitoring data form (also utilized for monitoring Wildlife Food/Cover Plots)

2.8-8 Cutler Property Coordination/Incident monitoring data form

2.8-9 Cutler Recreation Site monitoring data form

Remedial Action:

Data Sheets Related to This Site
____ Erosion Control Checkdams
____ Bank Stablilization
____ Shrub Plantings
____ Buffer Fence
____ Management Fence

Buffer Health Monitoring Worksheet

Buffer Name:

Management Unit: ID#: GPS'ed:

Observer(s):	Date:

Photopoint:	Yes	No	Frame Number:

Category:	Tilled Ground Buffer	Shoreline Buffer

Vegetation

1) Plant Community %:	Wet Meadow	Salt Grass	Upland
	Emergent Wetland	Shrubland	

2) Plant Community Composition and Distribution:	Adverse plant cover changes are affecting the buffer significantly.	Minimal plant cover changes are having minor affects on buffer.	Increase in desirable plant cover.	No Change in plant cover.

Description of Type and Vigor:

3) Robel Pole Measurement:

4a) Gullies in Buffer:	Common with active downcutting; Vegetation is infrequent on slopes or bed.	Active erosion is slight; Vegetation is stabilizing the bed and slopes.	Drainages are stable with no signs of erosion.

Description:

4b) Erosion Control Check Dams on Site:	Yes	No

Refer to Erosion Control Checkdam Data Sheet

5) Noxious Weeds:	Dominate the site.	Scattered throughout the site.	Rarely present on site.

Noxious Weeds GPSed:	Yes	No	File Name:

Dominate Species:

6) Wildlife Use:	Frequent sign (scat and tracks)	Occasional sign (scat and tracks)	No evidence of wildlife use.

Species observed on sight: Nesting/breeding behavior:

7) Adverse Use or Encroachment:	Mechanical	Animal	Other

Estimation in size:

GPSed:	Yes	No

Description:

8a) Bank Erosion:	Active sloughing of bank material. Vegetation is insufficient to protect bank.	Active erosion is slight; Vegetation is stabilizing bank.	No evidence of erosion; Vegetation is holding bank stable.

Estimate of Extent: Estimate of Bank Height:

Description:

8b) Potential Adjacent Property Loss:	Immediate	Moderate	Not a threat

Description:

8c) Bank Stabilization Site Present in Buffer?	Yes	No

Refer to Bank Stabilization Data Sheet

9) Presence of Wood Vegetation Planting:	Woody Veg Pocket	Buffer Shrub Plot

Site Name:

Woody Veg Change:	Significant Shrub Loss	Minimal Shrub Loss	No Shrub Loss	Increasing Shrub Cover
Need Monitoring / Remedial Action?			Yes	No

Description:

10) **Overall Health of Buffer:**	Excellent	Good	Poor	At Risk	Need Remedial Actn

Rationale:

Describe Necessary Actions:

Baseline Photo Point Description:

Site: **Check Dam 7**

Plot type: Belt

Year 2002

Plot	Dimensions	Date	Azmuth	Photo	RD	WR	W	PW	CY	FC	BB	SG	SU	GC	HW	HC	RB	SL
CD7-1C	10x125 ft	5/30/02			0			0	0	0					0			
CD7-1N	10x125 ft	5/30/02	186			4							3	4				
CD7-1S	10x125 ft	5/30/02				2								5				
Summary for 'Date' = 5/30/02 (3 detail records)																		
			Sum:		0	6		0	0	0			3	9	0			
			Avg:		0	3		0	0	0			3	4.5	0			
			Baseline:		7	8		1	5	1			10	15	2	0		
			Survival:		0	75		0	0	0			30	60	0			
CD7-2C	10x155 ft	5/30/02			0			0	0	0					0	0		
CD7-2N	10x155 ft	5/30/02				3							9	12	0	0		
CD7-2S	10x155 ft	5/30/02												3	0	0		
Summary for 'Date' = 5/30/02 (3 detail records)																		
			Sum:		0	3		0	0	0			9	15	0	0		
			Avg:		0	3		0	0	0			9	7.5	0	0		
			Baseline:		9	7		1	7	1			14	18	8	3		
			Survival:		0	43		0	0	0			64.29	83.33	0	0		

Remedial Action:

Data Sheets Related to This Site
___ Erosion Control Checkdams
___ Bank Shrub Plots
___ Shrub Plantings
___ Buffer Fence/Posts
___ Buffer Vegetation
___ Cattle Management Fence

Bank Stabilization Monitoring Worksheet

Bank Name:

Management Unit: ID#:

Observer(s): Date:

Photopoint: Yes No Frame Number: GPSed:

Vegetation

1) Bank Originally Revegetated: Yes No

2a) Emergent Zone Originally Planted: Yes No

2b) Emergent Zone Original Vegetation: Cattail Willow Wattles Willow Shoots

2c) Current Emergent Vegetation Present: Yes No

Description of Vegetation:

2d) Condition of Emergent Vegetation: Dense Fair Sparse N/A

2e) Emergent Zone Vegetation: Increasing Decreasing No Change

3) Slope Vegetation Type: Shrubs Herb.

3) Cond. Of Slope Vegetation: Dense Fair Sparse N/A

4a) Bank Stabilization Structure: Yes No

4b) Structure Type: Rock Rip/Rap Gabion Rock Breakwater Straw Willow

4c) Condition of Structure: Good Poor At Risk Need Remedial Actn

Describe:

5) New Erosion: Yes No

Estimation in size:

GPSed: Yes No

Description:

6) Function of Bank Stabilization: Good Fair Poor Need Remedial Actn

Rationale:

Describe Necessary Actions:

7) Baseline Description of Photo Point:

Remedial Action:

Data Sheets Related to This Site
___ Erosion Control Checkdams
___ Bank Stabilization
___ Shrub Plantings
___ Buffer
___ Management Fence

Buffer/Boundary/Cattle Management
Fence Monitoring Worksheet

Fence Name:

Management Unit:				ID#:
Observer(s):				Date:
Photo:	Yes	No		Frame Number:
Category:	Wire Fence	Wood/Carsonite Posts		Carsonite

Marker Condition

1) Are Markers Missing:	Yes	No
2) Damaged Markers:	Yes	No

Marker Description:

Fence Condition

3) All Posts Upright and Firm:		Yes	No		
4) **Braces**:	Tight	Loose	Damaged		
5) Wire:	Tight	Loose	Unstapled	Unclipped	Cut
6) **Gates**:	Tight	Sagging	Damaged		Number:
GPSed:	Yes	No			
7a) Lock Condition:	Good	Corroded	Missing		
7b) Type of Locks:	Management Lock	Switch Lock	Lessee or Neighbor Lock		

Fence Description:

Damage

8) Maintenance Need:	Immediate	Yearly Scheduled		Maintenance Performed
9) **Evidence** of Damage:	Natural	Lessee - Normal Use		Lessee – Encroachment
	Vandalism	Neighbor-Normal Use		Neighbor – Encroachment
10) **Reprimand** Necessary:	Yes	No		

Damage Description:

Remedial Action:

Data Sheets Related to This Site
___ Sensitive/Unique Wildlife Habitat
___ Bank Stabilization
___ Shrub Plantings
___ Buffer/Boundary Fence/Posts
___ Buffer Vegetation
___ Cattle Management Fence

Erosion Control Sediment Basin Data Form

EC Sediment Basin Name:

Management Unit:				ID#:	
Observer(s):				Date:	
Photopoint:	Yes	No	Frame Number:		GPSed:

1) T-Post Markers Present:			Yes	No
Description:				
2) Condition of Structure:	Good	Eroded	Encroachment	Full of Sediment
Describe:				
3) Presence of Water:	No	Perennial	Ephemeral	
Description:				
4) Evidence of Wildlife Use:	Yes	No		
Description:				
5) Remedial Action Needed:	Yes	No		
Description:				

6) Baseline Description:

Remedial Action:

Data Sheets Related to This Site
___ EC Sediment Basin
___ Bank Stabilization
___ Shrub Plantings
___ Buffer/Boundary Fence/Posts
___ Buffer Vegetation
___ Grazing Pasture
___ Cattle Management Fence

Sensitive/Unique Wildlife Habitat Data Form

Wildlife Habitat Site Name:

Management Unit:			ID#:	
Observer(s):			Date:	
Photopoint:	Yes	No	Frame Number:	GPSed:

1) Description of Site or Structure (e.g., Canyon Wildlife Spring, Owl nest box, Osprey platform, GBH Rookery, etc):

2) Condition of Structure (if applicable):	Good	Poor	At-Risk
Describe:			
3) Presence of Water:	No	Perennial	Ephemeral
Description:			
4) Evidence of Wildlife Use:	Yes	No	
Description and Incidental Species List:			
5) Protective fence/gate intact:	Yes	No	N/A
Description:			
6) Remedial Action Needed:	Yes	No	
Description:			

Baseline Site Description:

Remedial Action:

Data Sheets Related to This Site
___ Sensitive/Unique Wildlife Habitat
___ Cattle Management Fence

Grazing Pasture Data Sheet

Pasture Name: Wildlife Food/Cover Plot?

Lessee Unit:

Observer(s):			Date:	
Photopoint:	Yes	No	Frame Number:	GPSed:

1) Number of Cows Present:

2) Robel Pole Measurement:

3) Estimate Percent of Utilization:

4) Impacts on Soil by Livestock:

Describe:

5) Noxious Weeds:	Dominate the site.	Scattered throughout the site.	Rarely present on site.

Noxious Weeds GPSed:	Yes	No	File Name:

Dominant Species:

6) Impact to Wildlife/Habitat:

Describe:

7) Change in Vegetation Communities:

Describe:

8) Condition/Impact of Pasture Treatment:

Type of Treatment:
Condition of Treatment:
Impact of Treatment:

Cutler Property Issue/Incident Documentation

Date: _____ Incident Description Number (e.g., 2002-1):_____

Situation Area/ Adjacent owner: _____

Source of Information: _____

New Issue? _____ If not, which repeat (i.e., second, third, etc) _____

Refer to prior Incident description number_____

Description of Issue:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Who contacted (internal and external):_____

Responsible party: _____

Follow-up plans:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Need to add to Cutler/Property Priority List? _____

When is Resolution Expected?: _____

Additional notes/comments/information:

CUTLER RECREATION SITE MONITORING DATA FORM

Name: **Location: Inspection Date: / /**

Recreation Site Type:

Picture taken Y/N roll# picture# Boat in day-use site

Other maintenance needed Recreation site 'developed'

(and general site condition): Recreation site 'primitive'

Walking Trail

Canoe Trail

Number of Vehicles present at site

Please circle item monitored and condition. Be thorough in inspection, if repair is needed indicate on line below:

Boat Launch	Good	Remedial Action	Date completed: / /
-Hand rails			
-Planks			
-Anchors			
Restroom facilities	Good	Remedial Action	Date completed: / /
-All doors			
-Toilets			
Information signs	Good	Remedial Action	Date completed: / /
-Watchable wildlife			
-Hydro resource			
Docks	Good	Remedial Action	Date completed: / /
-Stairs (boat-in sites)			
-Attachment anchors			
Gate/post/fence	Good	Remedial Action	Date completed: / /
-Cable/wire			
-Lock(s)			
-Signs			
Picnic Attachments	Good	Remedial Action	Date completed: / /
-Seats/Attachment			
-Components			
Shelters	Good	Remedial Action	Date completed: / /
-Roof/Floor			
-Poles			
Trail conditions	Good	Remedial Action	Date completed: / /
-Debris			
-Substrate			
-Pruning/weeds			
Canoe buoys	Good	Remedial Action	Date completed: / /
-Cable/Anchor			
-Location			
Fire/grill areas	Good	Remedial Action	Date completed: / /
-Structure			
-Ashes/Debris			
Trees/shrubs	Good	Remedial Action	Date completed: / /
-Watered			
-Pruned			
Parking Areas	Good	Remedial Action	Date completed / /
-Barricades			
-Potholes			

3.0 INITIAL MONITORING RESULTS

This section of the report summarizes the monitoring results completed to date, and specifically notes the two monitoring programs that are now considered complete and will not be included in future monitoring. As previously described, monitoring results are presented to meet the requirements of the RMP and FERC license order, but also to help frame the O&M activities that will result in continual improvements for the project. Future five-year reports will likely cover only the information summarized in this section of the report.

As noted above in Section 2.0, complete sets of monitoring results data forms and photos to date are available upon request in binders located in the Hydro Resources Salt Lake City North Temple Office. The monitoring data results are analyzed and summarized only in the following sections due to the volume of complete data forms and photos involved (i.e., over 100 pages for Section 3.1.1, alone). Where appropriate, results from other documents (i.e., Recreation Visitor Use Survey) are either referred to or appended.

3.1 Vegetation Enhancement Monitoring Program

The Vegetation Enhancement Monitoring Program initial results are analyzed and presented for the following elements:

- Shoreline Buffer Monitoring
- Woody Vegetation Pocket Monitoring
- Bank Stabilization Monitoring
- Buffer/Boundary Fence Monitoring
- Erosion Control Sediment Basin Monitoring
- Sensitive/Unique Wildlife Habitat Area Monitoring

3.1.1 Shoreline Buffer

The initial shoreline buffer monitoring was completed in 2002. All 53 buffer parcels were traversed during July and August to observe and categorize site conditions regarding plant community health, erosion, noxious weed presence, encroachments, and to take a photograph at each established, permanently marked monitoring point. Table 3-1 summarizes the overall shoreline buffer monitoring results. Photos and the corresponding data forms from the permanent photomonitoring points illustrate the evaluation of excellent, good, poor, and at-risk buffers, and are available upon request (PacifiCorp NTO, Hydro Resources).

Table 3-1. Summary of Shoreline Buffer Monitoring Results

Condition of Buffer	No. Of Parcels	No. Of Acres	Percent of Total Acreage	Characteristics
Excellent	3	24	2.3%	Established perennial vegetation with rare presence of noxious or annual plants and no erosion
Good	27	701	62.4%	Increasing perennial vegetation with limited scattered noxious plants
Poor	17	335	31.7%	Limited perennial vegetation with increasing noxious or annual plants. In many cases condition is being aggravated by continued or recent farming encroachment
At-Risk	6	38	3.6%	Annual vegetative cover offering little protection from surface erosion
Totals	53	1098	100%	

During this first year of shoreline buffer monitoring, vegetation community type percentages were recorded as baseline information. Most vegetation showed effects of 3+ years of drought in that plant growth often showed signs of early maturation, die-back, and/or limited growth. Most of the gullies observed in shoreline buffers have been positively affected through reduced erosion as a result of the construction of erosion control sediment basins and the establishment of perennial vegetation. Noxious perennial and annual weeds are of concern in all parcels, with the exception of those that scored 'excellent' for buffer condition. This monitoring result suggests that coordination with both the county and adjacent land owners regarding current weed management efforts may assist in reducing weed infestations over the very large area required. Frequent wildlife observations were made on buffers that ranged from poor to excellent. Very little evidence of wildlife utilization was found on buffers that were considered at-risk. In buffers where emergent wetlands comprised a portion of the buffer plant community, bank erosion was controlled. The presence of emergent wetland along shoreline was a greater indicator of bank stability than the presence of established perennial grass. In those buffers where bank erosion was active, monitoring results indicated there was not an immediate risk to adjacent landowners.

Shoreline buffers exhibited a variety of buffer health conditions. Not surprisingly, those rated similarly shared some common attributes. The three buffers that were rated in excellent condition had established perennial vegetation and very few if any noxious weeds. Twenty-seven buffers were rated in good condition. In these buffers perennial plants were increasing, and showing evidence of future ability to reproduce and continue their improvement in distribution. The 17 buffers that were rated as being in poor condition also had several common characteristics. Many of these buffers had no or very limited perennial vegetation that showed signs of stress. Most of the vegetation that did exist in these buffers was dominated by noxious and/or annual weedy species. Many of these buffers also experienced farming encroachments that exaggerated any marginal vegetation conditions. Six of the buffers were rated as being in an at-risk condition. Most of the at-risk buffers had no perennial component and were dominated by annual, weedy vegetative cover. These buffers would suffer from surface erosion during heavy precipitation or runoff events. The major exception to this characterization of at-risk buffers is the T. Ballard buffer parcel, suffering severe and extensive bank erosion when the bank stabilization project implemented failed (project used straw bales; see Section 3.1.3, below). The current buffer on both the T. Ballard and adjacent T. Ballard South parcels is insufficient in size to provide adequate protection from adjacent farming. These buffer parcels are scheduled to be increased in size, the bank re-stabilized, and a perennial grass mix planted in 2003. The poor vegetative conditions on some of the at-risk buffers were due at least in part to the lack of efforts by adjacent landowners who had requested involvement in implementing buffer establishment. These buffers are scheduled to be replanted with a perennial grass mix. Depending on late season weather conditions, all work on at-risk buffers is currently planned for implementation during fall of 2002.

3.1.2 Woody Vegetation Pockets

The 12 woody vegetation pocket sites have been monitored continuously since the year of their original planting, except for the one site considered failed and abandoned in 1998. Baseline data was collected when sites were planted, and data regarding survival of marked shrubs on transects has been compiled as described above in Section 2.1.2 since then. One site each was planted in 1996 and 1997, four sites in 1998, four sites in 1999, one in spring of 2001, and one in fall of 2001 (all other sites were also planted in fall). Although most of the sites rated good or better in 2000, four continuous years of drought have markedly reduced shrub survival rates over the last two years. Although sites may be considered 'established' after five years of annual Phase I monitoring, due to the effects of predation and drought, no sites are proposed to be moved to Phase II monitoring during 2002. Table 3-2 summarizes the results of monitoring to date on woody vegetation pockets.

As detailed above in Section 2.1, sites rated as marginal for at least two years will be considered for augmentation, depending on individual site conditions. Continuation of the current drought conditions may delay sites' growth and resultant designation as 'established', which would also affect the commencement of Phase II monitoring. Future five-year monitoring reports will describe which, if any sites have been moved into Phase II monitoring plans. Photos and the corresponding shrub count data forms from the permanent transects and photomonitoring points illustrate the evaluation of established, good, marginal, and failed/abandoned woody vegetation pockets, and are available upon request (PacifiCorp NTO, Hydro Resources).

Table 3-2. Summary of Woody Vegetation Pocket Monitoring Results

Condition of Woody Veg Pocket	# Of Sites	Year Planted	Average % Survival Across Transects	% of Total Sites	Characteristics
Established	0	n/a	n/a	0	Established shrub plot with at least 20% shrub survival averaged across transects and stable trend data.
Good Check Dam 7; Cowley Slough; Cutler Marsh Rec; Rigby; Peterson, Swift Slough; Valley View	7	1998-3 1999-3 2001-1	Range 22-56%	58.3	Shrub survival at least 20% averaged across transects, not considered established due to decreasing or unstable survival trend data
Marginal 2600 N Lane; Big Bend; RR Trail; G.B. South	4	1998-1 1999-1 2001-2	Range 4-18%	33.3	Shrub survival less than 20% averaged across transects, considered for augmentation with this rating for at least two consecutive years
Failed/Abandoned Larson	1	1996	0	8.3	Original site considered failed and not re-planted
Totals	12	n/a	n/a	100	

3.1.3 Bank Stabilization

The 17 bank stabilization project areas were monitored using the protocol described above in Section 2.1.3. The initial monitoring was completed during June and July of 2002. Some bank shrub transect monitoring was implemented initially at project completion, but the overall bank monitoring success was not rated until 2002. Of the 17 bank stabilization projects, 12 were determined to be in good condition. These had utilized rock in their construction, and demonstrated longevity in protecting bank soil and vegetation. The method of using large rocks to form a quiet breakwater zone promoted the greatest vegetative growth in terms of emergent wetland flora and bank shrubs. This vegetative condition was consistent among the five bank stabilization areas that utilized the breakwater method. The gabion baskets were also effective in preventing erosion, but rated poorly for aesthetics, cost, and vegetation establishment. The bank stabilization areas that did not utilize rock in their construction rated fair to poor and evinced erosion conditions that necessitate replacement or repair. Table 3-3 illustrates the different techniques employed and their effectiveness.

Table 3-3. Summary of Bank Stabilization Monitoring Results.

Condition	Feet/Miles	% Of Total	Methods	Characteristics
Good	21,747 feet/ 4.1 mi	81%	Rip-Rap	Good protection, but little vegetation
			Breakwater, w/ or w/o willow bundles	Good protection and vegetation establishment
			Gabion basket	Good protection, little woody vegetation establishment
Fair	552ft / 0.10 mi	2%	Erosion control mat	Erosion protection for limited time
Poor	4,521ft / 0.86 mi	17%	Straw bales	Limited longevity and no vegetation establishment- all sites deemed failed
			Willow bundles w/o rock	Little vegetation growth to provide erosion protection
Totals	26,820ft/ 5.1mi	100%		

Photos and the corresponding data forms from the permanent photomonitoring points and bank shrub count transects illustrate the evaluation of good, fair, and poor/failed bank stabilization sites and are available upon request (NTO, Hydro Resources).

3.1.4 Buffer/Boundary Fence

The annual inspection of boundary/buffer fence and posts was conducted concurrently with the shoreline buffer monitoring in July and August of 2002. Post and fence damage was documented to provide the basis for resolving problems that relate primarily to adjacent landowner encroachment. Most of the damage occurred by farm equipment as the adjacent landowners continued to farm buffers that were previously taken out of production. This accounted for 8 of the 15 problems that were recorded from the 57 segments of boundary/buffer fences or posts, and generally consisted of one or more posts being removed. Six of the remaining buffer segments had only one or two posts that were damaged by the normal (and inadvertent) use of adjacent farm ground. Because initial contacts with adjacent landowners (prior to buffer establishment) did not include clear communication of PacifiCorp expectations and consequences of failure to meet these expectations, most of the current damages will be addressed through meetings with adjacent landowners to clarify expectations (see also Section 2.2.5 for new property incident protocols). The damage incurred to these posts will be considered incidental for the current year, and, it is expected, future problems prevented through the instigation of the monitoring plans described in Section 2.2.5. However, some of the more egregious incidents involving removal of buffer or boundary fences will be resolved through the concurrent actions of the legal staff in order to prevent additional damages in areas where property incidents have already been noted and landowners previously contacted. For example, one section of buffer fence damage was likely caused by a neighboring landowner, who appeared to have removed a portion of fence to allow cattle to graze a buffer parcel. This damage was temporarily repaired and the issue will be resolved simultaneously with other property issues pertaining to the adjacent landowner through a court action. As a result of buffer/boundary fence monitoring in 2002, a list of replacement/repair actions was developed to be completed during the annual 2002/2003 fence maintenance. The completed boundary/buffer fence data forms illustrate the evaluation of good and poor condition fences, as well as detail the problems documented by fence segment and are available upon request (NTO, Hydro Resources). Photos of the most egregious removal incidents were also taken to document these occurrences and are similarly available.

3.1.5 Erosion Control Sedimentation Basins

The erosion control sediment basins and corresponding check dams were monitored utilizing the corresponding data forms during July of 2002, and informally each spring from 1998-2002. Monitoring results indicate that 12 of the 13 sediment basins and check dams are in proper functioning condition. One, however, was impaired (the sediment basin was partially farmed over and filled in) by adjacent farming activities. Because this damage occurred prior to 2000, and the check dam is still functioning to allow water to flow through, the sediment basin will be monitored for future repair needs. To ensure that additional structures will not be damaged by future farming activities, missing T-posts (utilized to demarcate the extent of the check dams) were re-installed during 2002 monitoring activities.

Recent drought conditions have limited the amount of water and sediment trapped by the structures. Two basins were constructed on small but perennial water sources, and several others carry irrigation drain water, which ensures a relatively constant seasonal supply. Further, it was noted that during spring precipitation and runoff, all of the remaining sediment basins in the North Marsh Management Area contain water and provide habitat for a variety of breeding shorebirds, waterfowl, and grebes. Other wildlife observed utilizing these new aquatic habitats include chorus frogs, tiger salamanders, long-billed curlews, short-eared owls, bats, deer, small mammals, and a variety of songbirds. In 2001, wildlife observers reported seeing burrowing owls in one of the check dams structures in the North Marsh Management Area as well. Even those structures that surround ephemeral or spring runoff-only drainages create important mud flat and playa habitats for shorebirds. Also note the related discussion in Section 3.1.6, below, as the habitats created by the sediment basins are also monitored as part of the Sensitive/Unique Wildlife Habitat Program. The completed erosion control sediment basin data forms illustrate the evaluation of good and poor condition check dams, as well as detail the wildlife species utilizing these created habitats, and are available upon request (NTO, Hydro Resources).

3.1.6 Sensitive/Unique Wildlife Habitat Areas

Areas within the Cutler project boundaries designated as containing sensitive or unique wildlife habitats are surveyed at least once annually, and many of them quarterly (Figure 1-7). A summary of the results generated through the cooperative monitoring efforts of the Bridgerland Audubon Society on the three transects established to date are included in Appendix I, and describe both species observed and a quantitative measure of their abundance on the transects. Currently, these transects cover the areas just east of the ibis/gull/egret colonies, the west side of the reservoir around the erosion control sediment basins and artificial owl nest boxes, and around the spring in Cutler Canyon (North Marsh, Benson, and Cutler Canyon transects, respectively). As each of these areas has been designated as sensitive/unique wildlife habitat, future results from this monitoring will help track the effectiveness of the mitigation measures designed to improve and/or protect utilization of these sites. One of the most interesting findings was a marked increase in long-billed curlew, American avocet, and black-necked stilt breeding pairs in the 300-acre parcel surrounding many of the erosion control sediment basins since the parcel was removed from agricultural production and converted to a perennial grassland. Because 2002 was the first season the artificial nest burrows were available for occupation by burrowing owls, it is not surprising that they were not occupied during their initial season. However, we expect that burrowing owls will discover these sites relatively soon.

The great blue heron rookery has been used continuously over the years monitored (Figure 1-7), primarily by great blue herons, but also by double-crested cormorants, and occasionally by Canada geese. Although the fences now protect the area from cattle grazing, it is difficult to assess whether recruitment of new cottonwoods is occurring yet, as previous cattle grazing and shade-seeking was preventing successful sprouting of future suitable replacement trees. Future monitoring will continue to assess this factor. The white-faced ibis colony has changed in magnitude several times over the current monitoring period, possibly in conjunction with conditions in the Bear River Refuge, located on the west side of the Wellsville Mountains; i.e., during periods of favorable nesting conditions at the refuge, nesting ibis at Cutler may decrease. Regardless, the ibis colony continues to support habitat conditions important for a number of waterfowl, shorebirds, and gulls, and has been occupied continuously over the current monitoring period.

Monitoring results indicate that waterfowl (especially Canada geese) and ring-necked pheasants and Sandhill cranes are the target species that benefit most from the management of the wildlife food/cover plots (Figure 1-7), although the proximity of high-quality riparian habitats along the Logan River has also resulted in habitat improvements for neo-tropical migrant songbirds. Late-season grazing has mostly supplanted grain sharecropping as management for the six fields around the Logan River, as well as for the 300-acre parcel on the west side of the reservoir, and in Cutler Canyon.

The goose nesting platforms in the Watterson 100-acre parcel were constructed during 2002. It is anticipated that they will be utilized as early as the 2003 nesting season. The osprey platforms were constructed and installed in late 2001. Although they were not utilized during 2002, it is anticipated that as soon as water quality improvements are sufficient to support osprey, a breeding pair will re-inhabit the area. Future monitoring reports will indicate the nesting success observed for all artificial structures (two each for goose and osprey, four for burrowing owls).

The shrub and willow planting that occurred along the edges of the RR Trail and replaced the requirement for planting roses in the old Bear River Oxbow is monitored bi-annually to assess plant community vigor and wildlife utilization. Results of the first season of monitoring indicate that the vegetation community establishment has been both extremely rapid and quite diverse. All three shrub species planted flowered their first year, and some of the willows are over 7 feet high after one year. A wide variety of neo-tropical migrant songbirds (especially goldfinches and flycatchers), wading birds (great blue and black-crowned night herons), fish, and moose were observed utilizing the willow habitat; none were observed prior to the planting project. This site also has a permanent photo-monitoring point associated with it; baseline data and subsequent photos are available upon request at NTO, Hydro Resources. Future five-year monitoring reports will continue to track and document habitat changes and subsequent wildlife utilization of these areas through full implementation of the monitoring

plan presented in Section 2.1.6, and 2.2.3. The completed sensitive/unique wildlife habitat data forms detail the condition of special structures, habitats, and food and cover plots, as well as detail current wildlife utilization in those habitats. Completed data forms are available upon request (NTO, Hydro Resources).

3.2 Agricultural Lease Monitoring Program

The Agricultural Lease Monitoring Program initial results are analyzed and presented for the following elements:

- Grazing Leases
- Farming Leases
- Wildlife Food/Cover Plots
- Cattle Management Fences
- Property Coordination

3.2.1 Grazing Leases

While grazing leases (Figures 3-1 and 3-2) have been monitored by PacifiCorp for a number of years, a formal monitoring protocol for grazing leases was re-established and implemented in 2002. The results of this monitoring demonstrate the grazing program's effectiveness in managing vegetation for wildlife habitat. These benefits, however, have been impacted over the past 3+ years by on-going drought conditions and changes in lessees.

Monitoring conducted during 2002 provided the opportunity to analyze areas where grazing management and wildlife habitat objectives were being met, and, as importantly, where they were not. The majority of pastures monitored, 74 percent, were considered in good condition. Several pastures are providing good quality lure crops for geese, waterfowl, and cranes (the primary target species) and others are maintaining the vegetation community mix optimal for waterfowl nesting and breeding habitat.

The monitoring also indicated that 26 percent of the pastures were considered to be in poor condition, where efficiency and impact of maintenance activities could be improved. Current challenges to and limiting factors for the grazing management program include inappropriate grazing system changes under drought conditions, increases in less desirable or undesirable vegetation, and increases in weeds. These will be addressed by such measures as reseeding, fencing, improving irrigation, and by managing the number and timing of cattle on these pastures.

Future five-year monitoring reports will continue to track and document vegetation community changes, grazing utilization, and subsequent wildlife utilization of these pastures. Photos and the corresponding data forms, including Robel pole forage utilization measurements from permanent photomonitoring points illustrate the evaluation of good, poor, and at-risk grazing pastures, and are available upon request (NTO, Hydro Resources). A summary of pasture conditions for each lease unit was compiled and is also available upon request.

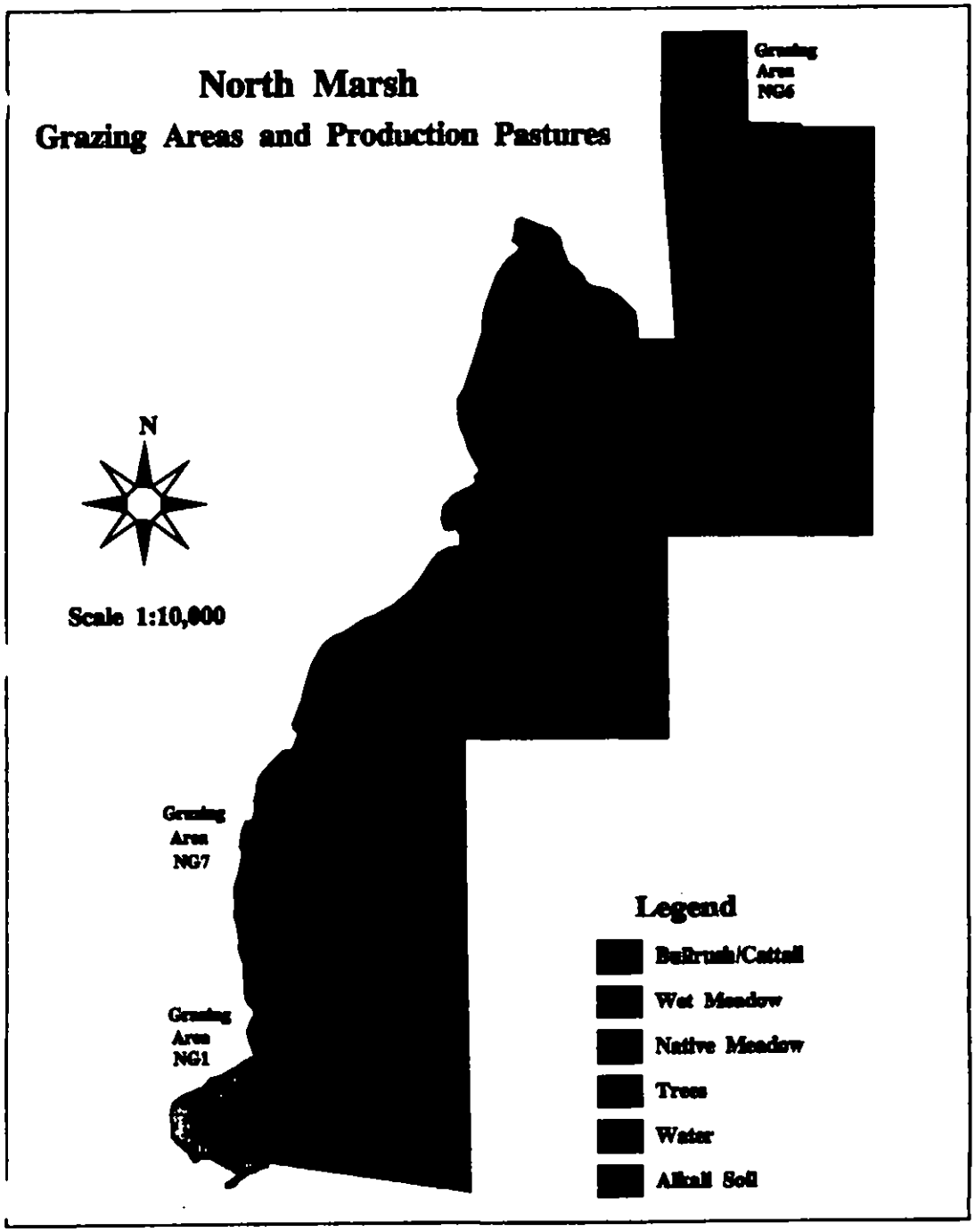

Figure 3-1

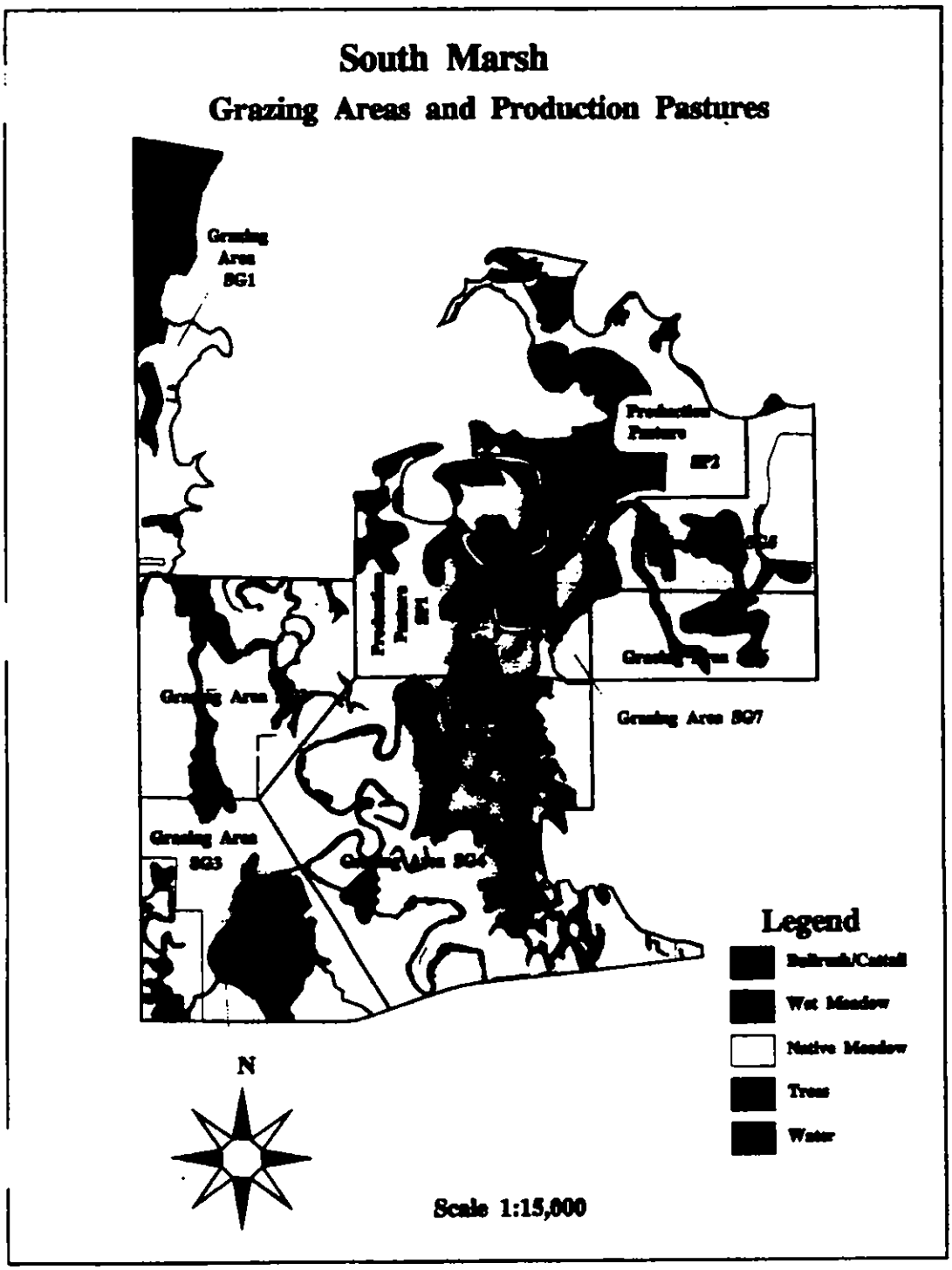

Figure 3-2

3.2.2 Farming Leases

Farming leases have continued to improve through application of guidelines and conditions outlined in the RMP. Monitoring by PacifiCorp's property agents has helped to identify non-compliance and improve compliance with lease conditions. Instances of non-compliance have been documented through the incident tracking protocol instituted by the property agents. Also see Section 3.2.5, below, for additional detail regarding lease compliance and monitoring information tracking in coordination with Property Management.

To reduce discrepancies in rent owed at the end of the year, in 1999 property agents implemented a "flat fee" approach rather than the crop-share farming lease used in the past. This change has been successful in more clearly stating expectations and making the year-end lease accounting process less subjective.

All farming lease areas were formally monitored for compliance with RMP and lease conditions in 2002 (informal monitoring occurred sporadically in previous years). All non-compliance was reported to property agents for documentation according to incident tracking protocol. Some non-compliance issues have been resolved but will continue to need monitoring. Currently, five individuals farming or occupying PacifiCorp lands without leases within the Cutler project boundaries have actions pending legal outcome. Documentation of farming lease monitoring is available upon request from PacifiCorp's Property Management, North Temple Office.

3.2.3 Wildlife Food/Cover Plots

As noted above in sections 3.1.6 and 2.2.3, late season grazing has supplanted share-cropping for most of the wildlife food/cover plots. The results of monitoring in the pastures managed as part of this program indicate that late-season grazing allows for breeding/nesting utilization of these pastures by waterfowl, pheasants, and cranes (the target species for this enhancement), that later grazing can successfully convert tall grass pastures to the desired shorter habitats for spring wildlife utilization, and that grazing is superior to share-cropping by requiring less invasive and intensive land manipulation and eliminating bare ground that is subject to sheet flow and other erosion. Currently, observations suggest there was increased goose production in these pastures. However, because formal monitoring of these plots did not commence until 2002, there is no past baseline data to compare to, so these observations merely qualify as initial observations. Future monitoring will help to determine which if any other species are being affected by the change in management of these areas. Further, these pastures are being targeted for future monitoring transect locations to quantify abundance of all species noted by Bridgerland Audubon Society observers. The completed wildlife food/cover plot data (as a result of their overall similarities, grazing pasture data forms are utilized for this assessment) illustrate the evaluation of good and poor condition food and cover habitats, as well as detail current wildlife utilization in those pastures. Completed data forms are available upon request (NTO, Hydro Resources).

3.2.4 Cattle Management Fences

All cattle management fences are inspected annually by the fence contractor, and incidentally throughout the season by both HCS and lessees during grazing pasture monitoring. The documentation of the primary annual monitoring consists of cattle management fence data forms. Because procedures recently shifted for the monitoring phase of the project (as detailed above in Section 2.1.4 and 2.2.4), and annual fence maintenance for 2002 had already been completed prior to adoption of the new monitoring data forms, this documentation will be completed for the first time in 2003. Future reports will include monitoring data for cattle management fences organized by lessee. In 2002, monitoring indicated minor repairs were necessary in the Selman North Marsh grazing lease, as well as annual electric fence maintenance on the University South Marsh grazing lease. Improvements to the fence/pasture arrangement for the area bordered by the Willmore and University South Marsh grazing leases were also discussed and will be implemented for the 2003 grazing season. Starting in 2003, the completed cattle management fence data forms will illustrate the evaluation of good and poor condition fences, as well as detail the problems documented by fence segment and lessee. These forms will be available upon request starting in 2003 (NTO, Hydro Resources).

3.2.5 Property Coordination

As stated in Section 3.2.2, several areas have been identified as being farmed without a lease. These unresolved and on-going property issues are currently being addressed in court, with an outcome to be determined in November 2002. Other incidents continued to be addressed and monitored with the cooperation of property agents, HCS, and the adjacent landowners. As stated in Section 2.2.5, a process is being followed to document and resolve non-compliance. Of the approximately 190 adjacent landowners and operators within the Cutler project boundaries, property incident monitoring forms are being used to track and document 20 current issues regarding property management or coordination (approximately 10.5 percent). Documentation of property coordination monitoring (either hard copy or electronically) is available upon request from Property Management, NTO.

3.3 Recreation Site Development Monitoring Program

The initial results are analyzed for the following Recreation Site Development Monitoring Program elements:

- Recreation Areas
- Visitor User Survey

3.3.1 Recreation Areas

Recreation site monitoring was conducted in July of 2002. A recreation site inspection data form was completed, a permanent photomonitoring point was established, and a picture was taken from each site. Although July 2002 marked the initial formal recreation site monitoring, Cutler plant staff have provided car count data as an indication of visitation on an opportunistic basis (averages weekly) during the seasons the recreation sites are open (generally April-December). This data as well as the recreation site inspection forms are available upon request from NTO, Hydro Resources. In July of 2002, an average of 0.85 vehicles were recorded at the eight sites with parking facilities.

Overall, the sites appeared to be in good condition, and need little overall major maintenance. Weekly maintenance activities are performed by Cutler plant staff, who also monitor and report bigger maintenance tasks as they occur. The one exception to this generalization was the canoe trail system, particularly the North Marsh and Little Bear Canoe Trail buoys. Informal monitoring in fall of 2001 indicated that hunters and winter ice had removed most of the buoys from these two river channel systems in particular. These buoys are currently scheduled for replacement during fall of 2002. Other noted concerns include the presence of purple loosestrife, a noxious weed, near the recreation sites located in the South Marsh, and continued 4-wheeler use at the Bear River Riparian Walking Trail. Informal surveys with local user groups indicated that some recreational users consider the boat ramp at the Cutler Canyon recreation site too steep, making it difficult to launch larger motorized boats. The local Ducks Unlimited chapter has indicated that they would be interested in participating in a joint effort to rebuild this ramp. Feasibility of this potential project will be assessed in 2003.

3.3.2 Visitor User Survey

The complete results and the protocols developed for the visitor use survey conducted by a graduate-level recreation resources class from Utah State University are included in Appendix B. The survey obtained responses from randomly-generated phone calls made to over 266 households (of over 44,000 possible) in the three counties surrounding the Cutler project boundaries, as well as interviewing a number of interested stakeholders. Overall, the visitor use survey showed that most people were not familiar with Cutler Reservoir, at least by name (less than 22 percent had heard of it, although 49 percent knew what it was once the location was explained), and that of those that did know what it was, 73 percent had never been there. Because the survey was completed in early spring, and did not have an on-site component that was considered highly relevant, an additional on-site survey was designed and recommended for future completion.

3.4 Wetland Mitigation Monitoring Program

As noted previously, this monitoring program was completed with the submission of the final monitoring report and site visit in 2001, however, the license order stipulated the attachment of the final wetland monitoring report to this Five Year Implementation and Monitoring Report. Therefore, Appendix C contains the required final wetland mitigation monitoring report, submitted to and accepted by the Army Corps of Engineers (COE) in 2000. Future Five-Year Monitoring Reports will not contain this monitoring program element, as once the final monitoring report was accepted by the COE and the site was officially transferred back to the UDWR, all future O&M, and any further monitoring are the responsibility of the UDWR as the land owners.

3.5 Fish Habitat Enhancement Monitoring Program

Monitoring the fish habitat structures began shortly after their installment in 1995. The electrofishing monitoring activities recorded a few game fish in 1996. The species found in close proximity to structures included black bullhead, largemouth bass, black crappie, green sunfish, and bluegill. However, in 1998 similar monitoring activities resulted in few game fish and most recently in 2000 none were recorded (Table 3-4).

Table 3-4. Summary of Fish Habitat Monitoring Results.

Number and length class information for game fish collected in vicinity of fish habitat structures in Cutler Reservoir in 1995, 1996, 1998, and 2000.

		Sample Year			
Species	Length Class (mm)	2000	1998	1996	1995
Black Bullhead	201 - 250			1	
Largemouth Bass	51 – 100			21	
	101 – 150				
	151 – 200			1	
	201 – 250				
	251 – 300			2	2
	301 – 350			1	
	351 – 400		1		
Black Crappie	51 – 100			1	
	101 – 150				
	151 – 200		1		
Green Sunfish	51 – 100		1	1	
	101 – 150			1	
Bluegill	151 – 200		1	2	1
	n	0	4	31	3

Note that the four electrofishing monitoring efforts produced very few fish per effort undertaken. Conclusions from the aquatic biologists involved were that game fish habitat, species diversity, and population numbers will continue to be limited by continued poor water quality and low numbers of forage fish.

As noted in Section 2.5, the other two original Fish Habitat Structure Monitoring Plan elements (angler creel surveys and visual inspections of the structures) have been changed per agreement with UDWR, and will be deferred until meaningful results can be collected. It has been suggested that the habitat structures could now be impaired due to sediment. Inspection will occur during the next major drawdown as visibility is extremely poor in the reservoir. Future cooperative monitoring efforts with UDWR are possible, if warranted by perceived changes in site conditions and/or angler success, or the need for additional information regarding aquatic game species, per request by UDWR.

3.6 Water Quality Enhancement Monitoring Program

Water quality monitoring was conducted from 1996 through 2001. The results of this monitoring indicate that the tributaries of the Cutler Marsh complex greatly influence the water quality. The average concentration of total suspended solids (TSS) decreased in Cutler Reservoir concurrently with a dramatic decrease in TSS concentration in the Bear River. It was also determined that increases in nutrient levels such as nitrogen and phosphorus were attributable to increases in nutrient levels in the Spring Creek tributary. Cutler Marsh's impairment relative to potential beneficial uses as considered by the State of Utah was not influenced by changes in TSS and nutrient levels. Further, basinwide efforts to address land uses that may degrade water quality will likely need to be implemented in order to result in water quality improvements to Cutler Reservoir.

Monitoring results also determined that due to the significant influence of tributary water quality parameters, the performance of potential water quality improvements such as implementation of erosion control features and improvements in land use practices was masked. Due to its relevance to the overall Cutler RMP project, the entire report regarding water quality monitoring activities and corresponding data is included in Appendix G.

Because a variety of other agencies, NGOs, private companies, and other stakeholders (primarily agricultural and animal processing interests) are now focusing on water quality in the surrounding watershed, greater efforts through collaboration and cooperation may result in increased, measurable benefits to water quality. Future five-year monitoring reports will continue to track and document water quality parameters, and resultant improvements. Starting in 2003, quarterly sampling will be conducted every 5th year (i.e., 2003, 2008, 2013, 2018, 2023) through the end of the license; analysis and results will be included in future monitoring reports.

3.7 Water Level Monitoring Program

Because this monitoring element is covered under a separate and recently modified order with a different reporting timeline (see Appendix H and Section 2.7), it was determined that the annual summary of results of water level monitoring will be submitted to FERC independently of this report structure. Table 3-5 presents the modified operating range proposed by PacifiCorp and accepted by FERC for Cutler Reservoir elevations (as measured at Cutler Dam). Average daily reservoir elevations will be compiled, analyzed, and reported to FERC by 31 December of each year.

Table 3-5. Licensee's Condensed Reservoir Elevation Operating Range.

Time Period	Operating Range (Elevation in feet)	Tolerance (feet)	Target Percentage
March 1 through December 1	4407.5 to 4406.5	+.25, -.25	95%
December 2 through February 28	4407.5 to 4406.0	+.25, -.50	90%

REFERENCES CITED

PacifiCorp, 1995. Cutler Hydro Project No. 2420 Resource Management Plan. Prepared for the Federal Energy Regulatory Commission by PacifiCorp, Salt Lake City, UT.

_____, 1993-97. Cutler Hydro Project No. 2420 Resource Management Plan Annual Implementation and Monitoring Report. (compiled). Internal report on file at PacifiCorp's North Temple Office, Salt Lake City, UT.

_____, 1998. Cutler Hydro Project No. 2420 Resource Management Plan Annual Implementation and Monitoring Report. Internal report on file at PacifiCorp's North Temple Office, Salt Lake City, UT.

_____, 1999. Cutler Hydro Project No. 2420 Resource Management Plan Annual Implementation and Monitoring Report. Internal Report on file at PacifiCorp's North Temple Office, Salt Lake City, UT.

_____, 2000. Cutler Hydro Project No. 2420 Resource Management Plan Annual Implementation and Monitoring Report. Internal report on file at PacifiCorp's North Temple Office, Salt Lake City, UT.

_____, 2001. Cutler Hydro Project No. 2420 Resource Management Plan Annual Implementation and Monitoring Report. (compiled). Internal Report of file at PacifiCorp's North Temple Office, Salt Lake City, UT.

Cutler Hydro Project No. 2420 Resource Management Plan
Five-Year Implementation and Monitoring Report

Volume 2: Appendices

Prepared for:

The Federal Energy Regulatory Commission
825 North Capitol Street, NE
Washington, D.C. 20426

Prepared by:

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Salt Lake City, UT 84105

December 16, 2002

Cutler Hydro Project No. 2420 Resource Management Plan
Five-Year Implementation and Monitoring Report

Volume 2: Appendices

Prepared for:

The Federal Energy Regulatory Commission
825 North Capitol Street, NE
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December 16, 2002

LIST OF APPENDICES

Appendix A

Original RMP Conceptual Maps (B Series) and Current 'As-Built' Implementation Maps (A Series)

Map A-1A: Cutler Canyon Management Unit, As Built
Map A-1B: Cutler Canyon Management Unit, Conceptual Map
Map A-2A: Reservoir Management Unit, As Built
Map A-2B: Reservoir Management Unit, Conceptual Map
Map A-3A: Bear River Management Unit, As Built
Map A-3B: Bear River Management Unit, Conceptual Map
Map A-4A: North Marsh Management Unit, As Built
Map A-4B: North Marsh Management Unit, Conceptual Map
Map A-5A: South Marsh Management Unit, As Built
Map A-5B: South Marsh Management Unit, Conceptual Map

Appendix Maps Legend

Proposed New FERC Boundary

Management Unit Boundary

Shrub Plantings

▲ Woody Vegetation Pockets

△ Buffer Shrub Plots

Recreation Sites

● Recreation Location

Deferred Recreation Site

Fence Type

Electric Fence

Post

Wire Fence

Water Boundary

Fence or Post Category

Boundary/Access

Wildlife/Buffer

Bank Stabilization Methods

Gabion/Rip-Rap

Rebuilt Dike Rip-Rap

Straw

Rip-Rap/Willow

Slope Plantings/Willow

Agricultural Lease Type

Farming

Grazing

Production Pasture

Wildlife Food/Cover

Sensitive/Unique Wildlife Habitats

● Fish habitat structures

Burrowing Owl Nest Box

Goose nesting boxes

Osprey nest platform

Spring Creek waterfowl pond

Sensitive wildlife areas

Wetland mitigation pond

Rookery or other colony

Watterson 100-acre parcel

● Erosion control sediment basins

Recreation Trail Classification

Bear River Riparian Trail

Little Bear River Canoe Trail

Logan/Little Bear River Canoe

Logan River Canoe Trail

North Marsh Canoe Trail

RR Trestle Walking Trail

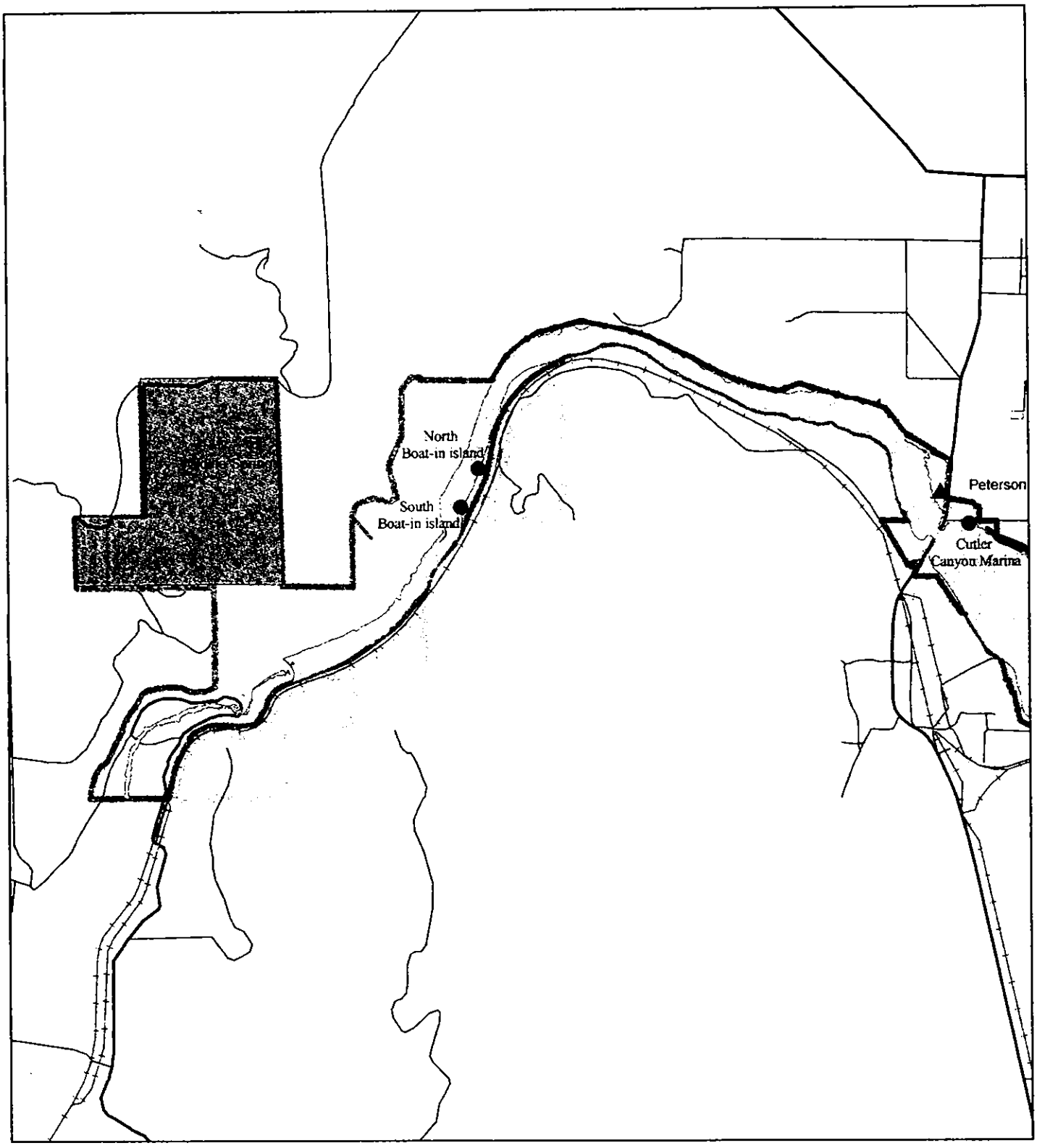

Figure A-1A

Cutler RMP:
Cutler Canyon Management Unit

PACIFICORP
Geographic Information System

August 26th, 2002
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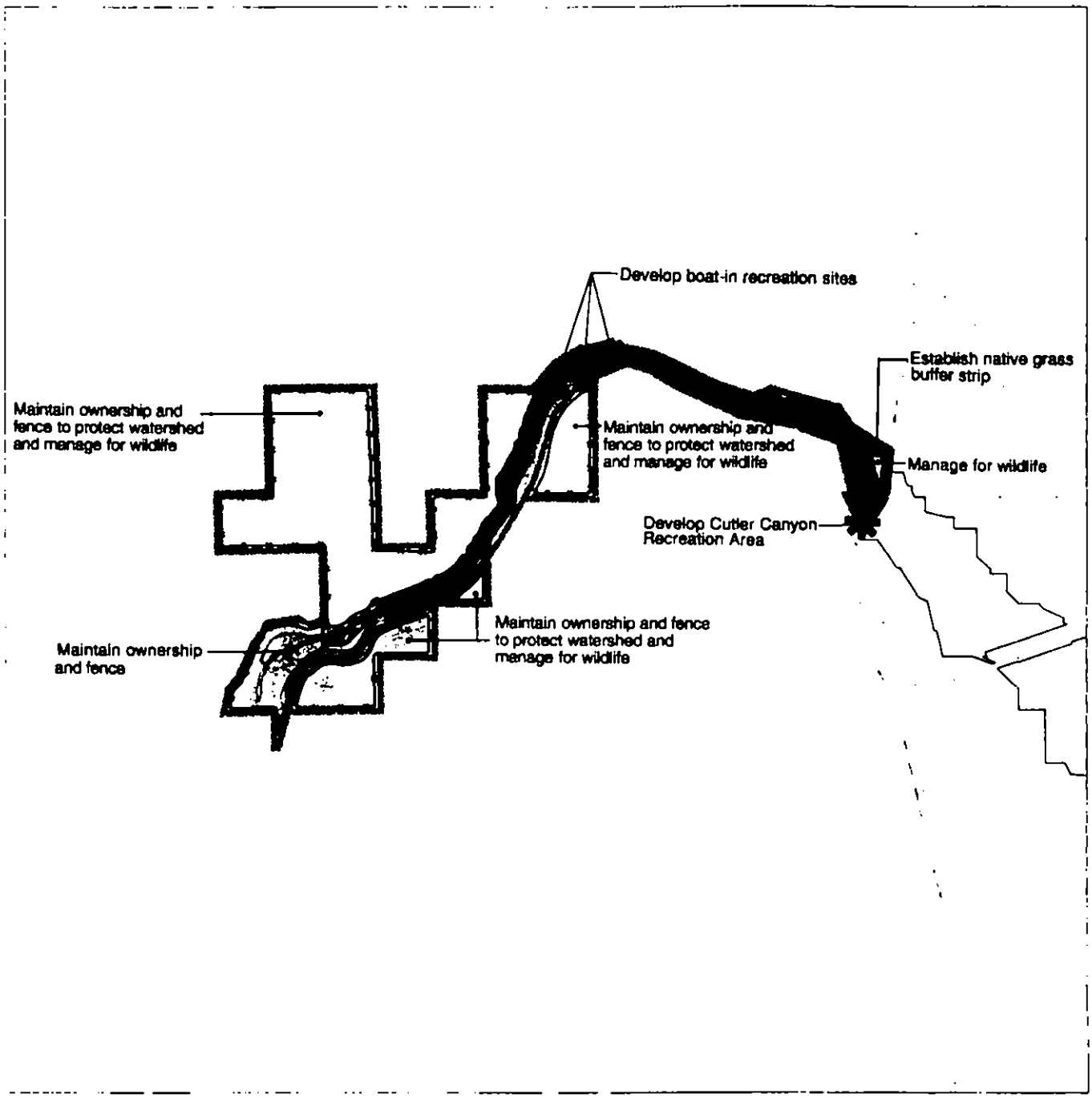

Cutler Canyon Management Unit

Cutler Hydroelectric Project
Utah Power and Light Company
Salt Lake City, Utah
Scale 1:12,000 (1 inch = 1000 feet)

Figure A-1B

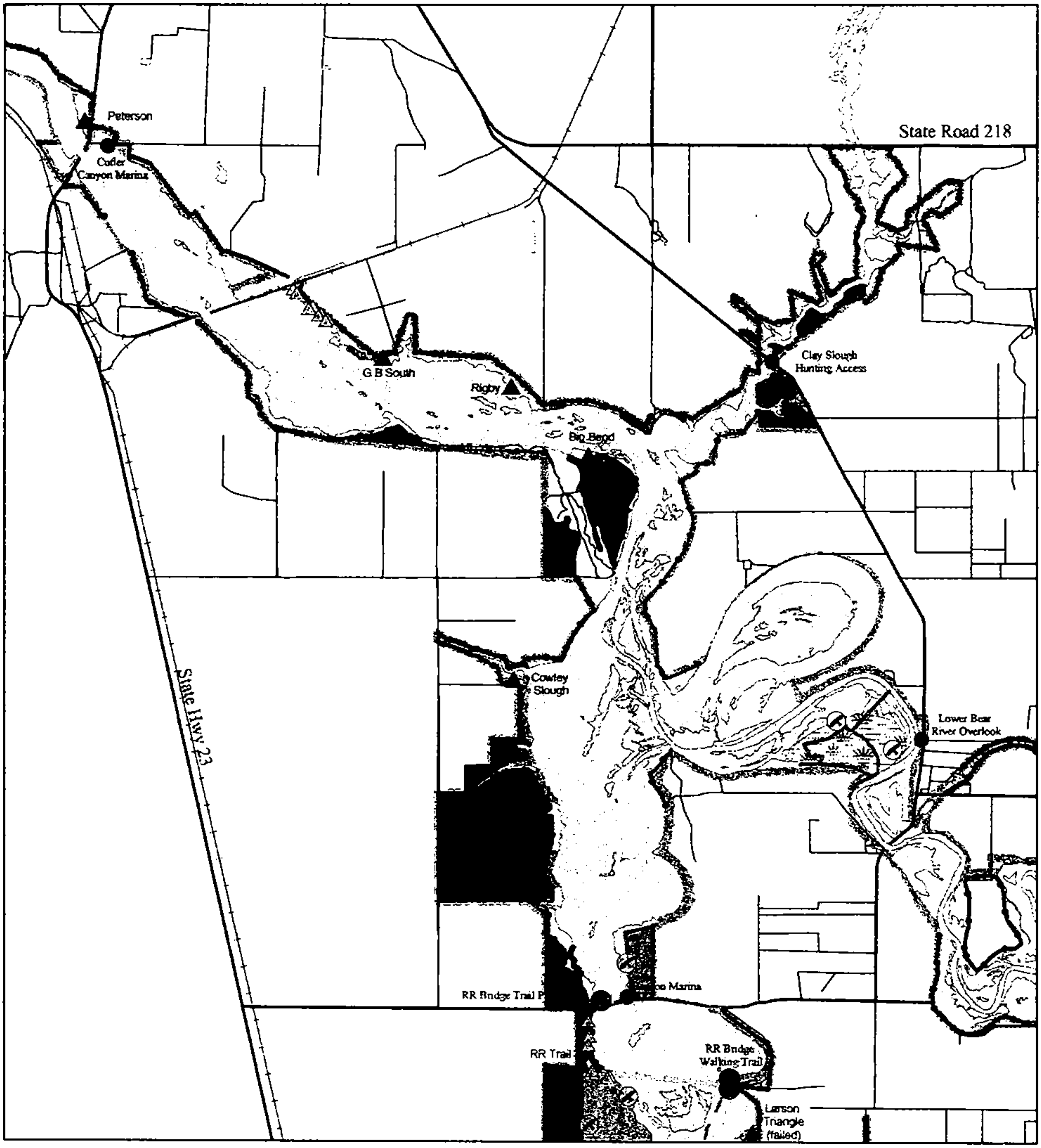

Figure A-2A

Cutler RMP:
Reservoir Management Unit

PACIFICORP

Geographic Information System

August 26th, 2002

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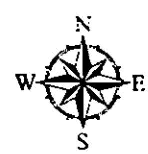
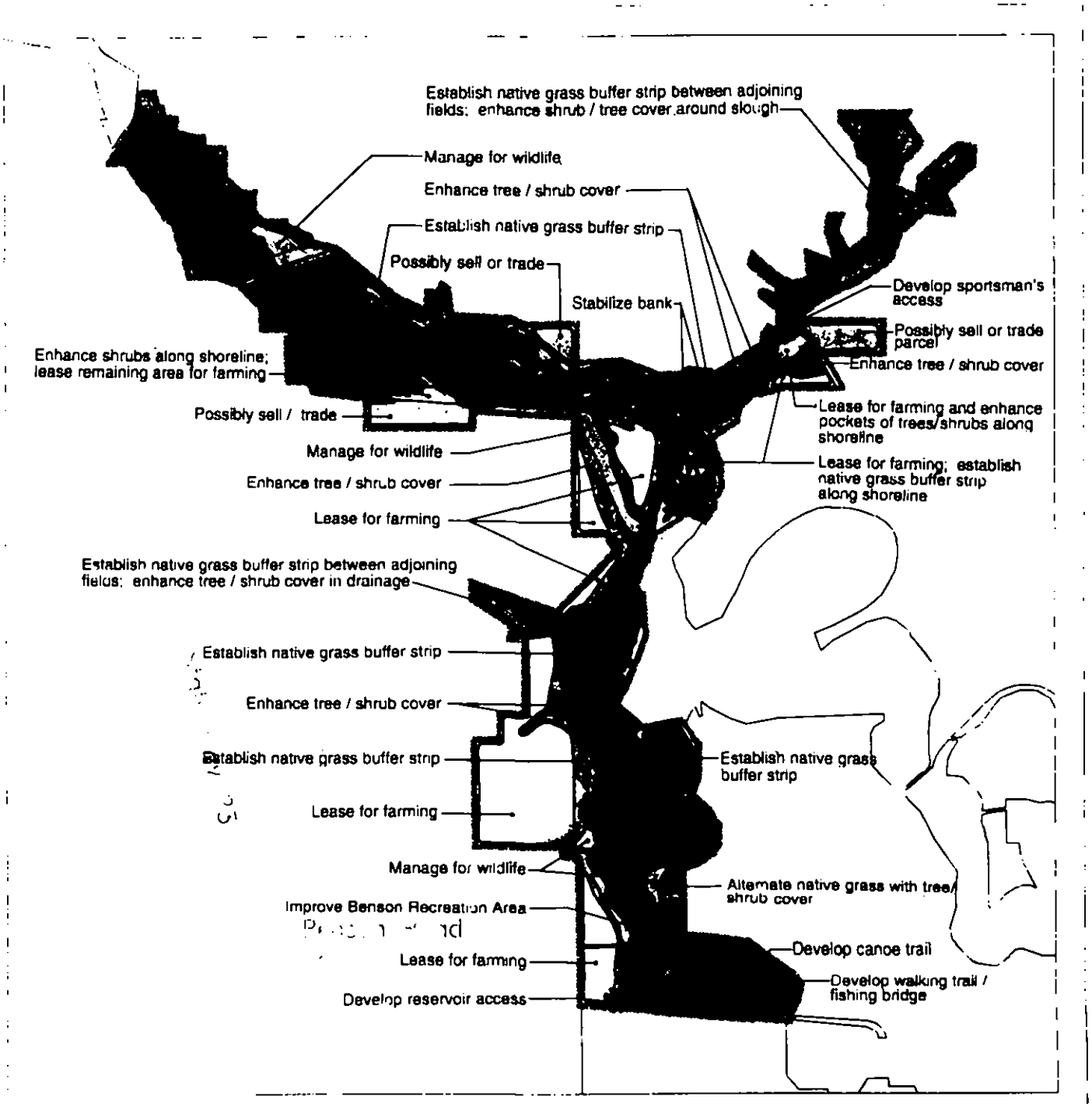


Miles
0 0.5



Main Reservoir Management Unit

Cutler Hydroelectric Project
Utah Power and Light Company
Salt Lake City, Utah
Scale 1:12,000 (1 inch = 1000 feet)

Figure A-2B

Figure A-3A

Cutler RMP:
Bear River Management Unit

PACIFICORP
Geographic Information System

August 26th, 2002
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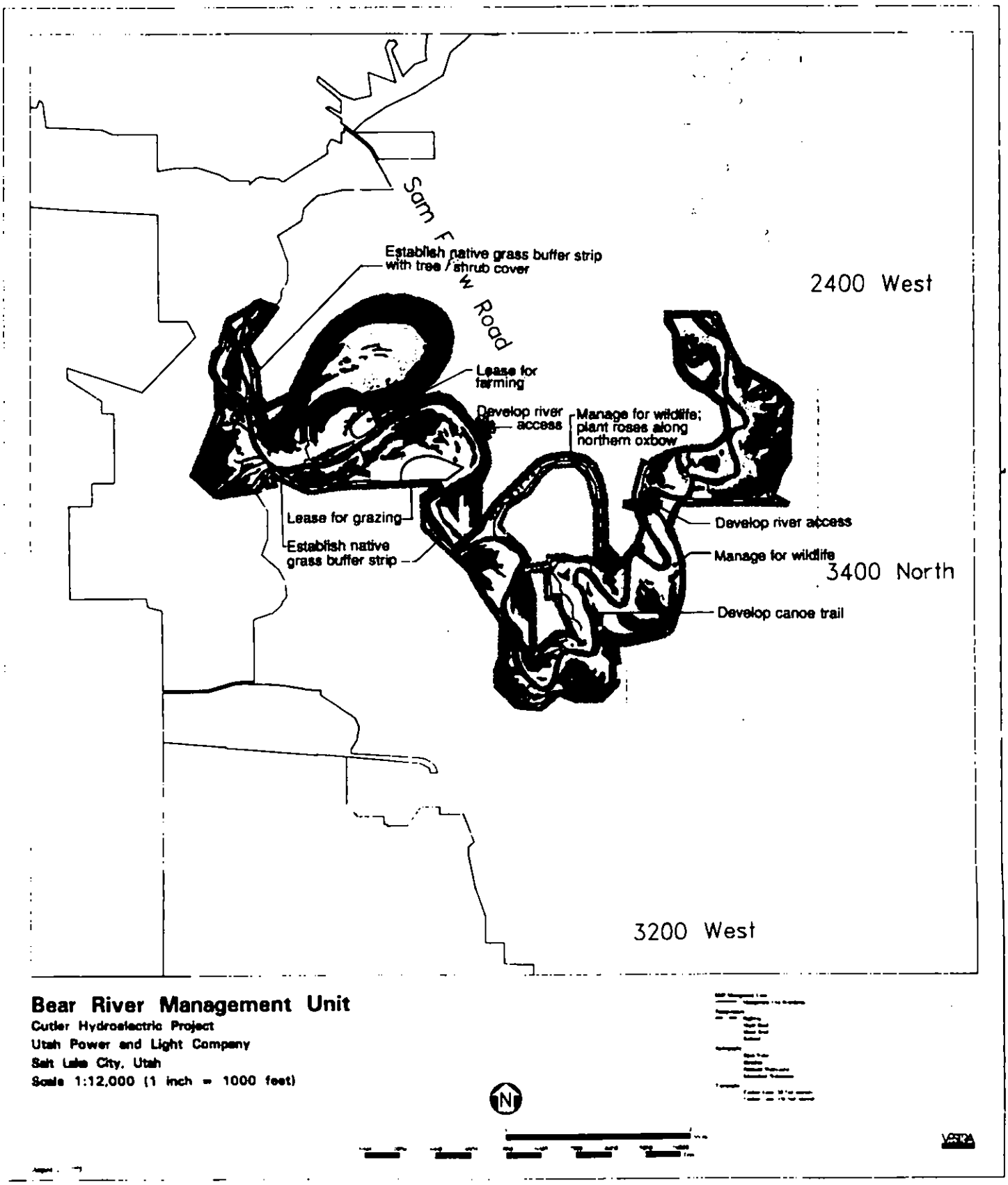

Figure A-3B

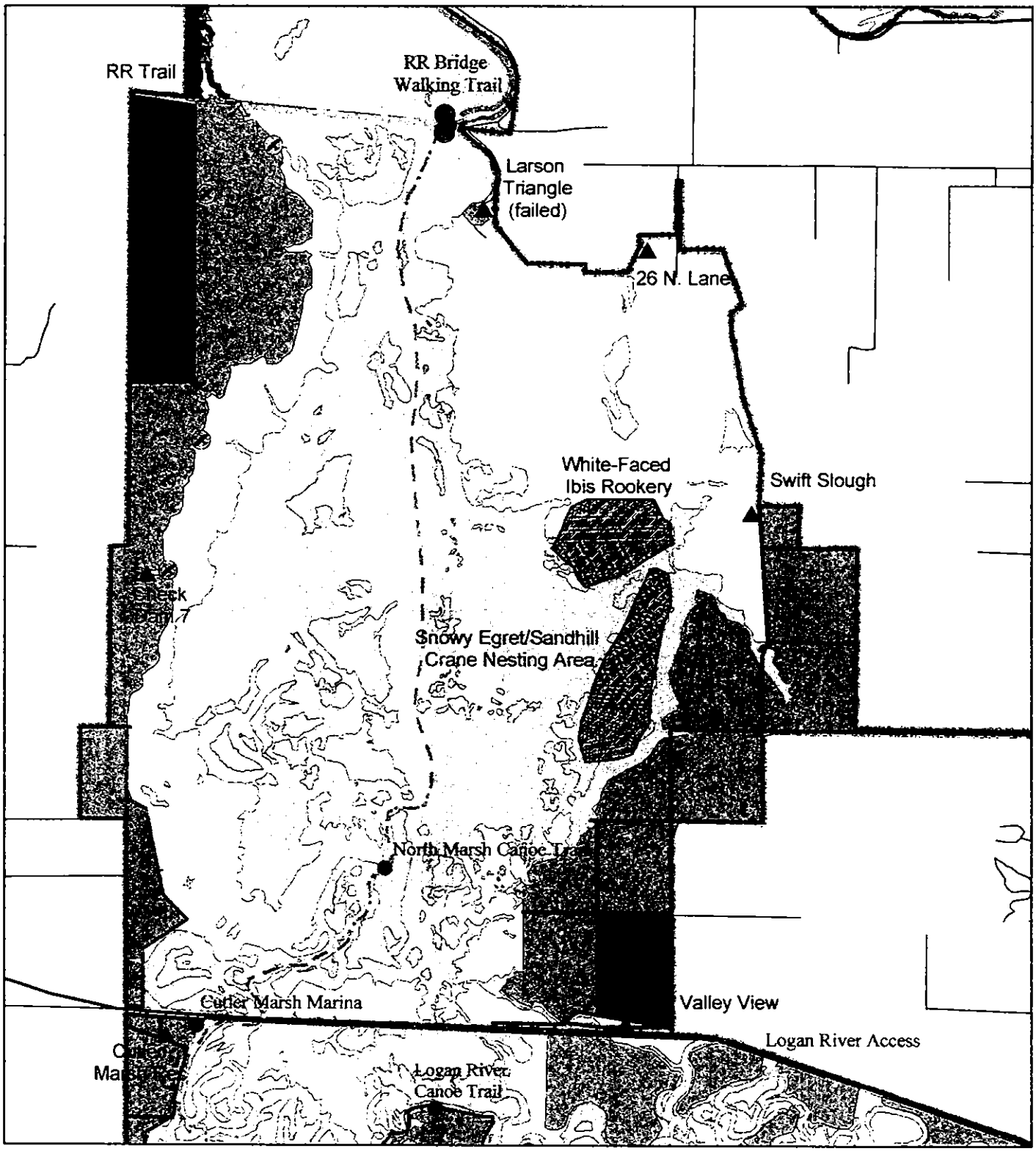

Figure A-4A

Cutler RMP:
North Marsh Management Unit

PACIFICORP
Geographic Information System

August 26th, 2002
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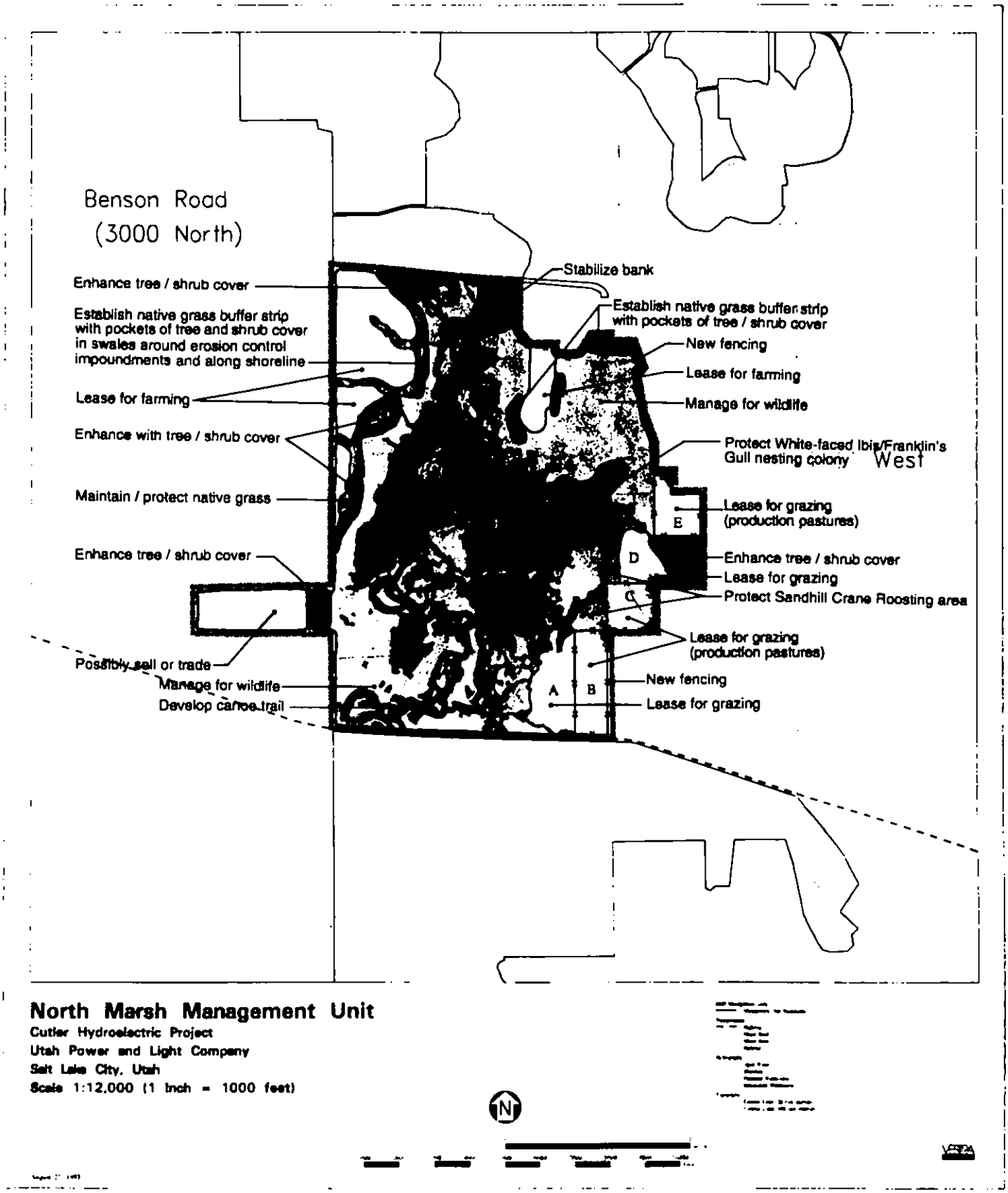

Figure A-4B

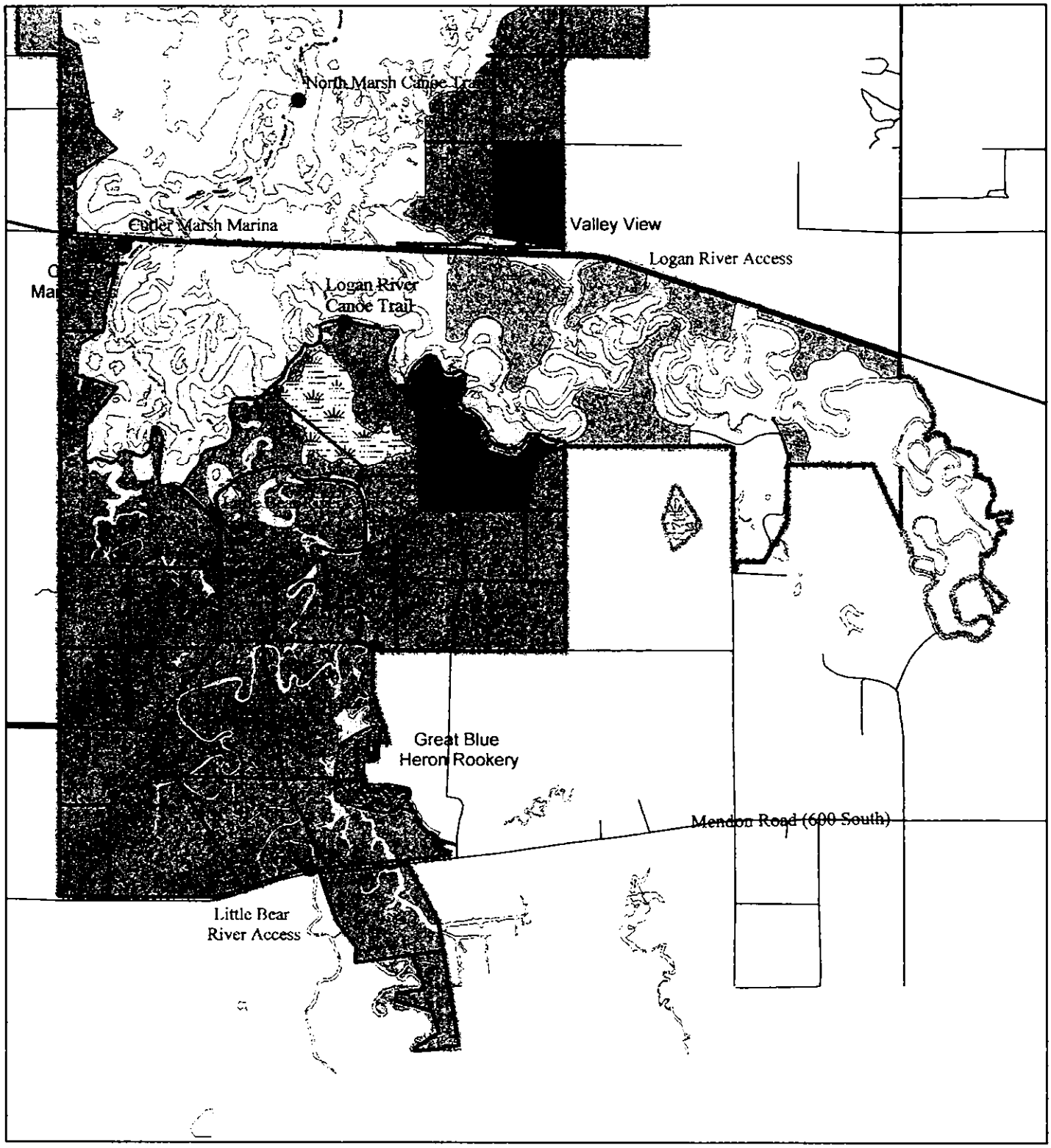

Figure A-5A

Cutler RMP:
South Marsh Management Unit

PACIFICORP
Geographic Information System

August 26th, 2002

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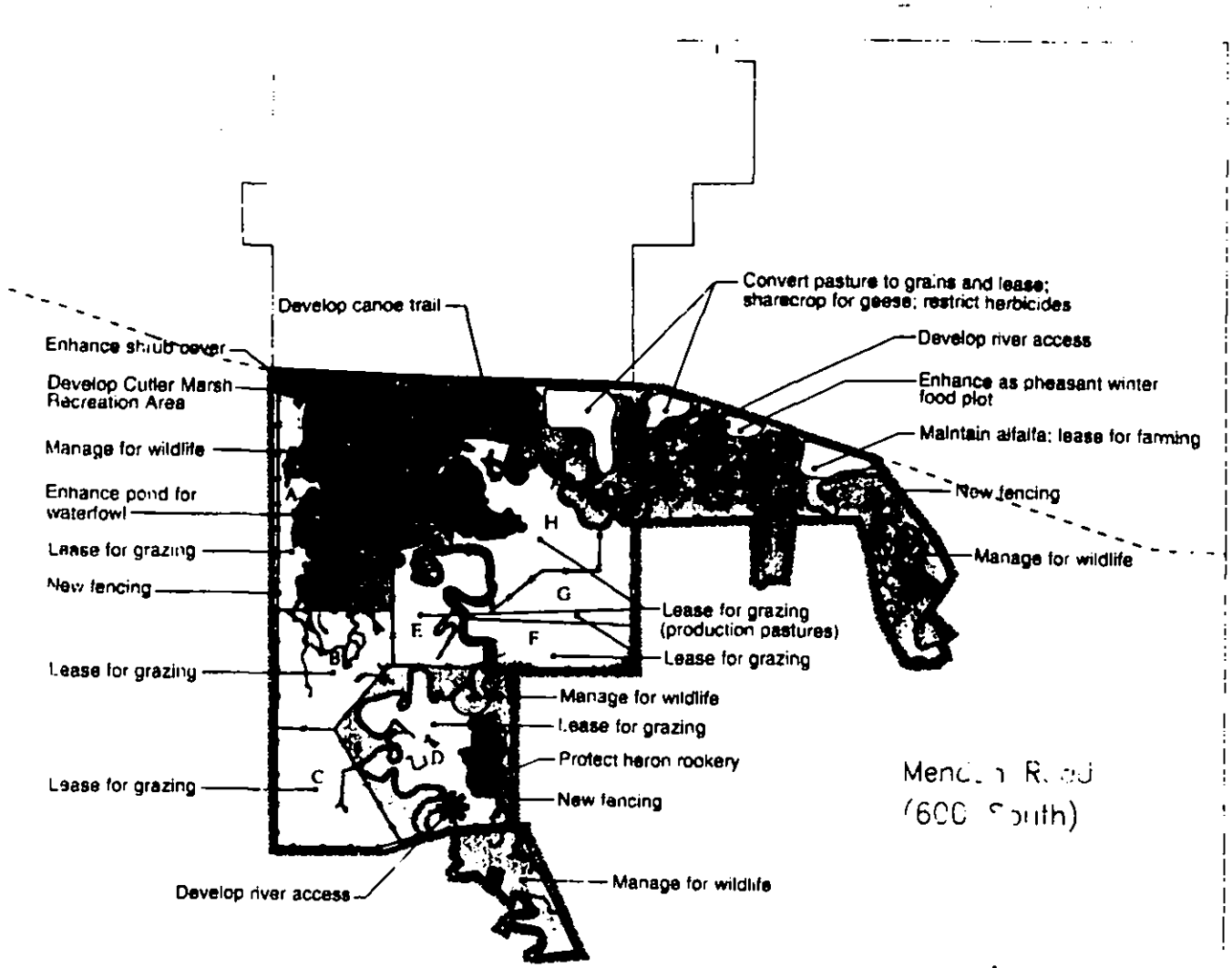

South Marsh Management Unit
Cutler Hydroelectric Project
Utah Power and Light Company
Salt Lake City, Utah
Scale 1:12,000 (1 inch = 1000 feet)

N

Figure A-5B

Appendix B

Recreation Visitor User Survey

B-1: Survey Instruction Sheet & Phone Survey
B-2: Survey Results
B-3: Visitor Comments
B-4: Recommended On-Site Survey

Appendix B-1

Survey Instruction Sheet & Phone Survey

Recreation Survey for Cutler Marsh

Cache County		Box Elder County		Franklin County	
$N_1 = 27543$; $n_1 = 166$		$N_2 = 13144$; $n_2 = 79$		$N_3 = 3467$; $n_3 = 21$	
Interval (k) = 850 or 63-7/16"		Interval (k) = 495 or 36-3/16"		Interval (k) = 176 or 13-3/16"	
Name	***Random Starting #***	***Name***	***Random Starting #***	***Name***	***Random Starting #***
Neal	82	Kevin	6	Chris B.	4
Nolan	50	Dusty	83		
Stein	98	Natalie	43		
Silas	62				
Kyle	16				

N_i = Population of each county
n_i = Sample size for each county
Total sample size (n) = 266
Total Population (N) = 44154
Estimated response rate = 60%
Target sample size = 190

Source: Population and sample sizes were calculated for each county from the number of households in the 2000 census. US Census Bureau – www.quickfacts.census.gov Intervals (k) were determined from the Bridgerland and Box Elder phone books.

Survey Instructions (read all instructions before beginning)

1) Practice conducting the survey with someone before beginning. Get feedback on how friendly your tone of voice was and how personable you were during the practice.
2) Make your initial calls on weekdays between 6:00 and 9:00 pm or on Saturday afternoons or Sunday afternoon and evenings until 9:00 pm (callbacks can be made anytime during reasonable hours).
3) Using the reverse index in the phone book, use your assigned random number to select your first contact. Make sure you are only counting numbers in your county (check the area code and prefix at the head of the columns).
4) If you land on a business number or the number is disconnected, mark that number in the book (so you know where to start counting again for your next selection) and then go to the next number in the list until you select a residential number.
5) To select the other contacts, count or measure down the list from the previous mark using the intervals in the table above for each county.
6) If there is no adult at home, if no one answers, or if you get an answering machine, try the same number again later. If you are unable to contact anyone after 6 attempts, record the call as a no response and move on to the next contact.
7) Read instruction sheet for the Little Sahara survey (pink sheet).

User Survey for the Cutler Marsh Area -- March 2002

Name: _____ Gender: (M) (F)
Phone: _____ City: _____
County: _____ State: _____

Telephone Call Record

	1	2	3	4	5	6
Date & Time	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Result	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Result Codes:

(1) Busy (2) Refused (3) Answering Machine (4) Wrong # (5) Completed
(6) Call back; Time __:__ (7) No Answer

Hello, may I speak to _____?
This is _____. I represent a team of Utah State University students conducting a survey on recreation use at Cutler Marsh in Cache Valley. The survey will last about 3 minutes and all your answers will be held confidential. Can I start the survey now?

1. Have you ever heard of Cutler Marsh? (If "Yes" continue. If "No" then explain that it's the marsh located in the middle of Cache Valley and mark either "YES, After Explanation" or "No" and thank the person for their time and end the call)
YES NO YES, After Explanation DON'T KNOW

2. Have you ever visited Cutler Marsh? (If "No" say you have three quick questions to ask and then read questions in box. If "Yes" go to question 6 on next page)
YES NO DON'T KNOW

3. Do any other members of your household visit Cutler Marsh?
YES NO DON'T KNOW
How many?____

4. I'm going to READ a list of activities at Cutler Marsh and you tell me which ones you would most likely participate in. (Mark Yes, No, or Don't Know and probe for more activities using "Anything else I haven't mentioned?")

Mountain Biking ____	Boating (motorized) ____	Picnicking ____
Hiking/walking/running ____	Boating (non-motorized) ____	Jetskiing____
Snowmobiling ____	Hunting ____	Horseback Riding ____
Bird Watching ____	Wildlife Photography____	Fishing____

Other_____

5. Are you aware that there is no overnight camping allowed at Cutler Marsh?
YES NO DON'T KNOW

Thank you for your time! Your information will prove valuable for recreation at Cutler Marsh! Have a nice day/night!

6. When was the last time you visited Cutler Marsh?

7. How many times do you recreate at Cutler Marsh in a typical year?

8. What time of year do you visit Cutler Marsh? (Circle all that apply)
WINTER SUMMER SPRING FALL DON'T KNOW

9. What time of the week do you usually visit? (Circle all that apply)
WEEKDAYS WEEKENDS DON'T KNOW

10. In general, what time of the day would you say you visit? (Circle all that apply)
MORNINGS AFTERNOONS EVENINGS DON'T KNOW

11. Which of the following places have you visited? (Read the following and explain location if needed. See question #1)

Benson Marina	Y ___	N ___	Do not know ___	Y, After Explanation___
Cutler Marsh Marina	Y ___	N ___	Do not know ___	Y, After Explanation___
Little Bear River Put In	Y ___	N ___	Do not know ___	Y, After Explanation___
Upper Bear River Access	Y ___	N ___	Do not know ___	Y, After Explanation___
Cutler Canyon	Y ___	N ___	Do not know ___	Y, After Explanation___
Clay Slough	Y ___	N ___	Do not know ___	Y, After Explanation___
Lower Bear River Overlook	Y ___	N ___	Do not know ___	Y, After Explanation___

Other _____

12. I'm going to read a list of activities at Cutler Marsh and you tell me which ones you have participated in? (Mark Yes, No, or Don't Know and probe for more activities)

Mountain Biking ___	Boating (motorized) ___	Picnic ___	
Hiking/walking/running ___	Boating (non-motorized) ___	Jetskiing___	
Snowmobiling ___	Hunting ___	Horseback Riding ___	
Bird Watching ___	Wildlife Photography___	Fishing___	Other

_____

13. Are you aware that there is no overnight camping allowed at Cutler Marsh?
YES NO

14. Are there any recreational activities that you would like to see offered at Cutler Marsh? (Mark Yes, No, or Don't Know and probe for more activities)

Mountain Biking ___	Boating (motorized) ___	Picnic ___	
Hiking/walking/running ___	Boating (non-motorized) ___	Jetskiing___	
Snowmobiling ___	Hunting ___	Horseback Riding ___	
Bird Watching ___	Camping ___	Fishing___	Other

_____

15. Are there any recreational activities that you would like to see reduced at Cutler Marsh? (Mark Yes, No, or Don't Know and probe for more activities)

Mountain Biking ___	Boating (motorized) ___	Picnic ___	
Hiking/walking/running ___	Boating (non-motorized) ___	Jetskiing___	
Snowmobiling ___	Hunting ___	Horseback Riding ___	
Bird Watching ___	Fishing___	Other _____	

16. Do you usually go with? (Read list and circle all that apply)
FRIENDS FAMILY ALONE OTHER DON'T KNOW

17. What is the typical group size when you go out?

18. Do any other members of your household visit Cutler Marsh?
YES NO DON'T KNOW
How many? ____

19. Please rate the following problems at Cutler Marsh on a scale from 1-4, 1 meaning not a problem, 2 meaning a small problem, 3 meaning a moderate problem, and 4 meaning a big problem. (Read list. If answer is 3 or 4 ask why it is a problem and write verbatim their response and probe for more using, "What else?" or "Anything else?")

Litter/Garbage ___	Dumping ___
Crowding ___	Conflicts with other users ___
Not enough signs ___	Water Quality ___
Vandalism ___	Not enough wildlife ___
Not enough facilities ___	Not enough law enforcement ___

Problems:

_____
_____
_____
_____
_____

For questions 20 and 21 write verbatim and probe a response using "What else?" or "Anything else?" until respondent has nothing else.

20. Are there any other issues or concerns that you have about Cutler Marsh? (If "No" leave blank)

_____
_____
_____
_____
_____

21. Are there any changes you would like to see? (If "No" leave blank)

_____
_____
_____
_____
_____

Thank you for your time! Your information will prove valuable for future recreation at Cutler Marsh! Have a nice day/night!

Appendix B-2

Survey Results

Entire Sample

Day of month

Month of Interview			Frequency	Percent	Valid Percent	Cumulative Percent
April	Valid	1	23	16.7	16.7	16.7
		2	29	21.0	21.0	37.7
		3	22	15.9	15.9	53.6
		4	13	9.4	9.4	63.0
		5	10	7.2	7.2	70.3
		6	10	7.2	7.2	77.5
		7	5	3.6	3.6	81.2
		8	12	8.7	8.7	89.9
		9	9	6.5	6.5	96.4
		10	5	3.6	3.6	100.0
		Total	138	100.0	100.0	
March	Valid	25	2	4.3	4.3	4.3
		26	5	10.9	10.9	15.2
		27	5	10.9	10.9	26.1
		28	13	28.3	28.3	54.3
		29	10	21.7	21.7	76.1
		30	11	23.9	23.9	100.0
		Total	46	100.0	100.0	

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	94	51.1	51.1	51.1
	Female	83	45.1	45.1	96.2
	Don't Know	7	3.8	3.8	100.0
	Total	184	100.0	100.0	

Residence's county

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cache	122	66.3	66.3	66.3
	Box Elder	54	29.3	29.3	95.7
	Franklin	8	4.3	4.3	100.0
	Total	184	100.0	100.0	

Residence's state

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Utah	176	95.7	95.7	95.7
	Idaho	8	4.3	4.3	100.0
	Total	184	100.0	100.0	

Heard of Cutler Marsh?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	55	29.9	29.9	29.9
	Yes	39	21.2	21.2	51.1
	Yes after explain	90	48.9	48.9	100.0
	Total	184	100.0	100.0	

Visited Cutler Marsh?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	94	51.1	72.9	72.9
	Yes	35	19.0	27.1	100.0
	Total	129	70.1	100.0	
Missing	Not applicable	55	29.9		
Total		184	100.0		

Non-Visitors

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	44	46.8	46.8	46.8
	Female	45	47.9	47.9	94.7
	Don't Know	5	5.3	5.3	100.0
	Total	94	100.0	100.0	

Residence's county

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cache	71	75.5	75.5	75.5
	Box Elder	19	20.2	20.2	95.7
	Franklin	4	4.3	4.3	100.0
	Total	94	100.0	100.0	

Residence's state

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Utah	90	95.7	95.7	95.7
	Idaho	4	4.3	4.3	100.0
	Total	94	100.0	100.0	

Other family members visit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	77	81.9	87.5	87.5
	Yes	11	11.7	12.5	100.0
	Total	88	93.6	100.0	
Missing	Don't know	4	4.3		
	Missing	2	2.1		
	Total	6	6.4		
Total		94	100.0		

Statistics

How many other family members?

N	Valid	10
	Missing	84
Mean		1.40

How many other family members?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	8.5	80.0	80.0
	2	1	1.1	10.0	90.0
	4	1	1.1	10.0	100.0
	Total	10	10.6	100.0	
Missing	Not Applicable	81	86.2		
	Don't know	1	1.1		
	Missing	2	2.1		
	Total	84	89.4		
Total		94	100.0		

Non-visitors mountain biking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	66	70.2	71.0	71.0
	Yes	27	28.7	29.0	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors hiking/walking running

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	33.0	33.3	33.3
	Yes	62	66.0	66.7	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Snowmobiling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	79	84.0	84.9	84.9
	Yes	14	14.9	15.1	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Bird Watching

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	61	64.9	65.6	65.6
	Yes	32	34.0	34.4	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Boating (motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	68	72.3	73.1	73.1
	Yes	25	26.6	26.9	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Boating (Non-Motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	59	62.8	63.4	63.4
	Yes	34	36.2	36.6	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Hunting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	67	71.3	72.0	72.0
	Yes	26	27.7	28.0	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Wildlife Photograph

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	67	71.3	72.0	72.0
	Yes	26	27.7	28.0	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Picnicking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	40	42.6	43.0	43.0
	Yes	53	56.4	57.0	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Jetskiing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	73	77.7	78.5	78.5
	Yes	20	21.3	21.5	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Horseback Riding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	70	74.5	75.3	75.3
	Yes	23	24.5	24.7	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	41	43.6	44.1	44.1
	Yes	52	55.3	55.9	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Non-visitors Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	6.4	54.5	54.5
	Yes	5	5.3	45.5	100.0
	Total	11	11.7	100.0	
Missing	Not Applicable	82	87.2		
	Missing	1	1.1		
	Total	83	88.3		
Total		94	100.0		

Are you aware there is no camping?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	89	94.7	95.7	95.7
	Yes	4	4.3	4.3	100.0
	Total	93	98.9	100.0	
Missing	Missing	1	1.1		
Total		94	100.0		

Visitors

Visitors

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	25	71.4	71.4	71.4
	Female	9	25.7	25.7	97.1
	8	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

Residence's county

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cache	28	80.0	80.0	80.0
	Box Elder	7	20.0	20.0	100.0
	Total	35	100.0	100.0	

Residence's state

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Utah	35	100.0	100.0	100.0

Month of last visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	January	3	8.6	15.8	15.8
	April	1	2.9	5.3	21.1
	June	4	11.4	21.1	42.1
	August	1	2.9	5.3	47.4
	September	1	2.9	5.3	52.6
	October	9	25.7	47.4	100.0
	Total	19	54.3	100.0	
Missing	Don't Know	16	45.7		
Total		35	100.0		

Year of last visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2000	2	5.7	6.5	6.5
	2001	14	40.0	45.2	51.6
	2002	2	5.7	6.5	58.1
	1972	1	2.9	3.2	61.3
	1985	1	2.9	3.2	64.5
	1990	1	2.9	3.2	67.7
	1992	3	8.6	9.7	77.4
	1997	5	14.3	16.1	93.5
	1998	1	2.9	3.2	96.8
	1999	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	Don't know	4	11.4		
Total		35	100.0		

Statistics

How many visits per year

N	Valid	34
	Missing	1
Mean		4.74

How many visits per year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	14.3	14.7	14.7
	2	5	14.3	14.7	29.4
	3	4	11.4	11.8	41.2
	4	4	11.4	11.8	52.9
	5	3	8.6	8.8	61.8
	6	3	8.6	8.8	70.6
	7	1	2.9	2.9	73.5
	8	6	17.1	17.6	91.2
	9	2	5.7	5.9	97.1
	12	1	2.9	2.9	100.0
	Total	34	97.1	100.0	
Missing	Missing	1	2.9		
Total		35	100.0		

Winter season visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	33	94.3	94.3	94.3
	Yes	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

Summer season of the visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	15	42.9	42.9	42.9
	Yes	20	57.1	57.1	100.0
	Total	35	100.0	100.0	

Spring season of the visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	68.6	68.6	68.6
	Yes	11	31.4	31.4	100.0
	Total	35	100.0	100.0	

Fall season of the visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	48.6	48.6
	Yes	18	51.4	51.4	100.0
	Total	35	100.0	100.0	

Visited on weekday

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	54.8	54.8
	Yes	14	40.0	45.2	100.0
	Total	31	88.6	100.0	
Missing	Don't know	4	11.4		
Total		35	100.0		

Visited on weekend

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	17.1	19.4	19.4
	Yes	25	71.4	80.6	100.0
	Total	31	88.6	100.0	
Missing	Don't know	4	11.4		
Total		35	100.0		

Visited on mornings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	45.7	48.5	48.5
	Yes	17	48.6	51.5	100.0
	Total	33	94.3	100.0	
Missing	Don't know	2	5.7		
Total		35	100.0		

Visited on afternoons

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	15	42.9	45.5	45.5
	Yes	18	51.4	54.5	100.0
	Total	33	94.3	100.0	
Missing	Don't know	2	5.7		
Total		35	100.0		

Visited on evenings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	51.5	51.5
	Yes	16	45.7	48.5	100.0
	Total	33	94.3	100.0	
Missing	Don't know	2	5.7		
Total		35	100.0		

Visited Benson marina

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	20.0	23.3	23.3
	Yes	21	60.0	70.0	93.3
	Yes, after explanation	2	5.7	6.7	100.0
	Total	30	85.7	100.0	
Missing	Don't know	5	14.3		
Total		35	100.0		

Visited Cutler Marsh marina

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	56.7	56.7
	Yes	10	28.6	33.3	90.0
	Yes, after explanation	3	8.6	10.0	100.0
	Total	30	85.7	100.0	
Missing	Don't know	5	14.3		
Total		35	100.0		

Visited Little Bear River put in

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	45.7	59.3	59.3
	Yes	11	31.4	40.7	100.0
	Total	27	77.1	100.0	
Missing	Don't know	8	22.9		
Total		35	100.0		

Visited Upper Bear River Acess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	57.1	80.0	80.0
	Yes	5	14.3	20.0	100.0
	Total	25	71.4	100.0	
Missing	Don't know	10	28.6		
Total		35	100.0		

Visited Cutler Canyon

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	37.1	48.1	48.1
	Yes	14	40.0	51.9	100.0
	Total	27	77.1	100.0	
Missing	Don't know	8	22.9		
Total		35	100.0		

Visited Clay Slough

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	68.6	92.3	92.3
	Yes	1	2.9	3.8	96.2
	Yes, after explanation	1	2.9	3.8	100.0
	Total	26	74.3	100.0	
Missing	Don't know	9	25.7		
Total		35	100.0		

Visited Lower Bear River Overlook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	31.4	64.7	64.7
	Yes	6	17.1	35.3	100.0
	Total	17	48.6	100.0	
Missing	Not Applicable	10	28.6		
	Don't know	8	22.9		
	Total	18	51.4		
Total		35	100.0		

Mountain Biking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	85.7	93.8	93.8
	Yes	2	5.7	6.3	100.0
	Total	32	91.4	100.0	
Missing	Missing	2	5.7		
	Don't know	1	2.9		
	Total	3	8.6		
Total		35	100.0		

Hiking/Walking/Running

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	22	62.9	68.8	68.8
	Yes	10	28.6	31.3	100.0
	Total	32	91.4	100.0	
Missing	Missing	2	5.7		
	Don't know	1	2.9		
	Total	3	8.6		
Total		35	100.0		

Snowmobiling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	88.6	96.9	96.9
	Yes	1	2.9	3.1	100.0
	Total	32	91.4	100.0	
Missing	Missing	2	5.7		
	Don't know	1	2.9		
	Total	3	8.6		
Total		35	100.0		

Birdwatching

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	53.1	53.1
	Yes	15	42.9	46.9	100.0
	Total	32	91.4	100.0	
Missing	Missing	2	5.7		
	Don't know	1	2.9		
	Total	3	8.6		
Total		35	100.0		

Boating (motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	21	60.0	63.6	63.6
	Yes	12	34.3	36.4	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Boating (non-motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	31.4	33.3	33.3
	Yes	22	62.9	66.7	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Hunting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	19	54.3	57.6	57.6
	Yes	14	40.0	42.4	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Wildlife Photography

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	26	74.3	78.8	78.8
	Yes	7	20.0	21.2	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Picnicking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	22	62.9	66.7	66.7
	Yes	11	31.4	33.3	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Jetskiing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	85.7	90.9	90.9
	Yes	3	8.6	9.1	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Horseback Riding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	32	91.4	97.0	97.0
	Yes	1	2.9	3.0	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	45.7	48.5	48.5
	Yes	17	48.6	51.5	100.0
	Total	33	94.3	100.0	
Missing	Missing	2	5.7		
Total		35	100.0		

Aware of no camping

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	18	51.4	51.4	51.4
	Yes	17	48.6	48.6	100.0
	Total	35	100.0	100.0	

Any additional recreational activities you would like to see?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	85.7	85.7	85.7
	Yes	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

Mountain Biking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Hiking/Walking/Running

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	5.7	40.0	40.0
	Yes	3	8.6	60.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Snowmobiling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Birdwatching

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	5.7	40.0	40.0
	Yes	3	8.6	60.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Boating (motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Boating (non-motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Hunting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Wildlife Photography

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	2.9	20.0	20.0
	Yes	4	11.4	80.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Picnicking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Jetskiing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Horseback Riding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	8.6	60.0	60.0
	Yes	2	5.7	40.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Frequency Table

Any recreational activities you would like to see reduced?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	85.7	85.7	85.7
	Yes	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

Mountain Biking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Hiking/Walking/Running

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Snowmobiling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Birdwatching

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Boating (motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	5.7	40.0	40.0
	Yes	3	8.6	60.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Boating (non-motorized)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Hunting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Picnicking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Jetskiing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	5.7	40.0	40.0
	Yes	3	8.6	60.0	100.0
	Total	5	14.3	100.0	
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Horseback Riding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	14.3	100.0	100.0
Missing	Not Applicable	30	85.7		
Total		35	100.0		

Usually go with friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	45.7	45.7	45.7
	Yes	19	54.3	54.3	100.0
	Total	35	100.0	100.0	

Usually go with family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	8	22.9	23.5	23.5
	Yes	26	74.3	76.5	100.0
	Total	34	97.1	100.0	
Missing	Don't know	1	2.9		
Total		35	100.0		

Usually go with alone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	88.6	88.6	88.6
	Yes	4	11.4	11.4	100.0
	Total	35	100.0	100.0	

Usually go with "other"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	31	88.6	93.9	93.9
	Yes	2	5.7	6.1	100.0
	Total	33	94.3	100.0	
Missing	Not Applicable	2	5.7		
Total		35	100.0		

Statistics

Typical group size?

N	Valid	31
	Missing	4
Mean		3.94

Typical group size?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	2.9	3.2	3.2
	2	8	22.9	25.8	29.0
	3	8	22.9	25.8	54.8
	4	6	17.1	19.4	74.2
	5	4	11.4	12.9	87.1
	6	1	2.9	3.2	90.3
	10	2	5.7	6.5	96.8
	11	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	Don't know	2	5.7		
	77	1	2.9		
	88	1	2.9		
	Total	4	11.4		
Total		35	100.0		

Do other household members visit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	17	48.6	50.0	50.0
	Yes	17	48.6	50.0	100.0
	Total	34	97.1	100.0	
Missing	Not Applicable	1	2.9		
Total		35	100.0		

Statistics

How many?

N	Valid	14
	Missing	21
Mean		3.14

How many?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	14.3	35.7	35.7
	2	5	14.3	35.7	71.4
	4	2	5.7	14.3	85.7
	6	1	2.9	7.1	92.9
	15	1	2.9	7.1	100.0
	Total	14	40.0	100.0	
Missing	Not Applicable	18	51.4		
	Don't know	2	5.7		
	Missing	1	2.9		
	Total	21	60.0		
Total		35	100.0		

Statistics

Rate the problem of litter/garbage

N	Valid	32
	Missing	3
Mean		2.50

Rate the problem of litter/garbage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	4	11.4	12.5	12.5
	small problem	13	37.1	40.6	53.1
	moderate problem	10	28.6	31.3	84.4
	big problem	5	14.3	15.6	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of crowding

N	Valid	32
	Missing	3
Mean		1.47

Rate the problem of crowding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	20	57.1	62.5	62.5
	small problem	10	28.6	31.3	93.8
	moderate problem	1	2.9	3.1	96.9
	big problem	1	2.9	3.1	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of not enough signs

N	Valid	32
	Missing	3
Mean		1.78

Rate the problem of not enough signs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	17	48.6	53.1	53.1
	small problem	6	17.1	18.8	71.9
	moderate problem	8	22.9	25.0	96.9
	big problem	1	2.9	3.1	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of vandalism

N	Valid	31
	Missing	4
Mean		1.74

Rate the problem of vandalism

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	17	48.6	54.8	54.8
	small problem	6	17.1	19.4	74.2
	moderate problem	7	20.0	22.6	96.8
	big problem	1	2.9	3.2	100.0
	Total	31	88.6	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	3	8.6		
	Total	4	11.4		
Total		35	100.0		

Statistics

Rate the problem of not enough facilities

N	Valid	31
	Missing	4
Mean		1.77

Rate the problem of not enough facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	17	48.6	54.8	54.8
	small problem	7	20.0	22.6	77.4
	moderate problem	4	11.4	12.9	90.3
	big problem	3	8.6	9.7	100.0
	Total	31	88.6	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	3	8.6		
	Total	4	11.4		
Total		35	100.0		

Statistics

Rate the problem of dumping

N	Valid	32
	Missing	3
Mean		2.09

Rate the problem of dumping

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	12	34.3	37.5	37.5
	small problem	7	20.0	21.9	59.4
	moderate problem	11	31.4	34.4	93.8
	big problem	2	5.7	6.3	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of conflicts with other users

N	Valid	32
	Missing	3
Mean		1.38

Rate the problem of conflicts with other users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	23	65.7	71.9	71.9
	small problem	6	17.1	18.8	90.6
	moderate problem	3	8.6	9.4	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of water quality

N	Valid	31
	Missing	4
Mean		2.61

Rate the problem of water quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	7	20.0	22.6	22.6
	small problem	7	20.0	22.6	45.2
	moderate problem	8	22.9	25.8	71.0
	big problem	9	25.7	29.0	100.0
	Total	31	88.6	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	3	8.6		
	Total	4	11.4		
Total		35	100.0		

Statistics

Rate the problem of not enough wildlife

N	Valid	32
	Missing	3
Mean		1.34

Rate the problem of not enough wildlife

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	22	62.9	68.8	68.8
	small problem	9	25.7	28.1	96.9
	moderate problem	1	2.9	3.1	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Statistics

Rate the problem of not enough law enforcement

N	Valid	32
	Missing	3
Mean		1.53

Rate the problem of not enough law enforcement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not a problem	21	60.0	65.6	65.6
	small problem	7	20.0	21.9	87.5
	moderate problem	2	5.7	6.3	93.8
	big problem	2	5.7	6.3	100.0
	Total	32	91.4	100.0	
Missing	Not Applicable	1	2.9		
	Don't know	2	5.7		
	Total	3	8.6		
Total		35	100.0		

Appendix B-3

Visitor Comments

Cutler Marsh Survey Notes –

Survey #	Q #	Comments
27	19	Water Quality has slowly improved over the last 30 years.
	20	Big term development, building of factories and industries around the area. Need a forbidden area that nothing can be built within 2 blocks from riverbank. Area near Benson Stake Center is the closest it should be. Farmers need to stay back from ban 20-30 ft.
	21	People who own property need to think of area as a precious property such as beachfront or etc, Once it becomes realized that it is precious then we can begin to preserve the area more efficiently.
33	21	Area needs to be dredged.
49	19	Facilities – There was not much there 15 years ago. Vandalism – Neglect on the part of the users. Water Quality – It's a marshy area. Not enough signs – Not enough information
	21	Keep it the way it is, no new developments.
63	19	Litter/Garbage – More garbage than should have been there. Too many people don't pick up after themselves.
67	19	Vandalism – Rest area blown up by dynamite.
68	19	Litter/Garbage – People not trained to pick up garbage. Vandalism – Graffiti Water Quality – Cloudy water, stagnant.
75	19	Dumping – This time of year a lot of litter Water Quality – Pretty dirty, muddy.
76	19	Litter/Garbage – anytime litter in wildlife a problem, farmers and cattle smelly. Signs – Canoeing wander maze. Dumping – Dumping near water (farmers) Water Quality - Farmers
	21	Like to see farmers not dumping in river. Fence off river to improve water quality. Motorized boaters restricted (scares off wildlife). Limit use to things more natural.
81	19	Litter – Problem everywhere there is recreation. Vandalism – We busted up everything at Benson. Problem for a long time. Water Quality – Just obvious.
	20	Not too much development.
87	12	Train dogs.
	14	Couple places for overnight camping.
	15	Conflicts between users, respect other users.
	19	Dumping – Landowners problem. Old hay, dead animals, liquid manure in riparian area. Conflicts – people don't care. Should have motorized and non-motorized.

	19	Water Quality – Raw sewage dumping into Cutler area. Spring Creek a problem. Upper Spring Creek used to be Trout now only carp.
	20	Adequate setbacks, no more buildings.
	21	Irrigation system to prevent silt and salt. Federal funding to do this (for farmers).
90	19	Sign – More signs, more people become aware and take advantage of it. Facilities – Didn't see any bathrooms Wildlife – Not enough, didn't see any.
98	19	There was a lot of trash when we were there. Seemed like there was a lot of cardboard and cans. Yes, there were bigger items in the deeper spots, parts of cars… can't remember. That's it.
	21	Cleaned up.
162	19	Some garbage. Really crowded during hunt. More signs for direction and to show where you are.
163	12	Nice to see wildlife and take pictures
	19	Dead cow in river.
	20	Really nice
	21	No, keep it like that. Road steep down to the dam. Don't want it to go away.
164	19	They are pigs who use it – fisherman, entrails. Signs knocked over and writing on stuff. Too muddy, stirred up by boaters and carp.
	21	Leave it like it is.
173	19	Environmental concerns – worried about restrictions, does not want to see restrictions. Keep everybody under control.
186	19	Sometimes parking on opening day of hunting.
	21	Garbage picked up. Access roads improved.
226	19	Too much litter lying around.
	20	Littering, motorbikes and mountain bikes going off trail and damaging vegetation.
	21	Would like to see areas for larger group meetings.
227	19	Too much Garbage
	21	Markings on main channels for boat routes.
229	19	Crowding and conflicts with jet-skis and powerboats.
	20	Jet-skis, ski boats, when the water is low it is possible to hit fence posts that are partially covered.
	21	Limit use of jet-skis to certain area.
231	12	Swimming
	14	Boat ramps not so steep.
	21	Developed a little more. More walking trails or something. Boat ramps not so steep.

Top three concerns found throughout the survey –

- Number 1 problem found at cutler is water quality.
- Number 2 is dumping and garbage/litter.
- Number 3 is the concern that Cutler Marsh should be kept the way that it is. No new development.

Appendix B-4

Recommended On-Site Survey

Date:_____
Time:_____
Location: _____

Cutler Marsh On-Site Survey

1. Current Place of Residence (City, State). _____
2. What activities are you participating in today? _____
3. About how many times do you recreate at Cutler Marsh each summer? _____
4. How many are in your party today? _____
5. What is your typical group size when you come to Cutler Marsh? _____
6. What other activities do you participate in at Cutler Marsh during the summer? Mark each of the following activities you have participated in during the summer only.

Hiking/walking/running	_	**Motor Boating**	_
Snowmobiling on water	_	**Non-motorized Boating**	
(Areservoir dragging@)	_	**(canoeing, kayaking, etc.)**	_
Bird Watching	_	**Hunting**	_
Picnicking	_	**Wildlife Photography**	_
Horseback Riding	_	**Jetskiing**	_
Fishing	_	**Other** _____	_

7. Do you recreate at Cutler Marsh during other seasons? Yes _ No _

8. If you marked A No@ on question 7, skip to question 9. If you marked AYes@ on 7, mark the activities and season(s) for each of the following you participate in?

	Spring	Fall	Winter		Spring	Fall	Winter
Hiking/walking/running	_	_	_	**Hunting**	_	_	_
Snowmobiling	_	_	_	**Motor Boating**	_	_	_
Snowmobiling on water (Areservoir dragging@)	_	_	_	**Non-motorized Boating (canoeing, kayaking, etc.)**	_	_	_
Mountain Biking	_	_	_	**Wildlife Photography**	_	_	_
Bird Watching	_	_	_	**Jetskiing**	_	_	_
Picnicking	_	_	_	**Fishing**	_	_	_
Horseback Riding	_	_	_	**Other** _____	_	_	_

9. **Did you know Cutler Marsh is owned by Utah Power (a PacifiCorp company)?**
   Yes _ No _

10. Were you aware overnight camping is not allowed at Cutler Marsh? Yes __ No __

11. **Mark how often you have visited the following sites.**

	Never	Less than once a year	Once a year	2-5 times a year	6-10 times a year	>10 times a year	Don=t Know
Benson Marina	—	—	—	—	—	—	—
Cutler Marsh Marina	—	—	—	—	—	—	—
Little Bear River Put In	—	—	—	—	—	—	—
Upper Bear River Access	—	—	—	—	—	—	—
Cutler Canyon	—	—	—	—	—	—	—
Cutler Dam	—	—	—	—	—	—	—
Clay Slough	—	—	—	—	—	—	—
Lower Bear River Overlook	—	—	—	—	—	—	—
Other _____	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—

12. **Please rate the following issues at Cutler Marsh and give an explanation for any issues you consider to be moderate or big problems (if you need more space use the back of the sheet, but remember to write the question number and issue you are talking about).**

Issue	Not a problem	Small problem	Moderate problem	Big problem	Don=t Know	For each you marked as a moderate or big problem, explain why you feel its a problem
Litter/Garbage	—	—	—	—	—	_____
Too many people	—	—	—	—	—	_____
Vandalism	—	—	—	—	—	_____
Not enough informational signs	—	—	—	—	—	_____
Not enough bathrooms or facilities Not enough wildlife	—	—	—	—	—	_____
Not enough law enforcement	—	—	—	—	—	_____
Water quality	—	—	—	—	—	_____
Conflicts with other users	—	—	—	—	—	_____
Other _____	—	—	—	—	—	_____
	—	—	—	—	—	_____
	—	—	—	—	—	_____
	—	—	—	—	—	_____

14. **Are there any other issues or concerns you have with Cutler Marsh, or any changes you would like to see?**

_____

_____

_____

_____

_____

Thank you for your time! Your information will prove valuable for future recreation at Cutler Marsh!

Appendix C

Final Wetland Mitigation Site Monitoring Report

1407 W. North Temple, Suite 270
Salt Lake City, Utah 84140
Telephone (801) 220-4902

UTAH POWER
A Division of PacifiCorp

September 11 2000

Mr. Anthony Vigil
U.S. Army COE
1403 S. 600 W.
Bountiful, UT 84010

Please find the attached the Cutler Wetland Mitigation Pond 2000 Monitoring report. This report is intended to fulfill the requirement of COE permit #199550325 which requires PacifiCorp to conduct monitoring for five years and file annual monitoring reports by October 1 of each year. This is the final year of PacifiCorp's monitoring efforts and the final report of this monitoring effort.

If you have any questions please feel free to give Eve Davies or myself a call at 801-220-2257.

Sincerely,

Todd A. Black
Hydro Resources Compliance

Attachments

cc: Scott Johnson - NTO 270
Jerry Roppe – LCT 1500
Eve Davies – NTO 270/file

Cutler Wetland Mitigation Pond
2000 Monitoring Report

PacifiCorp
Salt Lake City,UT

September 09, 2000

1.0 Introduction

PacifiCorp's Cutler wetland mitigation pond is located along the Spring Creek irrigation canal in the Bud Phelps Wildlife Management Area in Cache County, Utah. The pond was constructed in the fall of 1995 under the US Army Corps of Engineers (COE) permit # 199550325. The permit requires PacifiCorp to submit an annual monitoring report the COE by October 1. The pond was constructed to provide 6.5 acres of wetland mitigation associated with the construction of recreation sites required by FERC as part of the Cutler Resource Management Plan (RMP).

This report summarizes monitoring and wetland management activities in 2000. Monitoring consisted of seasonal inspections (Section 2.0 Cutler RMP) and annual vegetation monitoring (Section 3.0 Cutler RMP) as previously specified in the Wetland Mitigation Planting and Monitoring Plan (PacifiCorp 1997). Results and management recommendations are provided. This is the 5th and final year of reporting.

2.0 Inspections

Several walk-through inspections were conducted in 2000. The dike and water control structures were in excellent condition and no maintenance was needed. Spring Creek Ditch, the source of water for the pond, was cleaned out in June of 1999. These areas have recovered and vegetation is growing and established in areas disturbed by the ditch cleaning. Wildlife observed in the immediate area during the July 30 inspection included: ring-necked pheasant, mallard Canada geese, gadwall, song sparrow, yellow warbler and black-billed magpies. Other evidence would indicate that meadow voles, red fox, pocket gophers, and raccoon inhabit the area; heavy use by Canada geese is evident along the east embankment. Other observations included northern leopard frog and chorus frog in the pond.

3.0 Annual vegetation monitoring

An official monitoring visit was conducted on July 30, 2000 (Attachment 1) to describe vegetation development and to conduct photo documentation.

Vegetation types

Both upland and emergent wetland vegetation types were present. The upland vegetation types were well established on the dikes and islands (Figure 3-4). Species composition in the upland vegetation type consisted of tall wheat grass (*Thinopyrum ponticum*), foxtail barley (*Hordeum jubatum*), poison hemlock (*Conium maculatum*), thistle (*Cirsium* spp.), and garrison (*Alopecurus arundinaceus*).

Emergent wetland vegetation was within a 2- to 4-ft band on the perimeter of the pond and islands (Figure 1). The predominant emergent vegetation consists of cattail (*Typha latifolia*), with some reed canary grass (*Phalaris arundinacea*) and sweet clover (*Melilotus alba*) with bulrush (*Scirpus americana*) at the edge of the emergent zone. The water level was at full pool during the monitoring visit and very little floating aquatic vegetation were observed.

Emergent vegetation/open water ratio

Open water covered most (approximately 85%) of the pond (i.e., overall ratio of emergent vegetation to open water was approximately 15:85).

Figure 1. Example of upland and emergent vegetation established on the dike near photo point P1. Water level was at full pool (see bell riser in the center of the photo).

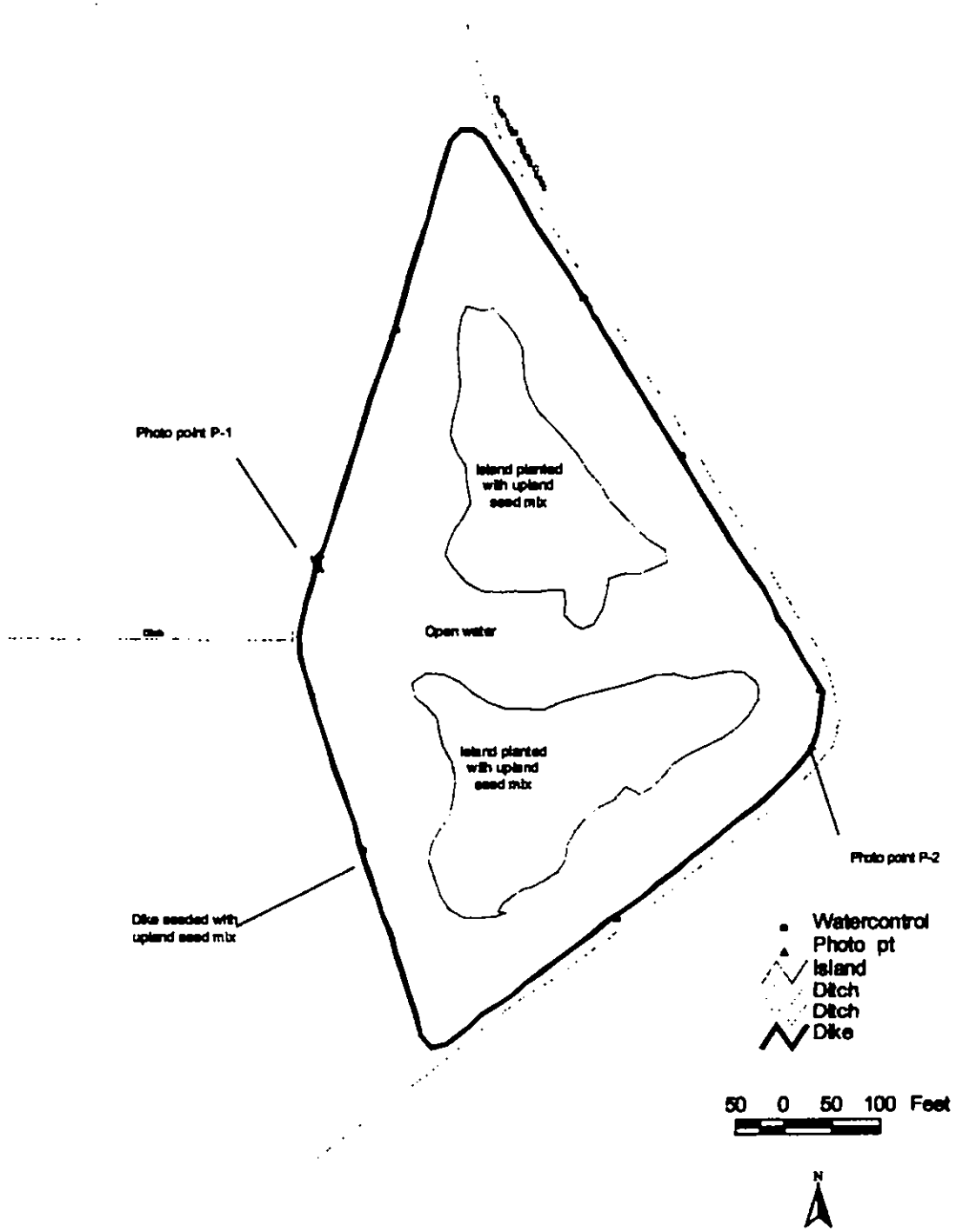

Figure 2. Drawing of Cutler wetland mitigation pond showing location of photo points.

LARGE-FORMAT IMAGES

One or more large-format images (over 8 ½" X 11") go here.
These images are available in FERRIS at:

For Large-Format(s):

Accession No.: 20030601-0444

Security/Availability:

- ☐ PUBLIC
- ☐ NIP
- ☑ CEII
- ☐ NON-PUBLIC/PRIVILEGED

File Date: 12-26-02 Docket No.: P-2420

Parent Accession No.: 20030115-0241

Set No.: 3 of 3

Number of page(s) in set: 1

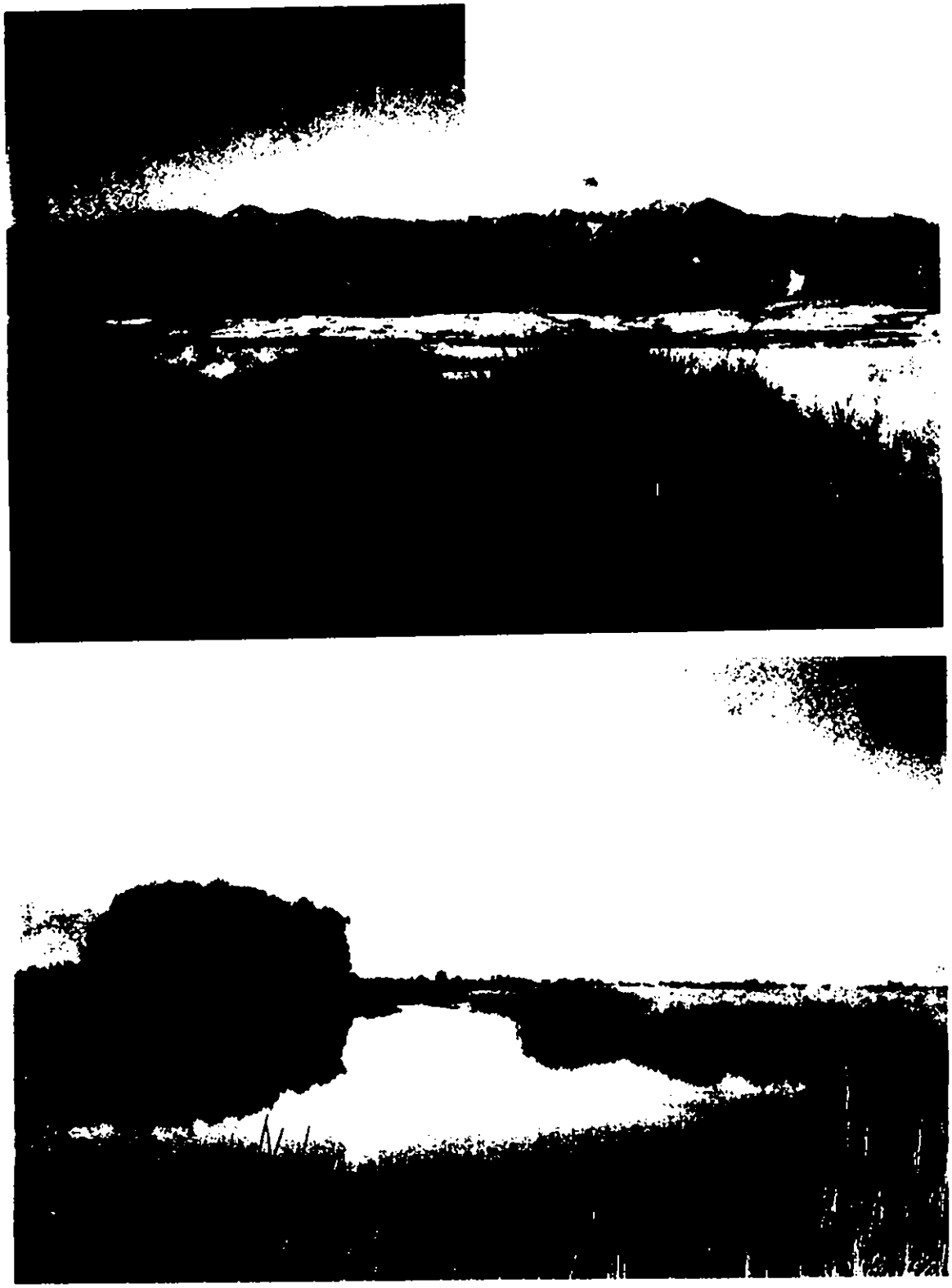

Figure 4. view of wetland.

Photopoint P2
Cutler Wetland Mitigation Pond

6

Attachment 1. Data sheet of Cutler Wetland Mitigation monitoring 2000.

Cutler Wetland Monitoring Form

Date (conduct in June/July) July 28 2000 Start time: 07:35

Weather: Clear ~ 75°F ~ 0 wind

Water level (e.g., (full pool) or 3 ft below full pool - look at bell riser near P1 for reference):

Water clarity: pretty clear - wind calm no wave action

Photo documentation

1. Take panoramic photos at P1 and P2 with the following settings:

Station	P1	P2
Azimuth (degrees): note: declination set at 19 degrees	30, 50, 73, 97, 120, 145, & ~~180°~~ 2x circled	240, ~~270, 300~~, & 330° 2x circled
Frame numbers:		
Lens focal length (50 mm):		
Film (use Kodak Gold 100 or similar ISO 100 print film):		

2. Take Photo of bell riser near P1 (see example). no picture in 2000 - Riser checked out fine picture in Report from 1999

3. Wildlife observations: 6 - Mallard - / 2 ♀ RNPH - / 2 - ♀♂ GADW / 1 - ♂ YEWA / 4 BBMA
3 GAGO - fox Scat - Raccoon tracks

Vegetation types:

[illegible]	[illegible]	[illegible]
1. Upland	1. tall wheat grass 2. foxtail barley 3. 4. 5.	
2. Emergent wetland	1. Cattail 2. reed Canary grass 3. 4. 5.	
3. Other (e.g., floating aquatic bed - specify)		<5%

Ratio emergent vegetation to open water (not including upland or island): 85:15

Comments Some noxious weeds growing on East Bank/Dyke. Heavy use of grasses & forbes in this area by the Geese - evidence of nesting by the geese.

Appendix D

Fish Habitat Enhancement Program Monitoring Plan Changes
Agency/PacifiCorp Correspondence

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Robert G. Valentine
Division Director

Northern Region
515 East 5300 South
Ogden, Utah 84405-4599
801-479-5143
801-479-4010 (Fax)

November 15, 1996

Andrew M. Scott
PacifiCorp
1407 West North Temple
Salt Lake City, UT 84140

Dear Andrew,

This letter is confirmation of our acceptance of your monitoring plan for the structure placement in Cutler Reservoir. I think that moving the sampling dates back a year is probably a good idea, giving the fish populations time to more fully utilize them; especially in light of the fact that most of the fish captured were juvenile specimens. Perhaps we could intensify the effort a bit with additional gear types (i.e. gill nets) to more adequately sample the catfish population. Do you still plan to conduct angler interviews if the pressure substantially increases? I think Cutler Reservoir has great potential as a warmwater fishery and will receive more Regional attention in the next few years. I would be interested in any thoughts you might have on the future management of the fishery. I would also request that you send me a map of the structure placement for my files. The original has evidently been misplaced. We may be able to direct some anglers to this resource with a bit of additional I&E effort. Thanks again.

Sincerely,

Kent Sorenson
Regional Sport Fish Biologist

cc: Brad Schmitz

1407 West North Temple
Salt Lake City, Utah 84140
(801) 220-2000

PACIFICORP
PACIFIC POWER UTAH POWER

September 3, 1996

Mr. Brad Schmitz
Regional Fisheries Manager
Northern Region
515 East 5300 South
Ogden, Utah 84405

Dear Brad:

This is letter is a follow up to our recent electrofishing efforts done on Cutler Reservoir. Article 402 of our FERC license for the Cutler Hydro Project required us to develop a Resource Management Plan in consultation with UDWR and other agencies. One requirement of the plan called for installing four fish habitat structures near the old railroad trestle south of Benson Marina (see enclosed copy of the plan and implementation schedule). We installed approximately 24 structures north and south of the trestle and 6 just north and west of the Benson highway bridge in May 1995. Eight of the 30 structures were bottom catfish bungalows and 22 were vertical crappie structures. The schedule called for us to survey the structures immediately after placement. This we did with your staff on 05/24/95 and found 3 gamefish. Table 1 lists the species found and their numbers. On our recent shocking trip on 07/24/96 approximately 43 fish were collected this year. Table 2 list the species found and their numbers. The initial plan called for us to evaluate fish usage of the structures in 1995, 1996, 1997 and 1999. Our modified plan is to resurvey and inspect the structures again in 1998 and 2000. The plan also called for angler interviews to determine if the structures have resulted in increased fishing success. We have foregone these interviews due to difficulties in locating fishermen.

We are requesting a letter of acceptance from your agency on this current monitoring plan for the fish structures.

A-2

We would like to bring closure to this portion of the Cutler Resources Management Plan. If you need more information or have questions, please contact me at 801-220-2245.

Sincerely,

Andrew M. Scott
Environmental Services

cc: J. Burruss, NTO 270
file:brncut:fish mgmt

A-3

Appendix E

Documentation of Cutler Project Property Boundary Changes

													Easements			
Date	Doc #	Parcel#	Grantor	Grantee	Legal Area (AC)	Township	Range	Section	Bk	Page	Entry#	Doc Type	Flooding	Road / Access	Pump	Notes
3/7/87	1	CA-021	PACIFICORP	DNR	13.5	11N	1W	3	738	912	656420	QUITCLAIM DEED				Parcel 1
3/7/87	1	CA-021	PACIFICORP	DNR	11.66	12N	1W	35	738	912	656420	QUITCLAIM DEED		#6389 6		Parcel 2
3/7/87	2	CA-021	PACIFICORP	DNR		12N	1W	34	738	910	656419	ACCESS EASEMENT				#63896
12/21/83	NA	CA-020	PACIFICORP	RUDY L VAN KAMPEN	98.8	11N	1W	3,10,11	583	1070	591800	QUITCLAIM DEED	YES			EXCHANGED FOR LAND IN CA-377
3/3/95	NA	CA-027	PACIFICORP	CACHE COUNTY CORPORATION	1.24	11N	1W	3,4	646	224	617456	QUITCLAIM DEED				
5/23/95	NA	CA-027, 393	PACIFICORP	ARTHUR D & GERALDINE MAURER	2.29	11N	1W	3,4	653	(CUT OFF)	620679	QUITCLAIM DEED				
3/16/83	NA	CA-035, 036, 348, 349	PACIFICORP	ARTHUR D & GERALDINE MAURER	12.21	11N	1W	4	556	281	573450	QUITCLAIM DEED	YES			
4/10/88	3	CA-061	PACIFICORP	JUNE WEST COWLEY	5.61	12N	1W	4	?	?	?	?		YES	YES	CHECK TO SEE IF RECORDED
5/6/01	NA	CA-061	JUNE WEST COWLEY	PACIFICORP	0.86	12N	1W	4	1017	799	783397	ACCESS EASEMENT				
5/9/01	NA	CA-061	PACIFICORP	JUNE WEST COWLEY		12N	1W	4	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
7/28/95	4	CA-102	PACIFICORP	TODD N & NORENE R BALLARD	0.77	12N	1W	1	667	731	626994	QUITCLAIM DEED				
7/28/95	4	CA-102	PACIFICORP	TODD N & NORENE R BALLARD	1.65	12N	1W	1	667	733	626995	QUITCLAIM DEED				
12/11/95	5	CA-114	PACIFICORP	LAMONT C & JEWELL H LARSEN	2.36	12N	1W	15	661	520	632709	SPECIAL WARRENTY DEED				
11/8/93	6	CA-113, 386	PACIFICORP	LOIS OLSEN	1.98	12N	1W	15	585	945	587641	QUITCLAIM DEED	YES			
11/2/94	7	CA-121	PACIFICORP	CECIL & LORNA RAE ARCHIBALD	1.52	12N	1W	15	632	(CUT OFF)	611188	QUITCLAIM DEED	YES			
10/19/94	7	CA-121	PACIFICORP	CECIL & LORNA RAE ARCHIBALD	1.55	12N	1W	15	632	(CUT OFF)	611187	QUITCLAIM DEED	YES			
8/10/83		CA-135	PACIFICORP	RICHARD W WORLEY	3	12N	1W	23	605	505	596297	SPECIAL WARRENTY DEED	YES			
5/1/95		CA-124 234, 278	PACIFICORP	REED, THURLOW, H & BETTY BULLIN, KNIGHT, DUFFIN	101.59	12N	1W	28,29	664	1024	625864	SPECIAL WARRENTY DEED				CORRECTION SWD BK748 PG978 ENT660447
5/20/93		CA-142	PACIFICORP	CONRAD ROBBINS PETERSON	UNKNOWN	12N	1W	26	564	1118	577962	QUITCLAIM DEED	YES			
8/29/92		CA-147, 148, 155	PACIFICORP	UDOT	3.03	12N	1W	27,26	?	?	?	?				CHECK TO SEE IF RECORDED
8/26/94		CA-176	PACIFICORP	JODIE R & GEANETTE R HARRIS	0.37	12N	1W	36	640	331	614573	QUITCLAIM DEED	YES			
8/26/94		CA-176	PACIFICORP	JODIE R & GEANETTE R HARRIS	8.56	12N	1W	36	640	333	614574	QUITCLAIM DEED	YES			
8/13/97	12	CA-240	PACIFICORP	BRENT R & JERRY W RODNEY C A ROBERT & JEANNINE B MONK	2.64	13N	1W	27	783	412	686051	SPECIAL WARRENTY DEED				QCD BK1002 PG305 ENT759007 (0 08 AC)
Aug-88	**	CA-246,245	PACIFICORP	MARK L & DIANE K RIBGY	4.89	13N	1W	29,32	?	?	?	SPECIAL WARRENTY DEED				CHECK TO SEE IF RECORDED
9/18/00		CA-245,246	PACIFICORP	MARK L & DIANE K RIBGY	UNKNOWN	13N	1W	29,32	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
8/28/88	14	CA-245,246	MARK L & DIANE K RIBGY	PACIFICORP	UNKNOWN	13N	1W	30,32	962	105	744984	WARRENTY DEED				CHECK TO SEE IF RECORDED
8/2/97	13	CA-249	PACIFICORP	GARTH J BENSON	9.24	13N	1W	29	753	606	682182	SPECIAL WARRENTY DEED				

6/13/97	15	CA-252	PACIFICORP	W LEROY & WILMA L COOLEY	0.46	13N	1W	29	753	396	662106	SPECIAL WARRENTY DEED				
9/11/80	16	CA-255, 258	GRIFFIN PROPERTIES	PACIFICORP	UNKNOWN	13N	1W	30	962	108	744986	SPECIAL WARRENTY DEED				
9/22/00		CA-255, 258	PACIFICORP	GRIFFIN PROPERTIES	UNKNOWN	13N	1W	30	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
3/3/97	17	CA-260	PACIFICORP	CHRIS H GRIFFIN & JENNIFER GRIFFIN	4.26	13N	1W	30	743	97	656036	SPECIAL WARRENTY DEED				
2/7/97	18	CA-265	PACIFICORP	SALLY SNOW & JANICE R BENSON	0.5	13N	1W	30	743	?	657986	SPECIAL WARRENTY DEED				
3/1/97		CA-265	PACIFICORP	JANICE R BENSON	UNKNOWN	13N	1W	30	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
8/12/97	19	CA-279	PACIFICORP	JAY GOLDEN RIGBY & HELEN P RIGBY	12.92	13N	1W	33	753	151	662015	SPECIAL WARRENTY DEED		YES		
6/1/97		CA-279	PACIFICORP	JAY GOLDEN RIGBY & HELEN P RIGBY	UNKNOWN	13N	1W	33	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
4/24/95		CA-286	PACIFICORP	PAUL & WENDY STEWART	1.48	13N	1W	33	649	(CUT OFF)	618957	SPECIAL WARRENTY DEED				
4/20/95		CA-287	PACIFICORP	PAUL & WENDY STEWART	UNKNOWN	13N	1W	33	649	(CUT OFF)	618956	QUITCLAIM DEED				
10/12/94		CA-342	PACIFICORP	LESLIE L SMITH	1.65	13N	1E	6	630	857	610367	QUITCLAIM DEED	YES			
5/13/93		CA-364	BLAINE W & NEVADA W HANCEY	PACIFICORP	UNKNOWN	12N	1W	35	570	382	580257	QUITCLAIM DEED				
8/10/93		CA-364	PACIFICORP	EDGAR R HIBBARD	36.15	12N	1W	35	585	941	587639	SPECIAL WARRENTY DEED	YES			
9/15/93		CA-365	EDGAR R HIBBARD	PACIFICORP	UNKNOWN	12N	1W	35	585	940	587638	WARRENTY DEED				
8/26/94		CA-365	PACIFICORP	FRANK E & EMMA R & ELMA F HARRIS	9.34	12N	1W	35	640	338	614576	QUITCLAIM DEED	YES			
9/22/94		CA-366	FRANK E & EMMA R & ELMA F HARRIS	PACIFICORP	UNKNOWN	12N	1W	35	640	342	614578	QUITCLAIM DEED		YES		EXCLUDING WATER RIGHTS
9/22/94		CA-367	FRANK E & EMMA R & ELMA F HARRIS	PACIFICORP	11.7	12N	1W	36	640	340	614577	QUITCLAIM DEED	YES	YES		EXCLUDING WATER RIGHTS
1/5/96		CA-368, 369	LAMONT C & JEWEL H LARSEN	PACIFICORP	UNKNOWN	12N	1W	15	661	522	632710	WARRENTY DEED				
6/18/95		CA-370	TODD N & NORENE R BALLARD	PACIFICORP	0.26	12N	1W	2	667	744	627001	WARRENTY DEED		YES		
9/15/95		CA-371	BRENT L BALLARD	PACIFICORP	UNKNOWN	13N	1W	30	668	234	627190	QUITCLAIM DEED				
11/3/94		CA-372	CECIL & LORNA RAE ARCHIBALD	PACIFICORP	UNKNOWN	12N	1W	15	632	646	611186	WARRENTY DEED				
12/22/95		CA-373	LEE WILLIAM JOHNSON	PACIFICORP	0.25	12N	1W	10	679	711	632016	WARRENTY DEED				
3/12/93		CA-374	GERALDINE & ARTHUR DEAN MAURER	PACIFICORP	UNKNOWN	11N	1W	4	555	280	573449	WARRENTY DEED				
5/21/93		CA-375	GILBERT H & RENE W PETERSON	PACIFICORP	99.86	12N	1W	16	564	1111	577659	WARRENTY DEED				
5/24/94		CA-375	PACIFICORP	PERRY O PETERSON	15.05	12N	1W	16	625	257	607850	QUITCLAIM DEED	YES			
11/15/93		CA-376	JUNE WEST COWLEY	PACIFICORP	UNKNOWN	12N	1W	14	594	1008	592334	WARRENTY DEED				
12/23/93		CA-377	RUDY L VAN KAMPEN	PACIFICORP	UNKNOWN	12N	1W	35	593	1078	591802	WARRENTY DEED				EXCLUDING WATER RIGHTS
6/6/93		CA-378	ADVERSE POSSESSION	PACIFICORP	8.56	12N	1W	3	566	52	578248	ADVERSE POSSESSION				

5/21/93		CA-379	CONRAD ROBBINS PETERSON	PACIFICORP	75 14	12N	1W	16	564	1113	577660	WARRENTY DEED				
3/15/93		CA-380	WILLMORE BROTHERS	PACIFICORP	UNKNOWN	12N	1W	33	565	276	573447	WARRENTY DEED		YES		
4/30/93		CA-381, 400	OPAL LARSEN	PACIFICORP	UNKNOWN	11N	1W	4	561	1118	576367	WARRENTY DEED	YES			
9/22/94		CA-382	JODIE R & JEANNETTE R HARRIS	PACIFICORP	3.65	12N	1W	36	640	336	614575	QUITCLAIM DEED		YES		EXCLUDING WATER RIGHTS
7/14/93		CA-383, 384, 385, 386, 387	UNION PACIFIC RAILROAD COMPANY	PACIFICORP	20.74	12N	1W	14,15,16	570	942	580481	QUITCLAIM DEED				
12/11/95		CA-384	PACIFICORP	LAMONT C & JEWEL H LARSEN	1.56	12N	1W	15	681	518	632708	SPECIAL WARRENTY DEED				
10/26/93		CA-386	PACIFICORP	JUNE WEST COWLEY	1.12	12N	1W	14	564	1009	592335	QUITCLAIM DEED				
3/18/94		CA-388	SUSAN J & RICHARD W WORLEY	PACIFICORP	UNKNOWN	12N	1W	23	605	510	596301	WARRENTY DEED				
3/9/94		CA-388	MICHAEL WORLEY	PACIFICORP	UNKNOWN	12N	1W	23	605	507	596298	QUITCLAIM DEED				
3/18/94		CA-388	WILLIAM O WORLEY	PACIFICORP	UNKNOWN	12N	1W	23	605	509	596300	QUITCLAIM DEED				
3/18/94		CA-388	CHARLES N WORLEY	PACIFICORP	UNKNOWN	12N	1W	23	605	508	596299	QUITCLAIM DEED				
9/22/94		CA-389	GARRY R WILSON	PACIFICORP	UNKNOWN	11N	1W	2	629	629	609883	WARRENTY DEED				
10/13/93		CA-390	LOIS OLSEN	PACIFICORP	UNKNOWN	12N	1W	15	585	944	587640	WARRENTY DEED				
8/24/94		CA-391	PERRY O PETERSON	PACIFICORP	UNKNOWN	12N	1W	21	625	258	607851	WARRENTY DEED				
3/10/93		CA-392	ADVERSE POSSESSION	PACIFICORP	4.29	12N	1W	33	564	905	573184	ADVERSE POSSESION				
3/10/93		CA-392	PACIFICORP	WILMORE BROTHERS	4.29	12N	1W	33	565	278	573448	QUITCLAIM DEED				
3/2/95		CA-393	CACHE COUNTY CORPORATION	PACIFICORP	1.37	11N	1W	3	646	223	617455	QUITCLAIM DEED				
3/24/95		CA-394, 395, 396	REED & THURLOW H & BETTY BULLEN KNIGHT & MARY ALICE DUFFIN	PACIFICORP	28.74	12N	1W	9,16,33	664	1019	625883	SPECIAL WARRENTY DEED				EXCLUDING WATER RIGHTS
3/24/95		CA-394, 395, 396	PACIFICORP	REED & THURLOW H & BETTY BULLEN KNIGHT & MARY ALICE DUFFIN		12N	1W	9,16,33	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
3/24/95		CA-397, 398, 399	PAUL & WENDY STEWART	PACIFICORP	UNKNOWN	13N	1W	33,34	649	491	618959	SPECIAL WARRENTY DEED				
4/5/99		CA-397, 398, 399	PACIFICORP	PAUL & WENDY STEWART	UNKNOWN	13N	1W	33,34	681	983	712122	PUMPING EASEMENT				
4/5/99		CA-397, 398, 399	PACIFICORP	PAUL & WENDY STEWART	UNKNOWN	13N	1W	33,34	681	180	711764	PUMPING EASEMENT				
10/24/94		CA-401	LARRY E & COLLEEN A RILEY	PACIFICORP	0.17	11N	1W	2	631	484	610643	WARRENTY DEED				
11/12/96		CA-402	DNR	PACIFICORP	6.97	11N	1W	3	736	906	656417	QUITCLAIM DEED				
11/12/96		CA-403	DNR	PACIFICORP	18.87	12N	1W	34,35	736	908	656418	QUITCLAIM DEED				
6/10/97	20	CA-408, 409	HAROLD L BARTLETT	PACIFICORP	UNKNOWN	13N	1W	29,30	754	294	662467	WARRENTY DEED				
7/13/97	21	CA-410	W LEROY & WILMA L COOLEY	PACIFICORP	UNKNOWN	13N	1W	29	753	397	662107	WARRENTY DEED				

5/14/97	22	CA-411, 412, 413	GARTH J BENSON	PACIFICORP	UNKNOWN	13N	1W	29	753	604	662180	WARRENTY DEED				
5/23/97	23	CA-414, 415	LAMONT C & JEWEL H LARSEN	PACIFICORP	UNKNOWN	12N	1W	15	758	600	668089	WARRENTY DEED				
5/15/97	24	CA-425	BRENT R & JERRY W J & RODNEY C & A ROBERT & JEANNINE B MUNK	PACIFICORP	UNKNOWN	13N	1W	27	763	409	666050	WARRENTY DEED				
2/5/97	25	CA-423	SALLY & JANICE R BENSON	PACIFICORP	UNKNOWN	13N	1W	30	743	3	657984	WARRENTY DEED				
3/20/97	26	CA-424	CHRIS H & JENNIFER GRIFFIN	PACIFICORP	UNKNOWN	13N	1W	30	743	98	658037	WARRENTY DEED				
5/28/97	27	CA-426	JAY GOLDEN & HELEN P RIGBY	PACIFICORP	UNKNOWN	13N	1W	28	753	150	662014	WARRENTY DEED		YES	YES	
6/1/97		CA-426	PACIFICORP	JAY GOLDEN & HELEN P RIGBY	UNKNOWN	13N	1W	28	?	?	?	PUMPING EASEMENT				CHECK TO SEE IF RECORDED
5/12/98	8	[redacted]	M B ENTERPRISES LTD	PACIFICORP	UNKNOWN	11N	1W	10	948	1091	739326	SPECIAL WARRENTY DEED				
WAITING	9	CA-061, 066	PACIFICORP	HAROLD N & TWILLA P FALSLEV	UNKNOWN	12N	1W	11	?	?	?	QUITCLAIM DEED				WAITING FOR RECORDING INFORMATION
WAITING	9	CA-061, 066	HAROLD N & TWILLA P FALSLEV	PACIFICORP	UNKNOWN	12N	1W	11	?	?	?	QUITCLAIM DEED				WAITING FOR RECORDING INFORMATION
3/25/02	10	[redacted]	C VAL GRANT	PACIFICORP	UNKNOWN	13N	2W	23	1069	271	784075	WARRENTY DEED				
3/15/02	11	[redacted]	PACIFICORP	C VAL GRANT	60.64	13N	1W	22,23	1069	272	784076	SPECIAL WARRENTY DEED		YES		
Pending																
Date	Doc #	Parcel#	Grantor	Grantee	Legal Area (AC)	Township	Range	Section	Blk	Page	Entry#	Doc Type	Flooding	Road/ Access	Pump	Notes
2002		CA-178, 179	HEBER LUNDBERG	PACIFICORP	UNKNOWN				?	?	?	BOUNDARY LINE AGREEMENT		YES		
2002		CA-178, 179	PACIFICORP	HEBER LUNDBERG	UNKNOWN				?	?	?	BOUNDARY LINE AGREEMENT				
2002		CA-178, 179	HEBER LUNDBERG	PACIFICORP	UNKNOWN				?	?	?	ACCESS EASEMENT				
2002		CA-064, 373, 066, 065, 066, 378, 074, 072	JIM WATTERSON	PACIFICORP	UNKNOWN				?	?	?	BOUNDARY LINE AGREEMENT		YES		
2002		CA-064, 373, 066, 065, 066, 378, 074, 072	PACIFICORP	JIM WATTERSON	UNKNOWN				?	?	?	BOUNDARY LINE AGREEMENT				
2002		CA-064, 373, 066, 065, 066, 378, 074, 072	JIM WATTERSON	PACIFICORP	UNKNOWN				?	?	?	CONSERVATION EASEMENT				
2002		CA-064, 373, 066, 065, 066, 378, 074, 072	JIM WATTERSON	PACIFICORP	UNKNOWN				?	?	?	ACCESS EASEMENT				
2002		Need a new no assigned - adjacent to 067	ROBERT GRIFFITHS	PACIFICORP	UNKNOWN				?	?	?	UNKNOWN UNTIL COMPLETE				

Appendix F

Cutler Project Pending Property Coordination Work

Appendix F- Pending Property Coordination Work

The following areas require assistance from Property Management Dept. for continuing RMP implementation in 2002:

Site	Property work	Date Needed	RMP implementation plans
Cutler Canyon (south side of river)	• Need to survey and stake ownership from west of Newton Bridge to Cutler plant if fences or wood posts are needed. Have Scott or Eve on site at time of marker placement	Nov 2002	Fence for boundary/access control, wildlife, and grazing program.
Church Farm (Paul Cardon)	• Continuous monitoring required due to ongoing concerns w/fencing and grazing – Restraining order in place	Ongoing	Ensure integrity of buffer
Watterson	• Property trade and lease. • COGO property line description. • Survey and stake ownership. AGREEMENT MADE, FINALIZING	Dec 31 2002	Bank stabilization, fencing and grazing management
Lundberg	• Assess long-term lease, trade, or purchase land. • Determine site of existing fence. • May need to survey and stake ownership. AGREEMENT MADE, WAITING FOR LEGAL DESCRIPTION	Sept 30, 2002	Fence eastern part of area for buffer-shoreline & boundary/access fence or change management (exclude from RMP).
J.D. Scott boundary/ Long Divide Rd.	CAN'T GET AGREEMENT FROM COUNTY & or J.D. Scott. May require legal action.	Mar 31 2003	Property issue resolution/ boundary fence protection.
General Pump Permits	• Approximately 35 pump permits need to be completed	Mar 31 2003	Ensure license and RMP compliance for water quality and lease conditions prevent CWA violations and associated fines.
Zona Balls	• Property line dispute - Court action pending	Pending Nov 2002 court resolution	Ensure license and RMP compliance for water quality, scenic, recreation, and wildlife habitat goals.
Larry Falslev	• Property line concern- structures encroaching on PacifiCorp property? • Trespass- cattle grazing on PacifiCorp property- in river bottoms- designated as "protected area" no grazing allowed • Trespass-farming on PacifiCorp property without lease Court Action Pending • Pumps- permit Pending • Dumping farm debris being pushed off bank-Forwarded to dept of water quality	Nov 30 2002	Control property, ensure, improve water quality, protect critical habitat areas

Darrel Kunsler	• Trespass-Dumping dairy waste, trash in to water- Division of water quality involved • Boundary line dispute-Court action pending	Nov 30 2002	Water quality
Dr. Griffin	• Purchase land near bank Agreement has been made. Site visit needed to finalize agreement.	Nov 30 2002	
Delroy Hobb	• Pier in water on PacifiCorp property – May need dock permit	Mar 31 2003	Control property, ensure, improve water quality
Todd Ballard	• Redo bank stabilization? Budgeted for future year • Hog farm- feed lot-Dumping dairy waste in Bear River on PacifiCorp property Division of water quality investigating	Future year March 2003	Control property, ensure, improve water quality
Steve Lindley	• Damage to PacifiCorp property and trespass issues outstanding – Court action pending	Nov 30 2003	Clay Slough- water quality, buffers
Spring Creek water rights	• Ensure we can adequately irrigate our south marsh pastures with the water we paid for to do this; reduce labor costs in raising/lowering main headgates. –This has not been a problem this year thanks to Scott Pratt- Temp.- coordinating w/other users. • Develop water users agreement.-	Jan 31 2003	Ensure implementation of Grazing Management Plan.
General Bear River Section property issues	• Feed lot dumping in to river illegally Division of water quality investigating • Pumps- identify and permit, or secure easements. Diesel pumps need containment. Pending	Mar 31 2003 Apr 30 2003	Ensure license and RMP compliance for water quality, scenic, recreation, and wildlife habitat goals.
General	• Development of Policy & Procedures for uses on company lands around reservoir- • Develop Application for special event/day use	Apr 30 2003	Ensure license and RMP compliance in all areas.
Mapping	• Create, update maps on ongoing basis	Ongoing	
Water rights-investigation	• Logan Cow Pasture- renew lease with DWR	Jan 31 2003	Protect water rights, put to use on PacifiCorp lands, control use, meet needs of RMP
Wetland Mitigation	• Work w/ Logan Airport on mitigation lands at Cutler	ongoing	

Appendix G

Cutler Reservoir Water Quality Report
1996-2001

A Summary of Water Quality Conditions in Cutler Reservoir

1996-2001

Prepared by:

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Logan, Utah

April 5, 2002

INTRODUCTION

The Cutler Hydroelectric Project (FERC No. 2420) was issued a new license on April 29, 1994. As a condition to that license, PacifiCorp was required to submit a Resource Management Plan (Article 402) to the FERC within one year of the issuance of the license. The Resource Management Plan was filed on August 1, 1995 and supplemented on September 15, 1995. On November 6, 1995, the FERC Director ordered PacifiCorp to file with the Commission the results of the monitoring conducted by the company over the first five years. Because part of the Resource Management Plan was the implementation of Cutler Reservoir shoreline erosion control measures, water quality monitoring was undertaken during this five year period.

To that end, the following objectives were addressed during this monitoring program.

1. Design and implement a monitoring program which will evaluate the impacts of shoreline restoration activities on suspended sediments and,
2. Monitor the concentrations of nutrients (nitrogen and phosphorous) to determine the effectiveness of livestock and land management practices implemented as part of the Resource Management Plan.

METHODS

Between November 1996 and May 2001, the Cutler Reservoir complex was sampled eleven times. The specific sample locations are described in Table 1 and are shown in Figure 1. According to the Resource Management Plan, sampling was to be conducted on a quarterly basis for the first three years following FERC approval of the RMP, thereafter, quarterly sampling was to be conducted every fifth year. Sampling can be discontinued when data trends are established or when management objectives have been met. Quarterly sampling occurred in 1996, 1997 and 1998. The next scheduled quarterly sampling is to occur in 2003 (the fifth year). However, there were data gaps in the monitoring conducted during 1996, 1997 and 1998. During 1996, sampling was conducted only during the third quarter. In 1997 and 1998 there was no sampling in the first quarter. Although no water quality monitoring was scheduled to occur in 2000, additional sampling was completed to fill the data gaps from previous years.

Sampling protocols required that the entire system be sampled in a 3-hour period so that comparisons between inflowing and outflowing water quality could be made. At each site, a grab sample was collected and placed on ice to be transported back to the laboratory within the specified holding times. Samples returned to the laboratory were logged into the Ecosystems Research Institute (ERI) sample tracking system and analyzed for the specific parameters listed in Table 2 below. In addition, the field parameters of temperature, dissolved oxygen, pH, and conductivity were measured at each site. All sample locations were documented with photographs and are provided in Appendix I. The complete data sets for all grab samples are provided in Appendix II.

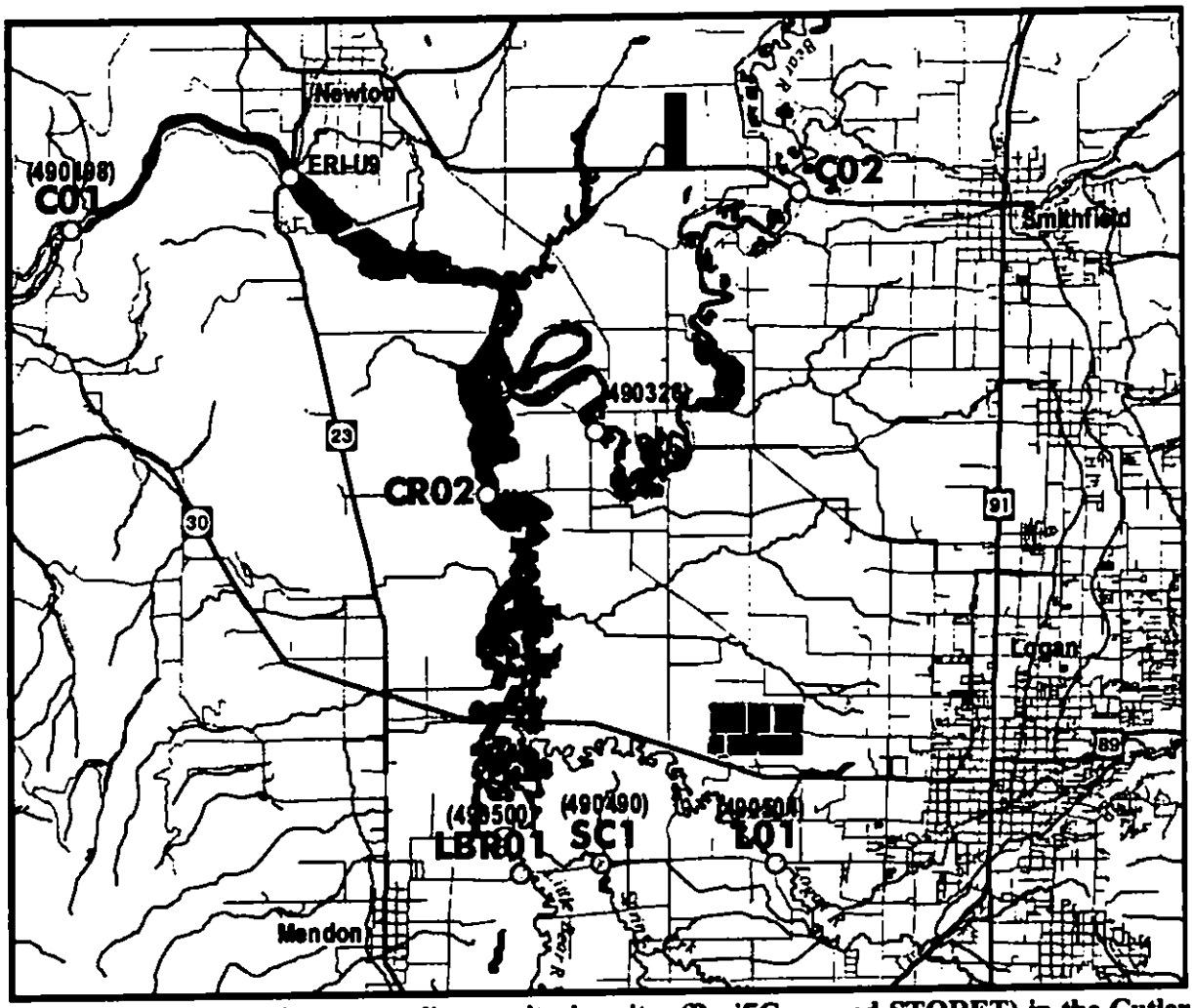


Figure 1. Locations of water quality monitoring sites (PacifiCorp and STORET) in the Cutler Reservoir area. Orange markers indicate sites in the current monitoring program.

Table 1. A description of Cutler Reservoir water quality monitoring sites.

SAMPLE ID	DESCRIPTION
CO2	NW of Logan on 2400W approximately 3 miles to bridge over Bear River. Sampling point is on NW side of river
CRO1	NW of Logan on 3000 N (Benson Road) Right under bridge at recreation site on north side of road.
CO1	Below Cutler Dam on the north side of river, immediately below plant.
LBRO1	West of Logan on Mendon road-Little Bear River. Sample taken at the bridge on south side of road on east bank.
SC1	West of Logan on Mendon Road-Spring Creek. Sample taken at bridge on north side of road, west bank.
LO1	West of Logan on Mendon road-Logan River. Sample taken at bridge on south side of road, west bank.

Table 2. A table of the methods used and reporting limits for each parameter to be analyzed for the Cutler Reservoir water quality monitoring program.

PARAMETER	METHOD#	MDL	UNITS
Orthophosphorus	EPA Method 365.2	0.001	mg/liter
Total Phosphorus	EPA Method 365.2	0.005	mg/liter
Nitrate	EPA Method 353.3	0.005	mg/liter
Nitrite	EPA Method 354.1	0.0002	mg/liter
Ammonia	EPA Method 350.3	0.02	mg/liter
Total Suspended Solids	EPA Method 351.4	1	mg/liter
Turbidity	EPA Method 180.1	1	NTU

RESULTS

The hydrology of the Cutler Reservoir system is dominated by the Bear River. This single source accounts for over 50 percent of the total flow into the reservoir with the remainder of flows coming from the Logan River, the Little Bear River and numerous smaller tributaries. In 1994, a detailed investigation was undertaken by the Tri-state Bear River Water Quality Taskforce and included Cutler Reservoir and the Bear River. The current monitoring data sets were added to the 1994-1996 investigation in order to display historical trends relative to the current data.

The comparison of Bear River flows above and below Cutler Reservoir can be seen in Figure 2 for the entire period of record where detailed water quality data were available. As can be seen in Figure 2, year to year flows vary greatly. In order to understand the annual hydrologic cycle in Cutler Reservoir and how it impacts water quality, daily averages from January 1994 are summarized in Figure 3.

Inspection of Figure 2 indicates that 1997, 1998 and 1999 were above average water years while 1995 and 1996 were considered average water years. The graph also shows that 1994 and 2000 were considered dry hydrologic years. Figure 3 demonstrates the average daily conditions of the Bear River above and below Cutler Reservoir. From January to the end of May, flows into and out of Cutler Reservoir steadily increase. Bear River inflows start at about 900 cfs and peak at 1600 cfs. Bear River outflows from Cutler Reservoir follow the same pattern, although differing in magnitude (reflecting the tributary inflows). Peak discharges exceed, on average, 3500 cfs. June is a transition month, with the flows into and out of Cutler Reservoir drastically reduced. After June and extending for over 60 days, flows are greater entering Cutler Reservoir than leaving. This is a result of the export of water from the reservoir's surface via two canals located at the surface of Cutler Dam. This water is used for irrigation in Box Elder County by the Bear River Canal Company. There are periods of time when the Bear River below Cutler is dry except for leakage from the dam. After irrigation season, the flow patterns return to the pattern seen in the six months prior to June. Flows for both the Bear River into Cutler and out of Cutler steadily increase reaching 500 and 1000 cfs (respectively) prior to the end of December.

As stated previously, water quality data was collected at six locations around and within the Cutler Reservoir complex. The sites were sampled eleven times. The data for total suspended solids (TSS), ortho and total phosphorous, total inorganic nitrogen, as well as total coliforms, are shown in Figures 4 through 8. In each figure, data are compared for the Bear River sites, the tributary sites and the single marsh site located at Benson Marina (Figure 1).

In Figure 4, the total suspended solids data for the two periods of time sampled indicates that the two years were somewhat different in concentrations of TSS with the period 1996 to 1998 having higher concentrations that the 2000-2001 data. As noted previously, this may be the result of the higher than normal flows occurring during the 1996 to 1998 period (Figure 2). The TSS concentrations in the three tributary sites did not have the same temporal pattern as the mainstem Bear River stations. In the 1996-1998 period, the TSS concentrations were not elevated when compared to the 2000-2001 data. In comparing the three streams, the Logan River had the overall lowest concentrations of TSS, with Spring Creek and the Little Bear River being similar in concentrations. The Cutler Reservoir site, located at Benson Marina, had both concentrations and

temporal patterns that were similar to the above and below Bear River stations.

The nutrients phosphorous and nitrogen can be seen in Figures 5 through 7. The data represent the concentrations for the mainstem, tributary and marsh sites for the eleven sample dates. The general trend in the data indicates a gain in concentrations in ortho and total phosphorous, as well as total inorganic nitrogen, with movement of the Bear River through Cutler Reservoir. However, inspection of the tributary data, especially the concentrations observed in Spring Creek (ten-fold higher concentrations than the inflowing Bear River) and the concentrations at Benson Marina (intermediate in location between Spring Creek and the Bear River outflow) would indicate that Spring Creek' influence is impacting Cutler Reservoir and the outflowing Bear River nutrient concentrations.

The final data set collected was total coliform bacteria. The data indicates that only one data point at Benson Marina had higher total coliforms (9% of the observations) when compared to the five locations of inflowing water (Figure 8).

DISCUSSION AND CONCLUSIONS

The Bear River, Little Bear River, and Spring Creek entering the Cutler Marsh complex are considered impaired relative to its potential beneficial uses (State of Utah, 1998). High total suspended solids and excessive nutrients such as nitrogen and phosphorus are indications of this impairment. Historical investigations have indicated that these tributaries are a major cause of the degraded water quality conditions observed in Cutler Reservoir. In the case of total suspended solids, the influence of the mainstem Bear River on water quality conditions within the reservoir (Benson Marina site) is apparent (Figure 9). Although the average concentrations of total suspended solids decreased at the Benson Marina site over the study period, the average concentrations of TSS also decreased dramatically in the inflowing Bear River water (Station CO1 in Figure 9). It is interesting to note that while the Benson Marina TSS concentrations were dropping, the two tributaries (Little Bear River and Spring Creek) were increasing in TSS concentrations through the study period. The opposite trend was noted for the nutrient concentrations (Figure 10). In this case, the average Bear River concentrations were lower than the Benson Marina site which was lower than the Little Bear and Spring Creek inflowing water concentrations. This is exemplified by the Total Phosphorous data in Figure 10.

One objective of this investigation was to evaluate the performance of new sediment control features and improved land use practices implemented by PacifiCorp's Resource Management Plan. Because of the overall influence of the Bear River's total suspended solids and the excessive loadings of nitrogen and phosphorous from Spring Creek, any benefits gained by the implementation of the RMP is masked by the overwhelming impact of these sources.

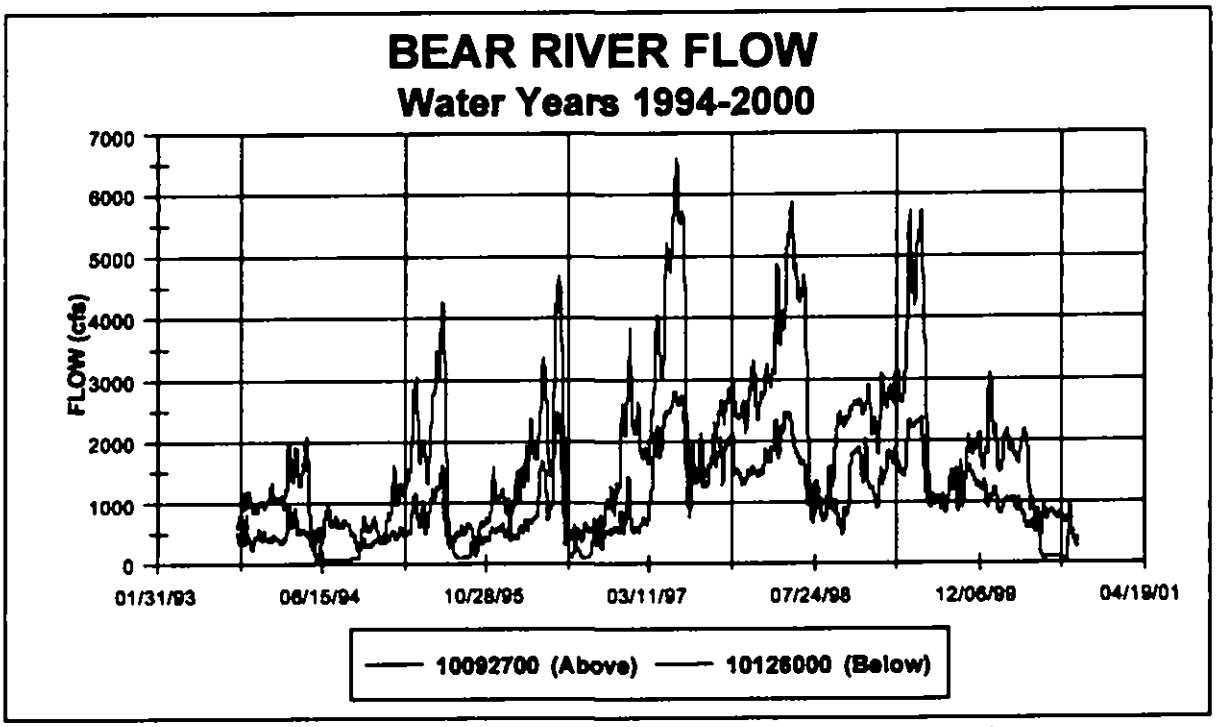


Figure 2. The daily flows for the Bear River above and below Cutler Reservoir.

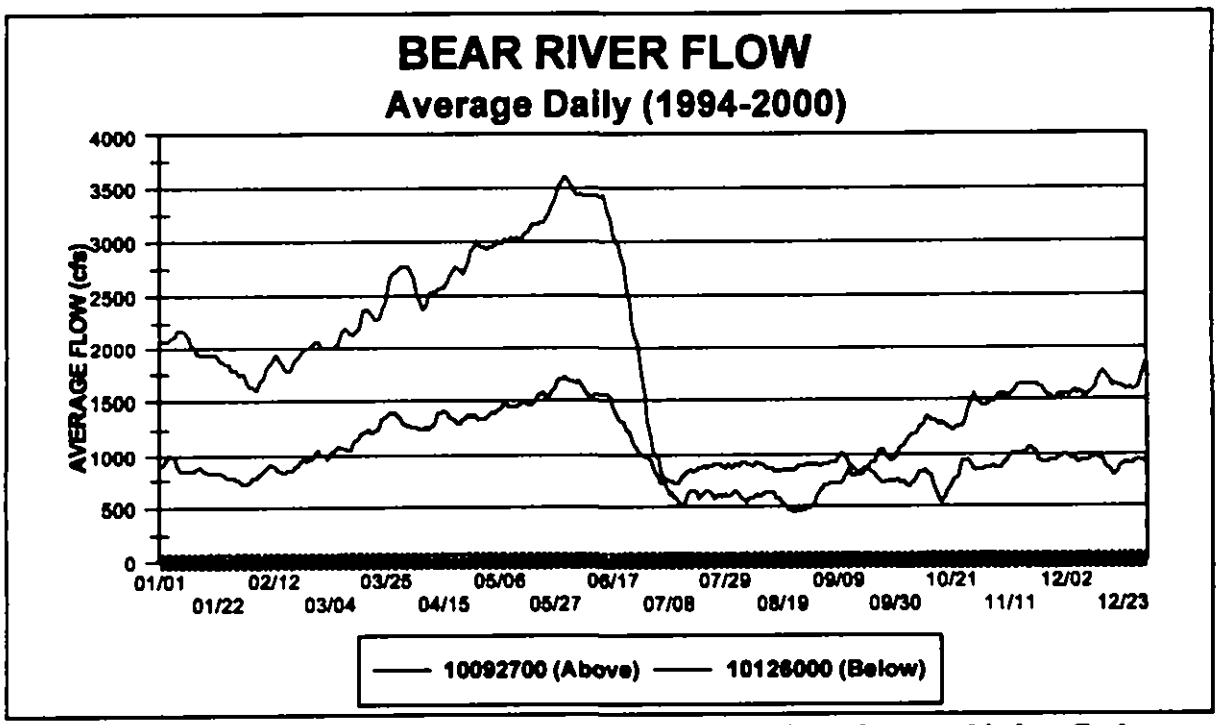
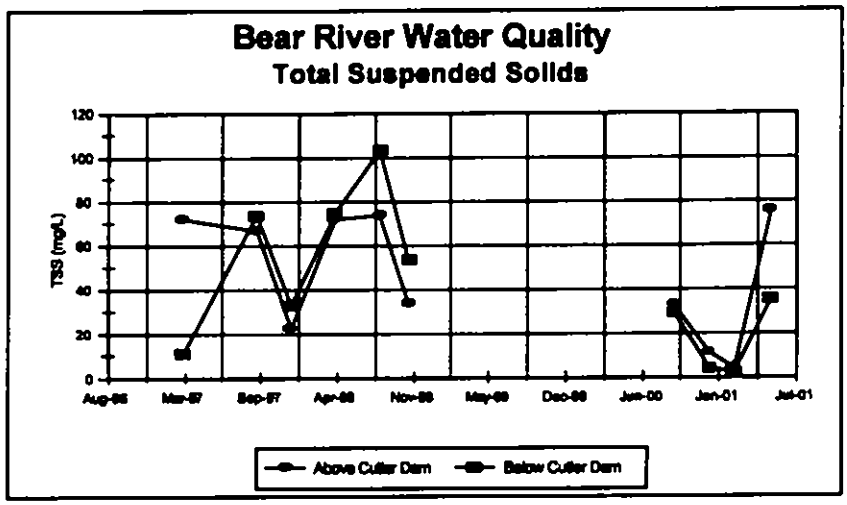
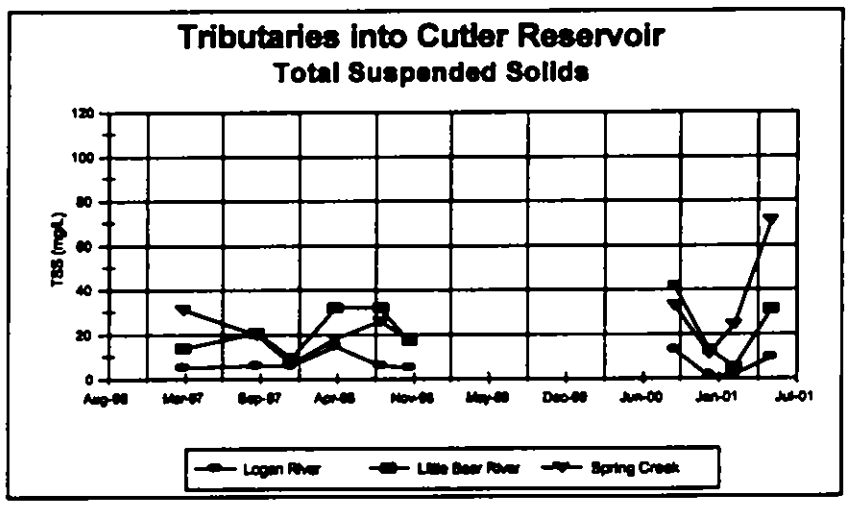


Figure 3. The average daily flows (1994-2000) for the Bear River above and below Cutler Reservoir).





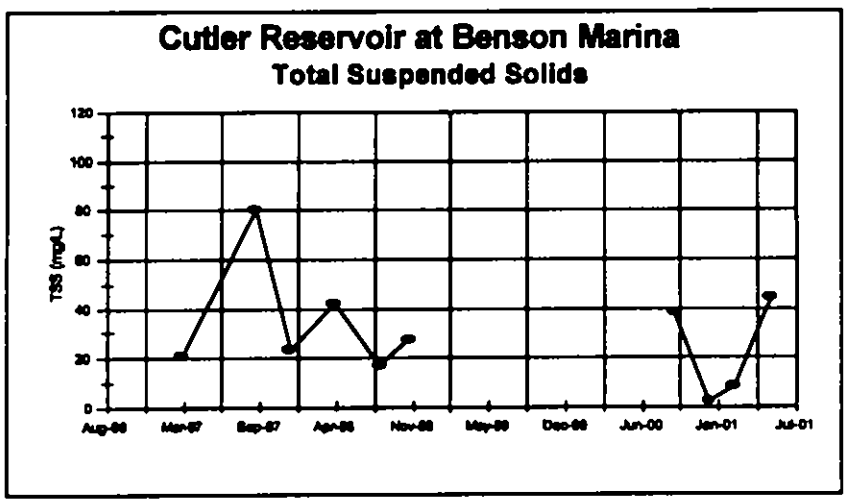
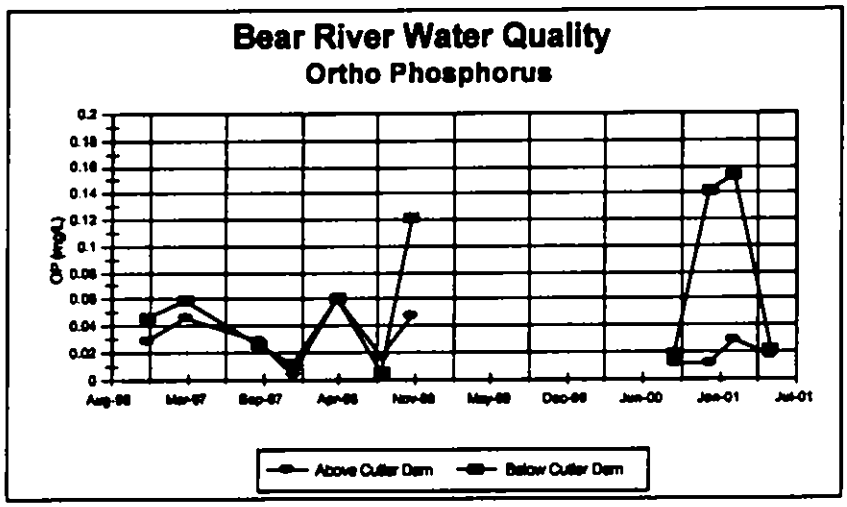
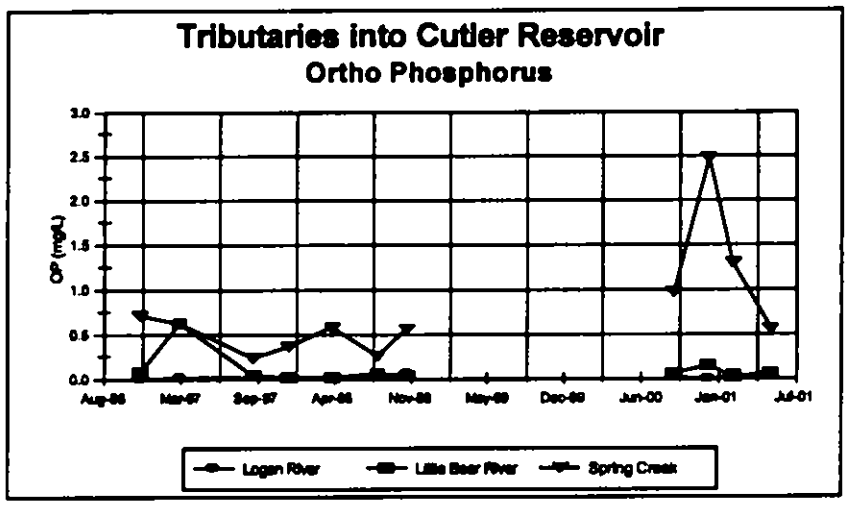


Figure 4. Total suspended solids concentrations in mg/liter at the six study sites during the monitoring period.





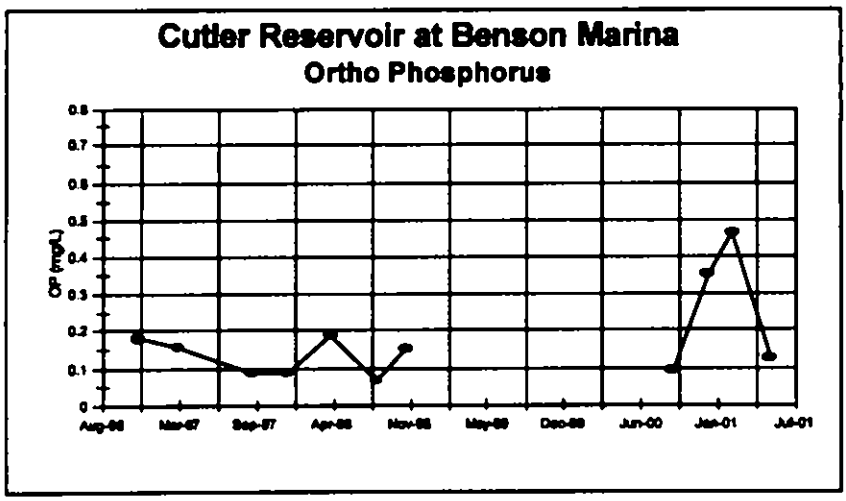
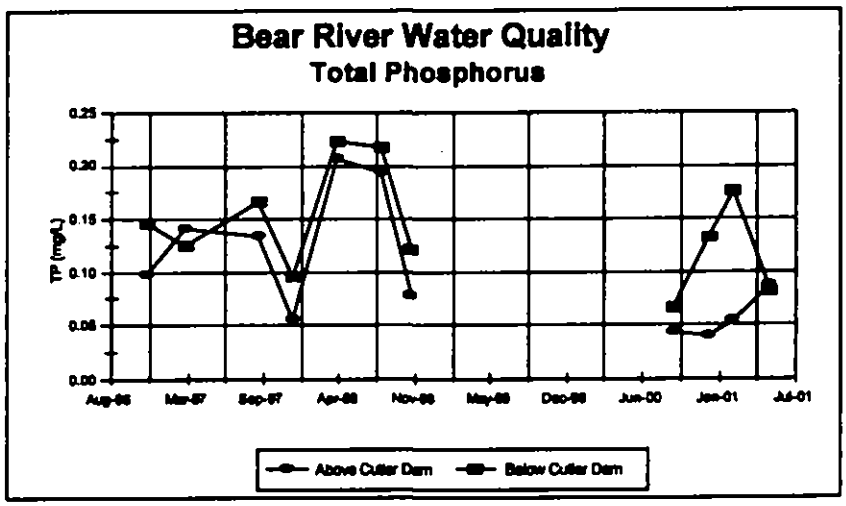
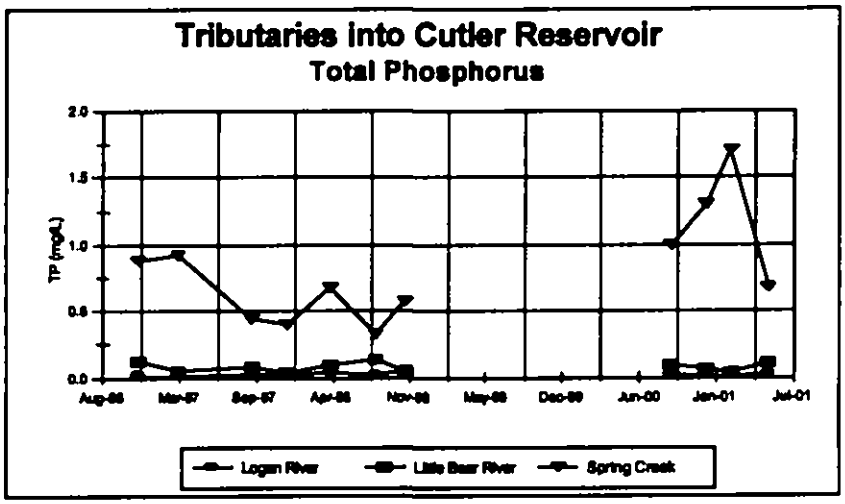


Figure 5. Ortho phosphorus concentrations in mg/liter at the six study sites during the monitoring period.





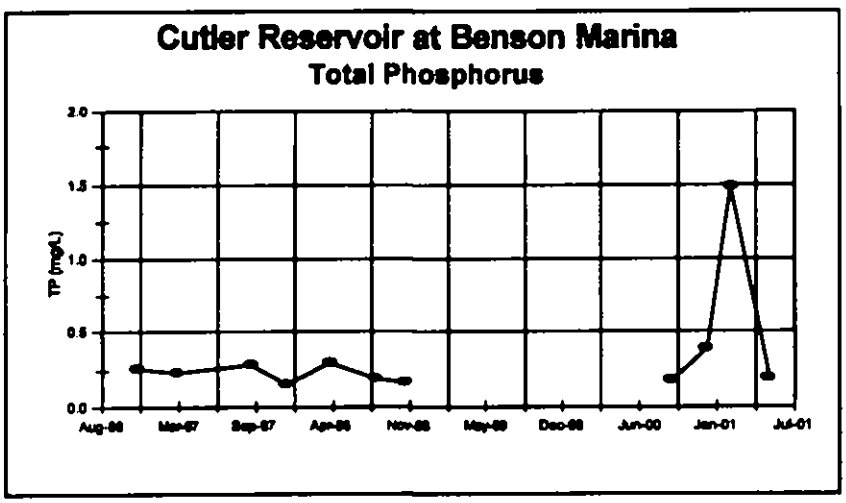
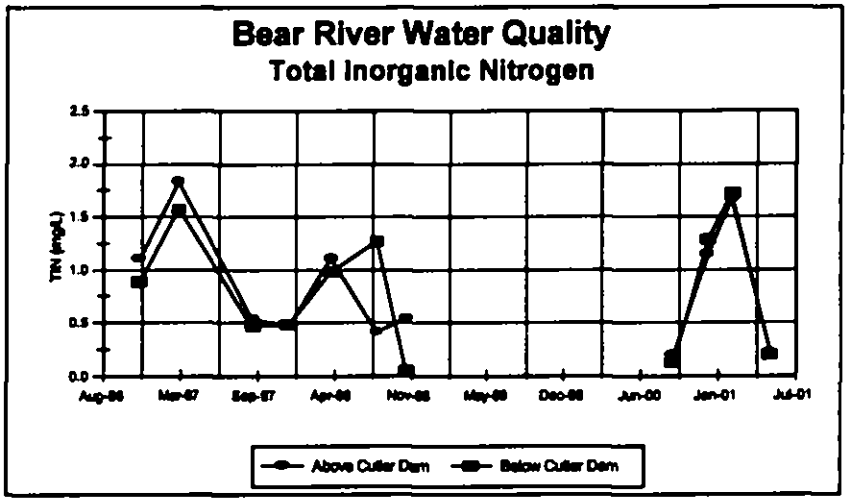
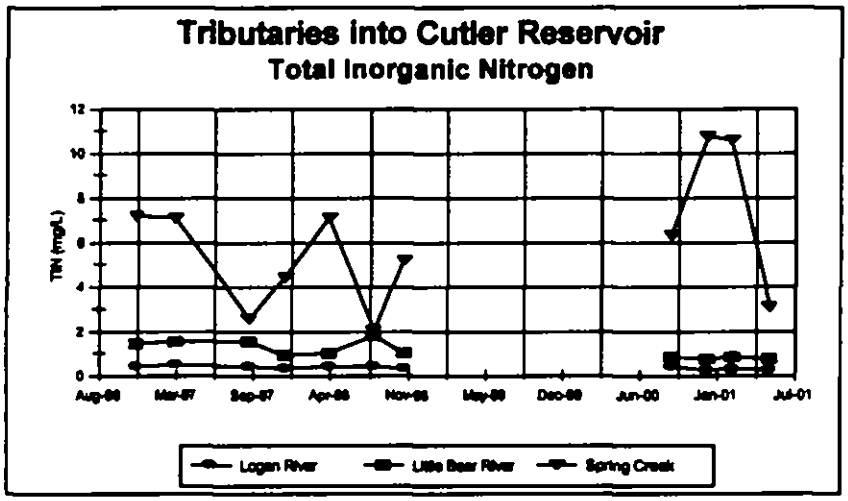


Figure 6. Total phosphorus concentrations in mg/liter at the six study sites during the monitoring period.





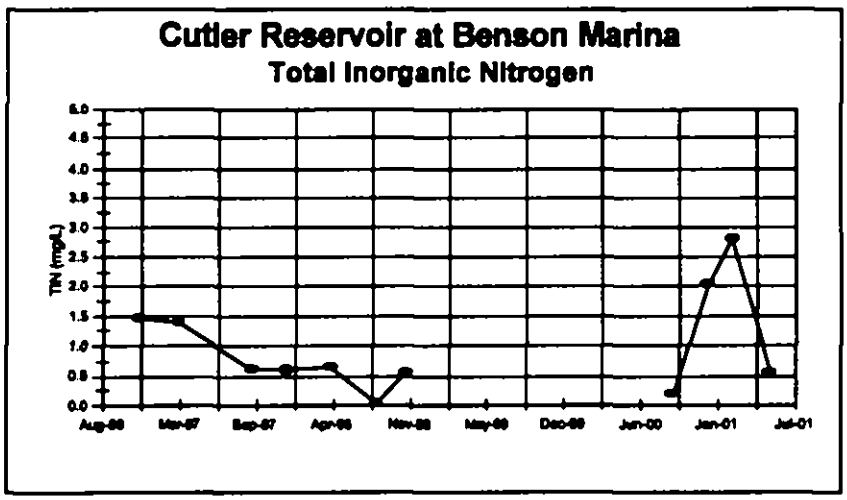
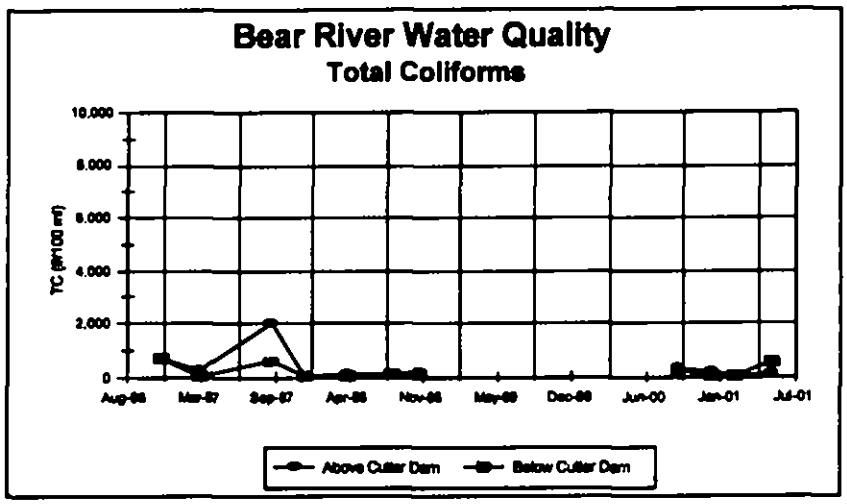
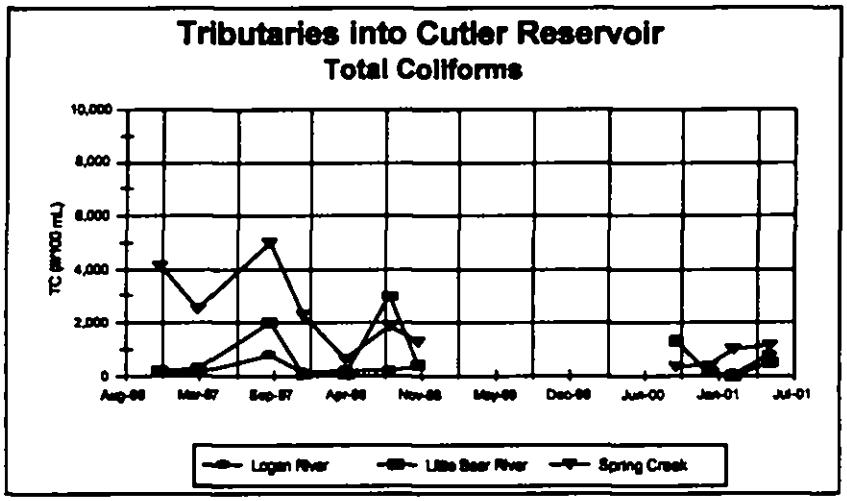


Figure 7. Total inorganic nitrogen concentrations in mg/liter at the six study sites during the monitoring period.





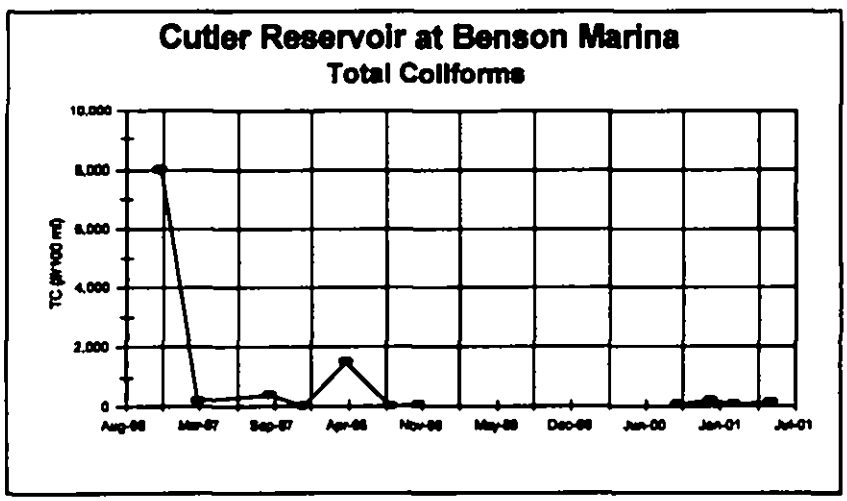


Figure 8. Total coliform counts in #/100 ml at the six study sites during the monitoring period.

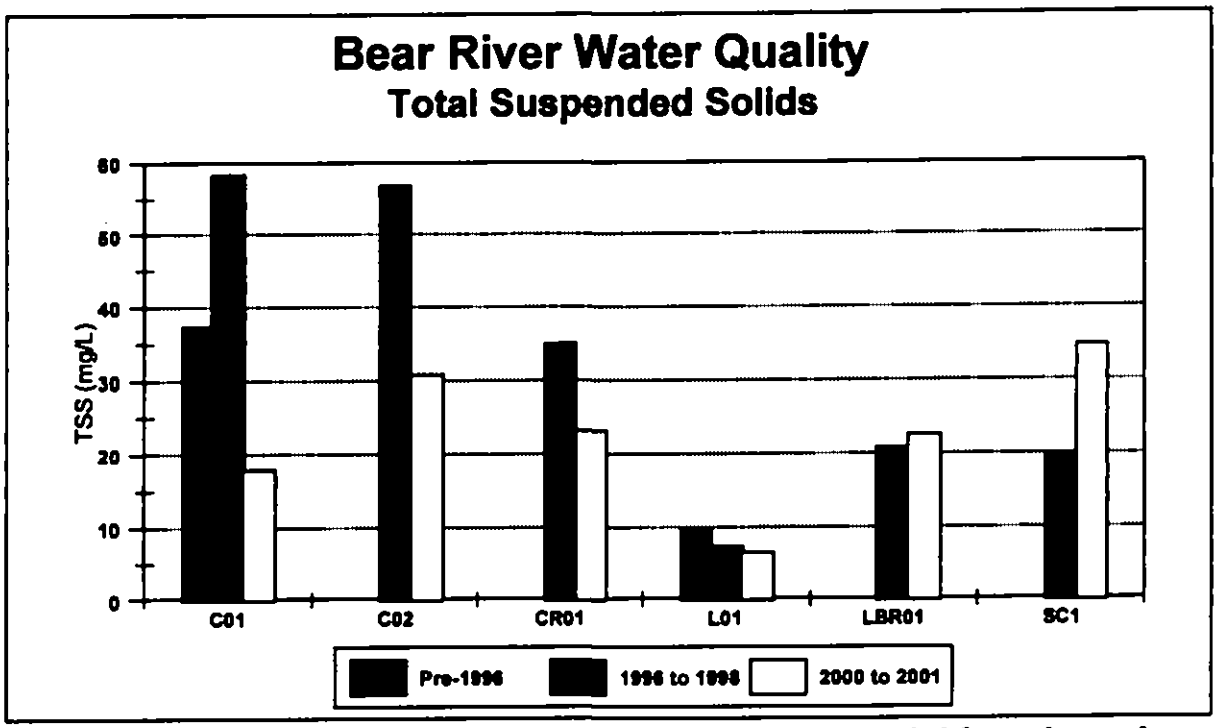


Figure 9. The average total suspended solids concentration by time period for each sample site where data is available.

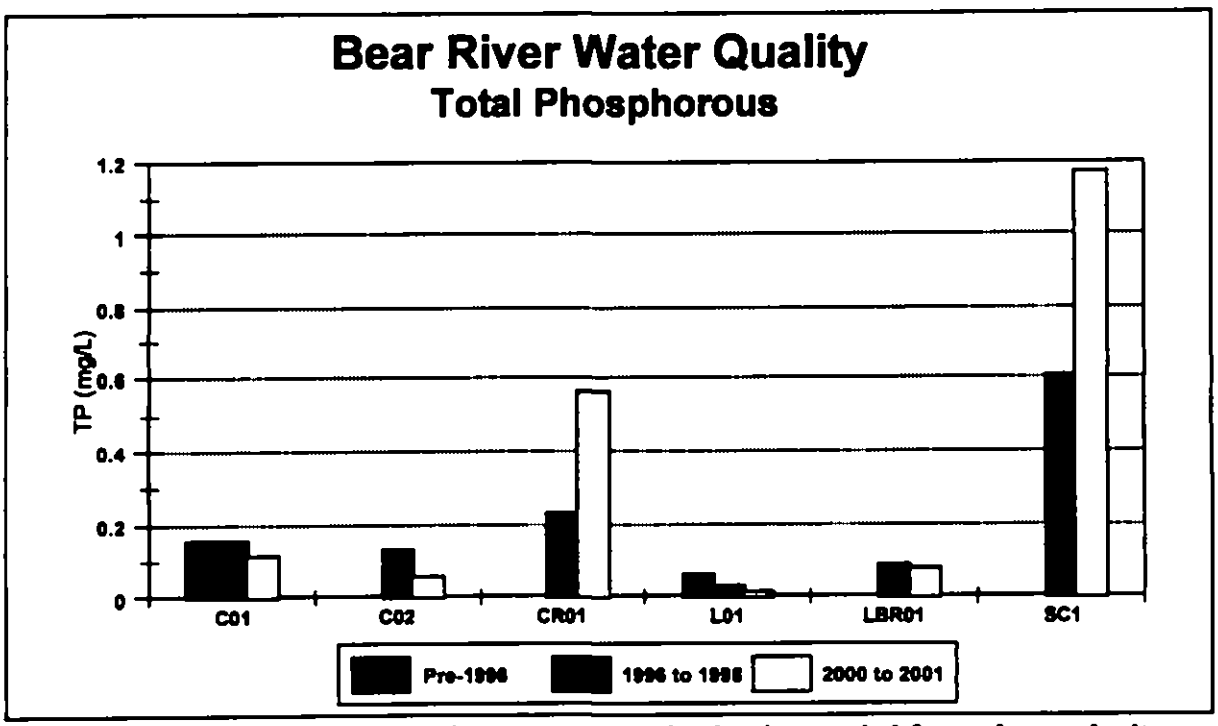


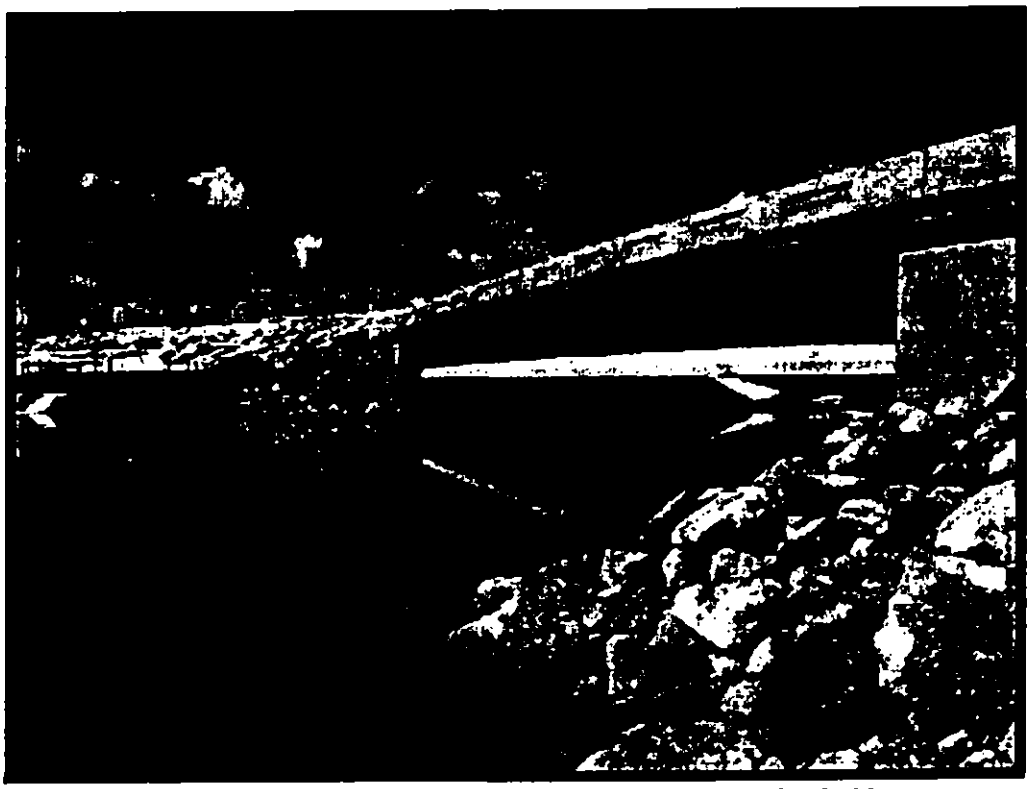
Figure 10. The average total phosphorus concentration by time period for each sample site where data is available.

Appendix G-I

Photographs of the Sampling Sites

Site C01: Below Cutler Dam on the north side of river, immediately below plant.

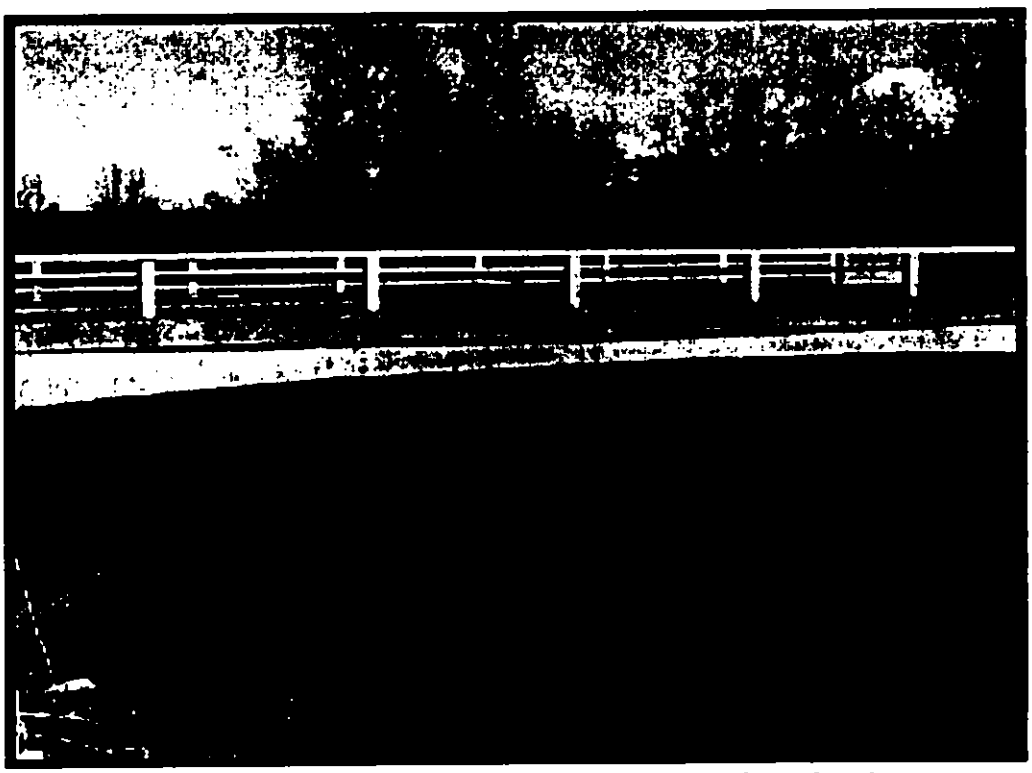
Site C02: NW of Logan on 2400W approximately 3 miles to bridge over Bear River. Sampling point is on NW side of river.



Site CR01: NW of Logan on 3000 N (Benson Road) right under bridge at recreation site on north side of road.

Site LBR01: West of Logan on Mendon Road-Little Bear River. Sample taken at the bridge on south side of road on east bank.

Site SC1: West of Logan on Mendon Road-Spring Creek. Sample taken at bridge on north side of road, west bank.



Site L01: West of Logan on Mendon Road-Logan River. Sample taken at bridge on south side of road, west bank.

Appendix G-II

Tabular Data

C01: Below Cutler Dam

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	12:00	1:30	12:25	12:36	12:05	11:10	12:10	11:25	11:30
ERI LOG ID:	3723	314	971754	972093	980377	980906	981358	1383	1789	10118	10488
Temperature (°C)	5.16	3.48	16.7	5.9	8.09	24.21	9.14	19.29	1.55	1.21	20.79
Diss. Oxygen (mg/L)	8.68	10.81	6.7	10.1	8.65	8.23	9.06	7.86	13.01	9.98	7.03
Conductivity (µm/cm)	785	832	691	681	753	972	912	1740	975	889	1770
pH	8	8.22	8.3	8.3	7.86	7.97	8.28	8.14	8.33	7.76	8.12
Turbidity (NTU)	11.9	26.6	151	17	ND	50	26	ND	ND	ND	ND
DO (%Sat)	79.7	111.1	81	94.9	73	ND	ND	101.3	113.7	ND	94.6
TSS (mg/L)	ND	11	74	33	75	103	54	30	4	2	36
NH3 (mg/L)	0.167	0.137	0.033	<0.030	0.110	<0.020	0.050	0.060	0.183	0.571	0.068
NO3 (mg/L)	0.699	1.380	0.423	0.450	0.846	1.230	ND	0.054	1.086	1.124	0.126
NO2 (mg/L)	0.021	0.050	0.013	0.007	0.017	0.009	0.007	0.002	0.017	0.024	0.007
TIN (mg/L)	0.887	1.567	0.469	0.487	0.973	1.259	0.057	0.116	1.286	1.719	0.202
TP (mg/L)	0.146	0.125	0.167	0.095	0.223	0.217	0.121	0.067	0.132	0.176	0.082
OP (mg/L)	0.048	0.059	0.026	0.011	0.060	0.006	0.121	0.019	0.142	0.153	0.022
TC (#/100 ml)	700	30	600	80	30	100	120	280	20	60	550
FC (#/100 ml)	90	0	40	0	20	90	20	ND	ND	ND	ND

C02: Bear River at 2400 West

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	1:15	2:30	1:59	1:19	12:44	10:20	12:55	10:40	10:45
ERI LOG ID:	3724	315	971755	972094	980379	980908	981360	1381	1791	10116	10486
Temperature (°C)	4.46	3.26	16.5	5.9	7.61	23.33	8.54	18.62	1.25	0	17.78
Diss. Oxygen (mg/L)	10.24	9.13	7.1	10.6	8.5	6.67	9.08	7.04	12.24	9.73	7.5
Conductivity (µm/cm)	950	851	742	711	742	819	831	1038	958	963	832
pH	7.64	8.2	8.2	8.4	7.85	7.98	8.23	8.32	8.33	7.78	8.2
Turbidity (NTU)	7.6	40	235	11	39	38	15	ND	ND	ND	ND
DO (%Sat)	92.9	92.7	85.8	100.1	71.6	ND	ND	86.5	101.8	ND	92
TSS (mg/L)	ND	72	67	22	72	74	34	33	11	4	75
NH3 (mg/L)	0.130	0.137	<0.030	<0.030	0.105	<0.020	<0.020	<0.030	0.091	0.253	0.024
NO3 (mg/L)	0.949	1.670	0.506	0.432	0.980	0.387	0.508	0.154	1.032	1.390	0.183
NO2 (mg/L)	0.016	0.020	0.008	0.005	0.015	0.012	0.005	0.005	0.016	0.019	0.007
TIN (mg/L)	1.095	1.827	0.544	0.467	1.100	0.419	0.533	0.189	1.138	1.662	0.215
TP (mg/L)	0.097	0.141	0.133	0.056	0.206	0.194	0.077	0.044	0.040	0.053	0.087
OP (mg/L)	0.029	0.046	0.029	0.004	0.061	0.017	0.048	0.011	0.011	0.029	0.016
TC (#/100 ml)	700	300	2000	20	140	130	200	364	180	90	100
FC (#/100 ml)	500	90	150	10	40	130	10	ND	ND	ND	ND

CR01: Cutler at Benson Marina

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	12:30	2:00	2:11	1:03	12:29	10:40	12:35	10:55	11:05
ERI LOG ID:	3725	316	971756	972095	980378	980907	981359	1382	1790	10117	10487
Temperature (°C)	5.21	4.7	18.4	7.22	9.74	27.49	9.06	20.27	2.7	0.29	21.53
Diss. Oxygen (mg/L)	7.97	10.27	7.4	10.2	9.25	9.96	10.57	8.57	10.51	8.9	8.33
Conductivity (µm/cm)	579	550	510	457	570	543	513	587	522	542	460
pH	8.01	8.35	8.3	8.4	8.04	8.37	8.44	8.24	8.17	7.7	8.33
Turbidity (NTU)	7.6	50.2	170	14	26	11	16	ND	ND	ND	ND
DO (%Sat)	74.1	108.6	92	100.1	80.9	ND	ND	110.2	88.2	ND	100.1
TSS (mg/L)	ND	21	80	23	42	17	27	38	2	8	45
NH3 (mg/L)	0.224	0.300	0.053	0.031	0.248	<0.020	0.148	0.111	1.106	2.218	0.247
NO3 (mg/L)	1.190	1.030	0.546	0.557	0.388	<0.005	0.401	0.046	0.908	0.556	0.292
NO2 (mg/L)	0.043	0.067	0.023	0.010	0.014	0.005	0.013	0.021	0.027	0.018	0.022
TIN (mg/L)	1.457	1.397	0.622	0.598	0.650	0.030	0.562	0.178	2.042	2.792	0.560
TP (mg/L)	0.265	0.234	0.284	0.153	0.296	0.194	0.174	0.176	0.389	1.491	0.200
OP (mg/L)	0.179	0.156	0.089	0.086	0.188	0.065	0.148	0.095	0.355	0.464	0.123
TC (#/100 ml)	8000	210	400	20	1500	0	80	90	190	80	110
FC (#/100 ml)	100	0	190	0	300	0	0	ND	ND	ND	ND

L01: Logan River

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	11:00	10:15	2:48	11:45	11:20	11:55	11:25	12:05	12:17
ERI LOG ID:	3727	317	971757	972096	980382	980903	981355	1386	1786	10121	10491
Temperature (°C)	5.97	3.33	10.7	4.95	7.12	13.32	7.09	14.54	3.14	2.21	10.8
Diss. Oxygen (mg/L)	10.33	9.2	8.8	10.48	9.98	8.24	9.31	8.05	11.44	11.89	8.89
Conductivity (µm/cm)	447	427	415	404	437	463	478	524	423	420	341
pH	8.28	7.45	8.1	7.8	8.04	7.86	8.32	7.96	8.12	8.09	8.09
Turbidity (NTU)	0.9	4.8	40	1.9	5.2	2	2	ND	ND	ND	ND
DO (%Sat)	97.1	93	92.5	95.4	82.2	ND	ND	93.1	99.8	ND	96.1
TSS (mg/L)	ND	5	6	6	15	6	5	13	<1	2	10
NH3 (mg/L)	0.052	0.058	<0.030	<0.030	0.022	0.021	<0.020	0.030	0.034	0.052	0.024
NO3 (mg/L)	0.314	0.432	0.358	0.299	0.386	0.380	0.304	0.339	0.230	0.228	0.211
NO2 (mg/L)	0.003	0.003	0.004	0.002	0.003	0.004	0.003	0.007	0.002	0.003	0.004
TIN (mg/L)	0.369	0.493	0.392	0.331	0.411	0.405	0.327	0.377	0.267	0.283	0.239
TP (mg/L)	0.017	0.012	0.023	0.021	0.037	0.030	0.047	0.027	0.005	0.009	0.023
OP (mg/L)	0.005	0.007	0.008	0.003	0.010	0.009	0.047	0.012	<0.001	0.006	0.009
TC (#/100 ml)	180	120	800	110	200	190	370	1364	90	30	785
FC (#/100 ml)	10	60	110	20	30	50	40	ND	ND	ND	ND

LBR01: Little Bear River

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	11:30	10:45	2:27	12:06	11:40	11:35	11:45	11:50	12:00
ERI LOG ID:	3726	318	971758	972097	980380	980905	981357	1384	1788	10119	10489
Temperature (°C)	5.85	3.01	13.7	7.1	7.72	17.15	9.75	15.45	2.33	1.71	15.92
Diss. Oxygen (mg/L)	9.7	8.66	7.9	9.33	9.97	6.25	8.3	5.97	10.4	11.3	7.74
Conductivity (µm/cm)	752	535	595	490	481	691	571	690	546	553	651
pH	8.05	7.93	8	8.2	7.97	7.68	8.18	7.91	8.13	7.98	8.01
Turbidity (NTU)	3.2	16.4	102	3.4	16	16	6.5	ND	ND	ND	ND
DO (%Sat)	91	87.5	90.3	90.8	83.2	ND	ND	70.1	87.6	ND	93.9
TSS (mg/L)	ND	14	21	9	32	32	17	41	13	5	31
NH3 (mg/L)	0.083	0.058	0.038	<0.030	0.041	0.045	0.022	0.048	0.071	0.085	0.096
NO3 (mg/L)	1.340	1.460	1.460	0.908	0.941	1.710	1.000	0.781	0.653	0.793	0.646
NO2 (mg/L)	0.018	0.012	0.013	0.007	0.008	0.022	0.007	0.013	0.009	0.008	0.014
TIN (mg/L)	1.441	1.530	1.511	0.945	0.990	1.777	1.029	0.841	0.734	0.886	0.757
TP (mg/L)	0.125	0.057	0.067	0.037	0.092	0.144	0.051	0.094	0.064	0.044	0.108
OP (mg/L)	0.077	0.615	0.039	0.009	0.020	0.064	0.032	0.051	0.144	0.026	0.063
TC (#/100 ml)	170	290	2000	80	80	3000	400	1273	110	10	460
FC (#/100 ml)	100	40	1000	10	40	700	80	ND	ND	ND	ND

SC1: Spring Creek

DATE:	11/25/96	03/06/97	09/15/97	12/15/97	04/09/98	08/05/98	10/21/98	09/14/00	12/13/00	02/15/01	05/23/01
TIME:	10:00	9:00	11:15	10:30	2:36	11:55	11:30	11:45	11:35	11:55	12:10
ERI LOG ID:	3728	319	971759	972098	980381	980904	981356	1385	1787	10120	10490
Temperature (°C)	6.76	4.2	13.3	6.1	9.39	18.07	8.49	15.03	3.71	3.25	15.66
Diss. Oxygen (mg/L)	9.26	7.82	7.5	10.46	9.71	5.78	8.45	6.58	9.44	10.13	7.37
Conductivity (µm/cm)	908	983	562	627	957	665	811	762	832	868	697
pH	7.95	7.64	7.9	8	7.81	7.6	8.1	7.64	7.94	7.82	7.82
Turbidity (NTU)	5.9	30.4	81	3.5	10	14	10	ND	ND	ND	ND
DO (%Sat)	89.1	80.6	84	97.6	84.5	ND	ND	75.4	87.2	ND	85.9
TSS (mg/L)	ND	31	20	7	18	26	18	32	11	24	71
NH3 (mg/L)	0.189	2.210	0.062	<0.030	0.476	0.036	0.046	0.766	4.100	3.532	0.293
NO3 (mg/L)	6.930	4.440	2.470	4.350	6.600	2.000	5.150	5.495	6.551	6.880	2.692
NO2 (mg/L)	0.093	0.503	0.019	0.022	0.071	0.042	0.028	0.044	0.142	0.166	0.127
TIN (mg/L)	7.212	7.153	2.551	4.402	7.147	2.078	5.224	6.305	10.793	10.578	3.111
TP (mg/L)	0.881	0.924	0.450	0.401	0.683	0.336	0.580	0.992	1.309	1.709	0.675
OP (mg/L)	0.707	0.615	0.231	0.368	0.578	0.249	0.567	0.966	2.470	1.291	0.566
TC (#/100 ml)	4100	2500	5000	2300	660	1900	1300	370	380	1000	1180
FC (#/100 ml)	950	180	470	490	80	1000	110	ND	ND	ND	ND

Appendix H

2002 FERC Order Modifying Bear River Basin Study and Operating Plan

UNITED STATES OF AMERICA 99 FERC ¶ 62,085
FEDERAL ENERGY REGULATORY COMMISSION

Pacificorp Project No. 2420-018

ORDER MODIFYING AND APPROVING PROJECT OPERATION PLAN PER ARTICLE 401

(Issued April 30, 2002)

On October 4, 1999 and supplemented on April 11, 2002, Pacificorp (licensee) filed a "Three Year Bear River Basin Study" and an "Operational Plan" for the Cutler Hydroelectric Project (FERC No. 2420) per license article 401. The Cutler Project is located on the Bear River in Cache and Box Elder Counties, Utah. This order discusses the licensee's study and plan and approves the operation plan with minor modifications.

LICENSE REQUIREMENT

Article 401 requires the licensee to submit for Commission approval, a plan for conducting a three-year Bear River Basin Study as proposed in the license application. The study plan is required to include: (1) the development of a basin-wide irrigation call system that includes irrigation companies and individual irrigators; (2) the development of an operational model to provide a statistical method for improving the operation of the Bear River system; (3) an assessment of reservoir levels at specific locations to develop a reservoir level relationship between each location; (4) the testing of a one-year operational plan to control Cutler Reservoir fluctuations from mid-reservoir (near Benson Marina) to the south end of the reservoir while maintaining the current irrigation supply; (5) the development of a final Cutler Reservoir operating plan that best meets the needs of wildlife, recreation, power generation, and irrigation based on meteorology, runoff and seasonal power requirements; and (6) a schedule for implementing the study, consulting with the appropriate agencies and interested parties, and filing the results in a final report.

The licensee developed and filed with the Commission, a Bear River study plan per article 401. The licensee's study was approved March 30, 1995 by Order Modifying And Approving Three-Year Bear River Basin Study Plan.[1] The licensee's filings of the results of the Bear River Study indicates that it has adequately fulfilled the requirements of article 401. The licensee used the information learned in the Bear River study to develop its Operation Plan, which is the focus of this order.

[1] 70 FERC ¶ 62,209 (1995).

BACKGROUND

The Cutler reservoir is located at the confluence of the Bear, Logan, and Little Bear Rivers in northern Utah. There are six hydroelectric projects on the mainstem Bear River. Of the six projects, the Cutler Project is the farthest development downstream. From mid-June to mid-October, nearly all the natural flow in the Bear River is diverted for irrigation. Supplemental flows come from water releases from Bear Lake, a large storage reservoir.

The Cutler reservoir has a surface area of approximately 5,500 acres. At the time of relicensing in the early 1990's, comments from the resource agencies suggested that minimizing reservoir fluctuations in the area south of Benson Marina would benefit fish and wildlife resources, reduce soil and shoreline erosion and improve recreational opportunities. Irrigation needs, releases from Bear Lake, and runoff from large tributaries complicate management of the lake levels. As a result of the agencies' comments, the licensee proposed in its license application as adopted in article 401, a three-year study to determine the feasibility of new operating procedures that would help stabilize the reservoir elevations. The licensee completed its three-year study and developed a final operating plan for the project.

THE LICENSEE'S PROPOSED OPERATION PLAN

The licensee stated that the project is operated in a semi-automatic mode whereby the generators are started and synchronized to the system manually by the local hydro operator. The licensee added that once on-line, the units are controlled remotely by the System Dispatcher, located in Salt Lake City, who controls the load on the generators to meet system requirements and to stay within the reservoir elevation guidelines.

The licensee identified a number of sources of inflow to the reservoir such as flows from the upstream projects on the Bear River, the Cub, Logan, Black Smith and Little Bear Rivers, plus precipitation and irrigation returns. Outflow sources from the Cutler reservoir include generation, evaporation, irrigation and pumping. Of these, the licensee stated that it controls only the outflow at the dam, and only reservoir inflow from the upstream project which has a lag time of 36 hours. In order to minimize Cutler reservoir elevation fluctuations, the licensee developed an operation plan that proposes to maintain the reservoir elevation within target ranges as measured at the Cutler dam.

The licensee stated that the reservoir elevation monitoring equipment located at the dam does not necessarily depict the water surface elevation throughout the reservoir. The licensee stated that there are a number of physical restrictions in the reservoir that impede the flow of water through the reservoir such as highway and railroad bridges across the reservoir, sandbars in the lower reach of the reservoir, marshy areas, a narrow canyon just above the dam, and the submerged Wheelon Dam located approximately ½ mile upstream of the Cutler Dam. The Wheelon Dam was constructed for power generation and to divert water for irrigation, but was never breached when the Cutler Dam

was built. It is completely inundated by the Cutler impoundment; however it does effect water surface elevations between the upper end of the reservoir and the dam.

The licensee explained that drawing down the reservoir four feet at the dam for a sustained period results in approximately a four foot drawdown in most areas of the reservoir. However, if the reservoir is drawdown more than four feet at the dam (ie. for maintenance purposes), the impact on the upper reaches of the reservoir is less because of the submerged Wheelon Dam.

The licensee stated that the principle area of environmental concern with respect to water level fluctuation is the upper reach of the reservoir, from the Benson Marina (mid-reservoir) to the marshy areas in the south end of the reservoir. The licensee added that the water elevation in this area is difficult to control due to inflow from the tributaries or sudden increases in irrigation demands from the tributaries and Bear River. The licensee stated that these factors are beyond their control and difficult to predict. The licensee, therefore, proposed the following operating ranges, as measured and recorded at the Cutler Dam.

Table 1. Proposed Reservoir elevation operating range as measured at the Cutler Dam

Time Period	Operating Range (Elevation in feet)	Tolerance (feet)	Target Percentage
March 1 through June 15	4407.5 to 4406.5	+.25, -.25	95%
June 15 through September 30	4407.5 to 4406.5	+.25, -.25	95%
October 1 through December 1	4407.5 to 4406.5	+.25, -.25	95%
December 2 through February 28	4407.5 to 4406.0	+.25, -.50	90%

The licensee proposed to monitor the operation of the project and annually file a report, with the Commission, concerning compliance with **the daily average elevation requirements**. The licensee indicated that exceptions to the target ranges may be necessary during times of project maintenance or when flood conditions exist.

CONSULTATION

Article 401 required the licensee to prepare the operating plan after consultation with the Utah Division of Wildlife Resources, the U.S. Fish and Wildlife Service (FWS), and area irrigators, including the Bear River Canal Company. By letter dated July 12, 1999, the licensee provided the "Three-Year Bear River Basin Study" and the "Operation Plan" to the resource agencies and local irrigators for their review and comments. The licensee received comments from the FWS by letter dated August 2, 1999.

The FWS commended the licensee for their work. The FWS highlighted the studies and stated that through monitoring and annual reporting, the project will benefit fish and wildlife resources, reduce soil and shoreline erosion, and improve recreational opportunities. No other comments were received.

DISCUSSION

As part of the three-year Bear River study, the licensee developed a basin wide irrigation call system to help schedule and coordinate water deliveries, a hydrologic operational model to improve the predictive capabilities of available water, an assessment of reservoir levels to determine reservoir responses to seasonal changes at various locations around Cutler reservoir, and a test operating plan that encompassed four time periods associated with varying demands by water users.

The results of the study and the test operating plan indicate that the licensee has limited control of both inflow to the project and outflow from the reservoir. Because of the hydraulic limitations, the licensee indicated that the only way to minimize reservoir fluctuations is to limit the reservoir elevation range at the Cutler dam. The licensee's tests show that there is no predictable relationship between the dam and Benson Marina elevations making it unfeasible to operate the dam based on real time data from the Benson Marina. Based on the results of the Bear River Study and the test operating plan, the licensee modified the reservoir elevation ranges.

Since filing of the proposed operation plan, the licensee has operated the project using the proposed reservoir ranges. Supplemental data from 1999 to 2001 indicate that the licensee has been capable of complying with the operating plan. In fact, during water year 2000-2001, the data indicate that the licensee kept fluctuations of the reservoir elevation to less than one foot.

Although Table 1 depicts four time periods (which are repeated from the test operating plan), the proposed reservoir elevation operating plan essentially has two time periods: March 1 through December 1; and December 2 through February 28. The operational range for March 1 through December 1 is one foot (4406.5 feet to 4407.5 feet) and the operating range for December 2 through February 28 is one foot, six inches (4406. feet to 4407.5 feet).

The licensee explained that the "tolerance range" is an area above and below the operating range where the licensee would still be considered to be in compliance with the requirement as the licensee continue to work to bring the reservoir level back within the operating range. Thus, for the March 1 through December 1 period, the total operating range would be one foot, six inches, and for December 2 through February 28, the operating range would be two feet, three inches. Table 2 illustrates the licensee's proposed operating range.

Table 2. Licensee's condensed reservoir elevation operating range table

Time Period	Operating Range (Elevation in feet)	Tolerance (feet)	Target Percentage
March 1 through December 1	4407.5 to 4406.5	+.25, -.25	95%
December 2 through February 28	4407.5 to 4406.0	+.25, -.50	90%

The heading, "Target Percentage" represents the percentage of time the licensee anticipates maintaining the reservoir level within the operating range including the tolerance band. The licensee explained that various factors, within and not within its control (such as maintenance and irrigation returns), may occasionally contribute to exceedances of the requirement.

If the Cutler reservoir elevation, as measured by the Cutler dam gage, exceeds the total, upper or lower operating range (operating range plus tolerance range) as approved in this order under article 401, the licensee should file a report with the Commission within 30 days of the incident. The report should, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. **The report should also include: 1) operational data necessary to determine compliance with the operating range requirement; 2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and 3) comments or correspondence, if any, received from the resource agencies or other interested parties regarding the incident.** Based on the report and the Commission's evaluation of the incident, the Commission should reserve the right to require modifications to project facilities and operations to ensure future compliance.

If the licensee draws down the reservoir for project maintenance, license compliance work or when flood conditions exists, the licensee is still responsible to file a report with the Commission. Any intentional reservoir drawdown should be in accordance with all Commission rules and regulations governing such actions.

The licensee indicated that it would **file daily average elevations from the Cutler dam gage** with the Commission annually. The licensee, however, did not identify a date by which it would file its reports. Since the licensee collects the data on a water year basis (October 1 through September 30), the licensee **should file its report by December 31** (three months after completing the collection of the data). The data may be in chart form, and the report should minimally include explanations of any previously unreported deviations, a summary of compliance with the operating range, and any problems or proposed changes regarding the operating plan. The licensee should also make the data and report available to the resource agencies upon request.

The licensee's plan should also be modified to specify the operating range during leap years. Since the change in the operating range occurs at the end of February each year, the "time period" of December 2 through February 28 should be modified to include February 29 during the years when there are 29 days in February.

CONCLUSION

In order to meet the needs of wildlife, recreation, power generation and irrigation through operation of the project, the licensee had numerous inflow and outflow factors to consider when developing an operating plan. After completing a three year Bear River basin study, the licensee developed an operating plan that should minimize fluctuations of the Cutler reservoir. The plan attempts to balance the various demands of the different user groups.

Generally, from December through February, there are no operating constraints such as irrigation, spawning, nesting, or hunting that restrict the licensee's use of the reservoir for generation. Therefore, the licensee proposed a wider operating range to increase generating options while keeping fluctuations to a minimum for management of ice conditions. The licensee's Operating Plan meets the needs of wildlife, recreation, power generation, and irrigation based on meterology, runoff and seasonal power requirements, as stipulated in article 401, and should, as modified, be approved.

The Director Orders:

(A) Pacificorp's Operational Plan for the Cutler Hydroelectric Project (FERC No. 2420), filed October 4, 1999 and supplemented on April 11, 2002, as modified in paragraphs (B) through (D), is approved.

(B) The licensee shall file **an annual report of the daily average reservoir elevations** for the Cutler Project, with the Commission, **by December 31** (three months after completing the collection of wateryear data). The licensee shall make the report available to the resource agencies upon request.

(C) The operating range during the **time period of December 2 through February 28 shall be modified to include February 29 during leap years.**

*(D) **If the Cutler reservoir elevation, as measured by the Cutler dam gage, exceeds either the total, upper or lower operating range (operating range plus tolerance range) as approved in this order under article 401, the licensee shall file a report with the Commission within 30 days of the incident.** The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report shall also include: 1) operational data necessary to determine compliance with the operating range requirement; 2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and 3) comments or correspondence, if any, received from the resource agencies or other interested parties regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.*

(E) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

George H. Taylor
Chief, Biological Resources Branch
Division of Hydropower Administration
and Compliance

Appendix I

2002 Wildlife Transect Data Results

Table 1. Bird Species Sighted, Number of Individuals, and Abundance at the Cutler Reservoir, West Side Transect, 2001.

		Apr-01	Jun-01	Aug-01	Oct-01	Nov-01
Common Name	Latin Name	Abundance*	Abundance	Abundance	Abundance	Abundance
American Avocet	*Recurvirostra americana*	3.3 ± 2.1	0.3 ± 0.6			
American Coot	*Fulica americana*	25.3 ± 16.3		1.7 ± 2.9		
American Crow	*Corvus brachyrhynchos*					0.7 ± 1.2
American Goldfinch	*Carduelis tristis*			3.0 ± 5.2		
American Kestrel	*Falco sparverius*	0.3 ± 0.6	4.0 ± 1.0			
American Pipit	*Anthus rubescens*				1.7 ± 2.9	
American White Pelican	*Pelecanus erythrorhynchos*	1.0 ± 1.7	8.7 ± 2.3	12.7 ± 4.9		
Bank Swallow	*Riparia riparia*			12.7 ± 2.1		
Barn Owl	*Tyto alba*				24.3 ± 21.1	
Barn Swallow	*Hirundo rustica*	0.3 ± 0.6	7.7 ± 2.5	1.0 ± 1.7		
Blackbird					0.7 ± 0.6	
Black-crowned Night Heron	*Nycticorax nycticorax*	0.3 ± 0.6	1.7 ± 0.6			
Black-necked Stilt	*Himantopus mexicanus*		1.0 ± 0.0			
Brown-headed Cowbird	*Molothrus ater*		0.7 ± 0.6			
Canada Goose	*Branta canadensis*	21.7 ± 6.5	0.7 ± 1.2			
Cinnamon Teal	*Anas cyanoptera*		3.0 ± 3.0	0.7 ± 1.2		
Clark's Grebe	*Aechmophorus clarkii*	11.7 ± 2.3	4.3 ± 1.5	1.7 ± 1.2		
Cliff Swallow	*Petrochelidon pyrrhonota*		8.7 ± 3.8	1.3 ± 1.5		
Common Yellowthroat	*Geothylpis trichas*		2.3 ± 1.2	0.7 ± 1.2		
Double-crested Cormorant	*Phalacrocorax auritus*	1.3 ± 1.2	8.3 ± 1.2	0.7 ± 1.2		
Ducks		3.3 ± 3.0	2.3 ± 1.2	0.7 ± 1.2		
Eastern Kingbird	*Tyrannus tyrannus*		5.3 ± 3.0	2.0 ± 2.6		
Forster's Tern	*Sterna forsteri*		1.7 ± 1.5			
Gadwall	*Anas strepera*		1.3 ± 2.3		0.7 ± 1.2	
Great Blue Heron	*Ardea herodias*	0.3 ±0.6	6.0 ± 1.0	5.3 ± 4.5	1.0 ± 1.7	
Green-winged Teal	*Anas crecca*	4.3 ± 0.6				
Gulls		5.3 ± 3.5	2.0 ± 3.5	0.7 ± 1.2	5.7 ± 2.9	
Horned Lark	*Eremophillia alpestris*					4.7 ± 8.1
Killdeer	*Charadrius vociferus*	2.0 ± 1.0	4.3 ± 3.5			
Lesser Scaup	*Aythya affinis*				0.7 ± 1.2	
Long-billed Curlew	*Numenius americanus*	4.7 ± 3.0	1.0 ± 1.7			

Mallard	*Anas platyrhynchos*	4.0 ± 1.0	29.0 ± 8.7		0.3 ± 0.6	
Marsh Wren	*Cistothorus palustris*	4.3 ± 0.6	0.3 ± 0.6	0.3 ± 0.6	20.7 ± 20.0	
Mourning Dove	*Zenaida macroura*			3.7 ± 2.9		
Northern Flicker	*Colaptes auratus*				0.3 ± 0.6	
Northern Harrier	*Circus cyaneus*	1.0 ± 1.0	0.7 ± 0.6	1.3 ± 2.3	1.7 ± 2.9	
Northern Shoveler	*Anas clypeata*		0.3 ± 0.6			
Redhead	*Aythya americana*		1.3 ± 1.2			
Red-tailed Hawk	*Buteo jamaicensis*				0.3 ± 0.6	
Red-winged Blackbird	*Agelaia phoeniceus*	5.7 ± 8.1	1.3 ± 1.5	0.3 ± 0.6		
Ring-necked Pheasant	*Phasianus colchicus*	2.7 ± 2.9		12.7 ± 4.9	0.7 ± 0.6	
Rough-legged Hawk	*Buteo lagopus*					0.7 ± 0.6
Sandhill Crane	*Grus canadensis*	3.7 ± 1.5	6.0 ± 8.7	0.7 ± 0.6		
Sandpiper		4.0 ± 2.0				
Song Sparrow	*Melospiza melodia*	1.7 ± 0.6	6.3 ± 9.3	3.3 ± 1.2	16.7 ± 14.6	
Sparrow		0.3 ± 0.6				
Spotted Sandpiper	*Actitis macularia*		1.7 ± 1.5	1.7 ± 1.2		
Swallow		4.0 ± 6.9				
Tundra Swan	*Cygnus columbianus*				0.3 ± 0.6	
Vesper Sparrow	*Pooecetes gramineus*			0.7 ± 1.2		
Western Grebe	*Aechmophorus occidentalis*	.7±1.2	9.3 ± 5.5	1.0 ± 0.0		
Western Meadowlark	*Sturnella neglecta*	0.3 ± 0.6			1.7 ± 2.1	
White-faced Ibis	*Plegadis chihi*	11.3 ± 19.6		1.3 ± 1.5		
Willet	*Catoptrophorus semipalmatus*	1.0 ± 1.0	3.0 ± 5.2			
Yellow-headed Blackbird	*Xanthocephalus xanthoceophalus*	1.0 ± 1.7	4.0 ± 1.7			

* abundance = # per kilometer

source: Bridgerland Audubon Society

Table 2. Bird Species Sighted and Abundance at the Cutler Reservoir Dam Transect, May 2002.

Common Name	Latin Name	May-02 Abundance*
American Goldfinch	*Carduelis tristis*	5.5 ± 2.1
Bank Swallow	*Riparia riparia*	0.5 ± 0.7
Barn Swallow	*Hirundo rustica*	0.5 ± 0.7
Black-billed Magpie	*Pica pica*	2.0 ± 0.0
Black-capped Chickadee	*Poecile atricapillus*	1.5 ± 0.7
Black-throated Grey Warbler	*Dendroica nigrescens*	3.0 ± 0.0
Blue-grey gnatcatcher	*Polioptila caerulea*	3.5 ± 0.7
Brewer's Sparrow	*Spizella breweri*	0.5 ± 0.7
Brown-headed Cowbird	*Molothrus ater*	8.0 ± 0.0
Bullock's Oriole	*Icterus bullockii*	0.5 ± 0.7
Chipping Sparrow	*Spizella passerina*	7.5 ± 2.1
Chukar (heard)	*Alectoris chukar*	--
Dusky Flycatcher	*Empidonax oberholseri*	1.0 ± 0.0
Grasshopper Sparrow	*Ammodramus savannarum*	1.0 ± 0.0
Green-tailed Towhee	*Pipilo chlorurus*	0.5 ± 0.7
Gull spp.	*Larus spp.*	32.5 ± 2.1
Hermit Thrush	*Catharus guttatus*	1.0 ± 0.0
House Finch	*Carpodacus mexicanus*	2.0 ± 1.4
Lark Sparrow	*Chondestes grammacus*	3.0 ± 1.4
Lazuli Bunting	*Passerina amoena*	5.0 ± 0.0
MacGillivray's Warbler	*Oporornis tolmiei*	0.5 ± 0.7
Mourning Dove	*Zenaida macroura*	3.0 ± 0.0
Rock Wren	*Salpinctes obsoletus*	1.0 ± 0.0
Spotted Towhee	*Pipilo maculatus*	0.5 ± 0.7
Vesper Sparrow	*Pooecetes gramineus*	1.0 ± 1.4
Violet-green Swallow	*Tachycineta thalassina*	0.5 ± 0.7
Warbling vireo	*Vireo gilvus*	1.0 ± 0.0
Western Meadowlark	*Sturnella neglecta*	3.5 ± 0.7
Western Tanager	*Piranga ludoviciana*	1.5 ± 2.1
Yellow Warbler	*Dendroica petechia*	0.5 ± 0.7

Abundance = # per kilometer

source: Bridgerland Audubon Society

Table 3. Bird Species Sighted and Abundance at the Cutler Reservoir, East Side Transect, May 2001-May 2002

Common Name	Latin Name	May-01	July-01	Sep-01	Nov-01	Jan-02	Mar-02	May-02
		Abundance*	Abundance	Abundance	Abundance	Abundance	Abundance	Abundance
American Avocet	*Recurvirostra americana*	35.7 ± 5.1	43.7 ± 21.2	0.3 ± 0.6				13 ± 1
American Coot	*Fulica americana*	26.7 ± 5.1	14.0 ± 7.8					57.7 ± 4.7
American Crow	*Corvus brachyrhynchos*	0.3 ± 0.6					0.3 ± 0.6	
American Magpie	*Pica hudsonia*			1.0 ± 1.7	1.0 ± 1.7	0.7 ± 1.2		0.3 ± 0.6
American White Pelican	*Pelecanus erythrorhynchos*	16.0 ± 3.5	7.3 ± 7.8	1.0 ± 1.0				33.3 ± 2.5
American Wigeon	*Anas americana*						0.3 ± 0.6	2.3 ± 4.0
Baird's Sandpiper	*Calidris bairdii*			8.7 ± 12.4				
Bald Eagle	*Haliaeetus leucocephalus*				0.3 ± 0.6	0.7 ± 0.6	1.3 ± 2.3	
Barn Swallow	*Hirundo rustica*		1.0 ± 1.7	4.0 ± 4.6				
Barrow's Goldeneye	*Bucephala islandica*						0.3 ± 0.6	
Black-crowned Night Heron	*Nycticorax nycticorax*		0.7 ± 1.2	2.3 ± 1.2				0.3 ± 0.6
Black-necked Stilt	*Himantopus mexicanus*	12.0 ± 2.6	18.0 ± 11.8					15.3 ± 11.9
Blue-winged Teal	*Anas discors*	3.7 ± 2.1	14.0 ± 6.2	0.7 ± 1.2				7.3 ± 8.5
Brown-headed Cowbird	*Molothrus ater*	3.7 ± 5.5	0.7 ± 1.2	6.0 ± 7.9				11.0 ± 16.5
Bufflehead	*Bucephala albeola*						2.0 ± 1.7	
California Gull	*Larus californicus*	10.0 ± 17.3	9.0 ± 13.9	16.3 ± 12.9	15.3 ± 24.8		94. 7 ± 79.6	5.0 ± 2.6
Canada Goose	*Branta canadensis*	14.7 ± 8.1	24.3 ± 29.1	93.0 ± 29.8	8.0 ± 13.8	0.3 ± 0.6	337.7 ± 31.6	167 ± 146.7
Canvasback	*Aythya valisineria*	0.7 ± 1.2						0.3 ± 0.6
Cattle Egret	*Bubulcus ibis*		2.0 ± 3.5					0.3 ± 0.6
Cinnamon Teal	*Anas cyanoptera*	7.7 ± 2.5	11.0 ± 1.0					12 ± 2.6
Clark's Grebe	*Aechmophorus clarkii*	2.0 ± 1.0	0.3 ± 0.6					2.3 ± 2.5
Cliff Swallow	*Petrochelidon pyrrhonota*	1.0 ± 1.0	0.7 ± 1.2					
Common Snipe	*Gallinago gallinago*	1.0 ± 1.0	0.3 ± 0.6	1.7 ± 2.1	1.0 ± 1.0			
Common Yellowthroat	*Geothylpis trichas*			0.3 ± 0.6				
Double-crested Cormorant	*Phalacrocorax auritus*	1.0 ± 1.0	0.3 ± 0.6	2.0 ± 0.0				0.3 ± 0.6
Duck		154.7 ± 39.9		297.0 ±161.0	2.0 ± 1.7		2.0 ± 17.2	
Eared Grebe	*Podiceps nigricollis*							0.3 ± 0.6
Forster's Tern	*Sterna forsteri*	0.3 ± 0.6						2.3 ± 1.5
Franklin's Gull	*Larus pipixcan*	14.7 ± 7.6	14.0 ± 7.8					271.0 ± 49.7
Gadwall	*Anas strepera*	4.3 ± 5.1	1.7 ± 2.1					10.3 ± 8.0
Great Blue Heron	*Ardea herodias*	1.7 ± 1.2	2.0 ± 0.0	3.0 ± 1.7			0.7 ± 0.6	1.7 ± 2.9

Green-winged Teal	*Anas crecca*	2.7 ± 1.2	5.7 ± 5.5					6.3 ± 5.1
Hawk		0.7 ± 1.2			0.7 ± 1.2	0.3 ± 0.6		
Killdeer	*Charadrius vociferus*	6.0 ± 3.5	5.7 ± 0.6	85.7 ± 18.0	2.0 ± 2.0		21.3 ± 31.9	1± 0
Lesser Yellowlegs	*Tringa flavipes*		3.0 ± 2.0	2.7 ± 2.9				
Mallard	*Anas platyrhynchos*	3.0 ± 3.5	4.3 ± 4.9	4.3 ± 4.5			10 ± 8	5.3 ± 1.2
Marbled Godwit	*Limosa fedoa*		3.3 ± 4.2					1.0 ± 1.7
Marsh Wren	*Cistothorus palustris*	8.7 ± 2.9	24.7 ± 6.6	8.9 ± 1.5	0.3 ± 0.6			20.0 ± 3.0
Northern Harrier	*Circus cyaneus*	2.3 ± 0.6	1.7 ± 0.6	1.0 ± 1.0		1.7 ± 1.2	3.3 ± 2.1	3 ± 1.7
Northern Rough-winged Swallow	*Stelfidopteryx serripennis*	0.3 ± 0.6	1.7 ± 2.9					
Northern Shoveler	*Anas clypeata*	6.0 ± 3.0	2.3 ± 2.5				1 ± 1.7	37 ± 17.1
Peregrine Falcon	*Falco peregrinus*			0.7 ± 0.6			0.3 ± 0.6	0.3 ± 0.6
Red Phalarope	*Phalaropus fulicaria*		23.7 ± 21.4					
Redhead	*Aythya americana*	9.3 ± 4.0	6.7 ± 5.8				2.3 ± 4.0	2 ± 1.7
Red-necked Phalarope	*Phalaropus lobatus*	1.0 ± 1.7						2.7 ± 3.8
Red-tailed Hawk	*Buteo jamaicensis*							0.3 ± 0.6
Red-winged Blackbird	*Agelais phoeniceus*	8.0 ± 1.0	4.3 ± 3.5	36.3 ± 62.1			10.3 ± 9.5	8.0 ± 5.6
Ring-necked Pheasant	*Phasianus colchicus*							0.3 ± 0.6
Rough-legged Hawk	*Buteo lagopus*						0.6 ± 1.2	
Ruddy Duck	*Oxyura jamaicensis*	4.3 ± 1.2						3.7 ± 4
Sandhill Crane	*Grus canadensis*	5.3 ± 5.8	5.0 ± 5.2	40.0 ± 42.5			10.7 ± 1.2	9 ± 3.5
Sandpiper		2.7 ± 2.3	0.3 ± 0.6	2.3 ± 3.2				
Savannah Sparrow	*Passerculus sandwichensis*	1.0 ± 1.0	2.0 ± 1.7	1.3 ± 1.5				6.0 ± 3.5
Semipalmated Plover	*Cahradrius semipalmatus*			0.7 ± 0.6				
Short-eared Owl	*Asio flammeus*							0.3 ± 0.6
Snowy Egret	*Egretta thula*	0.3 ± 0.6		9.3 ± 9.7				1 ± 1
Solitary Sandpiper	*Tringa solitaria*			0.3 ± 0.6				
Song Sparrow	*Melospiza melodia*		1.3 ± 0.6				0.3 ± 0.6	1.0 ± 1.0
Sora	*Porzana carolina*		0.7 ± 0.6	6.7 ± 2.3				
Sparrow		0.3 ± 0.6			0.7 ± 1.2			
Tree Swallow	*Tachycineta bicolor*							1.3 ± 2.3
Tundra Swan	*Cygnus columbianus*							38.3 ± 66.4
Turkey Vulture	*Carthates aura*	0.3 ± 0.6						
Vesper Sparrow	*Pooecetes gramineus*							0.3 ± 0.6

Violet-green Swallow	*Tachycineta thalassina*		0.3 ± 0.6	0.7 ± 1.2				1.3 ± 2.3
Virginia Rail	*Rallus limicola*			2.0 ± 1.0				
Western Kingbird	*Tyrannus verticalis*	0.3 ± 0.6						
Western Meadowlark	*Sturnella neglecta*	0.3 ± 0.6	0.3 ± 0.6		0.3 ± 0.6			0.7 ± 0.6
Western Sandpiper	*Calidris mauri*							4.0 ± 5.3
White-faced Ibis	*Plegadis chihi*	1.3 ± 1.5	4.0 ± 3.5	35.0 ± 59.8				125.7 ± 14.6
Willet	*Catoptrophorus semipalmatus*		0.3 ± 0.6					3.0 ± 2.6
Yellow-headed Blackbird	*Xanthocephalus xanthoceophalus*	9.7 ± 5.5	6.0 ± 2.6	1.0 ± 1.7				9.0 ± 4.0

*abundance = # per kilometer

source: Bridgerland Audubon Society