

# Church Universal and Triumphant

## Draft Supplement Environmental Impact Statement

Montana  
Department of Health  
and  
Environmental Sciences





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and  
Environmental Sciences**

**Draft Supplement  
Environmental Impact Statement**

**Church Universal  
and  
Triumphant  
  
Park County**

NOV 19 1992

**November, 1992**

In accordance with the Montana Environmental Policy Act, Section 75-1-101, et. seq., MCA and ARM 16.2.101, and the Montana laws regarding Public Water Supplies, Section 75-6-101, et seq., MCA and ARM 16.20.401, Food Establishments, Section 50-50-102, et. seq., MCA and ARM 16.10.3, Trailer Courts and Tourist Campgrounds, Section 50-52-101, et. seq., MCA and ARM 16.10.7, Work Camps, Section 50-52-102, et. seq., MCA and ARM 16.10.9, and Underground Storage Tanks, Section 75-11-201, et. seq., MCA, the following supplement environmental impact statement was prepared by the Department of Health and Environmental Sciences (DHES) with assistance from GeoResearch, Inc., Billings, MT, concerning a request for the approval of plans submitted to the DHES by the Church Universal and Triumphant, Corwin Springs, MT, in Park County.



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## **Chapter 1**

# **Description of the Proposed Actions**



## **1.0 CHAPTER 1 - DESCRIPTION OF THE PROPOSED ACTIONS**

### **1.1 Introduction**

The Department of Health and Environmental Sciences (DHES) is preparing this supplement environmental impact statement (SEIS) for the Church Universal and Triumphant's (the Church) proposed developments in Park County, Montana.

The proposed developments (depicted on **Map 1-1**) are:

1. Increase in occupancy at the East Gate Work Camp (for a more detailed description, reference p. 1-11),
2. Expansion to the development proposed at the Spring Creek Headquarters Site (for more detail, reference p. 1-14),
3. Reinstallation of underground fuel storage tanks at the Mol Heron Shelter Complex (for more detail, reference p. 1-16),
4. Expansion of the Golden Age Village mobile home park (for more detail, reference p. 1-17), and
5. Development of a public water supply system for a proposed community kitchen at an existing building in the Royal Teton Ranch - North (RTR-N) (for more detail, reference, p. 1-17).

A complete listing of the Church's development plans is included in Appendix D.

This SEIS incorporates all the material in the Draft EIS (DEIS - February 5, 1988), the Final EIS (FEIS - March 15, 1989), and any appropriate information associated with subsequent legal actions in the First Judicial District, Lewis and Clark County, Helena, and Sixth Judicial District, Park County, Livingston. The SEIS should be considered in conjunction with the previously referenced material.

### **1.2 Chronology - Need for this SEIS**

The DHES rules and regulations implementing the Montana Environmental Policy Act (MEPA) direct the department to prepare an environmental assessment (EA) on public water and sewer systems which are not reviewed under either the Sanitation in Subdivisions Act or the Tourist Campground and Trailer Court Act.

In the fall of 1986, after considering a preliminary environmental review (now called an EA) prepared for the proposed Church projects in the Corwin Springs area (collectively referred to as Royal Teton Ranch - South [RTR-S]), the DHES decided an EIS should be written to address the issues associated with the developments.

On December 18, 1986, the department held a scoping meeting in Gardiner to receive suggestions from groups and individuals concerning some of the important issues involved with the Church's proposals. Based on the information from the meeting and the DHES's review, a DEIS was written and distributed for comment on February 5, 1988.

A total of 600 copies of the draft were printed, with more than 300 sent to interested persons. The Church--which paid for the printing--reserved 200 copies for its members and provided copies to the public upon request. The remaining copies were distributed by the DHES. The draft was sent to public libraries throughout Park County and to the Bozeman Public Library. Additionally, copies were sent to the State Library in Helena and the university libraries at Montana State University (MSU), Bozeman and the University of Montana, Missoula.

A public hearing was held in Gardiner on March 21, 1988, for interested persons to comment on the DEIS. Written reviews were accepted by the DHES until April 21. Letters postmarked after that date were not considered by the department during its review.

The FEIS was mailed March 15, 1988. Four public interest groups and an individual filed suit on March 31, 1989, against the DHES in Helena district court claiming the DEIS and the FEIS did not meet the requirements of MEPA. Four days later the Church filed to intervene in behalf of the department. The court ultimately ruled in favor of the DHES.

Soon after the decision, it was learned the Church was building a fallout shelter near its conference site in the upper reaches of Mol Heron Creek. The facility reportedly would house about 750 persons. The DHES expressed concern that this proposal had not been mentioned to the department, thus was not part of the environmental review. The Church said the decision to build the shelter in the Mol Heron drainage occurred after the review.

Proposed developments on property owned or controlled by the Church near Emigrant, the construction of shelters by homeowners in the Glastonbury North and South (Glas-N and Glas-S) developments and the continued construction of the Mol Heron shelter prompted the DHES to consider doing a supplement to its original environmental review.

A scoping meeting for a possible supplement EIS (SEIS) was held Tuesday, April 10, 1990, in Gardiner. An estimated 700 to 800 people attended the nearly four-hour meeting. Also that day, the Church notified the DHES of a fuel leak at the Mol Heron shelter site.

On Thursday, April 12, department officials inspected the site, and within the next several days, the Church reported that additional leaks had been discovered and the petroleum release was more extensive than initially suspected. A thorough investigation revealed that three of the 35 underground fuel tanks ruptured and leaked around 33,000 gallons of diesel fuel and gasoline. Cleanup efforts began with the first reports of a leak. Due to the spill, the DHES filed suit against the Church in April. The suit was later amended to include the owners of fallout shelters in Glastonbury.

Later that summer the department announced the EIS would be reopened. Another scoping session was scheduled for October 15, 1990, in Livingston. About 100 persons attended the meeting. A period of negotiations between the DHES and the Church involving legal matters and the methods for proceeding with the environmental review, lasted for more than a year. The department and the Church signed a partial consent decree on October 18, 1991, which was later approved by the court. The agreement settled several key issues. The DHES agreed that the water and wastewater systems at the Mol Heron shelter are not "public" systems, and therefore would not require State review and approval. The Church agreed to do the following:

1. Establish a monitoring system that would make sure the underground shelter will not be used as a public system.
2. Pay a \$25,000 civil penalty for violations of the State's Water Quality Act, with an additional \$25,000 suspended as long as the Church complies with the cleanup procedures.
3. Reimburse the DHES for \$72,719 in remedial action costs incurred by the department as the result of the spill.
4. Pay part of the cost for producing the SEIS as required by the MCA and ARM.

Once the negotiations were settled, the department drafted a request for proposal (RFP). The RFP was sent to interested contractors. There was one response to the first RFP, and after being reviewed by the DHES, it was not accepted. A second RFP was prepared, with the department proposing to play a greater role in the preparation of the SEIS. This was sent out on February 3, 1992. Three responses were received by the DHES. Representatives from the Park County Commission, the Church and the department reviewed the proposals and rated them. GeoResearch, Inc. (the Consultant) of Billings was chosen. The Consultant signed the contract on April 22, 1992.

### **1.3 Summary Description of Church Properties and Activities**

#### **1.3.1 Status of DHES Permits and Authorizations**

The Church bought the Forbes Ranch in 1981. The property was purchased in the name of Royal Teton, Ltd. At that time the Church headquarters was in southern California. On July 3, 1986, the Church's international headquarters property was unexpectedly sold after an unsolicited inquiry and a brief period of negotiations. The sale agreement required the Church to vacate its facilities by December 15, 1986.

Shortly after completion of the sale, the decision was made, and plans announced to transfer the Church's headquarters to various locations on the Royal Teton Ranch. These plans required construction of a number of new buildings, in addition to

existing facilities, primarily in the vicinity of Corwin Springs. Due to the size and nature of several of these structures, some aspects required review and licensing by the DHES.

Applications were made to the DHES. Due to the scope of the proposals the department decided a MEPA environmental review was required. When the review was finished and the ensuing court decision rendered, the Church began submitting final plans and specifications for approval of the various proposed projects.

The status of the various actions addressed in the DEIS and FEIS, as well as the DHES approvals given prior to the RTR-S proposals which prompted the DEIS and FEIS (indicated by an [\*]), include:

**1.3.1.1 Royal Teton Ranch - South (Map 1-2)**

**Water Quality**

Approved

**1. Ranch Headquarters (Map 1-6)**

- a. Ranch Headquarters wastewater system #1\*
- b. Ranch Headquarters wastewater system #2
- c. Ranch Headquarters water system

June 1984

December 29, 1990

Under Final Review

**2. East Gate Work Camp (Map 1-4)**

- a. Wastewater system
- b. Water system

May 31, 1989

May 1, 1989

**3. Ranch Office (former Forbes Ranch) (Map 1-5)**

- a. Food Processing Plant Wastewater system (not a public system)
- b. Poultry Processing Facility (reference Royal Teton Ranch - North [RTR-N])

May 31, 1989

**4. Spring Creek (Map 1-3)**

- a. Water system
- b. Wastewater system

Under Review

Under Review

**Food Purveyor**

Type Units

- 1. Cinnabar General Store\*
- 2. The Ranch Kitchen\*

8 (Frozen Food Plant)  
 9 (Perishable Food Dealer)  
 1 (Eating Establishment)

**Public Accommodation**

Type Units

Cinnabar Campground\*

H1-14 (14 unit motel)

**Trailer Court/Campground/Work Camp**

Type Units

1. East Gate\* (Formerly Camp Mustang)

T1A-65 (65 unit RV park)  
T1B-20 (20 tent campsites)  
T1C-1 (1 cabin)  
T2-16 (16 unit trailer court)

2. Cinnabar Trailer Court and Camp\*

T1A-30 (30 unit RV park)  
T1B-30 (30 tent campsites)  
T2-11 (11 unit trailer court)

3. East Gate Work Camp\*

T3A-64 (64 unit work camp)

Also, the Food and Consumer Safety Bureau (F&CSB) has two work camp applications which were put on hold May 30, 1990. These are:

- 1. Ranch Office                      Work camp for 24 employees, modular housing
- 2. Ranch Headquarters      Work camp for 251 residents & day employees

Neither of these was approved since the water supply systems had not passed Water Quality Bureau (WQB) engineering approval. Then in May 1990 with the Mol Heron Creek issues, the applications were placed on indefinite hold by the DHES.

**1.3.1.2 Glastonbury North (Map 1-10)**

**Air Quality**

Approved

Air Quality Permit (Portable Gravel Crusher)

January, 1986

**Water Quality**

Golden Age Village\* (Map 1-12)

- a. Wastewater system
- b. Water system

August, 1986  
August, 1986

**Trailer Court/Campground/Work Camp**

Approved

Golden Age Village\*

T2-49 (49 unit trailer court)

### 1.3.1.3 Royal Teton Ranch - North (Map 1-8)

#### Water Quality

Approved

#### Poultry Processing Facility

Wastewater system (not a public system) - Moved to the RTR-N as part of a mitigation measure after the first environmental review.

January 2, 1990

### 1.3.1.4 Big Spur Campground (BSC) (Map 1-13)

#### Water Quality

Approved

#### Big Spur Campground\*

- a. Wastewater system
- b. Water system

December 22, 1986

December 22, 1986

#### Trailer Court/Campground/Work Camp

Type Units

#### Big Spur Campground

T1A-21 (21 unit RV park)

T2-19 (19 unit trailer court)

#### Food Purveyor

Type Units

#### Big Spur Campground\*

9 (Perishable Food Dealer)

### 1.3.2 Church Activities

The Church describes its main activities as: (1) Holding religious services, lectures, seminars and conferences, (2) publishing and distributing religious writings, art and audio and video productions, (3) servicing an international membership and affiliate Churches, (4) conducting a 12-week religious course of study for members, known as "Summit University," and (5) operating a private school (Kindergarten-12) for the children of staff and members.

Royal Teton, Ltd., was a wholly owned subsidiary of the Church. It was established in September 1981 and by 1986 included a total ownership in Park County of about 33,000 acres. At the end of 1986, Royal Teton, Ltd., was dissolved and the Church became the owner of all the properties.

Ranching on the entire Royal Teton Ranch (RTR-N and RTR-S) includes: (1) cattle and sheep ranching (currently a total of about 55 cows and 1,300 sheep, plus the annual leasing of pasture for approximately 375 cattle), (2) farming of about 3,000 irrigated acres with traditional crops of alfalfa, grass, barley, oats and wheat, (3) a produce farm of about 80 acres and two greenhouses, (4) poultry farming (currently

a total of about 12,000 chickens and 2,500 turkeys) and egg production (currently an 800-hen laying flock), (5) the Church is no longer engaged in dairy farming, (6) processing facilities for farm produce for private on-farm use, (7) a restaurant known as The Ranch Kitchen, with appurtenant campground known as the Cinnabar Campground, both open to the public, and two nearby mobile home parks campgrounds operated primarily for private staff housing, known as the East Gate (formerly Camp Mustang) and the Cinnabar Trailer Court, respectively, all located along U.S. Highway 89 at Corwin Springs, (8) a leased campground and mobile home park located 13 miles south of Livingston on Highway 89, known as the BSC, open to the public, (9) a planned residential community of approximately 4,500 acres located west of Highway 89 near Emigrant, known as the "Community of Glastonbury," together with a 49-unit mobile home park subdivision known as the Golden Age Village included therein, and (10) the maintaining of an in-house engineering and construction crew for farm and ranch projects and the planned Church facilities.

### **1.3.3 Church Property**

The Park County property includes a number of separate units located in the Paradise Valley between Livingston and Gardiner as follows.

#### **1.3.3.1 Royal Teton Ranch - South**

The property is approximately 12,000 acres. It is four miles north of Gardiner, mostly west of the Yellowstone River and Highway 89 (former Forbes Ranch) and adjacent to Corwin Springs. This includes the East Gate Work Camp, Spring Creek Church Headquarters, Ranch Office, Ranch Headquarters, Conference Site and Mol Heron Shelter.

#### **1.3.3.2 OTO Ranch Property**

The OTO Ranch is approximately 3,300 acres, eight miles north of Gardiner and three miles north of Corwin Springs, east of the Yellowstone River and Highway 89. The ranch was sold in its entirety to the Rocky Mountain Elk Foundation, which in turn transferred most or all of it to the U.S. Forest Service. The Church has leased back a 52-acre parcel adjoining U.S. Highway 89--which includes several buildings--until June 30, 1993. The uses of these leased buildings include preschool, residences, and fire engine storage.

#### **1.3.3.3 Mol Heron Conference/Shelter**

The Mol Heron Shelter Complex, including associated facilities, consists of approximately 13 acres adjacent to the conference grounds located in Section 9, Township 9 South, Range 7 East on the RTR-S. The complex consists of six nearly identical underground shelters, a central storage shelter, a livestock fallout shelter, outdoor storage units, grain bins and associated mechanical systems, roads, and fencing. The conference grounds consist of the tent sites, road system, parking areas,

three bridges, site utilities, walkways, designated camping areas, shower houses, and fencing.

#### **1.3.3.4 Royal Teton Ranch - North**

The RTR-N consists of approximately 15,000 acres, situated about 12 miles south of Livingston. Improvements include at least a dozen dwellings, barns, corrals, a feedlot, a large horse barn, numerous sprinkler irrigation systems, a shop, an office facility, fencing and other farm and ranch facilities. Activities include farming of hay, alfalfa, grain, and vegetable crops, cattle and sheep ranching, the raising and processing of poultry, a minor amount of timber harvesting, residential housing for staff and associated religious services, and a preschool and elementary school for the children of the Church staff.

#### **1.3.3.5 Glastonbury South**

Glastonbury South (Glas-S) (**Map 1-11**) consists of approximately 3,000 acres and is about 28 miles south of Livingston. Activities include a planned residential land division for members of the Church and the associated development of roads, electrical and telephone systems. Individual purchasers are responsible for the development of their own water and septic systems, residential dwellings, driveways, landscaping and appurtenant facilities (such as a garage or fallout shelter). The Glastonbury Administrative Office is at Glastonbury-South. This property also includes approximately 250 acres of irrigated farmland and 250 acres of rangeland retained by the Church that is currently in agricultural use on a leased basis.

#### **1.3.3.6 Glastonbury North**

Glastonbury North consists of approximately 1,500 acres, and is about 23 miles south of Livingston. Activities include a planned residential land division for members of the Church and the associated development of roads, electrical and telephone systems. Individual purchasers are responsible for the development of their own water and septic systems, residential dwellings, driveways, landscaping and appurtenant facilities (such as a garage or fallout shelter). Also located at Glastonbury-North is the Golden Age Village, a 49-lot mobile home park subdivision completed in 1988.

#### **1.3.3.7 The Former Royal Teton Ranch Dairy**

This property consists of approximately 40 acres, about 20 miles south of Livingston on the East River Road. Improvements consist of one mobile home dwelling, a dairy barn and associated corrals. Currently, there are no activities conducted on the property other than the residential use of the dwelling. Dairy farming ceased several years ago.

### **1.3.3.8 Other Locations**

There are no other Church properties owned in Park County that are not associated with one of the above locations. Currently leased properties include the following:

#### **Big Spur Campground**

The BSC consists of approximately 10 leased acres, and is about 13 miles south of Livingston on U.S. Highway 89. Trailer court licensing for the facility includes 19 mobile homes, 14 recreational vehicles and seven tent sites with service connections. Also included at the site is a general store, laundry, shower house, pool, playground, sewage lagoon (on a separate one-acre site/currently unused), manager's apartment and additional camping sites without service connections. One of the mobile home sites has been used to operate a small mobile community kitchen for Church staff housed at the facility.

#### **Livingston Industrial Park**

The park consists of 30 leased acres located 2 miles east of Livingston on the U.S. Highway 89 Business Loop. Activities include warehousing, outside storage, grain storage, maintenance, and miscellaneous activities related to the Church's agricultural, publishing, and construction operations.

#### **Livingston Railroad Yard**

Consists of portions of two railroad buildings inside the city limits of Livingston. Activities include publishing, distribution, data processing, warehousing, and related activities.

#### **Small Shop Building/Corwin Springs**

Consists of a small metal building approximately two miles north of Corwin Springs adjacent to the Yellowstone River. It is used as an auto maintenance shop.

#### **Student Housing/Glastonbury**

Extra housing for students attending Summit University is occasionally leased from landowners in Glastonbury on a quarterly basis.

### **1.3.3.9 Location Maps**

Amendments to the former location maps used in the FEIS and new maps covering additional facilities to be covered by the Supplement EIS were prepared by the Church. These include the following:

1. Royal Teton Ranch/Park County (Map 1-1/Rev. 92-3)
2. Royal Teton Ranch - South (Map 1-2/Rev. 92-3)
3. Spring Creek Church Headquarters (Map 1-3/Rev. 92-3)
4. East Gate Work Camp/Corwin Springs Area (Map 1-4, Rev. 89-2)
5. Ranch Office Area (Map 1-5, Rev. 89-2)
6. Ranch Headquarters Area (Map 1-6, Rev. 89-2)
7. Mol Heron Conference/Shelter Area (Map 1-7, Rev. 92-1)
8. Royal Teton Ranch North (Map 1-8, Rev. 92-1)
9. Community of Glastonbury (Map 1-9, Rev. 92-1)
10. Glastonbury North (Map 1-10, Rev. 92-1)
11. Glastonbury South (Map 1-11, Rev. 92-1)
12. Golden Age Village (Map 1-12, Rev. 92-1)
13. Big Spur Campground (Map 1-13, Rev. 92-1)

## **1.4 Proposed Actions**

### **1.4.1 Decisions To Be Made**

Due to a number of events that followed the department's first environmental review, the Church decided to submit additional proposals for DHES approval.

Montana law, in Section 75-6-112, Montana Code Annotated (MCA) requires that plans and specifications for water and wastewater systems serving 25 or more persons be reviewed for public health and engineering adequacy. Montana law further requires, in Section 75-11-201, MCA, the DHES to license underground storage tank (UST) installers and removers, establish requirements for inspectors and issue permits for installations, repairs or removals, and Section 75-10-405 MCA, specific design, construction, installation, and operation standards.

As a result of this SEIS, decisions will be made on each of the following permit applications:

#### **1.4.1.1. Royal Teton Ranch - South**

##### **Water Quality**

1. East Gate Work Camp - Expansion
  - a. Wastewater system
2. Spring Creek - Expansion
  - a. Wastewater system
  - b. Water system

## **Underground Storage Tanks**

Mol Heron Shelter Complex - Reinstallation of underground fuel storage tanks

### **1.4.1.2 Glastonbury North**

#### **Water Quality**

Golden Age Village - expansion

- a. Wastewater system
- b. Water system

### **1.4.1.3 Royal Teton Ranch - North**

#### **Water Quality**

Community kitchen for Church personnel

- a. Wastewater system
- b. Water system

The DHES's Water Quality Bureau (WQB) is reviewing engineering information on proposed public water and wastewater facilities, and the Solid and Hazardous Waste Bureau's (SHWB), UST Program is reviewing applications for licensing the reinstallation of fuel storage tanks at the Mol Heron site. Park County will be reviewing the private water and wastewater systems at the Mol Heron Shelter.

## **1.4.2 Description of the Proposed Actions and Related Development**

This SEIS discloses the impacts of the developments for which permits are being requested. The following summarizes the proposed development at each specific location. Tables 1-1 and 1-2 show existing and proposed development at these and other Church locations in comparison to what was presented in the DEIS and FEIS. Preliminary engineering reports for each permit application being reviewed by the Montana DHES are available for review at the department's offices in Helena and the Park County sanitarian's office in Livingston.

### **1.4.2.1 East Gate Work Camp**

The purpose of the permit application for the East Gate Work Camp Wastewater System is to provide for an increase in occupancy from 64 to 110 persons. The Church indicates the existing system is running well below design capacity and could meet the needs of an additional 46 persons without additional construction. Church officials indicated that no additional housing or other buildings are planned for this work camp. The existing parking spaces (approximately 49) are currently under-utilized and should be adequate. Residents at this facility generally work and take

Table 1-1  
Existing Church and Church Related Developments

	Homes/Cottages		Mobile/Modular Dwellings		Office Bldg.		School Bldg.		Church Bldg.		Fallout Shelters		Waste Capacity 2-1-02 (GPM)		Non-publie Septic Systems Capacity 2-1-02 (GPD)		Public Sewerage Systems Capacity 2-1-02 (GPD)		Other Structures		Acreage Developed		Occupancy (Residential)		
	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	Non-publie	Publie	(GPD)	(GPD)	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	DEIS'	2-1-02'	
A. East Gate	0	0	0	0	0	0	0	0	0	0	0	0	2-48 sq.	0	0	1-9048	0	0	0	0	0	5	0	0	62
B. Camp Mustang	1	1	8	8	13	8	5	10	0	0	0	0	1-85	1-6,750	1-UC	1-UC	0	0	3	3	8	8	58	57	
C. Chinaber	4	4	11	11	0	0	0	0	0	0	0	0	1-45	0	0	6-UC	0	0	4	4	10	10	40	42	
D. Ranch HQ	0	0	16	17	8	11	0	0	0	1	1	1-12 2-NP	1-35 1-90	0	0	1-9030 1-9900	0	0	3	8	15	15	114	198	
E. Ranch Office	2	2	6	4	7	7	0	0	0	0	0	0	1-25 1-50 1-90	1-1000 1-3000 1-400 1-3145	0	0	0	0	5	8	10	10	37	36	
F. Spring Creek	0	0	0	0	0	0	0	0	0	0	0	0	2-NP	0	0	0	0	0	0	0	0	0	0	0	
G. Other Areas RTR-3	2	5	0	4	0	0	0	0	0	0	0	1-8 1-15 2-10 1-25	0	1-1200 1-320 1-700 1-312 2-UC	0	0	0	5	10 2-OTO Loans	0	10	7	35	35	
H. Conference Site	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	1-5 1-22 1-6 2-24 1-13 1-30 1-14 1-90	1-12,000 (Campground)	0	0	0	N/A	2 (Shower Houses)	0	79-83	N/A	0	0	
I. Glassbury-South	N/A	2	N/A	1	N/A	1	N/A	0	N/A	0	0	0	2-10	3-UC	0	0	0	0	N/A	3	N/A	5	N/A	11 Staff	
J. Glassbury-North (incl. Gold as Age Village)	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	N/A	0	N/A	0 Staff 20 Students (Leased)	
K. Golden Age Village	N/A	1	N/A	49	N/A	0	N/A	1	N/A	1	0	0	1-10	1-1500 1-UC	1-1,700	0	0	N/A	3	N/A	21.7	N/A	10 Staff 37 Students & Residents		
L. Big Spur Trailer Court	N/A	1	N/A	19	N/A	0	N/A	0	N/A	0	0	0	1-32 1-46	0	1-8325 1-Unused Lagoons	0	0	N/A	2	N/A	12	N/A	119		
M. North Ranch Development	N/A	10	N/A	3	N/A	1	N/A	2	N/A	1	0	2-16 1-35 1-12 1-53 1-25 2-NP 1-26	0	1-3224 1-350 1-1255 1-160 1-890 8-UC	0	0	N/A	14	N/A	26	N/A	45			
N. RTR Dairy	N/A	0	N/A	1	N/A	0	N/A	0	N/A	0	0	1-12	0	1-UC	0	0	0	0	N/A	1	N/A	1	N/A	2	
O. Other-Church Owned Sites	N/A	0	N/A	0	N/A	2	N/A	0	N/A	0	0	1-12	0	1-1050 1-890	0	0	0	0	N/A	7	N/A	10	N/A	2	

Existing Development

\* DEIS covered only an area on RTR-8 within one mile of Yellowstone River with this data. Information given for 2-1-02 and DEIS covers entire RTR-5.  
 N/A = Not Applicable  
 NP = No Pump  
 UC = Unknown Capacity

Table 1-2  
Proposed Church and Church Related Developments

	House/Cottage		Mobile/Modular Dwellings		Office Bldg.		School Bldg.		Church Bldg.		Fallout Shelters 5-1-02		Well-Capacity 5-1-02 (GPD)		Non-publc Sewer Systems Capacity 5-1-02 (GPD)		Public Sewerage Systems Capacity 5-1-02 (GPD)		Other Structures		Acreage Developed		Occupancy (Residential) (In addition to Existing Occupancy)	
	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS	DEIS	SEIS
<b>Proposed Additions</b>																								
A. East Gate	0	0	9	Already Completed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	46
B. Camp Mustang	0	0	4	4	(12)	(7)	(6)	(10)	0	0	0	0	0	0	0	0	0	0	0	0	0	(16)	(16)	(2)
C. Chamber	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(2)
D. Ranch HQ	0	0	2	2	(6)	(6)	0	0	0	(1)	0	0	0	0	1	0	0	0	0	3	4	4	21	(80)
E. Ranch Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
F. Spring Creek	0	29 Apartment Structures Est.	45	36	14	16	10	15	1	2	0	0	0	0	0	0	0	0	0	3	10	60	75	264
G. Oular Areas RTR-5	1	2 (1 Already Completed)	0	2	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	3	3	1	3	4
H. Conference Site	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	2	0	7	0	0	0	N/A	2	2	N/A	1	N/A
I. Glassbury-South	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	0	N/A	0	N/A
J. Glassbury-North (See Including Oular Age Village)	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	0	N/A	0	N/A
K. Golden Age Village	N/A	0	N/A	(77) Lost	N/A	1	N/A	Several (6 Unknown)	N/A	1	0	0	2-146 Est. (Increase Existing)	0	0	0	0	0	N/A	0	0	N/A	0	0
L. Big Spur Trailer Court	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	0	N/A	0	0
M. North Ranch Development	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	1-15	0	0	0	0	0	N/A	0	0	N/A	1	N/A
N. RTR Dairy	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	0	N/A	0	N/A
O. Oular Church Owned Sites	N/A	0	N/A	0	N/A	0	N/A	0	N/A	0	0	0	0	0	0	0	0	0	N/A	0	0	N/A	0	N/A

\* DEIS covered only an area on RTR-5 within one mile of Yellowstone River. Information given for SEIS covers entire RTR-5. N/A = Not Applicable

their meals at other locations on Church property. The future increase in meals has been taken into account in the Engineer's Report for the Spring Creek Headquarters dining hall and water and sewage systems. According to Church officials, the proposed increase in the population at East Gate Work Camp will probably result in an increased traffic flow of approximately 20-25 trips per day. (Francis, Correspondence, 5-6-92).

#### **1.4.2.2 Spring Creek Headquarters Expansion**

The Spring Creek potable water supply system and sewage treatment system are designed to serve the future headquarters of the Church. The facilities served will include the Church's preschool, elementary school and high school (faculty and students), chapel, dining hall/community center, Church office buildings, staff, student and visitor housing, laundry facilities, Summit University (faculty and students), a publishing facility, a gymnasium/swimming pool complex, visitor facilities, and the community's volunteer fire department.

This development was reviewed in the DEIS and FEIS, but at a smaller scale. The current application presents the details of the modifications necessary to provide for more housing, a larger chapel, an eventual move of the organization's publishing facilities and staff from Livingston to the site, and a corresponding increase in the size of the water and sewage treatment systems, including the addition of a 25 percent reserve capacity to accommodate future expansion. A wastewater lagoon system and storage pond will be constructed, and treated water will be used for sprinkler irrigation. The size of the planned development area in the FEIS was approximately 60 acres. The size of the proposed development in the SEIS has been increased to approximately 75 acres. Additional area will be occupied by the wastewater lagoon and water storage pond.

The Church will be applying for a ground water appropriation for the domestic water supply and work camp licensure. In addition, the planned use of LaDuke Hot Spring water for heating and flow-through pool use will be the subject of separate applications to other state and federal agencies.

Anticipated use of the Spring Creek Headquarters is presented in Table 1-3. Approximately 500 people will reside at the Church's headquarters. Day use calls for approximately 519 staff, including residents, plus approximately 550 students at peak. The number of members and visitors attending Church services and Sunday school is estimated at 2,500 during average peak days, which usually coincide with quarterly conferences or holiday events. An additional 25 percent reserve capacity has been included in the total peak design flow volumes to accommodate future growth of the Church's headquarters, including residential and day use.

Due to the scope, diversity and anticipated cost of the infrastructure and facilities planned for the Church headquarters, the construction activities will continue on and off for a number of years. The initial period of construction to install and substantially complete the site infrastructure is expected to last approximately 12 to

**Table 1-3  
Spring Creek Peak Design Flow**

<b>Building/Water Use</b>	<b>Population Served</b>	<b>Design Demand (GPCD)<sup>(2)</sup></b>	<b>Flows (GPD)</b>
Staff, Student and Visitor Housing	500	50	25,000
Offices / Church Staff	200	16	3,200
Dining Hall / Community Center Staff	60	16	960
Dining Hall Meals	6,000 <sup>(3)</sup>	5	30,000
Laundry	125 <sup>(4)</sup>	30 <sup>(5)</sup>	3,750
Preschool Faculty	40	16	640
Preschool Students	170	16	2,720
Elementary / High School Faculty	30	21 <sup>(6)</sup>	630
Elementary / High School Students	180	21 <sup>(6)</sup>	3,780
Summit University Faculty	10	16	160
Summit University Students	200	16	3,200
Chapel Seats and Sunday School	2,500	5	12,500
Chapel Staff	20	16	320
Publishing Facility	150	16	2,400
Gymnasium / Pool / Locker Rooms	600 <sup>(6)</sup>	11	6,600
Volunteer Fire Department	2	16	32
Visitor Center	7	16	112
25% Reserve for Future Expansion			23,996
<b>TOTAL PEAK DESIGN FLOW</b>			<b>120,000</b>

- (1) Site irrigation is not included in this table. A separate system utilizing reclaimed water and/or existing surface water rights will be used to irrigate all grounds and landscaping.
- (2) The value for the daily design demand is taken from Table 30-1 of the MDHES Circular 84-10 and from Tables 4-6 and 4-8 or Onsite Wastewater System Treatment and Disposal, EPA Design Manual, October 1980, except as noted.
- (3) The quantity of meals served is a maximum based on attendance at the Church's quarterly conferences and other occasional events which could fill all of the chapel seats.
- (4) The average daily flow generated by washing laundry is based on a conservative estimate of 1 load per person approximately every fourth day, including children.
- (5) Design demand is the average volume of water used for one cycle of washing and rinsing by most 12 lb-capacity top loading automatic washing machines that will most likely be used at Spring Creek.
- (6) The number of persons using the planned gymnasium/pool complex is based upon an average use of twice per week by community residents plus day-use by members and visitors. Elementary and high school student and faculty use of the gymnasium on a daily basis for the school sports program is included under the figures for students and faculty day-use.

18 months. This will be the period during which earthmoving machinery will be present and the most land disturbed. Upon the conclusion of this phase, much of the site will be restored and re-vegetated, except for specific building sites scheduled for construction. The priority for the installation or construction of the individual buildings on the site has not been definitely determined. However, based on the immediate needs of the community, it is anticipated that the school, housing, chapel and community center will rank high on the priority list for completion. A number of the modular buildings that will comprise the school are already stored at the site, and the construction of selected buildings could occur simultaneously with construction of the infrastructure. (Francis, Correspondence, 5-6-92, and Preliminary Engineer's Report - Spring Creek Headquarters, 11-30-91)

### **1.4.2.3 Mol Heron Shelter Complex**

The Church has filed an application for permit to install eight new double-walled steel USTs with tertiary containment and underground double-wall fiberglass piping with duplicative methods of release detection at the Mol Heron Shelter Complex. These eight storage tanks each have a capacity of 30,000 gallons and are intended to store #2 diesel fuel.

As described in the Chronology, the Mol Heron Shelter Complex has been essentially completed with the exception of wastewater systems and fuel storage tank installation, actions which will require approval prior to installation. The wastewater systems will be reviewed by Park County; the UST installations are reviewed by DHES.

The fallout shelter site consists of approximately 13 acres of land. This area, and the area used for the staging of equipment and materials, was disturbed (i.e., surface vegetation removed and/or soils excavated or graded) during construction of the fallout shelters and related facilities, including the original underground tanks and piping. The original underground tanks have since been removed and are being stored at the warehouse and yard facilities in Livingston.

Reclamation work from the original shelter construction is more than 95 percent complete. Additional localized disturbances will be required for installation of the new underground fuel tanks and piping, the on-site septic systems and any associated site work (i.e. access, recontouring, landscaping, fencing, etc.). It is anticipated that these additional disturbances would be fully restored and replanted within six months to one year after all permits and approvals are received.

The Church plans to use the facility only for its lawful use as a single-purpose fallout shelter. There are no current plans for expansion. Under the "Agreement for Fallout Shelter Water Supply and Sewage Systems," the water supply and sewage systems will not be designated or used as public. They will therefore be permitted as private systems by the county.

Maintenance needs will likely include periodically inspecting, operating and performing preventive maintenance on life support systems to ensure reliability, monitoring shelter and storage areas for vermin, water seepage, condensation, rust, corrosion deterioration, etc. and taking necessary corrective action, monitoring food and other supplies for fitness and exchanging where necessary, landscape irrigation, maintenance, and repairs. (Francis, Correspondence, 5-6-92, and Permit Application, 12-16-91)

#### **1.4.2.4 Golden Age Village**

The purpose of permit applications for water and wastewater systems at the Golden Age Village is to allow for proposed expansion of the existing mobile home park and related facilities at Glastonbury North. Future plans for this development include the addition of 77 mobile home lots in an area east of and adjacent to the existing Golden Age Village mobile home development of 49 lots, together with an expansion of additional related facilities. As indicated in Table 1-4, the additional facilities may include a maintenance/garage facility, expanded administrative offices, a new chapel/meeting hall of up to 500 seats, a new school of up to 350 students and faculty, and new community center, general store, playgrounds, athletic fields, community gardens and other community-related facilities, although no specific plans presently exist. A preliminary schematic developed for the Thomas More School in 1989 is included as Figure 1-1.

The existing wells will be pumped at a higher capacity by the installation of larger pumps. The existing water reservoir will be adequate. The water supply piping will be extended. A sewage collector system will be installed and sewage will be treated in a package plant. Treated water will be disposed in infiltration trenches.

The proposed development represents an increase of approximately 66 acres. The existing development occupies approximately 22 acres. The total area to be disturbed by the construction activities for the installation of the sewage treatment and disposal system is about five acres. The disturbance area for the installation of piping for water supply and sewer collection will be in addition to the five acres.

The construction activities required to complete the development for 77 lots in Golden Age Village is estimated at 9 to 12 months from the start of construction. Additional construction will occur on each lot as mobile homes are installed. No specific plans exist yet for constructing the chapel, school and related facilities. (Francis, Correspondence, 5-6-92, and Preliminary Engineer's Report, Golden Age Village, 11-30-91)

#### **1.4.2.5 Community Kitchen - North Ranch Blue House**

The DHES must review the plans and specifications for the new water system and existing wastewater system serving the proposed community kitchen (referred to as the North Ranch Blue House) and decide whether they are either public or

**Table 1-4  
Golden Age Village Phase II Peak Design Flows**

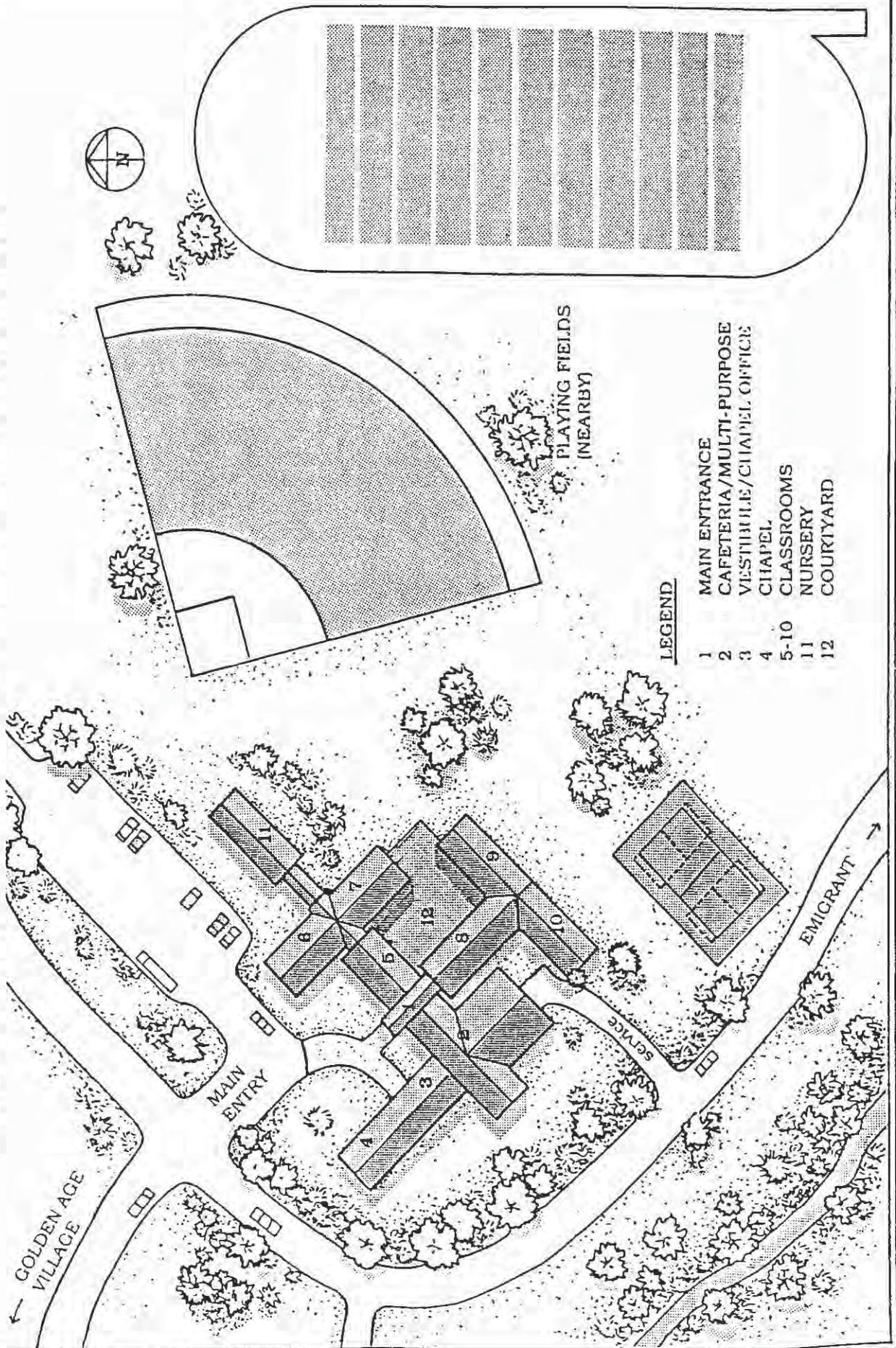
<b>Building/Water Use</b>	<b>Population/ Units Served</b>	<b>Design Demand (GPCD)</b>	<b>Flows (GPD)</b>
<b>Existing System As Approved</b>			
Single Family Residences (Lots)	49	280 <sup>(1)</sup>	13,720
Landscape Irrigation (Lots)	49	480 <sup>(2)</sup>	23,520
Chapel / Meeting Hall	120	3	360
Office Facility	10	15	150
Pre-School	20	15	300
Maintenance / Garage	5	15	75
<b>Existing Design Flows</b>			<b>38,125</b>
<b>Added Flows In Phase II Expansion</b>			
Single Family Residences (Lots)	77	280 <sup>(1)</sup>	21,560
Landscape Irrigation (Lots)	77	480 <sup>(2)</sup>	36,960
Chapel / Meeting Hall	500	5	2,500
School (Students and Faculty)	350	21	7,350
Maintenance / Garage	5	16	80
Office Facility	5	16	80
Reserve Capacity for Addition of Community Center, General Store and Other Related Facili- ties			8,345
<b>Phase II Expansion Additional Flows</b>			<b>76,875</b>
<b>TOTAL PEAK DESIGN FLOWS</b>			<b>115,000</b>

(1) The design demand figure is derived from an average of 2.8 people per single family residence multiplied by a per capita water use of 100 gpd.

(2) The design demand for irrigation is based on an average irrigable land per lot of 3600 ft<sup>2</sup> and an average weekly application rate of 1.5 in. (3600 ft<sup>2</sup>/lot x 1.5 in. x 1 ft/12 in. x 7.48 gal/ft<sup>3</sup> x 1 wk/7 day = 480 gpd/lot)

Figure 1-1

# THOMAS MORE SCHOOL~CHAPEL~COMMUNITY CENTER



Source: Thomas More Center Planning Committee. Correspondence, 9 July 1989.

private systems. Public systems are reviewed by the department, while private systems are reviewed by the county.

The water supply system, which currently provides water to the house and the mobile home, is a residential system, which predates the Church's ownership of the property. This system is proposed to be replaced by a completely new, more reliable system consisting of a well and water supply line. At present the sewage treatment system daily serves five Blue House residents and a family of four that lives in the single-family mobile home located next to the Blue House. The system will daily serve an additional four kitchen employees once food preparation activities begin.

The system will regularly serve 13 people in addition to the preparation of 85 meals a day for the approximately 36 ranch staff. Meals will be prepared in the Blue House kitchen and then transported to various locations on the North Ranch to accommodate the staff's schedules and work priorities. Many North Ranch staff maintain irregular schedules in the fields and must eat at or close to their work location. Therefore, the Church maintains that the existing sewage treatment system and the proposed new potable water supply system would be non-public since they would serve less than 25 people each day (in accordance with ARM 16.20.401)

The number of persons expected to occupy this site remains unchanged since the kitchen workers reside elsewhere.

The wastewater system is planned to remain unchanged. The water system will include a new well located approximately 400 feet from the kitchen. The new disturbance as a result of the construction of this well will be less than one acre. The construction of a new well, installation of a supply main and completion of the water system is estimated to require approximately four to six weeks. (Francis, Correspondence, 5-6-92, and Preliminary Engineer's Report, North Ranch Blue House, 10-31-91)

### **1.4.3 Scope of the Proposed Action**

The scope of the analysis considered in this SEIS reflects public involvement from two scoping sessions held on April 10, 1990, in Gardiner and on October 15, 1990, in Livingston. As a result of this public participation, the geographic scope of the SEIS was generally expanded to include all of the properties owned or leased by the Church in Livingston and south to the border of Yellowstone National Park.

The geographic scope of analysis varies by resource topic--water, air, wildlife, etc., and by type of impact--primary, secondary, or cumulative. Primary effects are caused by the action and occur at the same time and place. (federal definition - 40 CFR 1508) Secondary impacts are further impacts to the human environment that may be stimulated or induced by or otherwise result from a direct (primary) impact. Cumulative impacts are the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions

related to the proposed action by location or generic type. (Health and Environmental Sciences - Procedural Rules 16.2.625)

#### **1.4.3.1 Scope of Primary Impacts**

Generally for this SEIS, the analysis of primary impacts will be limited to the proposed development areas described above. When analysis of primary impacts extends beyond that general area for a specific resource topic, a description of the geographic scope of analysis will precede the discussion of impacts.

#### **1.4.3.2 Scope of Secondary Impacts**

The geographic scope of secondary impacts analysis is more likely to change by resource topic. Secondary impacts to water resources, for example, are those that occur downstream and later in time. Another example is the geographic scope of distribution of employment; some employees at proposed developments may require housing at another Church-owned site, elsewhere in the county or in the City of Livingston.

#### **1.4.3.3 Scope of Cumulative Impacts**

Geographic scope of cumulative impacts will include all of the properties owned or leased by the Church in Livingston and south to the border of Yellowstone National Park. The Park County planner has indicated that no other major growth-inducing operations are projected for the reasonably foreseeable future in this geographic area (Personal Communication 5-14-92). Consequently, other major developments are not considered in the cumulative effects analysis. However, it is possible that a growing trend for rural residences (Livingston Enterprise, 3-31-92, "Census Shows Need for Planning") will continue and possibly increase. This trend will be considered in the general analysis of cumulative impacts.

The time frame for cumulative analysis includes past, present and potential future actions. This approach has been adopted in response to public concern about future activities of the Church, and in order to adequately address the DHES criteria for determining the significance of impacts. DHES is required to consider "any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions" (DHES Procedural Rules, 16.2.627 (f)). This cannot be done without examining the reasonably foreseeable future actions of the Church. Therefore, cumulative effects analysis will take into account potential future actions of the Church.

Future actions typically considered in an EIS would be those outlined in the developer's master plan for the property. The Church does not have a master plan for future Park County development other than what is described in this SEIS document. The Church has stated that it can "list only those development plans that are presently known or contemplated" (Correspondence from E. Francis to T.

Ellerhoff, 3-24-92). The developments known to the Church as of March 24, 1992, are included in Appendix D. Edward Francis, Vice President and Business Manager of the Church, has stated that "I cannot guarantee that this listing will remain valid for 5-20 years, or even for one year. We do not generally plan things as government agencies do...."

Park County does not have a Master Plan that would provide a framework for future Church or other development in areas outside of the planning area for the City of Livingston.

Given that neither the Church nor the county has plans that would limit future growth, the preparers of this SEIS were forced to make certain assumptions as a framework for cumulative effects analysis. These assumptions are:

- The Church will continue to grow.
- Development will come in incremental stages, and will include new construction and the upgrading of temporary facilities to permanent facilities.
- Development will include residential and commercial operations.
- In the absence of county master plan requirements to manage growth and control development, the Church's growth potential is virtually unlimited.

1. The Church will continue to grow. The Church has a history of growth evidenced by:

- current proposals for development (i.e, the current proposal for Spring Creek Headquarters doubles the number of residents proposed in the 1988 EIS),
- provisions for expansion (i.e., 25% expansion capability at the proposed Spring Creek Headquarters site),
- participation at the annual summer conference has grown from approximately 2,000 in 1982 to nearly 4,700 in 1988. Attendance for 1992 was approximately 4,200. Attendance for future years is expected by the Church to run from 4,000 to 6,000.

2. Development will come in incremental stages. As growth occurs, new facilities will be required. Even without additional growth, temporary facilities, such as the conference tents and facilities, may no longer be adequate or will be determined to be more costly over the long-run than permanent structures. At each new stage of development, applications for state permits could require environmental review. At each stage of development, the possibility exists for baseline environmental conditions to be altered.

3. Development will include residential and commercial-type operations. Residential development includes clustered developments, such as the Golden Age Village, and East Gate Work Camp, and dispersed individual residences, such as the lots at the Glastonbury properties and the addition of individual homes on RTR-S (Francis, Correspondence 3-24-92). There are no limits to the number of structures the Church can place on its own property as long as the Church meets county septic requirements, which include among other criteria a minimum of one acre per residence.

Commercial operations include those operated directly by the Church on a nonprofit basis such as Summit University Press, and those of affiliated entities, such as the Ranch Kitchen restaurant and Cinnabar General Store operated by Lanello Reserves, Inc. As membership and residential growth continue to occur, it is reasonable to assume that associated businesses will also grow. Since the Church purports a self-sustaining life style, it is also reasonable to assume that commercial operations will be developed close to other existing or proposed Church developments. The plan to move the publishing facility from Livingston to Spring Creek Headquarters is an example of this development philosophy. The covenants for the Community of Glastonbury clarify that the "Community of Glastonbury should be a predominately rural/residential community" (Section 5.08), but also make specific provisions for commercial activities. Under the covenants, the Church "may formally establish a commercial area of the Community where space is available for rent, lease or purchase for commercial or industrial usage--and correspondingly substantially limit commercial activity throughout the rest of the residential portions of the Community". (Section 5.08.j) Lands that would be available for such development include unsold lots, lands reserved by the Church and common use lands now used by the Community for recreational purposes. (Section 7.01.i)

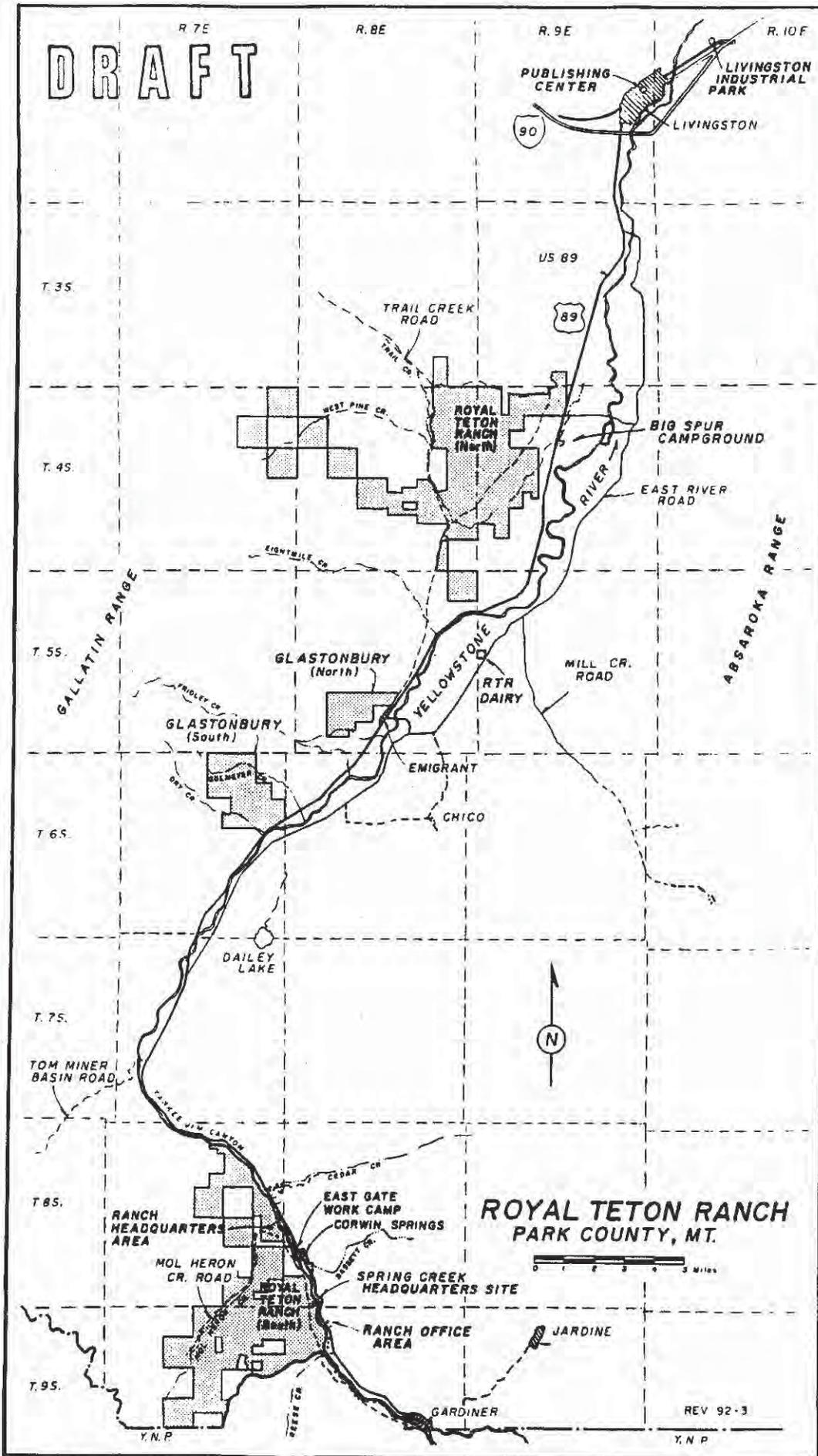
4. The Church's growth potential is virtually unlimited. Each county in the State of Montana is empowered to enact a comprehensive plan that can be used as a tool to manage and control growth. Park County does not have such a plan. Residential building permits are only required within a designated area surrounding Livingston. The State Department of Commerce - Building Codes Bureau requires building permits for residential development of six kitchen units or more, and for any other structure except those required for the operation of a farm or ranch. The permits are reviewed and approved according to the safety and construction standards of the State's Uniform Building Codes. These Codes were amended in 1991 to require building permits for community fallout shelters (Appendix 57 of the Uniform Building Code of the State of Montana). The building permits are primarily intended for safe construction and are not intended as growth management mechanisms. Therefore, the primary growth management controls are the county's adopted subdivision regulations (which only apply to subdivision of lots less than 20 acres), county septic regulations and flood plain construction regulations. (Park County Planner, personal communication 6-8-92)

The Church states that it uses development guidelines (FEIS-16). These guidelines are summarized below:

1. Housing and work areas are to be cluster-type developments.
2. Retain the maximum amount of valuable land in agricultural usage and maintain current levels of farming and ranching.
3. Avoid development in areas of flooding or instability.
4. Minimize visual impacts.
5. Avoid changes to the predominately rural character of the ranch.
6. Preserve wildlife populations and key habitats.
7. Minimize traffic flows.
8. Minimize dependence on and impacts to county services by developing in-house capabilities for schooling, garbage collection and disposal, group transportation, fire control and emergency medical response for ranch residents.

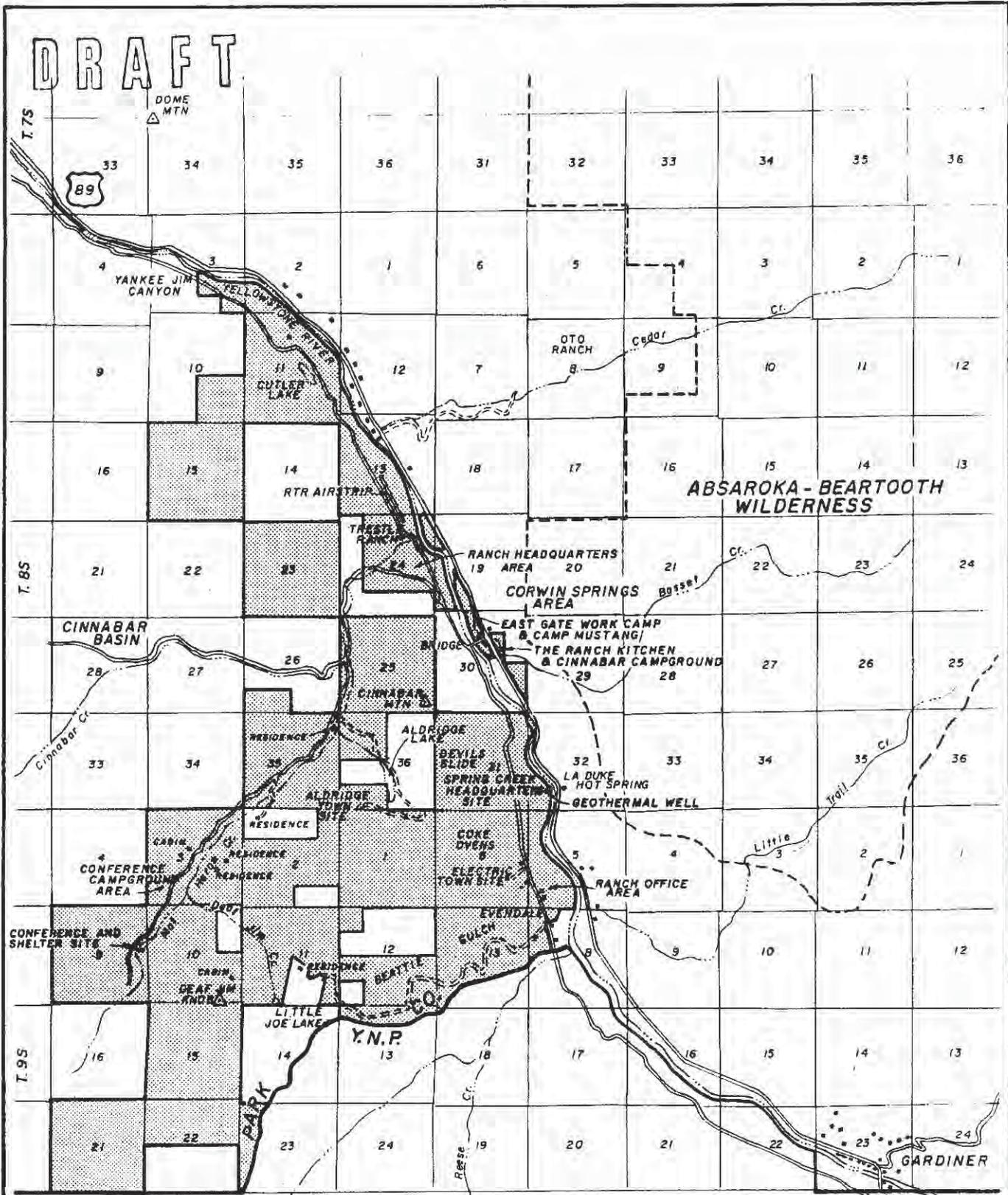
Chapter 3 of this SEIS provides a general assessment of historical Church development under these guidelines. These guidelines present a framework for future growth management, but do not limit growth. Since the Church established its headquarters in Park County in the early 1980s, it has demonstrated its ability to develop Church property and associated businesses at a rate at least as fast as other businesses in Park County. Based on the Church's development plans as outlined in their proposed actions, it is probable that such growth will continue.

Map 1-1



Map 1-2

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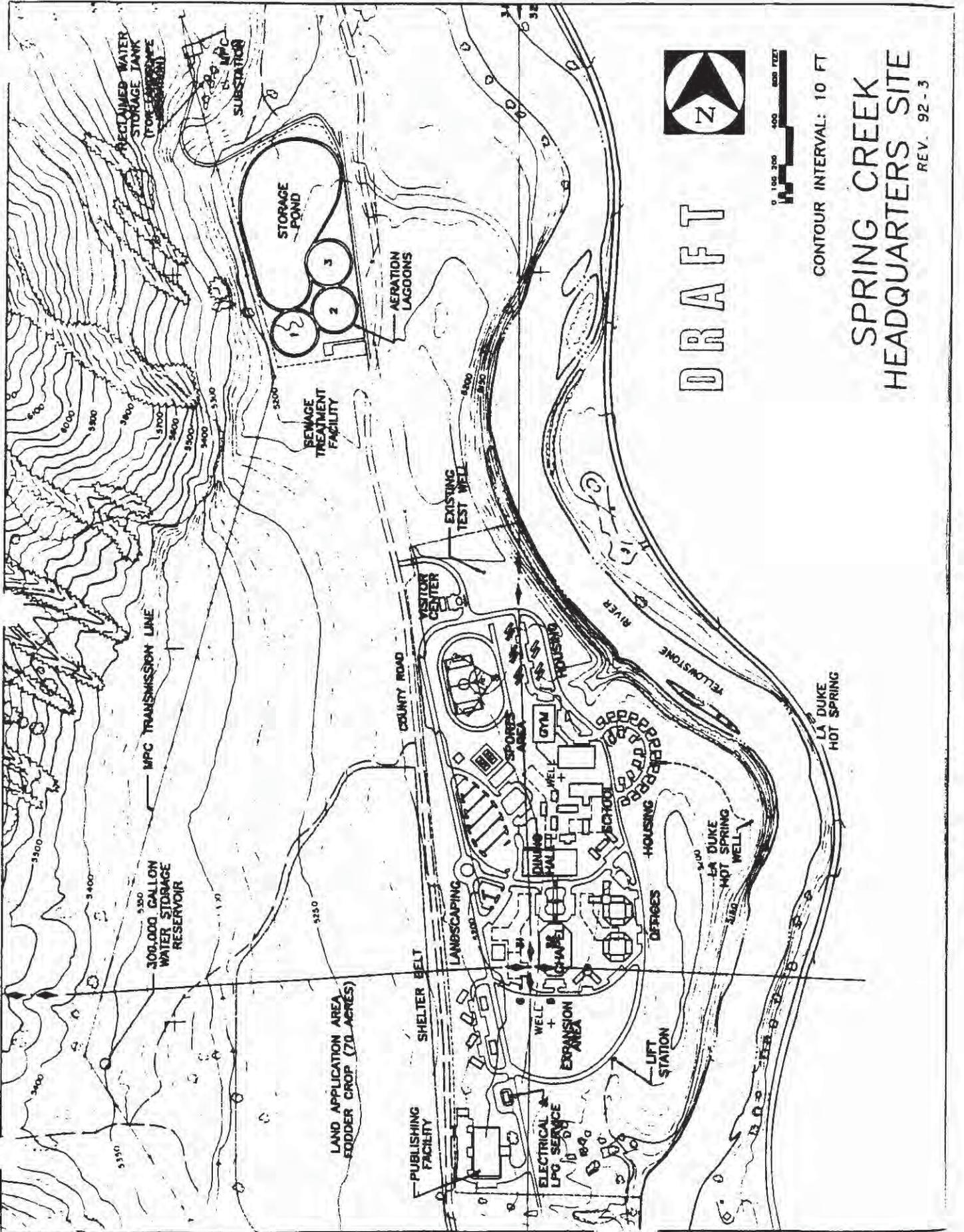


ROYAL TETON RANCH - SOUTH

0 1/4 1/2 1 2 4 MILES



Map 1-3

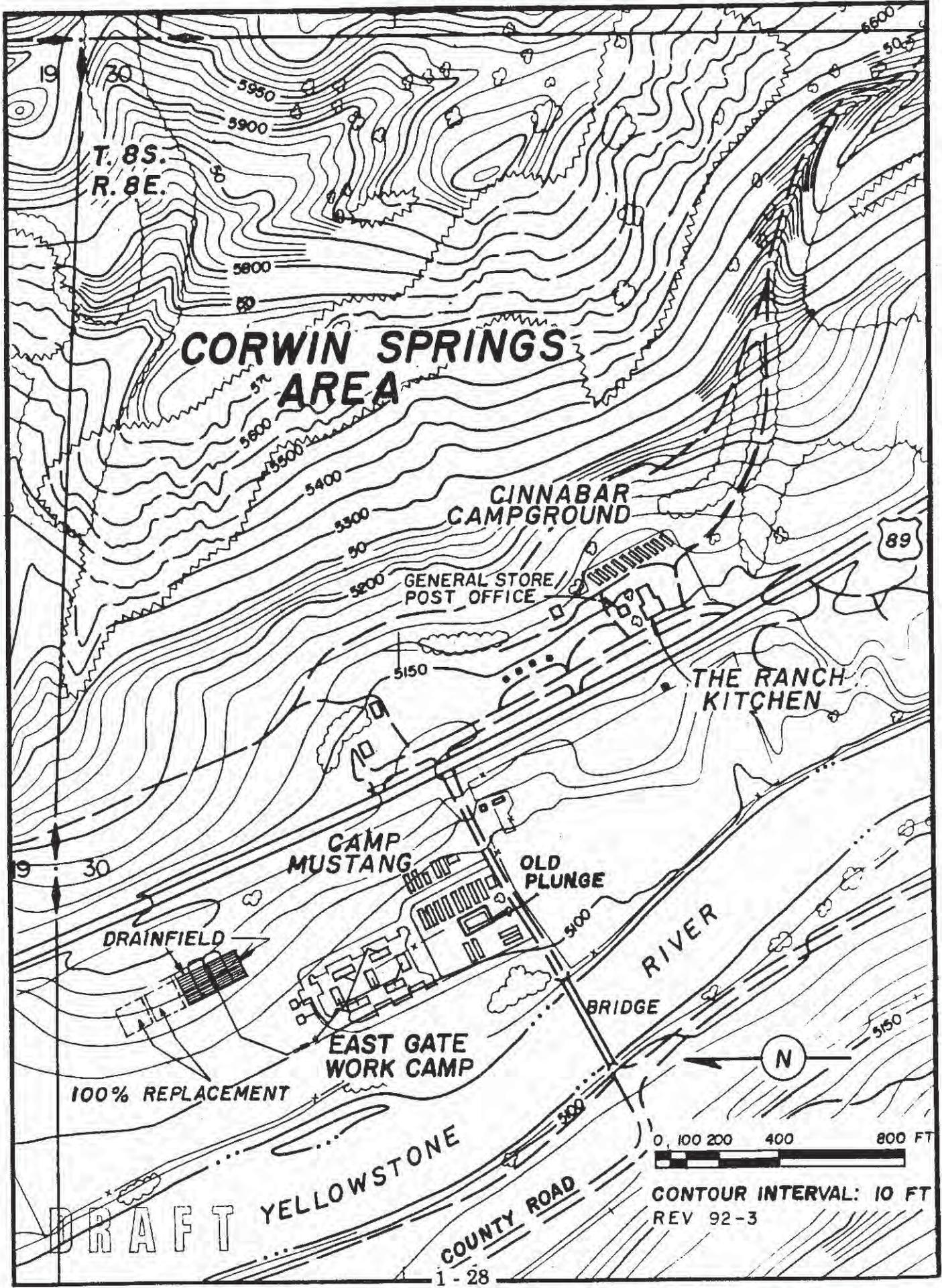


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CONTOUR INTERVAL: 10 FT

SPRING CREEK  
HEADQUARTERS SITE  
REV. 92-3

Map 1-4

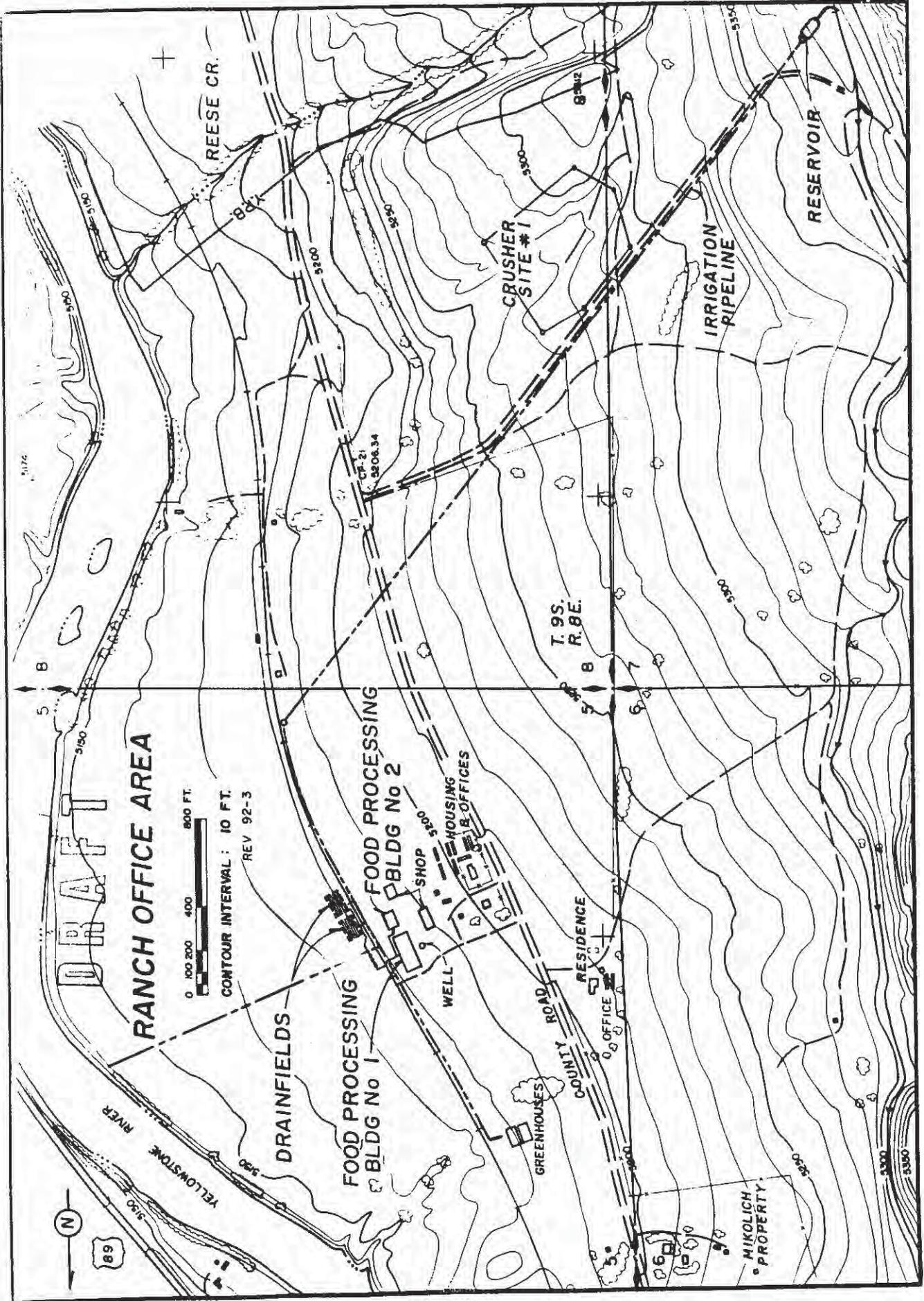


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COUNTY ROAD

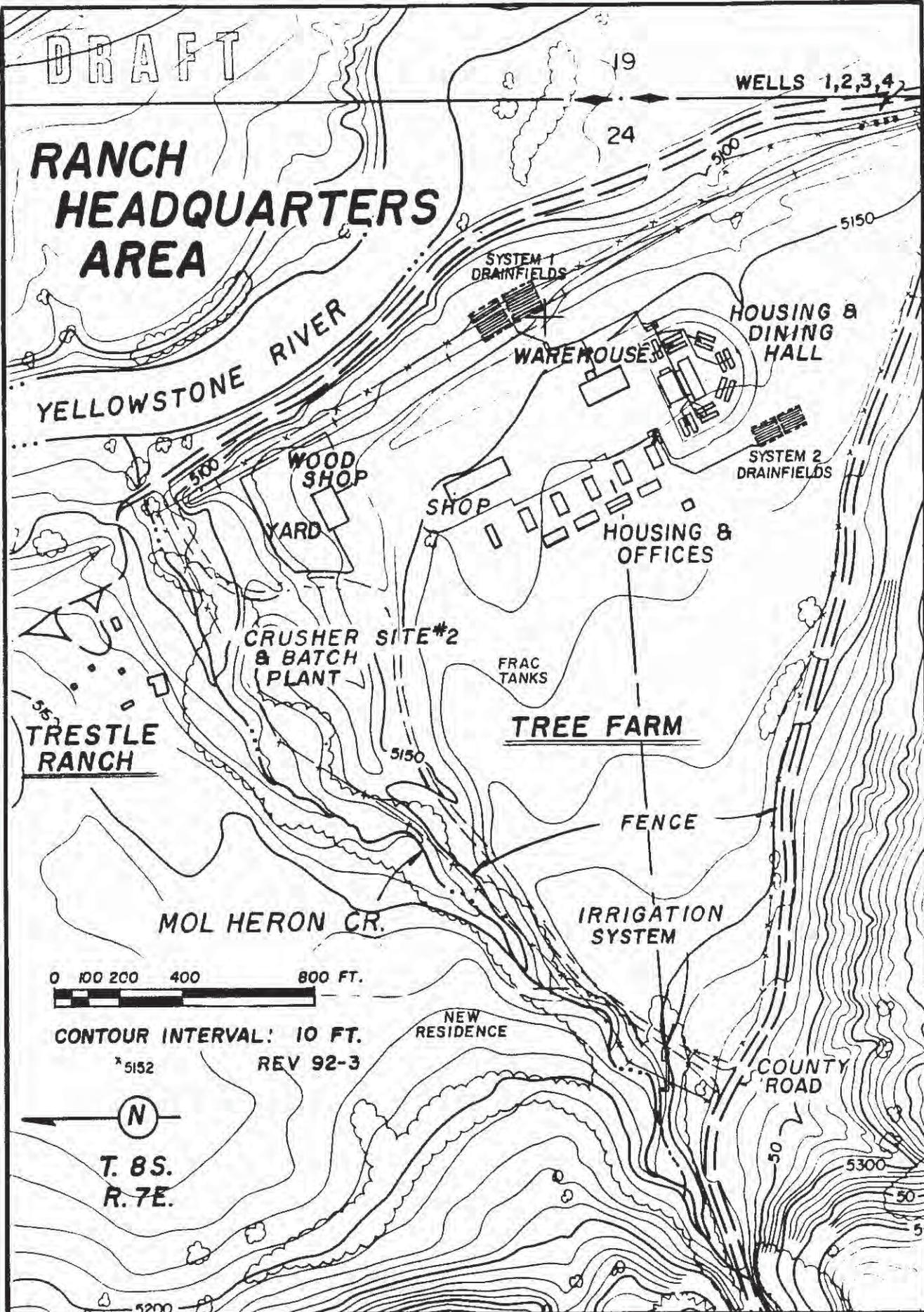
CONTOUR INTERVAL: 10 FT  
REV 92-3

Map 1-5



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# RANCH HEADQUARTERS AREA



0 100 200 400 800 FT.

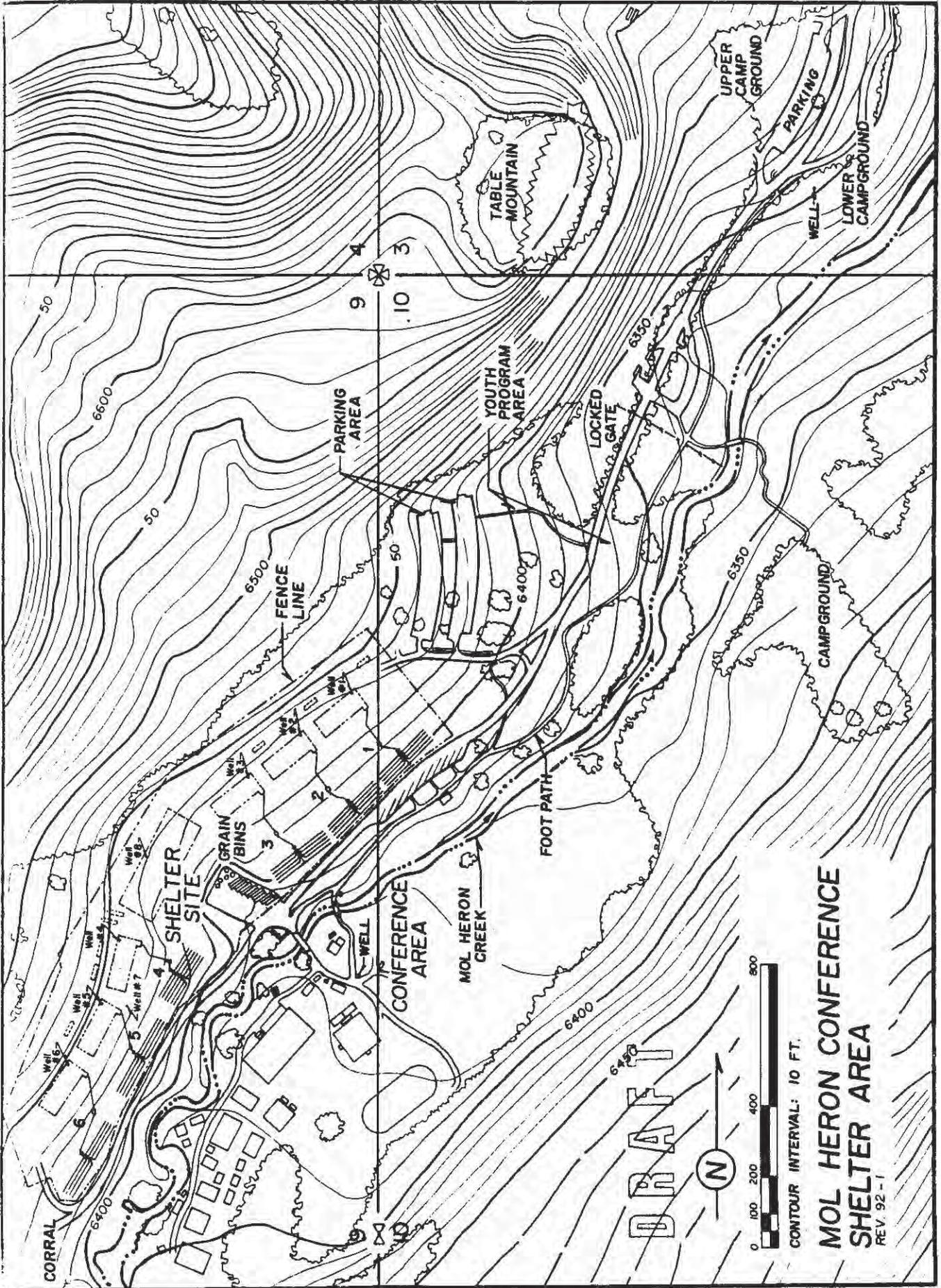
CONTOUR INTERVAL: 10 FT.

REV 92-3

\* 5152

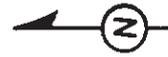
T. 8 S.  
R. 7 E.

Map 1-7

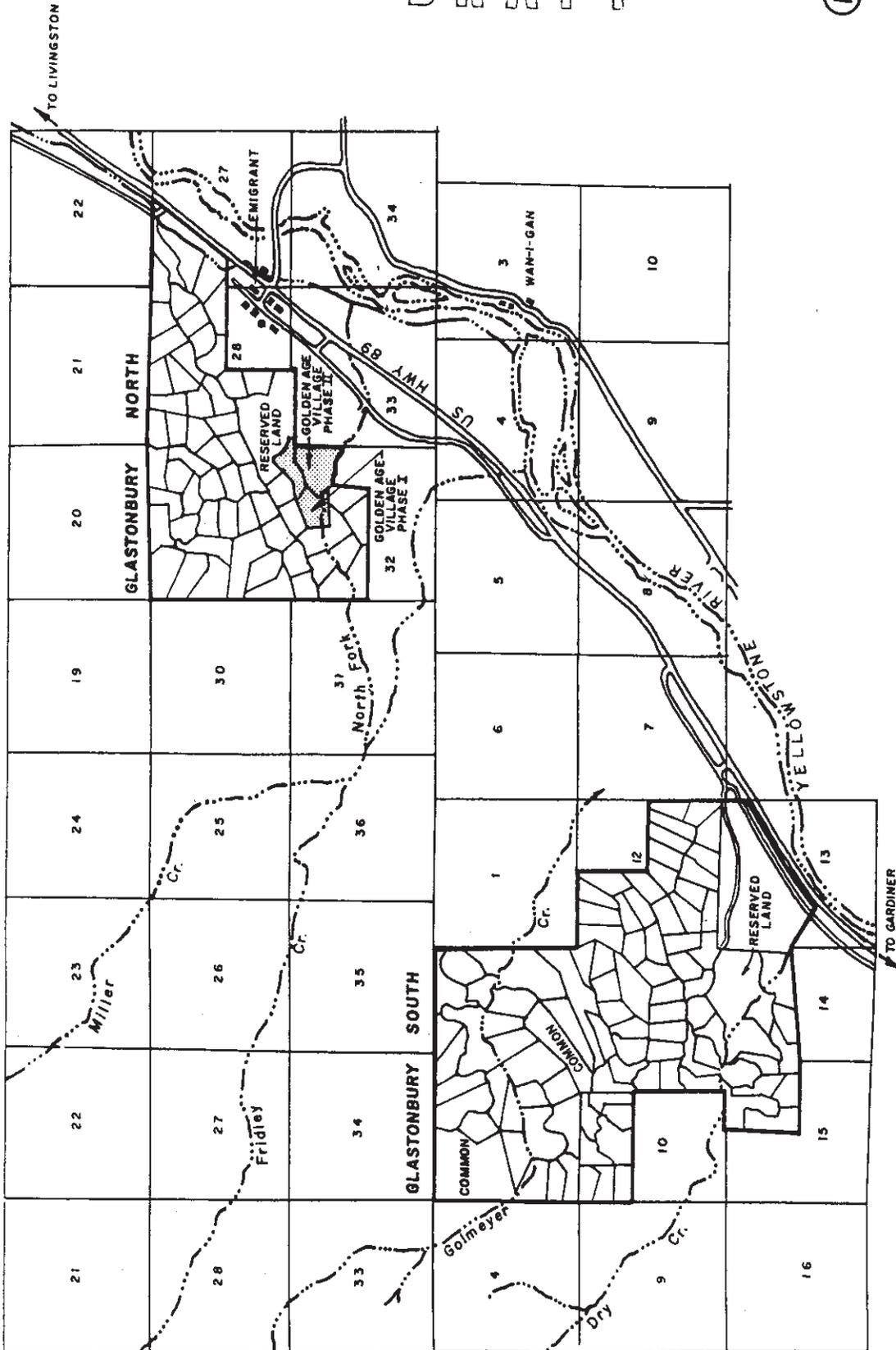




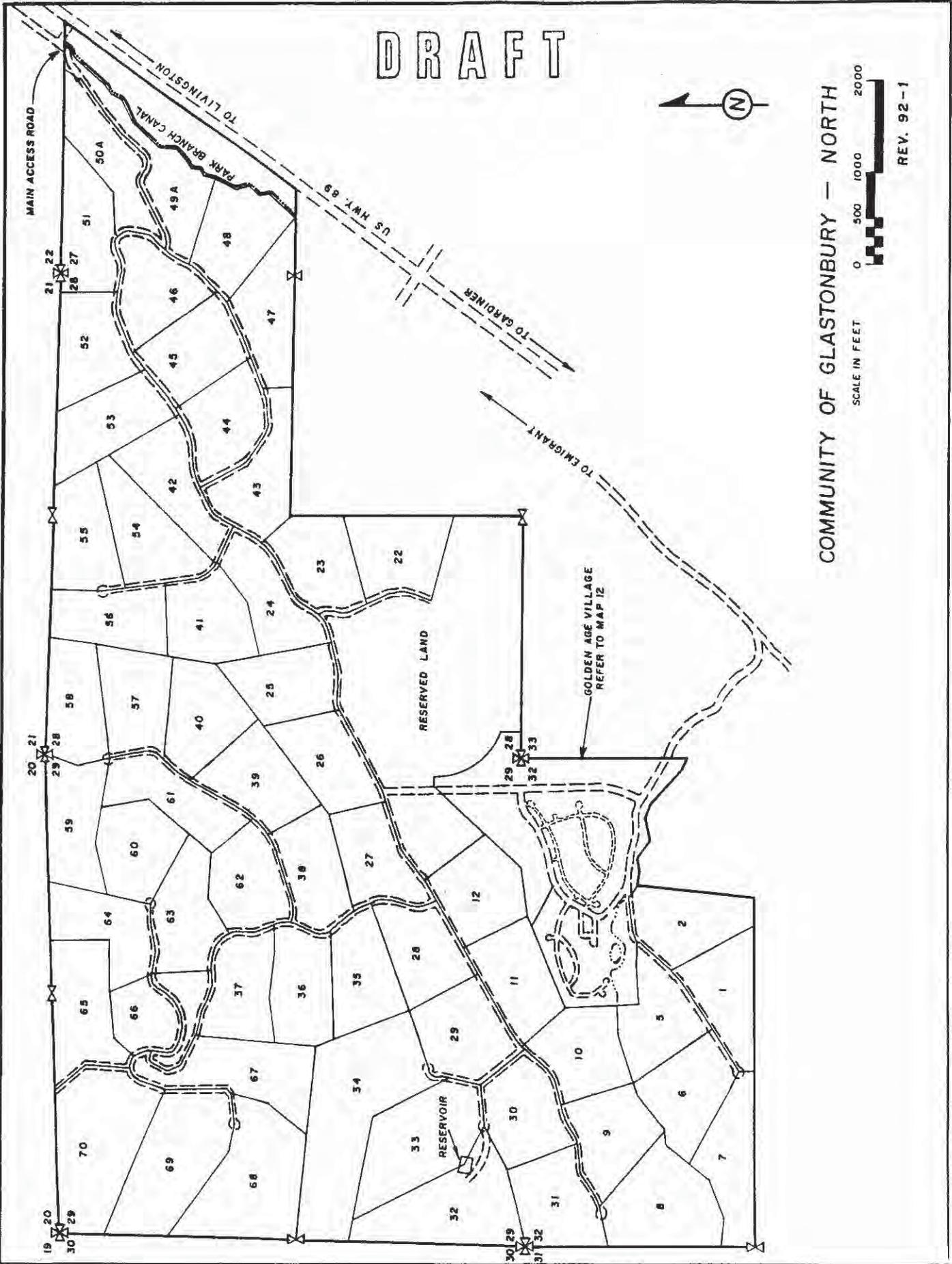
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REV. 92-1



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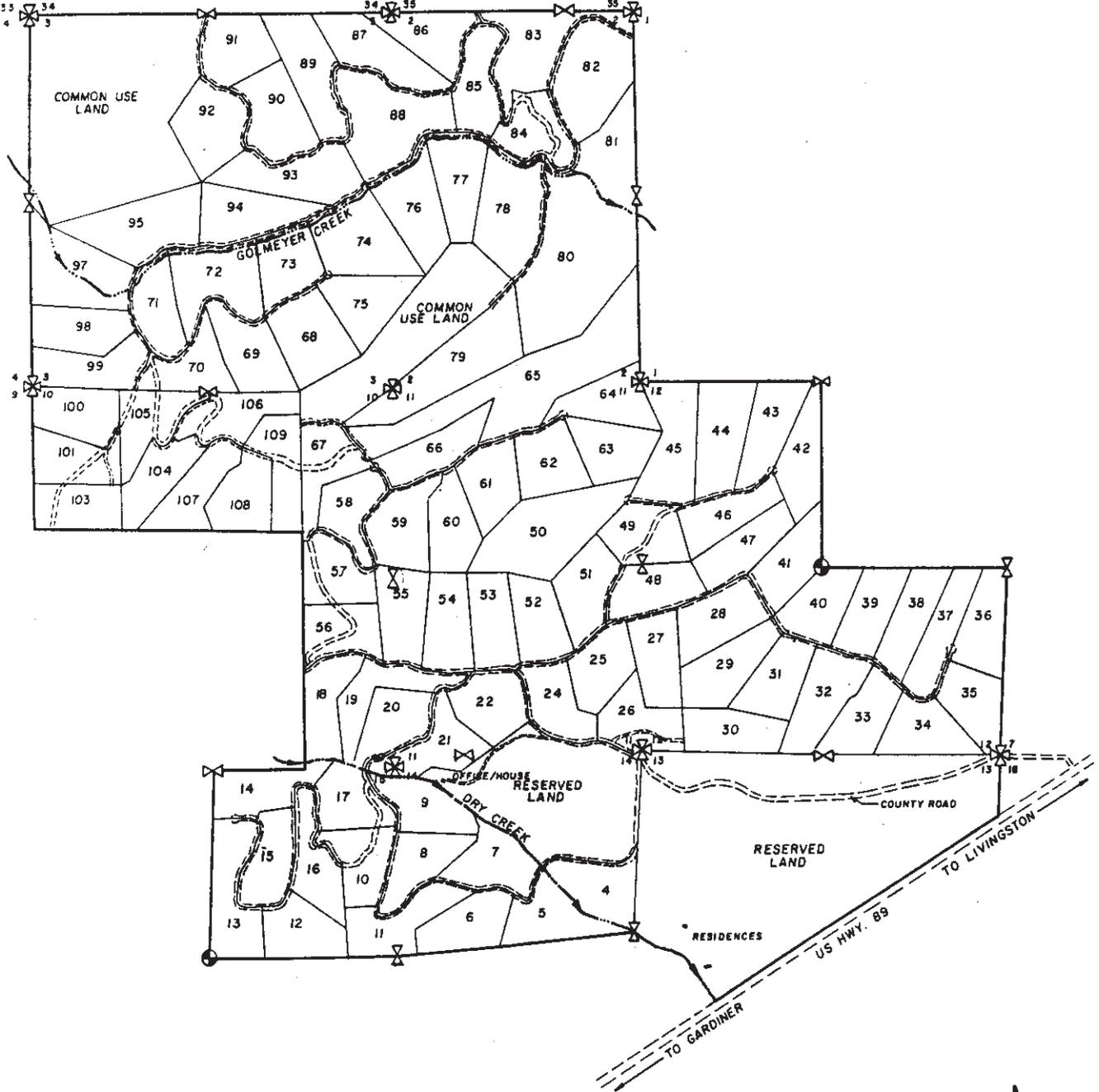


COMMUNITY OF GLASTONBURY - NORTH



REV. 92-1

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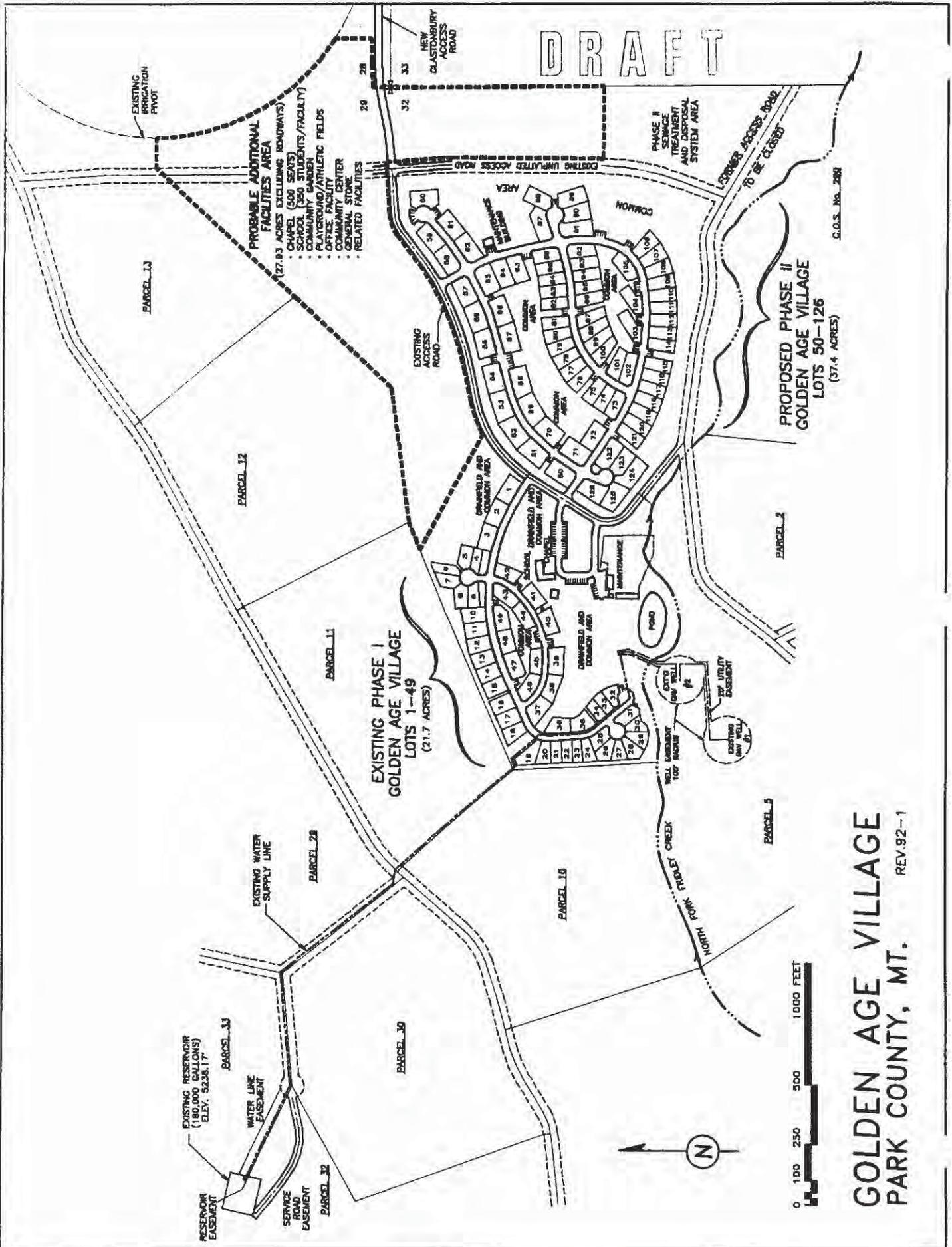


COMMUNITY OF GLASTONBURY - SOUTH



REV. 92-1

DRAFT



PROPOSED PHASE II  
GOLDEN AGE VILLAGE  
LOTS 50-126  
(37.4 ACRES)

EXISTING PHASE I  
GOLDEN AGE VILLAGE  
LOTS 1-49  
(21.7 ACRES)

EXISTING RESERVOIR  
(180,000 GALLONS)  
ELEV. 52.38, 1.7'



GOLDEN AGE VILLAGE  
PARK COUNTY, MT. REV. 92-1

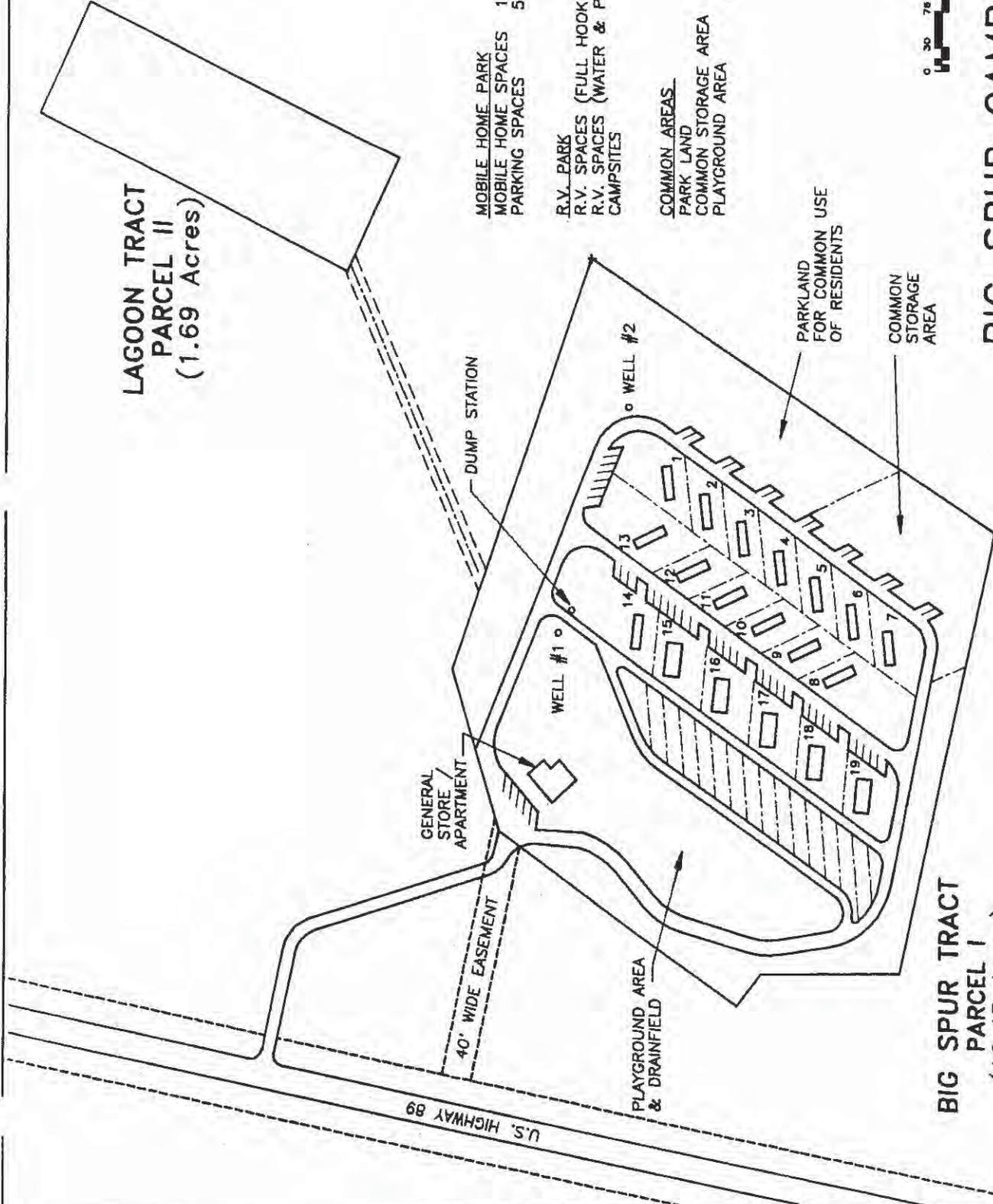
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**BIG SPUR CAMPGROUND**  
**PARK COUNTY, MT.**  
 REV. 92-1

**LAGOON TRACT  
 PARCEL II  
 (1.69 Acres)**

- MOBILE HOME PARK 19
- MOBILE HOME SPACES 19
- PARKING SPACES 51
- R.V. PARK 14
- R.V. SPACES (FULL HOOK-UPS) 7
- R.V. SPACES (WATER & POWER) 13
- CAMPSPITES
- COMMON AREAS
- PARK LAND 1.7 ACRES
- COMMON STORAGE AREA .66 ACRES
- PLAYGROUND AREA .75 ACRES



**BIG SPUR TRACT  
 PARCEL I  
 (10.43 Acres)**



# **Chapter 2**

## **Alternatives**



## **2.0 CHAPTER 2 - ALTERNATIVES**

### **2.1 Introduction**

The Montana Environmental Policy Act (MEPA) requires that every Environmental Impact Statement (EIS) must include alternatives to the proposed action. The DHES Procedural Rules that implement MEPA indicate that the DHES is required "...to consider only those alternatives that are realistic, technologically available, and that represent a course of action that bears a logical relationship to the proposal being evaluated."

The First Judicial District, in its Findings of Fact, Conclusions of Law and Order (cause No. BDV-89-261), stated,

It is not required that an agency perform an exhaustive study of every possible alternative; what is required is information sufficient to permit a reasoned choice of alternates so far as environmental aspects are concerned. (p.41)

The SEIS considers three alternatives: (1) Denial, (2) Approval and (3) Approval with Mitigation Plan.

Alternatives that would require the Church to relocate their proposals were not considered for the following reasons.

1. The First Judicial District Court found that "...it certainly does not make any sense to consider locating their proposal on other Park County properties" because "The Church feels that the RTR-S property is divinely inspired for their purpose." The facts related to this matter have not changed.

2. The logical expansion area for the existing Golden Age Village is the general project site area. The Golden Age Village is a locally reviewed and approved subdivision and the analysis of impacts from the expansion can be tiered from the first analysis. In addition, the expansion will also require Park County Planning Board review and approval.

3. The analysis of impacts related to the Blue House Kitchen did not indicate that this development would result in any major impacts.

### **2.2 Alternative Descriptions**

#### **2.2.1 Alternative 1: Denial**

Denying the proposed permits would mean that the proposed development would not take place as outlined in Chapter 1. Denial of the proposed permits would not force the Church to terminate its existing operations. The Church would still have the opportunity to implement some other method of development, with of course, the

necessary permits and review processes prescribed by appropriate federal, state, and local governments, if any. The Church has not defined a course of action if this alternative is selected. The Church has publicly stated that it intends to remain at its present location.

### **2.2.2 Alternative 2: Approval**

Alternative 2 assumes approval under the review process that the DHES typically follows in applications for public water and sewer permits that are not part of EIS analyses. If plans are found to be technically deficient, the applicant would be required to meet state requirements or have the permit denied. For purposes of this SEIS, it is assumed that the Church would meet technical review criteria, modifying its detailed plans if necessary.

### **2.2.3 Alternative 3: Approve with Mitigation Plan and Recommendations**

Mitigation is defined by the DHES Procedural Rules (16.2.625) as:

- a) avoiding an impact by not taking a certain action or parts of an action;
- b) minimizing impacts by limiting the degree or magnitude of an action and its implementation;
- c) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; or
- d) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action or the time period thereafter that an impact continues.

Under this alternative, mitigation measures would reduce or eliminate identified impacts of alternative 2. Impacts and mitigation measures are identified and described in detail in Chapter 4. The following is a summary of the mitigation measures proposed or recommended for impacts on various resource topics. Those mitigation measures that are asterisked (\*) are recommended for consideration because of possible cumulative impacts, not because of identified primary, secondary and reasonable foreseeable cumulative impacts of the proposed development. The potential cumulative impacts of possible future development may never materialize if the Church does not engage in a large amount of development or expansion above and beyond what it has presently proposed. Therefore, the Church would be allowed to begin construction of the proposed developments contingent upon the Church's agreement to conduct the mitigation measures relative to identified primary, secondary and cumulative impacts of known activities. It is recommended that the Church consider the asterisked mitigation measures in its future planning, particularly if any large-scale development beyond the current proposals is considered in the future. All applicable provisions of the "Mitigation Plan Agreement" in the FEIS would continue or be modified as stated under this alternative.

## Identified Mitigation Measures

### 1. Physical Environment

#### Wildlife

- Powerlines to be constructed according to Olendorff (1981)
- \* • Multiple Species Conservation Plan

#### Aquatic Life & Habitats

- Sedimentation controls such as hay bales on construction sites, revegetation and landscaping where appropriate
- Development of spill containment/emergency response plan
- Develop a sediment control plan in conjunction with tank installation at Mol Heron Shelter
- \* • Baseline study of invertebrate communities and use by spawning fish (recommended)
- Develop in cooperation with the DFWP a catch and release for Yellowstone Cutthroat Trout during annual conference (proposed change from existing policy of one fish per fisherman)
- Vegetation buffer zone between Golden Age Village and Fridley Creek

#### Water

- Emergency Response Plan for remediation of potential future fuel spills
- Use of a lagoon for final treatment of wastewater at Golden Age Village
- Replacement of the Blue House Kitchen drain field in an area outside the 100 year flood plain
- Use of the sedimentation control measures described in the Church's preliminary engineer's reports
- The geothermal well drilled to tap the aquifer serving LaDuke Hot Spring will only be used in accordance with the terms and conditions of the Certificate of Water Right issued by DNRC until a change in point of diversion and place of use is authorized for Church's LaDuke Hot Spring Water Right by the DNRC under Montana Law.

#### Geology

- No mitigation measures recommended

#### Soils

- No mitigation measures recommended

## Botanical Resources

- \* • Map all plant communities on the ranch - in conjunction with the Multiple Species Conservation Plan listed as a mitigation measure for wildlife
- Consult with the Soil Conservation Service (SCS) for restoration of vegetation in sagebrush steppe communities
- Stockpile 2-6 inches of topsoil for reclamation of construction projects where excavation will occur
- Restrict heavy vehicle traffic on construction sites to avoid compaction
- Use seed mixtures and species in consultation with the SCS
- Monitor restored sites to determine if irrigation is necessary
- Mulch, if required, with materials free of weed seed
- Avoid driving vehicles in weed-infested areas
- Implement a weed control program for gravel pits

## Aesthetics

- Development of Church guidelines for building heights in conjunction with state building code laws; design criteria for building color, roof line and building placement; and use vegetation in shelter belts to make development more compatible with the surrounding environment

## Air Quality

- Apply water to settle the dust at construction sites, as necessary

## Historical and Archeological

- \* • Consider structural rehabilitation of the old plunge at Corwin Springs
- \* • Additional subsurface excavation at Site 24PA758, if future construction occurs
- Fence off, protect and otherwise guarantee that the historic features along the Yellowstone trail contained within the lagoon project area would not be disturbed, or:
  - Small scale excavation of select localities along the Yellowstone trail contained within the lagoon project area
  - Photograph and map the historic advertising boulder; then move the boulder to an appropriate museum facility
- Class III inventory of cultural resources at the Golden Age Village project site
- \* • Class III inventory of cultural resources on appropriate areas of Church properties prior to future development

## Land Use

- No mitigation measures recommended

## 2. Human Environment

Mitigation measures are not recommended except in the following cases:

### Fire Protection

- \* • Complete the plans for fire protection at East Gate that were described in the DEIS

### Roads and Traffic

- Assist the county in paving and widening the county road from the Ranch Office to Ranch Headquarters
- Assist the state and county in replacing the Corwin Springs Bridge:
- Participate in a voluntary resolution process among Park County, Gardiner Residents, Yellowstone National Park and the Church for alternate routing for truck traffic through Gardiner (and specifically across the school parking lot)
- Joint Church-county review of road and bridge conditions before and after fuel tank installation in Mol Heron and road re-conditioning as necessary after installation

## 2.3 Summary Comparison of the Alternatives

### 2.3.1 Features Common Among the Alternatives

Church activities may continue no matter which alternative is selected. Many actions which are considered for cumulative effects analysis are outside of the scope of the decision to be made. These impacts are likely to continue regardless of any decision to be made as a result of this SEIS.

### 2.3.2 Primary, Secondary and Cumulative Impacts

The DHES Procedural Rules provide seven criteria for determining the significance of impacts associated with a proposed action. These are:

1. The severity, duration, geographic extent, and frequency of occurrence of the impact;
2. the probability that the impact will occur if the proposed action occur; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur;
3. growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts;
4. the quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources or values;

5. the importance to the state and to society of each environmental resource or value that would be affected;
6. any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions; and
7. potential conflict with local, state, or federal laws, requirements, or formal plans.

This section (2.3.2) discusses the alternatives in light of these criteria (with the exception of criteria number 3 which is discussed as a separate topic under section 2.3.3.

The DHES Procedural Rules indicate that "the severity, duration, geographic extent, and frequency of occurrence of the impact" (16.2.627 (a)) be used as a criterion in determining the significance of an impact.

If the proposed actions were approved under alternatives 2 or 3, the duration, geographic extent and frequency of the proposed development associated with the above criteria would be similar. The duration of the construction of the proposed development is uncertain at this time based on the Church's preliminary engineer's reports. It is clear that the development would take place in stages at both Spring Creek and Golden Age Village and that the projects may not be completed for ten years or more. The geographic extent of the proposed actions is the same under each alternative. The frequency of the occurrence (of construction-related impacts) has little relevance in relation to the specific proposed actions since once they are completed, development will stay in place. It is possible, based on recent past history, that the Church may continue to pursue other developments on its property at a rate of frequency that equals or exceeds other growth in the study area. It is also possible the Church may decrease its frequency of development after completion of the proposed project. Consequently the rate of impacts may increase or decrease in the future.

The severity of primary and secondary impacts identified in Chapter 4 for alternative 2 would be mitigated by measures proposed in alternative 3. Resources that would be affected by mitigation measures for primary and secondary impacts include aquatic life and habitat, water resources, botanical resources, aesthetics, air quality, historical and archaeological sites, fire protection and truck traffic through the town of Gardiner and Yellowstone National Park.

The severity, duration, geographic extent, and frequency of occurrence is difficult to assess for alternative 1 because the extent of potential development under this alternative is unknown.

The analysis of cumulative impacts is based on a broad definition of cumulative impacts scope. The DHES Procedural Rules (16.2.627 (b) and (f)) were examined and

determined to be a basis for the definition of scope for the analysis of cumulative impacts. The specific criteria are:

- the probability that the impact will occur if the proposed action occurs; or conversely, *reasonable assurance in keeping with the potential severity of an impact that the impact will not occur*; (emphasis added) and
- any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions.

In order to determine if there was reasonable assurance that an impact would not occur under the denial alternative (#1), certain assumptions had to be made about what would happen if the proposed permits were denied. It was assumed, as described in Section 1.4.3.3, that denial would not deter the Church from continuing its growth plans. This assumption was based on the Church's public statements on its commitment to stay on its properties in Park County and the fact that development options exist under state law that are outside of the department's permit authority. As described in Section 1.4.3.3, the scope of cumulative impacts was defined in part to also address the possibility that decisions made here may set a precedent for future actions. If approved, construction and development would change existing baseline conditions. Any other future action would be assessed from these changed conditions. As a result of incremental development, it is possible that future development would reach a stage that would have been unacceptable in relation to baseline conditions examined in this SEIS. Based on a definition of cumulative effects that encompasses the two Procedural Rules criteria, it was determined that environmental impacts would occur under any alternative. Cumulative impacts would be mitigated in alternative 3. Long range impacts from possible future development (in addition to what is currently proposed) would be mitigated in alternative 3 if recommended measures for wildlife, vegetation and archeological resources are actually implemented in the future (Recommended measures are asterisked in Section 2.3.3)

The DHES Procedural Rules also require consideration of the following criteria to determine significance of impacts (16.2.627 (d) and (e)):

- the quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources or values; and
- the importance to the state and to society of each environmental resource or value that would be affected.

The environmental resources that would be potentially impacted by the proposed actions include wildlife and fisheries, water, botanical, visual quality, air quality, historical and archaeological resources. Resources that are particularly fragile include wildlife species that are federally listed as threatened or endangered (grizzly

bears, bald eagles, peregrine falcons), the Yellowstone Cutthroat Trout, and cultural and archaeological sites. The quantity of these resources has not been definitively determined (as discussed in Chapters 3 and 4), but their presence is certain. In general, primary and secondary impacts to these resources are less potentially significant than cumulative impacts. For fisheries and water resources, the greatest potential impacts are those associated with accidental spills or leaks from fuel tanks, sewage systems or from transporting hazardous materials. Alternatives 1 and 2 do not have specific identified measures to reduce impacts. Alternative 3 identifies measures to reduce and/or eliminate potential impacts.

The environmental resources described in this document are important to the state of Montana and to society in general. Yellowstone National Park's importance to the state and local economy is explored in detail in *Yellowstone: The Wealth of Nature* (Wilderness Society 1991). Nearly three million people visit the Park each year and visitation is growing. Although the Park's authority ends at its borders, the related economy and wildlife habitat cross far beyond the borders and have been the topic of regional coordination and discussion as part of the Greater Yellowstone Ecosystem. The fact that Yellowstone Park borders Church properties heightens issue awareness at local, state and federal levels.

DHES Procedural Rules also require the identification of any "potential conflict with local, state, or federal laws, requirements, or formal plans". (16.2.627 (g)) No conflicts have been identified with laws, requirements or formal plans for the proposed actions.

### **2.3.3 Potential Growth-Inducing or Growth-Inhibiting Impacts**

The analysis of potential growth-inducing or growth-inhibiting impacts in the DEIS is still valid. The major change is that the size of the development has increased significantly. The number of persons proposed to live at Spring Creek has nearly doubled, an additional 46 persons will live at East Gate, and the Golden Age Village expansion includes an immediate 150 percent increase in the number of mobile home lots and ancillary facilities to be built sometime in the future.

### **2.3.4 Irreversible and Irretrievable Commitments of Environmental Resources**

Resources, such as land and materials, would be committed during construction and during the life of the proposed project under alternatives 2 and 3. Land use may also be committed to development under alternative 1. The use of land is not an irreversible nor irretrievable commitment in the very long-term. A portion of the mining town of Horr occupied very nearly the same area as proposed now for the Spring Creek development, but visual remnants of the town are virtually undetectable to the casual observer. In the short-term, more land would be committed to development under current proposals than under the proposals examined at the time of the SEIS.

Primary and secondary impacts from proposed development are not likely to cause any irretrievable or irreversible commitments of wildlife or other environmental resources. The development of Golden Age Village could result in the irretrievable loss of unidentified cultural/archaeological resources. If a Class III survey of the site were conducted, the resources could be identified and appropriate mitigation measures, if any, identified. If scattered development were to result from denying the proposed actions, there could be similar or greater cultural/archaeological losses on other Church-owned properties.

Cumulative impacts could result in irreversible changes in baseline conditions and possibly irreversible and irretrievable commitments of environmental resources. Related impacts, such as impacts of geothermal development, may constitute an irreversible/irretrievable commitment. There is public concern that the Church's use of its geothermal well drilled near LaDuke Hot Spring could negatively affect geothermal resources in Yellowstone National Park. It is not the purpose of this SEIS to make that determination. Should that part of the Church's development plan be pursued and properly approved by DNRC, the extraction of heat from the water would constitute an irretrievable and irreversible commitment of resources.

### **2.3.5 Economic and Environmental Benefits and Costs of the Proposed Action**

In addition to the benefits described in the DEIS, the economic and environmental benefits under alternatives 2 and 3 would include:

1. Local economies will continue to benefit from the purchase of goods and services;
2. Local governments will realize increased taxes from the land and improvements scheduled for development;
3. County roads on RTR-S will continue to be maintained by the Church and under alternative 3 and at least a portion of the county road on the west side of the River might eventually be paved with the Church's assistance;
4. Under alternative 3, a resolution could be reached among the Church, Yellowstone National Park, Park County, and Gardiner regarding routing of heavy truck traffic through Gardiner and the Park, or alternately, the Corwin Springs bridge could be improved or replaced in the future with the Church's assistance;
5. Under alternative 3, cultural resources are identified and protected, thus increasing the knowledge of local cultural resources;
6. Under alternative 3, the Church would develop an emergency response plan of identification and remediation of future spills;

7. Under alternative 3, a multiple species conservation plan and associated map of plant communities could be developed in the future which could increase existing knowledge and provide a basis for future growth;
8. Under alternative 3, a class III inventory of all Church properties could be developed which could increase the existing data cultural resource data base;
9. Under alternative 3, measures would be taken to reduce spread of weeds from development construction; and
10. Under alternatives 2 and 3, efficient clustering of development would occur and displace less land than dispersed development.

Costs of development include:

1. Impacts on costs of providing public services, such as roads, law enforcement, and schools;
2. Under alternative 2, costs would include impacts to the town of Gardiner and to Yellowstone National Park as a result of heavy truck traffic unable to use the Corwin Springs Bridge;
3. Aesthetic impacts visible from U.S. Highway 89 (US 89) under alternatives 2 and 3, although mitigation measures would reduce severity of impacts somewhat; and
4. Potential cumulative environmental impacts described above and in Chapter 4 under all alternatives.

Unlike other developments of similar size, the Church development will not directly result in employment increases that offset environmental losses. Because the Church purports self-sufficiency and because it pays its staff based on need, this development and related employment is unlikely to generate secondary employment at a rate comparable to a mine or other major development. Future economic benefits would be primarily those associated with property taxes and from purchases related to construction and supplies rather than services. Other economic benefits related to Church growth in Park County include purchases and taxes paid by non-staff Church members who live in the area and purchases made by visitors to Church events.

### **2.3.6 Relationship Between Local Short-Term Use of Man's Environment and Long-Term Productivity**

The discussion of this topic in the DEIS is still valid for the proposed expansion. Local short-term use would be slightly greater in terms of land area and significantly greater in terms of short-term population increases. Over the long-term, it is possible that the land could be restored to existing productivity levels. This could require

significant effort, however, if the cumulative effects described in Chapter 4 are allowed to take place.

### **2.3.7 The DHES' Preferred Alternative**

Based on the information presented in this Draft SEIS, Alternative 3: Approve with Mitigation Plan and Recommendations is the DHES' preferred alternative.

A discussion of the Multiple Species Conservation Plan (or also referred to as the Habitat Conservation Plan) is in Chapter 4 under the heading of 4.2.1.7 Suggested Mitigation Recommendations for Wildlife. It is important to note that this is a recommendation which could be used if future development creates the necessity. It should also be mentioned that the Church would participate as a member of a committee, and not as the sole participant.

These plans most often succeed in instances when landowners (private, local, state and federal) collectively and cooperatively create plans to protect animal life based on ecological rather than political or legal boundaries.



## **Chapter 3**

# **Current Environmental Conditions**



## **3.0 CHAPTER 3 - CURRENT ENVIRONMENTAL CONDITIONS**

### **3.1 Introduction**

This chapter describes the portions of the physical and human environments that would affect or may be affected by implementation of any of the alternatives. The description covers resource conditions within the general study area between Livingston and Gardiner with specific focus on the proposed action site areas. The general study area includes property owned by the Church Universal and Triumphant that borders Yellowstone National Park and the Gallatin National Forest. The description of current conditions in this Chapter 3 provides the basis for assessing the environmental effects of alternatives discussed in Chapter 4. It also provides the context for assessing how the alternatives respond to public issues.

This chapter first describes the general purpose of an SEIS as an update and expansion of the DEIS and FEIS. Section 3.2.1 provides an update on the status of the mitigation plan agreement that was part of the FEIS. Section 3.2.2. provides a general update on activities in the Mol Heron drainage that took place after release of the DEIS and FEIS. Section 3.3 is an update to the description of existing physical environmental conditions at the proposed action sites. Section 3.4 describes the human environment.

### **3.2 General Update to Information in the DEIS and FEIS**

The purpose of this SEIS is to describe:

any impacts, alternatives or other items required...for a draft EIS...or for a final EIS that were either not covered in the original statement or that must be revised based on new information or circumstances concerning the proposed action. (Health and Environmental Sciences Procedural Rules 16.2.636 (c))

In Chapter 3, the SEIS provides an update to information in the DEIS where such update is relevant. The SEIS also provides information for areas that were not considered in the DEIS.

#### **3.2.1 Mitigation Plan Update**

Based on its review of the DEIS and FEIS, the DHES recommended approval of all licenses, plans and specifications sought by the Church subject to the implementation of a Mitigation Plan. The Church and the DHES agreed to and signed a Mitigation Plan Agreement on February 16, 1989. The Mitigation Plan was included in Appendix B of the FEIS.

The following information is an update on the current status of the various elements of the Mitigation Plan. Numbering corresponds to the numbered item in the Mitigation Plan Agreement.

1. *The Church agrees to coordinate and cooperate with the appropriate federal, state and local agencies to implement the recommendations included in the Mitigation Plan.* Since the Plan was signed, the Church has coordinated with Yellowstone National Park on in-stream flows for Reese Creek and other issues, Park County on road maintenance, and various state departments.

2. *With regard to the various measures included in the Mitigation Plan, the Church and the Department agree upon the following provisions governing the scope, extent and implementation of each measure:*

a. *For the particular projects covered by the EIS for which the Church has requested an approval or license from the Department, the Church shall utilize site planning that will allow housing and work units to be clustered in small units, minimizing loss of productive land, impacts on wildlife and preserving aesthetics of the area.* The Church indicated it has built the following developments since the FEIS:

- East Gate Work Camp, a clustered configuration of nine buildings, access roads, parking spaces and landscaping in accordance with plans approved by DHES,
- Mol Heron Fallout Shelter,
- Food Processing Plant/Septic System at RTR-S, built according to plans approved by DHES,
- Poultry Processing Plant/Septic System at RTR-N, built according to plans approved by DHES and licensed by the Department of Livestock,
- Mol Heron Yellow Barn, built for storage and did not require state permits or licenses, and
- Ranch Headquarters/Wastewater System 2, built as an addition to the preexisting clustered facilities as approved by DHES. (Francis, 6 June 1992)

In addition, the Church has placed the Sphinx Lodge to be used as a residential facility and is placing two other single family homes on the RTR-S. (See Appendix D, pgs. 1,2 and 3.)

b. *The Church will cooperate with Park County and jointly participate in a road improvement and dust control program on the county roads which cross the Royal Teton Ranch and receive the heaviest use. These roads include....* The road improvement and dust control program was for those county roads serving East Gate, Ranch Office, Spring Creek and Ranch Headquarters and the road between the Ranch Headquarters and the locked gate on the Mol Heron Creek County Road. Edward Francis (letter 6 June 1992) and Carlo Cieri, Park County Commissioner (pers.

comm.) have stated that the terms of the agreement have been and continue to be met.

*c. The Church will utilize car pooling and other forms of common transportation in moving its employees from one location to another, including the running of ranch "shuttle service" on a regular schedule between the most highly traveled routes on the RTR-S. The Church provides shuttle bus transportation on and between all Church properties, not just the RTR-S. Regular schedules are published and distributed.*

According to the Church (Francis 6 June 1992), coordinated transportation for the South Ranch includes:

- 15-passenger van that runs daily from 6:55 a.m. until 8:30 p.m between Ranch Headquarters, East Gate, Cinnabar Store/Ranch Kitchen, and Ranch Office
- Montessori International Elementary School Bus used Monday through Friday for school classes at East Gate and religious services and meals at the Ranch Headquarters
- Montessori International Primary School Bus used Monday through Friday for preschool at the OTO location
- Montessori International After-School Bus
- Henry Wadsworth Longfellow Academy School Bus used Mondays and Fridays at present to transport students from Ranch Headquarters to the Ranch Office
- Ranch Office Buses used to bring farm workers and other Ranch Office personnel to/from Ranch Headquarters at 7:15 a.m. and 5:45 p.m. Also used for meal deliveries and transportation to religious services
- Car Pooling, which is done informally
- Van for commuting to the publishing facility at the Livingston Railroad Yard, including stops at South Glastonbury, Emigrant and BSC.

Coordinated transportation for other Church locations include:

- Staff buses - two buses transport staff to/from BSC and the publishing facility. One bus is also used for transport to major religious services at RTR-S
- BSC Parents Bus transports between BSC, the North Ranch school and Livingston Railyard facility
- BSC Parents of Infants/Toddlers Van transports between BSC, the North Ranch School and Livingston Railyard Monday-Friday with a noon run between the North Ranch School and Railyard

- Swing Shift transportation includes one van and one economy car between BSC and Railyard
- Night Crew Transportation - one economy car
- Mail Delivery Suburban - Mail runs include BSC, Livingston Railyard, North Ranch, South Glastonbury, East Gate and Ranch Headquarters
- North Ranch Mothers' Van transports between the RTR-S and the North Ranch Montessori School
- Big Spur to Ranch Headquarters Commuter bus carries staff from BSC and Glastonbury properties to the South Ranch to work
- Big Spur School Bus runs between the North Ranch and South Ranch with stops at Emigrant, South Glastonbury and the Lindorfer Cabin
- North Glastonbury to Emigrant shuttle service
- Summit University bus and van service from North Glastonbury to Ranch Headquarters
- Bozeman Shuttle is a 15-passenger van serving Ranch Headquarters, Emigrant and BSC on trips to Bozeman

d. *The Church has agreed to move its poultry processing facility (also referred to in the EIS as a "slaughterhouse") from the RTR-S to a site closer to where the poultry is raised at the RTR-N. The Church will not construct any slaughterhouses on the RTR-S at any time in the future without the Department's approval. The Church constructed the poultry processing facility on the RTR-N as described for item "a." above. No animal processing facilities have been constructed on the RTR-S.*

e. *The Church has reached a tentative agreement with the U.S. Forest Service (USFS) for an exchange and consolidation of public and private lands within and adjacent to the RTR-S...Should the tentative exchange ultimately be rejected for any reason, the Church agrees to negotiate an acceptable lease to the Montana Department of Fish Wildlife and Parks (DFWP) for the grazing rights within the described area on Cinnabar Mountain.*

According to the Church (Francis 6 June 1992), domestic sheep have not been grazed in the area specified in the Mitigation Plan Agreement, and the Church currently has no plans to do so. Since the land exchange with the Forest Service is still under consideration and no sheep are being grazed in the specified area, no action has been taken to attempt to arrange an acceptable lease to the Montana Department of Fish, Wildlife and Parks.

The land exchange proposal described in the FEIS never took place. The OTO ranch proposed for exchange was purchased by the Rocky Mountain Elk Foundation and then transferred to the Forest Service. Negotiations for land exchanges utilizing different parcels continues with the Forest Service as described in 3.4.5.2. Forest Service representatives indicated in mid-June that the Church had not grazed sheep in the described area on Cinnabar Mountain. (Logan, pers. comm.) Much of the land on the Cinnabar Mountain area is privately owned by the Church and does not require USFS approval for grazing. (Logan, pers. comm.)

f. *The Church has already constructed, and agrees to maintain, a bear-proof fence around the tree farm area at the RTR-S.* There is a fence around the tree farm. According to the Church, there have been sightings of bears on Church property but no bear predations have been confirmed and no removal nor control actions were necessitated. (Francis 6 June 1992)

g. *For 1988 and any currently planned seasons in the future, the Church has removed its production of root crops (carrots and potatoes) from the RTR-S to the RTR-N....* The Church provided the following update information:

There are no root crops being produced on the RTR-S. We have received no reports of bears (either grizzly or black) being attracted to crops anywhere on Church property or in Glastonbury since completion of the FEIS. As a result, no additional mitigation measures have been necessitated. (Francis 6 June 1992)

h. *The Church agrees to move the composting of vegetation to other Church property away from the RTR-S where there is little likelihood of grizzly bear problems developing.* According to the Church, no composting is occurring at the RTR-S. Composting is currently taking place near the turkey barn at the RTR-N. There are currently no plans for any additional or new sites for composting. (Francis 6 June 1992)

i. *The Church agrees to implement a sediment control plan for all developed areas where the natural vegetative protective covering is removed for construction operations...* Revegetation efforts were undertaken at the East Gate Work Camp, the Mol Heron Shelter and other sites listed in item "a." above. In each case, straw bales were placed within or around the perimeters of construction zones and at places where runoff appeared likely. (Francis 6 June 1992) The DHES has not specified other measures to control sediment and runoff since the FEIS.

j. *The Church agrees to continue negotiating with Yellowstone National Park, DFWP [Montana Department of Fish, Wildlife and Parks], and other government agencies and private water users or appropriators having an interest, to establish minimum instream flows for Reese Creek, Mol Heron Creek and Cedar Creek...* In July 1990, Yellowstone National Park, DFWP and other private owners reached an agreement for minimum instream flows in Reese Creek. The Church's priority water rights to Cedar Creek were sold to the Rocky Mountain Elk Foundation with the OTO

Ranch property. Negotiations with the DFWP and Forest Service are ongoing regarding minimum instream flow in Mol Heron Creek. The Church's uses of water from Mol Heron Creek since the FEIS have not resulted in the dewatering of the creek.

k. *The Church agrees to cooperate with DFWP, to the extent allowed by law and deemed appropriate or necessary by DFWP, to establish a catch-and-release program and/or to implement other fishing regulations for the upper section of Mol Heron Creek during those times of year when the Church's outdoor conferences are held. The Church indicates that it has consulted with the local fisheries biologist of the DFWP on establishing voluntary fishing regulations for annual conference attendees. Guest regulations published in 1988 and 1992 included a catch limit of one fish per fisherman from Mol Heron Creek during the conference. These guidelines are voluntary and have not been enacted into law by the DFWP. There are no limitations or guidelines above and beyond state regulations for the upper section of Mol Heron Creek during other times of the year.*

l. *The Church agrees to monitor the groundwater impact, using guidelines and methods approved by the Department, of the existing wastewater disposal system serving the shower and toilet facility at the Mol Heron Creek Conference Site...*

m. *The Church agrees to monitor the groundwater impact, using guidelines and methods approved by the Department, of the proposed new wastewater facility serving the East Gate Work Camp...*

n. *The Church agrees to monitor the groundwater impact, using guidelines and methods approved by the Department, of the proposed new wastewater facility serving the Ranch Headquarters...*

Plans for positioning monitoring wells for items "l", "m", and "n" were sent to the DHES in a June 19, 1992 letter from William E. Smith, P.E., Royal Teton Engineering and Construction. Three monitoring wells were proposed around each drainfield. The drilling for the monitoring wells has been completed. Guidelines, methods and monitoring specifications are being developed by the Church and will be submitted to DHES.

o. *The Church agrees to monitor and report the flows, using guidelines and methods approved by the Department, at all wastewater systems previously approved and all systems that will be approved by the Department for the particular projects covered by the EIS... According to the DHES, this was initiated in September of 1991. (Ellerhoff, pers. comm.)*

p. *To the extent that the soils in the drainfield trenches at the proposed East Gate Work Camp Wastewater System and Ranch Headquarters Wastewater System 2 do not already contain a sufficient amount of sand as deemed necessary or advisable by the Department, the Church agrees to line the drainfield trenches for these new systems with sand as specified by the Department. These requirements were addressed in the*

approvals issued by the DHES for the systems, and were shown on the Church's as-built drawings as having been installed as specified.

q. *The Church agrees to make reasonable efforts to utilize the best available management practices in all aspects of agricultural production for its type of farming and ranching operations. This includes adhering to the terms of any Conservation Plans developed by the U.S. SCS for the RTR-S and RTR-N, and the grazing and range management plans specified in the USFS grazing permits covering the RTR-S and RTR-N.* Grazing on all ranges is conducted in accordance with Forest Service grazing permit requirements. The Church uses a SCS Conservation Planning Report for the RTR-N farming and rangeland management. The Church participates in the US Agricultural Stabilization and Conservation Service (ASCS) farm program and adheres to a compliance plan concerning farming practices for highly erodible soils and wetlands.

r. *The Church agrees that the geothermal well drilled to tap the aquifer serving LaDuke Hot Spring will not be developed or utilized until a change in the point of diversion and place of use is authorized by the Montana Department of Natural Resources and Conservation (DNRC) under Montana Water Law.* The Church began pumping 33.5 gallons of water per minute from the well on Sunday, June 28, 1992. This was done to establish ground water rights to the well for less than 35 gallons per minute (gpm), not to exceed 10 acre-feet per year. In a response to a letter from Dennis Iverson, DHES Director, Edward Francis wrote:

I wish to point out to you that measurements taken at LaDuke Hot Spring during the time that the well was being pumped indicated that the production rate of 33.5 gpm and the pumping schedule of approximately six hours per day was having no discernible effect on either the flow rate or the water level in the spring. This supports our action of making a new appropriation from the well and not pursuing the transfer of existing rights from LaDuke Hot Spring.

Your letter states that the Department views this use of the well as being contrary to the agreement. However, there is nothing in the agreement to prevent the Church from drilling a new geothermal well and appropriating a new geothermal water right under Montana Water Law. Needless to say, the Department would not have wanted to see that occur either. Furthermore, there is no recognition of the right of the DNRC to issue a permit for a new water right in addition to or as part of a change authorization. All of this points to the conclusion that there was no intention to waive our substantive rights or to bar the exercise of the prerogatives of the DNRC under Montana Water Law. The change authorization was simply what was envisioned at the time...

In accordance with your direction, we are suspending the withdrawal of water from the existing geothermal well... However, the Church is not intending to abandon its water rights to the geothermal well and this temporary action is

taken with the assumption that it shall not have the effect of suspending, terminating or voiding those rights.

The water rights associated with LaDuke Hot Spring are examined in this SEIS as a related action to the Spring Creek Development. The impacts of developing water rights are discussed in light of this related action, but impact analysis is not as fully developed as it would be if the geothermal development were the subject of an EIS. The Church has not submitted any proposals for geothermal development that would require state permitting at this time. Establishing a water right in the manner that the Church did over the weekend of June 26 does not require a permit. If the Church chooses to use more than 35 gpm, they must apply to the DNRC in advance. This action could trigger an EIS process specifically for the geothermal development.

### **3.2.2 Activities in the Mol Heron Drainage**

#### **3.2.2.1 Background**

Historically, a great deal of development has occurred in the Mol Heron drainage.

The story behind its name is almost as involved as its history. The different spellings of Mol Heron are found throughout scientific, technical and general interest publications. The variations are explained in A Photo History of Aldridge, by Bill and Doris Whithorn:

...In almost any newspaper item referring to John Mulherin, for instance, his name was spelled **Mulherin**. A few times it appeared **Mulheron**. When he had filed on a mining claim in 1876 in Emigrant Gulch his name was recorded as "**Mulheren**," but his son was Fafe "**Mullhern**" the next year in school. But the creek...now stands on both geological survey and forest service maps as "**Mol Heron**"--two words.

The coal mining town of Aldridge was founded in 1896. It was on a steep hillside just southwest of Aldridge Lake. The lake, at an elevation of 6,275 feet, is a half mile long, and a third as wide. Aldridge Creek runs through it and enters Mol Heron Creek about a half mile above where Cinnabar Creek joins Mol Heron.

Within months of its founding, there were 800 people living in Aldridge. The blanket of bituminous coal being mined ran from Mol Heron Creek, inclining east toward the town of Horr (later renamed Electric in 1904). The coal was transported from Aldridge, over a divide and 2,000 ft. down the mountainside to Horr in the Yellowstone Valley by a tramway.

Fifteen years later Aldridge was a ghost town.

Mining greatly affected the environmental resources of the drainage. Water from Mol Heron Creek and its tributaries was impacted in a variety of ways. The main stem was tapped as a water source for the mines. Its tributaries were also diverted.

After being run through the mining operation, the water was discharged into what was called the "Black Ditch." The ditch was described in the Whithorns' book:

The Black Ditch was as much a part of Aldridge as was the lake. Water for the operation of the washer was piped and flumed in from far back beyond the Taylor Ranch--itself over a mile beyond the town. The pipeline was eight miles long, and starting practically at the foot of Electric Peak, it picked up water from small mountain streams as it moved toward Aldridge. It claimed much of the water from Deaf Jim Creek and Hoppe Creek water which would have normally flowed into Mulherin (sic) Creek and thence through the canyon leading out of Cinnabar Basin and into the Yellowstone River.

That part of the water gathered and brought into Aldridge served two purposes. A part of it was used in the washer; a part supplied the flume which carried the snoosed coal to the bunker at Horr. That which was not needed for either purpose went down the Black Ditch through the town. The name, however came to be applied because the Black Ditch also carried the water which was used by the washer and with it slack and waste. So much material was moved with the water that at the point where it entered the lake, it built a veritable delta, still visible today. It was believed that the water from the Black Ditch affected the fishing in Aldridge Lake at the time of the mine operation and for years after the mines were closed.

There was always complaint, too, that the waste from the washer at Horr killed the fish in the Yellowstone River. As early as July 1898 there was built at Horr a reservoir for collecting the waste water from the bunkers to keep it from running into the Yellowstone. There were other reasons, too, for collecting the slack. Along with the other improvements being erected in 1901 there were plans for the building of a plant to save the coal screenings. Officers figured then that the material dumped into the Yellowstone would net them an additional \$1.25 when loaded into cars. In April of the following year the plan was under way, for the machinery was in route to stop the dumping of the slack into the river. The managers said at that time that they figured that they lost 20% of the output by permitting the slack to enter the river, and that when the machinery was put in, they expected to make a savings of that amount and prevent any further complaint from residents below the plant at Horr.

But such action did not cure all the evils of the black water. In 1906 there was still trouble as described in the March 3, edition of the Livingston Enterprise.

The Yellowstone River is now in a condition of inky blackness, owing to the dumping of coal slack into it from the Aldridge mines and washery. Tuesday the water in the city mains of Livingston was filled with sediment and wherever it was allowed to stand overnight, the bottoms of basins were covered with a thick coat of slime and sediment.

All the mining did not occur in the Aldridge drainage, the Foster Mine was established about two miles west of the town in the Hoppe Creek drainage. This drainage also was impacted by the ensuing development.

In terms of vegetation, one of the prime ingredients for building mining structures and homes for the inhabitants was wood. The pictures of the landscapes in the Photo History of Aldridge show scenes of almost tree-less landscapes.

The end of the mining marked the beginning of a natural restoration. The book, published in 1965, also includes photographs taken in the late 1950's and early 1960's. Natural reforestation reclaimed many of the denuded scenes of the mining era.

The end of mining didn't mark the end of human influences in the Mol Heron drainage. The J.C. Lohman and Ed Wright families established a dairy near Aldridge Creek as it enters Mol Heron. The dairy served the town of Aldridge, then in the late 1920's became a dude ranch. The venture proved unsuccessful, and it subsequently went through a number of owners.

Water was channelled to irrigate the fields in the upper reaches of the drainage by the following ditches: A) The Armstrong Ditches - Providing water to the land occupied in part by the Church's shelter, B) Pelham Ditches - Serving the area around the mouth of Hoppe Creek, and the C) Koncilya Ditches - Which irrigated the land below Aldridge Lake.

Considerably more irrigated ranching occurred (and continues to occur) in the Cinnabar Basin, a major tributary of Mol Heron Creek, and near the mouth of Mol Heron, where it joins the Yellowstone River.

Although the upper reaches of the Mol Heron drainage owned by the Church could not be historically classified as pristine, the area has been able to naturally reclaim much of its original beauty and appeal.

The Montana Department of State Lands hired a consultant to do abandoned mine reclamation on several mines in and around the former towns of Aldridge and Electric. The department began the project in 1986 and finished in 1989.

The work included closing or backfilling open mine shafts and adits, backfilling subsidences, regrading and burying coal slack piles, demolishing dilapidated buildings, providing access, cleaning up debris, neutralizing coal slack areas, fencing, and revegetating all disturbed areas.

The Aldridge Creek Project was composed of five sites: 1) Aldridge Cree, 2) Electric, 3) Spring Creek, 4) Beattie Gulch, and 5) Deaf Jim. All the land in the project area was owned by the Church.

### **3.2.2.2 Mol Heron Shelter Complex**

#### **The Decision to Build**

During the DHES's first environmental review, the only activities stated by the Church for the upper reaches Mol Heron Creek were the summer conference and cattle grazing. The following statement was made in the DEIS during a discussion of land-use in the drainage:

According to the Church, one of the prime reasons for purchasing the property (RTR-S) was the aesthetic retreat-like quality of the Mol Heron drainage. These qualities were tied to its spiritual beliefs....

The question of development in the upper reaches of Mol Heron was of particular importance to the department because of possible impacts on wildlife and other environmental resources.

The Church discussed the possibility of property development in the DEIS by stating:

**Property Development** - The report draws the conclusion that "The scale of Church's land purchases has been exceeded only by its energy in developing the property. It has filed aliquot subdivisions for much of its land." What is referred to here is an aliquot division (legal description of parcels according to aliquot parts of the public land survey) that was filed on the South Ranch (former Forbes Ranch - 12,000 acres) in 1982. However, this was done in response to the proposed emergency interim zoning ordinance proposed at that time by the County Planning Board, which we (the Church) felt was specifically directed against our presence in the county. At the time we explained that our action was to protect our property rights and that we had no intention of ever selling these lots. We have not, to this date, ever sold a single lot and none of the Church's other ranch property has been so subdivided. And it is not our intention to do so in the future. Interestingly enough, after the aliquot division occurred the zoning proposal was then dropped. It should be clear, therefore, that the nature and intent of this action was not "developing the property" as asserted in the report, but protecting our property rights....

Not only did the Church express its desire not to sell subdivided property in the Mol Heron drainage, it also mentioned no plans for development of any sort in that area, Church sponsored or private. This led the DHES to state the following in its discussion of **Short-Term Uses of Man's Environment vs. Long-Term Productivity of the Environment** in the DEIS:

Since one of the factors which led to the purchase of the property was its scenic setting, it's reasonable to believe the Church is as interested in minimizing short and long-term impacts and will work toward establishing environmental practices aimed at maintaining the health and beauty of the area.

After completing the EIS process and successfully defending it in district court in the spring of 1989, the department was astonished to learn soon after the court decision that the Church was building a fallout shelter at its conference site in the Mol Heron drainage.

The official response to the DHES' inquiries about how the decision was made to build the shelter came almost a year later in February 1990. The Church said the idea was derived from its interest in "survival preparedness and civil defense" and the "...choice of the location and the existence of the project itself was a matter of divine inspiration...."

### **The Shelter Complex**

Mol Heron Shelter Complex is located on approximately 13 acres as indicated on Maps 1-2 and 1-7.

Church staff members are entitled to use or occupy the Mol Heron shelter if nuclear war occurs. The maximum design capacity of the fallout shelters is for approximately 750 adults.

The fallout shelters were fabricated and constructed in shops located at RTR-S. Each of the six shelters consist of several structural components made of 13'-diameter corrugated structural plate steel tanks ranging in length from 24 ft. to 58 ft. After completion inside the shop, each of the structural components was then transported from the shop area to the shelter site, where they were connected together within the excavation to make up the completed shelter complexes. The entryways, air intakes and exhausts, interconnects, and other associated facilities were connected to each of the shelters, and the entire assembly backfilled.

The central storage/shelter facility consists of corrugated structural steel components fabricated by the manufacturer, shipped by truck to the site, and installed on a concrete foundation and structure prepared in advance. Backfilling and internal finishing was performed after the installation described above.

The livestock shelter facility consists of twelve 8'x8'x40' steel cargo containers trucked to the site, placed together on concrete strip footings, supported by treated wood sidewalls and a steel deck ceiling reinforced with concrete, and connected to a walk-in entryway. Backfilling and internal finishing was performed after the installation described above.

## **Fuel and Power**

The shelter had 35 underground tanks that were storing 630,000 gal. of petroleum products. The tanks included: 26 - 20,000 gal. diesel tanks, 5 - 20,000 gal. gasoline tanks, two tanks (one 6,000 gal. and the other 5,000 gal.) containing motor oil, a 1,500 gal. tank with hydraulic fluid and a 2,000 gal. tank of antifreeze. In addition to the underground diesel, gasoline and petroleum product tanks, there were eight 30,000 gal. underground liquid propane (LP) gas tanks.

Besides conventional hook-up to Montana Power Company, electrical power for the Church's fallout shelters at the Mol Heron site is provided by a diesel-fueled generator located in each shelter. For each shelter there is also an identical emergency backup generator provided in the event of a failure.

Heat is furnished primarily by waste heat recovery (cogeneration) from the generator cooling water and engine exhaust. Hot water is stored in an insulated hot water tank in each shelter. A backup heat source in the event of generator or waste heat recovery system failure is provided by two propane-fired tankless water heaters for each shelter. Propane fuel is used for cooking heat. The generator in each of the six shelters is sized to consume approximately 1.5 gallons per hour (gph) of diesel fuel during generator operation.

In addition to the six shelters, the central storage/shelter facility is provided with a diesel generator and backup of the same size as those provided for each of the six shelters (1.5 gph), as well as a larger diesel generator (and emergency backup) capable of supplying power to most of the shelter complexes and central storage/shelter facility at once. This generator system is sized to consume approximately 4.25 gph of diesel fuel during generator operation, in lieu of the operation of the individual shelter generators at 1.5 gph each. However, this latter system is currently incomplete and nonoperational. The waste and by-products resulting from the use of diesel generators and propane water heaters and stoves are the vapors and fumes resulting from fuel combustion.

## **Shelter Water and Sewer**

The water facilities for the shelters consist of one well attached to each of the six shelter complexes, a submersible well pump and internal domestic plumbing in each shelter for toilets, showers, sinks, drinking water purification system, air cooling system, and other associated fixtures.

The sewer handling facilities consist of an internal collection system of pipes and drains connected to a central sewer collection main for each of the six shelters which is stubbed out from the structures and capped off. The sewage system is incomplete and nonoperational. The possibilities include the installation of holding tanks or a septic tank and drainfield sewage disposal system designed to be used for less than 60 days or in the event of a nuclear war. To date, these systems have not been

installed. Park County will be responsible for the approval of the plans and specifications for the water and sewer facilities.

In the Partial Consent Decree agreement between the Church and the DHES, the Church agreed not to use any of the individual shelter water supply and sewage systems for more than nine families or 24 persons daily for any more than 59 days out of any calendar year.

The Church states it presently has "...no particular plans..." to use the Mol Heron shelters. Maintenance and repair activities will occur as needed.

### **Mol Heron Fuel Spill**

The Mol Heron gasoline and diesel leaks occurred between April 7 and April 14, 1990. Approximately 21,000 gal. of #2 diesel fuel and 11,000 gal. of unleaded gasoline leaked from three ruptured underground storage tanks located around the shelter complex. Three separate hydrocarbon plumes, one from each ruptured tank, were present in the water table beneath the shelter complex area. For discussion purposes, the three plumes are identified as the Creekside plume (diesel), the G1 plume (unleaded gasoline) and the D15 plume (diesel). All three hydrocarbon plumes are in an alluvial aquifer at depths of from 5 to 50 ft. below the surface.

On April 11, 1990, the Church hired Envirocon, Inc., Missoula, to assist in remediation activities. On July 11, 1990 Envirocon released a report, entitled Mol Heron Fuel Spill - Summary and Description of Long-Term Ground Water Remediation and Monitoring Program, which summarized what happened at the shelter complex and the actions taken to clean up the site. The following was derived from that report and is supplemented by the most recent quarterly report by the Church to the DHES.

Envirocon and the Church employed recovery systems in each of the three plumes. Free product was removed by using a variety of means, such as: vapor extraction using mechanical means, creating a vacuum to extract vapors), product-only recovery (using mechanical means to extract only petroleum products), a pumping system that extracted dissolved petroleum constituents in ground water, interceptor trenches (gravel lined trenches with a plastic barrier downgradient) and recovery sumps. A three-well ground water pump and treat system also removed ground water containing dissolved gasoline.

In addition to recovery from the water table, approximately 2,500 cubic yards of diesel fuel contaminated soil and 4,120 cubic yards of gasoline contaminated soil were excavated from beneath and around the ruptured tanks. Envirocon estimated that 3000 - 5000 gal. of diesel fuel and 3000 - 5000 gal. of gasoline were removed with the contaminated soil. Contaminated soil was transported to the Biological Land Treatment Area (landfarm) located approximately three miles from the shelter complex. The selection of the treatment area and berms constructed around it provided runoff and runoff control, ground water and surface water protection and

monitoring, erosion control and access via suitable roads for transporting the soils to the treatment area.

### **Mol Heron Creek**

Mol Heron Creek was sampled daily from April 12 through May 5, 1990, and sampling has continued less frequently, but routinely since then. Background total petroleum hydrocarbon (TPH) concentrations up to 0.5 parts per million (ppm) were indicated by results from sample point R-5, which was upstream of all remedial activities. No above-background TPH concentrations were detected since mid-April, 1990. No benzene, toluene, ethylbenzene and xylenes (BTEX) concentrations were detected since April 27, 1990, with the exception of 0.95 parts per billion (ppb) toluene on May 31, 1990.

No further release of hydrocarbons to Mol Heron Creek was anticipated based on the known extent of the gasoline and diesel plumes and the effectiveness of recovery systems in operation according to Envirocon's July 1990 report.

### **Post Cleanup Disposition of Fuel and Tanks**

All underground storage tanks were exhumed by June 26, 1990 and were removed from the Mol Heron Shelter Site by October 1990 (except the three ruptured tanks, which were tested and removed from the site by May 5, 1991), and are being stored at the Church's industrial park site in Livingston.

The fuel which was not sold or used is being stored in "frac tanks" at the Ranch Headquarters, RTR-S. The Church hopes to keep the 14-16,000 gal. tanks at that location until it receives permission from the DHES to install new tanks at the shelter.

The State Fire Marshal's Office initially approved the use of the temporary tanks on April 20, 1990. The present storage situation was recently reassessed, and the Fire Marshal's Office extended the "temporary" installation to April 30, 1993.

### **Shelter Site Reclamation**

Reclamation on the original shelter construction is more than 95% complete. Additional localized disturbances are required for installation of the new underground fuel tanks and piping, the onsite septic systems and any associated site work (i.e., access, recontouring, landscaping, drainage, fencing, etc.). It is anticipated that these additional disturbances would be fully restored and replanted within six months to one year after all permits and approvals are received (depending upon the season in which the approvals are received).

There are no plans for expansion of the shelter other than to install the new underground fuel tanks and piping (DHES permit) and to install the onsite septic systems (Park County permit), together with any associated site work.

Maintenance needs will likely include periodically inspecting, operating and performing preventative maintenance on life support systems to ensure reliability, monitoring shelter and storage areas for vermin, water seepage, condensation, rust, corrosion, deterioration, etc. and taking necessary corrective action, monitoring food and other supplies for fitness and exchanging where necessary, landscape irrigation and maintenance, road maintenance, monitoring of fuel systems and storage, periodic cleaning, and other normal maintenance and repairs.

### 3.2.2.3 Conference Facility

Outdoor conferences at the Mol Heron site are held once each year. Normally, the conferences begin in the last week of June and run for 7-14 days over the 4th of July weekend.

The conference site, campgrounds, roads, foot paths and parking areas occupy 60-70 acres. About 25-30 additional acres are used for undeveloped camping, transition and outdoor activity areas.

Approximate attendance at past Mol Heron site conferences are as follows:

1982	-	2,027
1983	-	1,986
1984	-	4,074
1985*	-	
1986*	-	
1987	-	4,464
1988	-	4,696
1989*	-	2,600
1990*	-	3,200
1991*	-	3,800
1992	-	4,200

(\* Note: Summer conferences were not held in the Mol Heron drainage during 1985, 1986, 1989, 1990 or 1991.)

The 1985 and 1986 summer conferences were held at the Church's former California headquarters. The 1989, 1990 and 1991 conferences were held at the Ranch Headquarters on the RTR-S. Attendance for future years is expected by the Church to run from 4,000 to 6,000.

A majority of the conferees stay overnight in campground facilities provided near the Mol Heron conference grounds. These facilities include camping areas with vehicle access and parking, several areas designated for tent camping with foot access only, spaces provided by the Church in dozens of "dormitory" tents (approximately 16' x 32'), a men's showerhouse and women's showerhouse, restrooms, several parking areas, a potable water system, a sewage disposal system, a system of lighted footpaths, additional "portable" toilets, and garbage disposal containers.

The existing Mol Heron campground facilities will accommodate about 3,500 persons. The Church does not anticipate having insufficient capacity. Overflow camping can be quartered at the East Gate/Cinnabar Campgrounds at Corwin Springs. Showerhouses are available at this location.

Most meals for the conferees are prepared in the Ranch Headquarters community kitchen, which routinely prepares meals for Church staff. Prepared food is placed in sealed pans and containers and transported to the conference site.

Meals are served in designated food service tents at the conference site. A limited amount of equipment is used in the food service tents or elsewhere on the site to heat water for tea and coffee, to warm precooked meals, and to cook some foods such as hamburgers, hot dogs, popcorn, grilled breakfast items, and occasionally fish.

Prepackaged foods such as sandwiches, chips, nuts, candy bars, etc., are also sold to conferees onsite. Each evening upon the closing of conference activities, all food items are removed from the site or stored in sealed cargo containers or coolers that are bear-proof and all garbage is removed from the site.

Campers are allowed to cook over open fires, subject to closures in the event of high fire danger. Information on preventing bear contacts by safe cookery/food storage practices is distributed to conferees.

### **1992 Conference**

Last spring the Church notified the DHES it was planning a number of projects at the conference site that did not require DHES review and approval. These projects were in preparation for its conference at the Mol Heron gatherings site. The projects included:

- a. The installation of chain link fence around shelter facility,
- b. Painting outside storage units and all surface penetrations,
- c. Telephone cable repair, exterior transformer installation,
- d. Culvert repairs,
- e. Bridge replacement,
- f. Foot bridge installation,
- g. Relocation of grain bins,
- h. Site cleanup and reclamation,
- i. Road and foot path restoration and maintenance,

- j. Preparations for 1992 and future summer conferences, including gravel on tent sites and small concrete footings for main tent, and
- k. Graded parking area near conference grounds.

### **Sewage Disposal**

The Church has used a number of means for disposing of sewage generated at conferences. It has contracted with licensed disposal companies, used its own licensed "spread fields", and contracted with municipal systems.

For the 1992 conference, the Church contracted with a licensed company to pickup the sewage and also contracted with the City of Livingston to dispose of the sewage in its municipal treatment plant.

One of Church-owned spread fields is situated on RTR-N and the other on RTR-S. The North Ranch field is 1.8 acres, and surrounded by agricultural land. The South Ranch field is 2.5 acres on a bench about a half a mile west of the Ranch Office.

The South Ranch field has not been used for several years. The North Ranch spread field is currently approved for 20,000 gallons of septage per year from maintenance pumping of septic tanks.

Spread fields are approved on an event-by-event basis by the Park County Sanitarian's Office. Included in the approval process is a review of the proposed amount of material to be spread, the tilling of the material into the soil and the monitoring of decomposition.

## **3.3 Physical Environment**

### **3.3.1 Wildlife (Terrestrial Life and Habitats)**

#### **3.3.1.1 Public Issues**

Public scoping meetings on April 10 and October 15, 1990, elicited concerns about the effect of proposed actions on resident and migratory wildlife. Grizzly bear, elk, bald eagle and peregrine falcon were mentioned individually. All species mentioned in the original EIS as "Wildlife of Particular Interest", will be considered where new information or analysis is relevant. Other species (such as mule and white-tailed deer) are not covered in the "Physical Environment" section because the original description was adequate, but may be discussed in Section 4 ("Effects") where new impacts are predicted. We have added the wolverine as a species possibly affected by the cumulative impacts of Church property development.

### **3.3.1.2 Geographic Scope for Each Proposed Action Site**

For the East Gate Work Camp, Spring Creek Headquarters and Mol Heron Sites, the affected environments are the project sites as described in Chapter 1 of this SEIS. The site-specific cumulative analysis area comprises what is usually referred to as Royal Teton Ranch - South (RTR-S).

Similarly, project sites define the affected environment for the Glastonbury and North Ranch activities (Golden Age Village and Blue House Community Kitchen). Site-specific cumulative impacts are analyzed for Church holdings south and west of Emigrant and south of Livingston.

The general cumulative impacts for all proposed permits and permit modifications may include potential future actions of the Church on all properties it owns or leases between Livingston and the northern border of Yellowstone National Park.

### **3.3.1.3 Existing Conditions**

#### **East Gate and Spring Creek Headquarters Sites**

A general description of environmental conditions at the East Gate Work Camp is given elsewhere in this document. It is a pre-existing site where an increase in occupancy is the only change contemplated at present. The Spring Creek Headquarters facility was reviewed in the original EIS. However, the permit modification would increase the size of the headquarters by an additional 15 acres.

The Spring Creek site is at a constriction in the Yellowstone River valley where the slope of Devil's Slide limits movement of some wildlife species to a corridor 1/4 to 1/2 mile wide. Pre-project comparison photos in this vicinity (Houston 1982) show a vegetation change over the past hundred years, a change which greatly reduced the native bunchgrass community and replaced it with less palatable grasses and shrubs. However, the portion of the site indicated as the expansion area shows signs of heavy use by a mix of ungulate species. State wildlife authorities (Lemke, pers. comm.) have observed large numbers of mule deer in this area during spring helicopter surveys in 1992. Updated and supplemental information for the site-specific cumulative effects analysis area (RTR-S) is provided below.

#### **a. General Wildlife**

##### **1) Bighorn Sheep**

A map of bighorn sheep groups sighted during 1992 surveys is given in Figure 3-1. Total numbers (222) and lamb recruitment (28 lambs: 100 ewes) seem to indicate a continuing recovery from the "pink-eye" epidemic of the early 1980s (MDFWP 1992b).

## 2) Elk

Information on elk presented in the DEIS (DHES 1988:12-14) suggested that the Church owns between 30 and 35 percent of elk winter range, and that 500-1,000 animals are found on Church property at any given time during the winter. After a sharp "die off" in 1988/1989, the herd has rebounded to around 6,000 animals counted north of Yellowstone in 1992 (MDFWP 1992), slightly more than were present when the DEIS was prepared (See Figures 3-2 and 3-3).

The importance of Church property to wintering elk was acknowledged in the DEIS. The principle change in the physical environment for elk is the acquisition of the OTO Ranch Property from the Church by the Rocky Mountain Elk Foundation.

## 3) Pronghorn Antelope

Population estimate in 1988 was 470 for this population (DHES 1988:20). By 1991 the herd had grown to 588 and mean daily numbers using Church property increased from the low 20's in 1988 75-150 in summer and up to 300 in winter (Lemke, pers. comm.) Use is particularly heavy near the Spring Creek Headquarters site, west of the county road (Scott 1991). Farming occurs on Church property in May and June (Lemke, pers. comm.).

Additional information is available on the prevalence of livestock-borne diseases and the genetic uniqueness of this pronghorn herd. Neither subject was covered in the original EIS. As of June, 1992, nearly 50 percent of 21 Yellowstone pronghorn tested showed exposure to para influenza-3 infection, and 80 percent to bovine viral diarrhea infection. Domestic cattle are a reservoir for both of these diseases (Scott pers. comm.). Recent research by Lee et al. (1992) has found that Yellowstone antelope carry a unique genetic element, mtDNA haplotype "J", an attribute which may qualify the herd for protection as a unique threatened population under provisions of the Endangered Species Act of 1973.

## 4) Bison

The DEIS stated (DHES 1988:21): "Bison using the northern range in Yellowstone National Park have been gradually shifting the focus of winter foraging further to the north." This situation has continued to develop, with bison now attempting to winter on Church property in considerable strength. Francis (pers. comm.) reported numbers have increased from "around thirty" in the early 1980s to over 300 at present; these numbers substantially agree with a published report by Meagher (Meagher 1989:672) that documents surveys averaging around 60 animals in the Mammoth-Gardiner-Reese area from 1982 to 1985, increasing to 241 in 1985/86 and 229 in 1986/87.

Causes of the activity are the subject of much debate, but are obviously related to overall population size and the generally nomadic nature of the species (McCullough 1985:460). The northern herd is 600-800 animals, about four times the

Park's "core number": in a recent Environmental Assessment (EA), the Park Service asserted that a herd size of 200 animals is consistent with long-term biological data and aesthetic considerations (Yellowstone National Park 1992:4). The EA suggests that the Park Service is taking more active responsibility in the restraint of animals leaving the Park.

The Montana Department of Livestock has pursued a "no bison" policy as recently as 1990 (Montana 1990), due to the threat of brucellosis transmission from bison to cattle. The conflicting goals of a variety of agencies led to a commitment to a long-term planning effort, currently underway to manage bison to the satisfaction of MDL, NPS, MDFWP, and the Animal and Plant Health Inspection Service (APHIS).

#### 5) Carnivores

There is extensive new information on the abundance and distribution of carnivores in the project area. "Only occasional sightings" of lions were reported in the DEIS (DHES 1988:22). There are now data to suggest resident mountain lions and bobcat (Murphy pers. comm.). Wolverines were not mentioned as an affected species, but five sightings between 1988 and 1991 (Murphy pers. comm.) geographically bracket Church property at RTR-S and suggest it may be an important travel corridor.

#### b. Threatened or Endangered Species

##### 1) Grizzly Bears

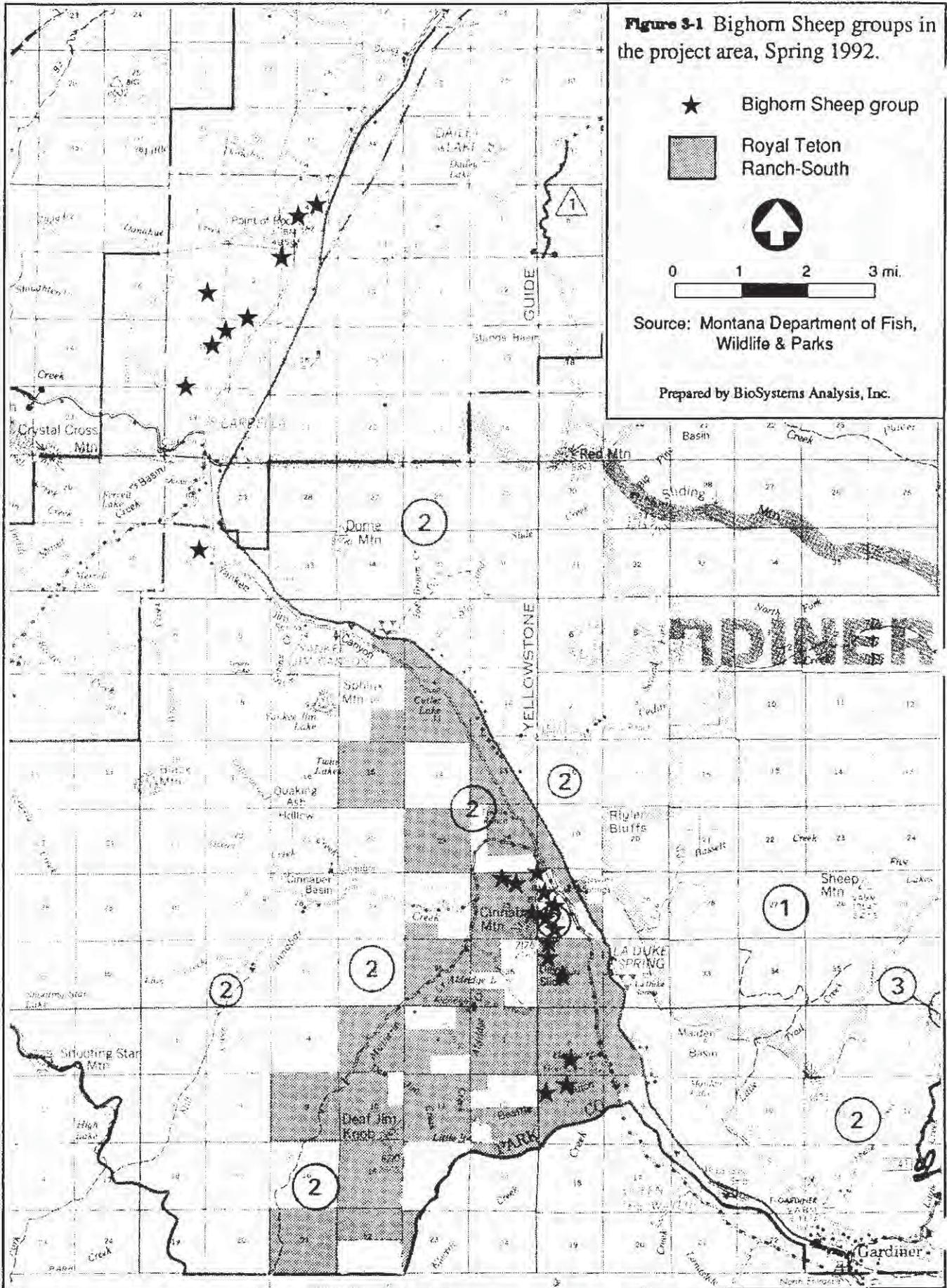
The Interagency Grizzly Bear Study Team has documented the number and location of all grizzly bear sightings since Jan. 1, 1989. The Gallatin National Forest has mapped grizzly bear habitat components in the project area. Both provide updated support for the assertion in the original EIS that "the northwest corner of Yellowstone National Park and the adjacent nonpark lands include an area providing year-round habitat and high-density sightings (DHES 1988:23)."

Since the publication of the EIS, several new sources have added to our knowledge of grizzly ecology in the project area. Knight et al. (1988) assimilated data from 1973 to 1985 and in 1988 published a report on mortality patterns and population sinks for Yellowstone grizzly bears. They found the area near Gardiner, bounded approximately on the east by the Absaroka slopes, the west by the Gallatin River and extending north to Dailey Lake, to be a "major population sink" (Knight et al. 1988:123). These sinks present the greatest threat to the survival of the Yellowstone population (Knight et al. 1988:124).

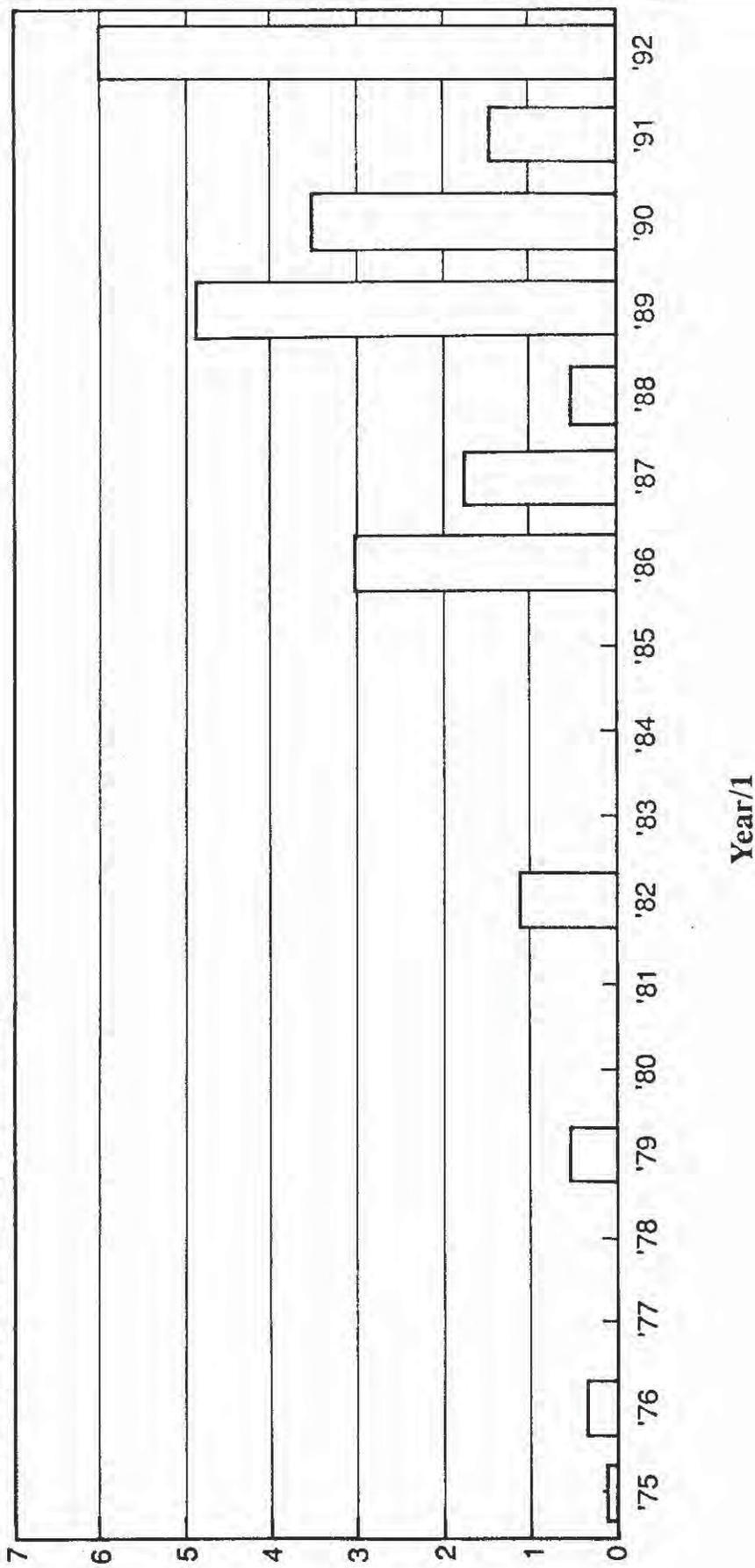
##### 2) Bald Eagles

The original EIS underrepresented the importance of this area to bald eagles, possibly because the Bear Creek (Jardine Mine) bald eagle nest was unknown at the time. The Bear Creek nest was discovered in May of 1988, and fledged one bird the

**Figure 3-1** Bighorn Sheep groups in the project area, Spring 1992.



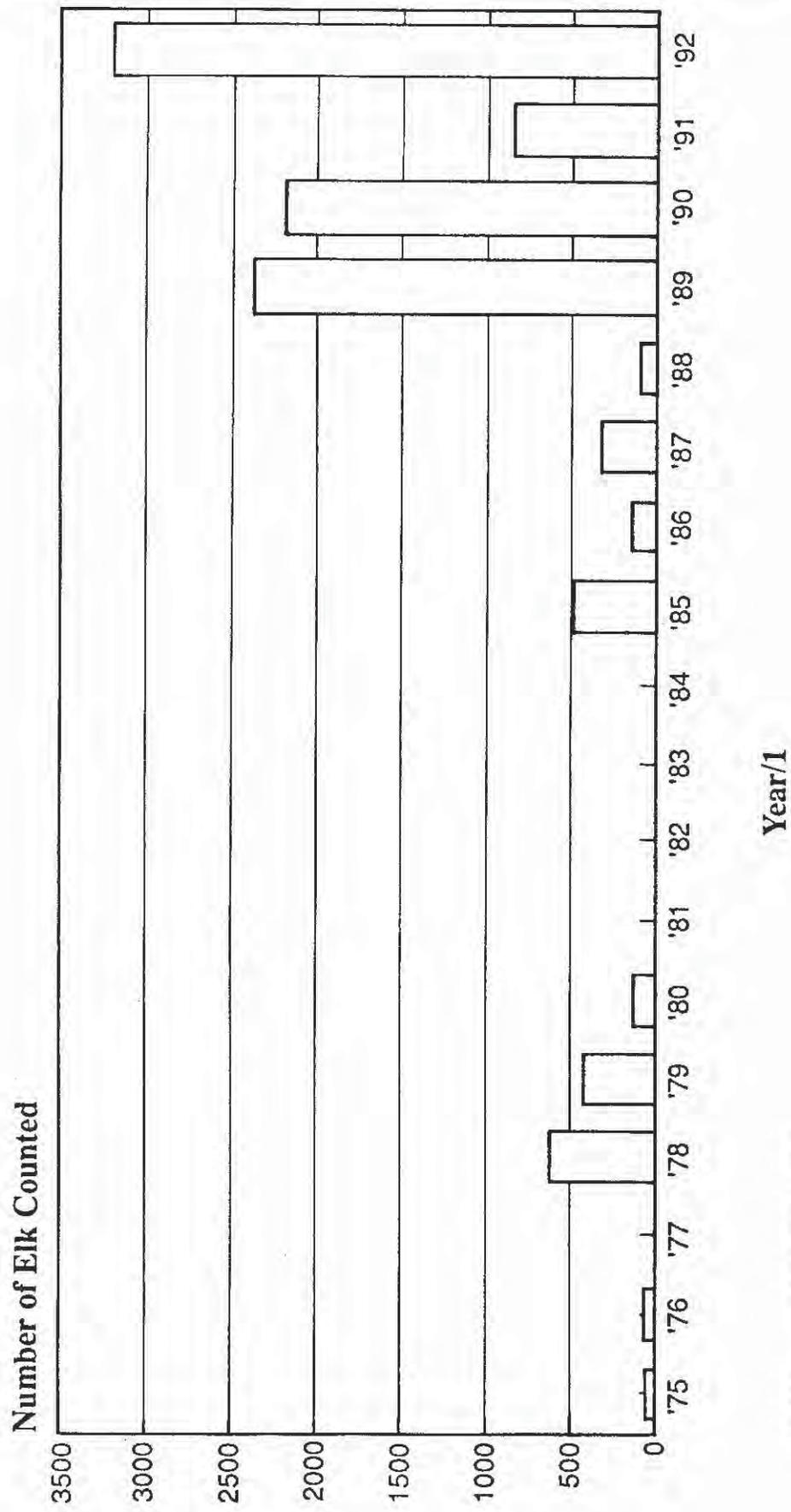
Number of Elk Counted (Thousands)



/1 Winter 1974/75 = '75

Figure 3-2 Elk counted north of Yellowstone National Park.

Prepared by BioSystems Analysis, Inc.



/1 Winter 1974/75 = '75

Figure 3-3 Elk counted north of Dome Mountain.

following year (Montana Natural Heritage Program 1992) and two in 1992 (Lemke, pers. comm.). They have been seen foraging in the area between the mouth of Mol Heron Creek north to the mouth of Joe Brown Creek, especially in cottonwood trees on Church property near the southern end of Yankee Jim Canyon (Harmata 1988).

### 3) Peregrine Falcons

Since the original EIS (which stated there had been no documented sightings of nesting peregrines in the vicinity of RTR-S) peregrines have begun to use the Dailey Lake "hack box" (an artificial structure used in peregrine reintroduction) for nesting. Dailey Lake is within six air miles of Church property at RTR-S. Individual birds were observed near Mol Heron Creek in 1989; at Yankee Jim Lake in 1991 (Lemke, pers. comm.); at Point of Rocks Fishing Access and at Devil's Slide in 1992 (McEneaney pers. comm.). The Montana Natural Heritage Program (1992) documents historic eyries near the summit of Emigrant Peak, and along the Yellowstone River between three and four miles south of Livingston. All of these eyries were considered as having a "high potential for re-occupancy" and none was named in the original EIS.

### **Mol Heron Shelter Site**

The Mol Heron site is within the RTR-S and much of the information presented above for East Gate and Spring Creek Headquarters is applicable here. The head of the Mol Heron drainage is relatively less important as ungulate winter range (Tyres pers. comm.) than the rest of RTR-S, and relatively more important as habitat for the bald eagle and grizzly bear. Undergrounding of facilities here makes long-term reclamation possible, with at least a superficial return to the "old field" (abandoned pasture) that was the pre-project condition (Francis pers. comm.). Updated and supplemental information for the site-specific cumulative effects analysis area is provided below.

#### a. General Wildlife

For most wildlife species, descriptive material provided for this area in the DEIS (DHES 1988) is adequate.

#### b. Threatened or Endangered Species

##### 1) Bald Eagles

The Mol Heron drainage is a low-gradient watershed that supplies the habitat requirements of mature cottonwoods in its riparian zone, providing roost trees in a matrix of excellent foraging habitat. Three dead eagles have been recovered from this area since the original EIS (McEneaney pers comm), two bald and one golden. Three eagle mortalities are compelling evidence of simultaneous heavy use by and heavy risk for eagles in the Mol Heron.

## 2) Grizzly Bears

The value of upper Mol Heron drainage was discussed in the original EIS (DHES 1988:23). Recently, another biologist (Tyres pers. comm.) has suggested that, since the area near Electric Peak ranks very high in cub production, Mol Heron is a natural point of expansion for the nearby portion of the Yellowstone grizzly population.

### **Golden Age Village and Blue House Kitchen Sites**

There was no inventory information in the original EIS pertaining directly to wildlife north of RTR-S, since activities here were only considered "possible future developments (DHES 1988)." However, the general discussion of "existing environment" in the DEIS (DHES 1988:11), the species lists in Appendix 1 (DHES 1988:128) and referenced literature cover most of Park County and all of the ranch property south of Livingston, including the Golden Age Village and Blue House Kitchen sites. This level of information was considered, when challenged, to be adequate for compliance with Montana law by a Montana District Court. Only additional or more recent information is furnished below.

The Golden Age Village expansion will impact about 70 acres of grassland, a mixture of "old field" (abandoned pasture) and native perennial grasses with scattered juniper trees. The North Ranch Blue House permit involves drilling a single well.

#### a. General Wildlife

The expansion area for the Golden Age Village is north of usual winter range for bighorn, pronghorn and bison (Houston 1982), but is a foraging area for kestrels and red-tailed and Swainson's hawks.

#### b. Threatened or Endangered Species

Since the publication of the FEIS a pair of bald eagles has attempted to nest near Emigrant, on the west side of the Yellowstone, at a site near to (but not within) Glastonbury North. Between May 15 and 29, 1992, the nest tree was felled and the nest destroyed (McEneaney pers. comm.).

### **3.3.2 Aquatic Life and Habitats**

Data on aquatic resources was gathered from various sources, including the Montana Department of Fish, Wildlife and Parks (MDFWP), U.S. Forest Service (USFS) (Gallatin National Forest), and university libraries. In addition, interviews were conducted with Brad Shepard of the MDFWP, Bruce May of the USFS, Ron Jones of the U.S. Fish and Wildlife Service (USFWS), and Edward Francis of the Church. Because the purpose of this analysis was to update and supplement the original DEIS (Montana DHES 1988), this information search focused on more recent studies.

### 3.3.2.1 Existing Conditions

#### East Gate Work Camp

As discussed in the 1988 DEIS, the upper Yellowstone River near the East Gate Work Camp in Corwin Springs, Montana, supports salmonid populations including the native Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) and non-native brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), and rainbow-cutthroat trout hybrids. Other fish species found in the Yellowstone River include white sucker (*Catostomus commersoni*), longnose sucker (*C. catostomus*), mottled sculpin (*Cottus bairdi*), and longnose dace (*Rhinichthys cataractae*).

Of these fish species, the Yellowstone cutthroat is the only species given special status. The trout is classified a "Species of Special Concern - Class A" by the Montana chapter of the American Fisheries Society. This designation, recognized by MDFWP, is given to a species when the range has been severely reduced. Yellowstone cutthroat are estimated to occupy less than 10% of its historic range (Varley and Gresswell 1988). Loss of habitat, competition and hybridization with introduced salmonid species, and overharvest are the primary reasons given for the decline of this native trout. In the Yellowstone River drainage, dewatering of spawning tributaries has also been cited as a major limiting factor for Yellowstone cutthroat (Clancy 1988).

Growing concern over the Yellowstone cutthroat's reduced range and associated loss of genetic diversity has warranted further analysis. In 1983, MDFWP and USFS (Gallatin) began conducting genetic studies on trout in headwaters of the Yellowstone drainage. Trout were collected from 63 streams in the upper Yellowstone River drainage, including tributaries flowing through Royal Teton Ranch (RTR) property. Using protein electrophoresis techniques, samples of trout were identified as either "genetically pure" or hybrid strains. In 1983, trout populations sampled in the Yellowstone River approximately 15 km downstream of the East Gate Work Camp did not contain genetically pure Yellowstone cutthroat. Further genetic studies on trout populations in the upper Yellowstone River drainage are planned, but sampling locations have not been finalized (B. May, USFS, pers. comm.).

Although pure strain Yellowstone cutthroat were not identified in the Yellowstone River, this area of the project evidently contains good habitat for the species. Clancy (1988) sampled the Yellowstone River at four locations between Yellowstone National Park and Springdale, Montana, and several tributaries from 1978 to 1987. In general, a higher number of adult (>2 year old) Yellowstone cutthroat trout were found in the main river near tributaries designated as high-quality spawning. In the Corwin Springs area, these tributaries include Tom Miner, Mol Heron, Cedar, and Bear Creeks, all located within 15 km of the East Gate Work Camp. No other high quality spawning tributaries were identified between Corwin Springs and Livingston as many of the Yellowstone River tributaries are often dewatered during periods of time corresponding with Yellowstone cutthroat spawning period (June-July).

Monitoring fish populations has continued on the Yellowstone River in several locations, including one near RTR-S just above the Corwin Springs Bridge and one in the vicinity of the RTR-N below the Mill Creek Road Bridge (B. Shepard, correspondence, 6-22-92). Preliminary data suggest that cutthroat trout populations have increased in the locations since 1985, while populations further downstream, near Livingston and Springdale, have decreased.

A discussion of macroinvertebrate communities in the Yellowstone River can be found in the 1988 DEIS.

### **Spring Creek Headquarters**

The proposed site of the Spring Creek Headquarters is located on the west bank of the Yellowstone River, approximately 2.5 km upstream of the East Gate Work Camp. Due to its proximity to the East Gate Work Camp, the environmental conditions at this proposed site are the same as described for the East Gate Work Camp.

### **Mol Heron Shelter Site**

Mol Heron Creek was historically dewatered for agricultural activities; however, due to reduced demands and use of existing water rights by the Church, the creek currently flows year round (Montana DHES 1988). Negotiations for establishing a minimum instream flow in Mol Heron Creek are currently being discussed between the Church and the MDFWP and USFS (E. Francis, the Church, correspondence, 6-6-92).

Since the 1988 DEIS, studies conducted on Mol Heron Creek include fish and benthic macroinvertebrate surveys following a diesel fuel and gasoline spill from previous fuel storage tanks associated with the fallout shelter. In addition, spawning adult and fry surveys have been conducted near the mouth of Mol Heron Creek.

Fish species found in Mol Heron Creek include many of those found in the Yellowstone River and include Yellowstone cutthroat trout, rainbow trout, rainbow-cutthroat hybrids, brown trout, mountain whitefish, mottled sculpin and longnose sucker. Mol Heron Creek was identified as a high quality spawning tributary for Yellowstone cutthroat trout (Clancy 1988) and recent studies have confirmed its importance. In June 1990, spawning Yellowstone cutthroat and rainbow trout were captured immediately upstream from its mouth (B. Shepard, correspondence, 6-22-92). Large numbers of trout fry (1,199) were captured during July-September 1990 fry trap surveys (B. Shepard, correspondence, 6-22-92). In the following year, little fry recruitment was documented, most likely the result of high sediment and debris loads incurred in the stream following intense thunderstorms.

The current status of genetically pure Yellowstone cutthroat in the vicinity of the Mol Heron shelter site and upstream is unknown. Resident trout populations sampled in Mol Heron Creek below its confluence with Cinnabar Creek in 1986 were

composed primarily of hybridized rainbow-cutthroat; however, genetic analysis revealed that pure Yellowstone cutthroat were also likely present (Leary et al. 1987). In 1990, Yellowstone cutthroat trout were caught during electrofishing surveys conducted in the vicinity of the Mol Heron shelter. No analysis was conducted to determine genetic integrity of the trout collected.

To aid upstream passage of cutthroat trout into upper Mol Heron Creek, a fishway was recently installed in a high-gradient culvert thought to be blocking fish passage upstream. Because the effectiveness of this fishway has not been assessed (B. Shepard, correspondence, 6-22-92), it is unknown whether adult trout migrating out of Yellowstone River are able to use the upper regions of Mol Heron Creek for spawning.

Benthic macroinvertebrates in Mol Heron Creek were sampled above and below the spill site in April 1990. Macroinvertebrate communities above the spill site in the unimpacted section of stream were dominated by chironomids, ephemereid mayflies, and limnephilid caddisflies (Bukantis 1990).

Macroinvertebrate abundance above the spill was higher than that observed below the spill. Macroinvertebrate abundance above the site (mean=285, std. dev.= 79) were generally the same as those observed in a nearby drainage, Bear Creek (B. Bukantis, DHES, pers. comm.). In August 1990, a visual survey of these same sites as well as an additional upstream location were conducted to evaluate recovery of macroinvertebrate populations following the spill. These surveys were brief and qualitative and it was noted that "invertebrate densities and community structure appears to be recovering rapidly" in the impact sites (B. Shepard, correspondence, 8-7-90).

The initial decline in abundance of macroinvertebrates was cited as a direct result of the spill. It is also possible that increased sedimentation in the creek contributed to the observed decrease in macroinvertebrate abundances below the shelter site. Construction of the Mol Heron fallout shelter site was not completed until 1990. During spring 1990, construction operations were contributing to erosion along the banks and sedimentation in the stream (Bukantis 1990, B. Shepard, MDFWP, pers. comm.). Although straw bales were used to contain sedimentation (E. Francis, correspondence, 6-6-92), it is possible that sediments reached the stream and had adverse effects on benthic invertebrate populations.

Prior to the Church activities in the upper Mol Heron drainage, this creek was identified as a "moderate" sediment producer in the Yellowstone River drainage (Shovic et al. 1988). Only a small amount of erosive land was identified in the Mol Heron drainage and was located in the canyon area of Mol Heron Creek above its confluence with Cinnabar Creek (Shovic et al. 1988). As a result of fires in Yellowstone National Park in 1988, approximately 0.8 mi<sup>2</sup> of area was burned in the upper Mol Heron watershed (B. Bucher, pers. comm., 10/9/92). It is possible that subsequent erosion in the upper watershed contributed to higher sedimentation loads downstream.

In addition to the fallout shelter, the Church uses this area of Mol Heron Creek as setting for annual summer conferences of 4,000 to 6,000 people. Preparation for this conference includes road improvement, construction of temporary campsites, and installation of large temporary tents on the south side of the creek. In June 1992, construction of a new parking lot and footbridge was taking place in the drainage. Conference attendees are allowed to fish Mol Heron Creek; however, catch is restricted to one fish per fisherman during duration of the conference and all other fish must be released (E. Francis, correspondence, 6-6-92). These restrictions are stricter than current state regulations and are not enforced during other times of the year. Fishing activity on the upper regions of Mol Heron Creek during other time periods is not significant (E. Francis, correspondence, 6-6-92).

### **Golden Age Village**

The North Fork of Fridley Creek flows east through Glastonbury North towards the Yellowstone River and is located immediately south of Golden Age Village. Aquatic habitat, streambanks, and riparian vegetation in the vicinity of the proposed activity has been disturbed by several past and ongoing activities including water diversions, channelization, bridge and culvert placement, grazing, and other general human activity.

Electrofishing surveys conducted in 1987 and 1990 revealed populations of rainbow trout, brown trout, and brook trout in Fridley Creek in the vicinity of Glastonbury North (Shepard 1991). Overall fish populations in Fridley Creek appeared to have declined since 1973 when surveys were previously conducted (Shepard 1991) although reasons are not given for this decline.

Hadley (1984) classified Fridley Creek as containing limited habitat value for Yellowstone cutthroat. Pure Yellowstone cutthroat, however, have been recently found in the upper reaches of Fridley Creek (B. May, USFS, personal correspondence, 6-92).

### **Blue House Kitchen**

Aquatic resources located in the vicinity of the Blue House Kitchen include those found in Trail Creek located immediately to the west of the site and flowing in a southerly direction. Trail Creek is subject to water diversions and channelization and is often completely dewatered near its mouth during summer months. No information on aquatic resources in Trail Creek could be found. In 1988, rainbow-cutthroat trout hybrids were collected in Pine Creek, a tributary of Trail Creek located upstream of the Blue House Kitchen site.

### **3.3.3 Water Resources**

The surface water resources of the upper Yellowstone Valley consist of the Yellowstone River and its numerous tributaries and a few small lakes, ponds and wetlands. The tributary streams are heavily appropriated for irrigation uses

resulting in dewatered streambeds in summer and fall. The Yellowstone River is relatively unaffected by surface water withdrawals because of its substantial flow. Surface water quality of the Yellowstone River above Livingston is generally quite good because of limited industrial or municipal development has occurred in this area.

The upper Yellowstone Valley has significant ground water resources which have not been extensively tapped. These resources include shallow alluvial aquifers associated with the Yellowstone River and its tributaries as well as deeper bedrock aquifers of varying value. The southern part of the valley also exhibits a significant geothermal resource as evidenced by such features as LaDuke Hot Spring.

### **3.3.3.1 Water Resources Issues**

Because the water resources of the upper Yellowstone Valley are in relatively pristine condition, any proposed development that could affect these water resources is subject to close scrutiny by government agencies and public interest groups. Water resource issues that have been identified in relation to the proposed Church applications are:

- Drawdown effects on existing water sources from proposed new wells;
- Sediment production from additional disturbance;
- Discharge of bacteria and nutrients from sewage systems;
- Solid and hazardous waste disposal; and
- Potential spills and leaks of fuel or chemicals.

The first issue, effects of new wells, is the only issue relating to water quantity; the remaining issues potentially affect water quality.

Sediment production from construction activities is another potential impact on water resources that must be addressed. Most of the water quality issues are concerned with indirect impacts: sewage discharges could eventually contaminate aquifers or surface water systems; solid waste disposal can produce leachate which can contaminate ground and surface water resources. Potential spills and leaks, however, can have direct effects on water resources.

Most of the effects of the proposed actions would be most significant in the immediate area of activity. For example, a spill at Mol Heron Creek would have a much greater impact on Mol Heron Creek than on the Yellowstone River; a sewage discharge at the Golden Age Village would be more likely to affect local wells or streams than the Yellowstone River or distant aquifers. However, combined effects of all the actions may be significant and may only be noticeable in larger systems such as the Yellowstone River.

### 3.3.3.2 The Upper Yellowstone River Valley Water Resources

The main surface water feature in the area of the proposed actions is the Yellowstone River. The Yellowstone River originates at Yellowstone Lake in Yellowstone National Park and flows northward through the study area. It is the longest free-flowing (undammed) river in the lower 48 states. However, there are numerous diversions for irrigation from the upper Yellowstone River and 9,464 acres are irrigated from the mainstem alone in Park County (State Engineer's Office 1951, p. 24). On the west bank the largest diversion is the Park Branch Canal; on the east bank the Paradise Canal is the largest diversion.

In the vicinity of Corwin Springs, the Yellowstone River's average annual flow is 3090 cubic feet per second (cfs) (USGS 1991). Because the river is unregulated by any dams, flows vary greatly. In the late spring and early summer flows are highest due to snowmelt and rains. In the winter flows are typically less than 1000 cfs. Figure 3-4 is a hydrograph showing the mean monthly flows of the Yellowstone River at Corwin Springs.

Most of the tributary streams to the upper Yellowstone River have high mountain headwaters and also exhibit seasonally variable flows. Generally flows recede on these streams by mid-July and irrigation withdrawals cause many streams to go dry in late summer. The U.S. Geological Survey maintained a stream gage on Mill Creek for five years, but none of the tributaries likely to be affected by the proposed actions has ever had a stream gage or crest stage gage installed. The tributaries which may be affected by proposed actions are Reese Creek, Bassett Creek, Mol Heron Creek, Dry Creek, Fridley Creek, and Trail Creek. Although the Church has water rights on Eightmile and Big Creeks, no development is proposed which would affect these streams or the water rights on these streams.

The MDHES has established surface water-use classifications for all drainages in Montana and water quality standards associated with those classifications. The Yellowstone River drainage (including tributaries) from Yellowstone National Park to the Laurel water supply intake has been classified B-1. This classification includes the entire study area. Waters classified as B-1 are suitable for drinking, culinary and food processing purposes after conventional treatment; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply.

Table B-1 in Appendix B is a summary of selected water quality data from the U.S. Geological Survey gage on the Yellowstone River at Corwin Springs. These data indicate Montana state water quality standards for fecal coliform or dissolved oxygen have not been exceeded and that EPA maximum contaminant levels (MCL's) for metals or nitrates have not been exceeded. In general, the water quality of the Yellowstone River is that which one would expect from a relatively undeveloped river.

**FIGURE 3-4**  
**HYDROGRAPH OF**  
**HISTORICAL MONTHLY MEAN DISCHARGE**  
**YELLOWSTONE RIVER AT CORWIN SPRINGS, MT**

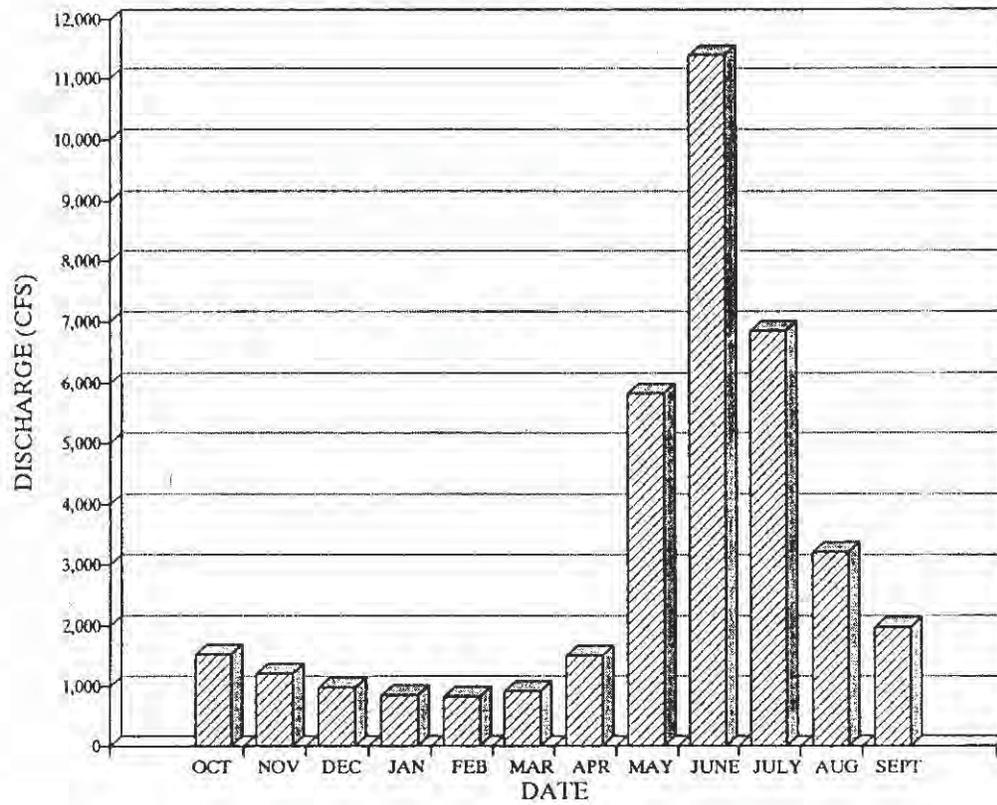


Table 3-1 summarizes some nutrient data collected at three sites on the Yellowstone River in April 1992 by the MDHES Water Quality Bureau (Bahls 1992). These data indicate an instantaneous decrease in nutrient concentrations through the Royal Teton Ranch South. Further data would need to be collected at these sites to determine if the trend is more general.

Little water quality data is available for the Yellowstone River tributaries which could be affected by the proposed actions. The U.S. Geological Survey collected some field information (specific conductivity, temperature, pH, and flow) on Mol Heron, Fridley, and Trail creeks in 1982 and 1983. These data are summarized in Table 3-2.

The upper Yellowstone Valley is geologically complex and hosts a variety of ground water systems. The valley is the repository for unconsolidated gravelly sediment of glacial and alluvial origin. The gravelly sediments are generally permeable and can form aquifers where ground water is present. Some lower permeability sediments are present as glacial till to glaciolacustrine deposits and generally form aquitards. The aquitards are not laterally continuous resulting in most of the gravel aquifers being unconfined. Some of the Church property is located in the Gallatin Range mountains which are underlain by bedrock of volcanic and sedimentary origin. Ground water within the bedrock forms highly variable aquifers because of fracturing and structural deformation.

The ground water conditions in the project area have not been extensively studied in published reports and basic data sources were used for analysis in this SEIS. These data include water rights and well logs on file with DNRC, well log summaries on file with MBMG, and well logs supplied by the Church.

Little historical ground water quality data are available in the upper Yellowstone River valley. Samples have been analyzed from wells drilled at Golden Age Village and Spring Creek sites and selected parameters from these wells are presented in Table 3-3. Samples have also been collected from LaDuke Hot Spring and the geothermal test well at Spring Creek.

From this limited data it appears that ground water in the upper Yellowstone valley is generally of good quality both in terms of natural quality and contamination. Although secondary standards for dissolved solids and sulfate are exceeded by the ground water at the Spring Creek site, no health hazards are indicated by the available data. Secondary standards address odor, taste and aesthetic concerns.

In addition to the data presented in Table 3-3, three ground water samples were collected during remedial activities at the Mol Heron fuel spill site and analyzed for nitrate. Nitrate was not detected in the samples.

**Table 3-1**  
**Summary of Nutrient Data Collected April 22, 1992**  
**Yellowstone River**

<b>Parameters</b>	<b>Yellowstone River at McConnell River Access</b>	<b>Yellowstone River at Carbella Fishing Access</b>	<b>Yellowstone River at Emigrant Fishing Access</b>
Phosphate	0.062	0.053	0.043
Total Nitrate/Nitrite	0.38	0.37	0.32
Total Phosphorus	0.069	0.063	0.057
Total Kjeldahl Nitrogen	0.30	0.40	0.20
Total Ammonia	0.04	0.03	0.01

NOTE: All units shown are milligrams per liter (mg/l) unless otherwise noted.

Source: Department of Health, Water Quality Bureau, Helena, Montana.

### **3.3.3.3 East Gate Work Camp**

Eastgate Work Camp is located on the east bank of the Yellowstone River at Corwin Springs about 200 hundred feet from the water's edge. This is the location of the U.S. Geological Survey water quality and flow measurement station "Yellowstone River at Corwin Springs". Besides the Yellowstone River, surface water features in the area include Bassett Creek which enters the Yellowstone River from the east about one-quarter mile upstream of the Work Camp. Bassett Creek is a small, high gradient mountain stream which is used for irrigation and hydropower. Bassett Creek is unlikely to be affected by the proposed permit change at Eastgate Work Camp because it is upstream and upgradient of the camp. The only potentially affected water resources at this site are the Yellowstone River and its associated aquifer.

The water quality and stream flow of the Yellowstone River is well documented at this location by the U.S. Geological Gage. No streamflow or water quality information is available for Bassett Creek.

**Table 3-2**  
**Summary of Water Quality Data**  
**Yellowstone Tributaries**

<b>SAMPLE SUMMARY</b>	<b>Flow CFS</b>	<b>Water Temp (°F)</b>	<b>Specific Conductivity umhos/cm @ 25°C</b>	<b>pH (su)</b>
Trail Creek ab. Pine Cr. nr. Livingston, MT				
Maximum	62	64.4	396	8.3
Minimum	5	32.0	179	7.5
Average	19.5	45.2	292	8.1
Sample Size	13	13	13	13
Fridley Cr. at Mouth nr. Emigrant, MT				
Maximum	23	50.9	114	7.9
Minimum	3	32.9	62	7.4
Average	7.1	40.3	91	7.7
Sample Size	13	12	13	13
Fridley Cr. ab. Miller Cr. nr Emigrant, MT				
Maximum	61	50.0	76	8.4
Minimum	7	32.0	41	7.1
Average	19.2	37.5	58.7	7.5
Sample Size	13	13	13	13
Mol Heron Cr. ab. Cinnabar Cr. nr. Corwin Springs, MT				
Maximum	71	59.0	302	8.4
Minimum	9.0	32.0	134	7.8
Average	24.1	42.0	245	8.1
Sample Size	13	13	13	13

**Table 3-3**  
**Selected Ground Water Quality Data**

Well	Spring Creek No. 1	Golden Age Village No. 1	Golden Age Village (system)	Montana Primary Drinking Water Standards
Date Sampled	June 17, 1991	April 4, 1985	December 27, 1988	
Total Dissolved Solids	613	158	140	500 (s)
pH	7.8	7.2	8.1	none
Total hardness (as CaCO <sub>3</sub> )	443	92	66.5	none
Nitrate	0.56	0.18	0.12	20
Sulfate	263	2	6	250 (s)
Sodium	40	5	7	none
Arsenic	0.007	<0.005	<0.005	0.05
Mercury	<0.001	<0.001	<0.001	0.002

Note: (s) - Secondary drinking water standard

Ground water development is limited near Corwin Springs with only eight wells on record on the east side of the river. The East Gate well is 160 feet deep and other wells north of Corwin Springs are mostly deeper than 100 feet. Although available data are insufficient to accurately characterize the aquifers at Corwin Springs, it is likely that the hydrogeologic conditions are similar to those elsewhere in the upper Yellowstone Valley where the uppermost aquifer is unconfined and recharge is from losing streams along the flanks of the valley and from direct infiltration of precipitation. Discharge from the uppermost aquifer is to adjacent aquifers, wells, springs, and through plant uptake. It is possible that the uppermost aquifer discharges to the Yellowstone River, but there is insufficient information to make this determination.

### 3.3.3.4 Spring Creek Headquarters

The proposed Spring Creek Headquarters will be located on the west bank of the Yellowstone River about two miles south of Corwin Springs. The proposed development will be on a bench about 100 feet above the river and 200 feet or further from the streambank. The Yellowstone River and its associated aquifer are the only water resources that could be expected to be affected by the proposed development. Spring Creek itself is an ephemeral spring-fed drainage that traverses the site, and rarely flows into the Yellowstone River. No water quality or streamflow information is available for this short, two mile-long drainage.

Reese Creek is a perennial tributary located within Yellowstone National Park about two miles south of the proposed headquarters. Although Reese Creek will not be affected by the proposed development because it is upstream and upgradient of the development, water from Reese Creek is used by the Church to irrigate 692 acres (State of Montana 1990). Water is also used by Yellowstone National Park and two other private users. Depletion of Reese Creek flows by irrigation has been a concern because the lower reaches of the stream are suitable for spawning of Yellowstone cutthroat trout. Reese Creek has a resident population of Yellowstone cutthroat trout, and Yellowstone cutthroat trout and other salmonids from the Yellowstone River spawn in lower Reese Creek, downstream from the diversions, in years when flows significantly exceed diversion requirements. However, Reese Creek is often dry below the diversion structures near the mouth of the stream. Reese Creek was dry at the lower gage site, situated below all irrigation diversions near the mouth, in 1986, 1987, 1988, 1989, and 1990 (Lentsch 1986, Mahony 1987, Jones *et al.* 1988, Jones *et al.* 1989, Jones *et al.* 1990).

In July 1990 an agreement for the establishment of minimum instream flows in Reese Creek was reached between the Church, Yellowstone National Park, the Department of Fish, Wildlife, and Parks, and the other private owners (State of Montana 1990). The written agreement provides for maintenance of an instream flow of 1.25 cfs during the spring and summer. Yellowstone Park has since undertaken the installation of new diversion structures and measuring devices in three locations on Reese Creek to monitor the terms of the agreement.

Current ground-water development in the area of Spring Creek is limited. Only five wells are in use in the area west of the river which could be affected by the proposed action. These wells are associated with the Ranch Office and a ranch house which lie south of the proposed Spring Creek development. Within the immediate area of the development several wells have been drilled by the Church including a water supply test well, a geothermal well, and two potable water supply wells.

The water supply test well was drilled in 1986 in a confined aquifer and yielded about 100 gpm. The water was quite hard with a hardness of 443 mg/l as calcium-carbonate. Two potable water supply wells were drilled in 1992 in an unconfined, sand and gravel aquifer that appears to be connected to the Yellowstone River. Although the transmissivity of the aquifer was not calculated, it appears to be highly

transmissive aquifer and yields from the wells were great enough to meet the water supply requirement for Spring Creek Village.

A geothermal well was drilled by the Church in 1986 and is further described in Section 3.3.3.8 on LaDuke Hot Spring. The water level of the geothermal well was not affected by pump tests of the potable water supply wells, suggesting that the geothermal well is not connected to the aquifer which will be developed for Spring Creek Village.

Sorey et al. (1991) presented some ground water quality data for the Spring Creek geothermal well, Spring Creek No. 1 test well, the East Gate well, the Miller warm well, the U'ren warm well and the National Park Service well at Stephens Creek. Selected data are presented in Table 3-4. Based on these data, an increase in sulfate is generally associated with an increase in temperature and is apparently a result of mixing of cold ground water with thermal water containing high sulfate concentrations.

Well	Temperature (°C)	Sulfate (mg/l)
Spring Creek No. 1	13	271
East Gate	9	92
Spring Creek Geothermal	57	1228
Miller	24	1001
U'ren	27	259
Stephens Creek	9	94

### 3.3.3.5 Mol Heron Shelter Site

The Mol Heron Shelter and Conference Site is about five miles upstream from the confluence of Mol Heron Creek with the Yellowstone River. The shelter, which occupies a 13 acre area, is on the west side of the Mol Heron Creek and the conference area is located largely east of the stream. Other Church development on Mol Heron Creek includes the Ranch Headquarters, a gravel crushing operation, and a sheep holding pen all about one-half mile upstream from the confluence, a large barn in the Aldridge Lake tributary drainage, and four residences and a campground

in the upper portion of the drainage. The water resources that could be affected by the installation of underground storage tanks in the Mol Heron drainage include Mol Heron Creek downstream from the shelter site, the Yellowstone River, and the associated aquifers.

Mol Heron Creek drains an 18.1 square mile basin. The headwaters are in Yellowstone National Park. The U.S. Geological Survey has measured flows on Mol Heron Creek and derived an estimated average annual flow of 33.8 cfs for the lower portion of the stream (Parrett and Hull 1986, p. 6). Diversions from the mainstem of Mol Heron Creek are used to irrigate 295 acres (State Engineer's Office 1951, p. 24). Field parameters measured in 1982 and 1983 indicate typical pH and specific conductivity characteristics for a mountain stream. However, no sediment or chemical data are available.

Sediment studies of the Upper Yellowstone River carried out by the National Park Service and U. S. Fish and Wildlife Service found the average total suspended sediment concentration during snowmelt on Mol Heron Creek to be 179 mg/l in 1986 (Mohrman et al. 1988). Sediment yield during this same runoff was 0.8 tons/day/mi<sup>2</sup>. Sediment concentrations and yield were lower during 1985 and during late season low flows. Sediment discharge for 1985 and 1986 averaged 11 tons per day which is equal to 4,000 tons per year. Shovic et al. (1988, pp. 20-21) found 131 acres of highly erosive land in Mol Heron Creek which constitute only 0.5% of the stream's drainage area.

In 1988 fires in Yellowstone National Park burned about 0.8 square miles in the upper Mol Heron Creek drainage. The burned area constitutes less than 2 percent of the total drainage of Mol Heron Creek. Sediment data was collected in 1989, 1990, and 1991 under a Postfire Sediment Study by the Research Division of Yellowstone National Park (Ewing 1992). Analysis of provisional data from this study found an average sediment discharge of 10.5 tons/day for the postfire study period. This small decrease does not appear to indicate a significant difference in postfire sediment discharge in Mol Heron Creek although further analysis of the data is being undertaken to determine if postfire effects are discernable.

Ground water in the vicinity of the proposed UST installations at the shelter site is well documented due to the previous fuel spill and ensuing remediation. Ground water is present in an unconfined sand and gravel aquifer which lies as at a depth of 5 to 50 feet below the ground surface (Envirocon, 1990, p.1). A subdrain installed near the shelters is also a demonstration of the shallow depth to ground water at the site. The soil in the area of the proposed installations is highly permeable resulting in the ground water being highly susceptible to spills and leaks from the tanks. A contaminant transportation rate as high as 10 feet per day has been reported for the aquifer based on actual spill conditions (Envirocon, 1990, p.2) Mol Heron Creek has been described as a losing stream and losses recharge the shallow aquifer (Envirocon, 1990, p.2).

### **3.3.3.6 Golden Age Village**

The Golden Age Village is located on the North Fork of Fridley Creek. Fridley Creek drains an area of 17.2 square miles and enters the Yellowstone River from the west 22 miles downstream from Corwin Springs. A major diversion in Fridley Creek about 1.5 mile west of the Golden Age Village forms the North Fork of Fridley Creek which serves irrigators on the Yellowstone River Bench north of the main channel of Fridley Creek. The water resources of this area are shown on Figure 3-5. The average annual flow of Fridley Creek above this diversion has been estimated at 20 cfs, whereas the flow at the mouth of the creek averages only 7 cfs indicating the effect of this and other diversions on the main channel (Parrett and Hull 1986, p. 6).

Field parameters measured on Fridley Creek by the U. S. Geological Survey indicate typical ranges of pH and specific conductivity which could be expected of a mountain tributary (Table 3-2). No sediment or chemical data are available.

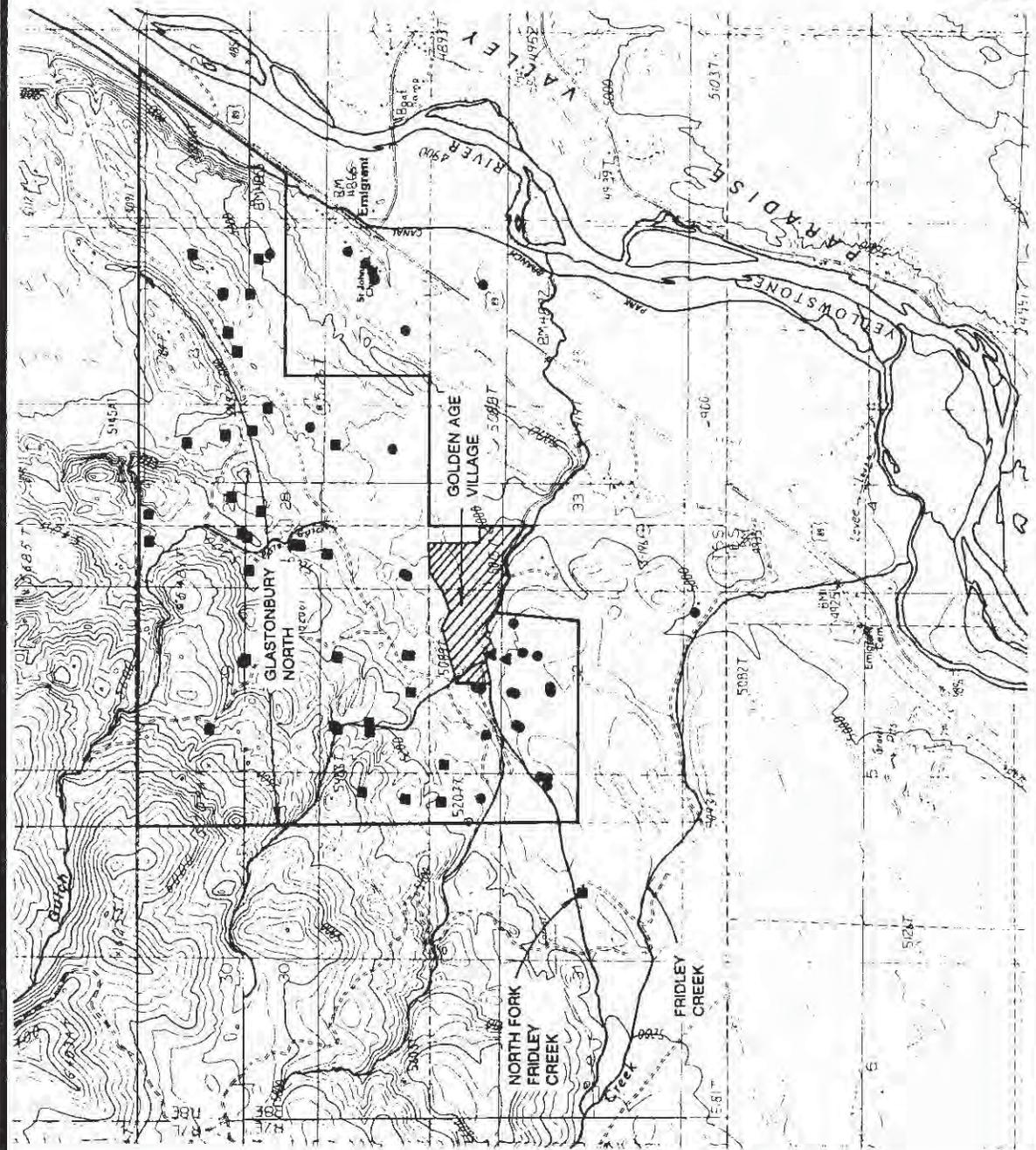
Water rights on the North Fork of Fridley Creek downstream from the Golden Age Village are listed in Table 3-5. Water is used for agricultural irrigation and stockwatering. The Water Resources Survey for Park County lists 968 acres of irrigated land on Fridley Creek (State Engineer's Office 1951, p. 25). The Church owns some water rights on Fridley Creek.

Dry Creek is another tributary that traverses Church land on the west side of the Yellowstone River. Dry Creek passes through the South Glastonbury Subdivision and enters the river 3.7 miles upstream from Fridley Creek. Water rights for irrigation and stock watering on lower Dry Creek are summarized in Table 3-6. The Water Resources Survey for Park County lists 50 acres of irrigated land on Dry Creek (State Engineer's Office 1951, p. 25). The Church owns all the water rights on Dry Creek that could be affected by development on Church property.

Ground water resources in the area of Golden Age Village can be identified from the ground water development that has already taken place in this area. Prior to subdividing Glastonbury North, there were very few water wells in the area west of Emigrant. During the 1980s, however, numerous wells were drilled on the twenty acre parcels as the area was developed. Locations of wells within the Glastonbury North Subdivision and some adjacent wells that could be affected by development are shown in Figure 3-5. The wells are up to 800 feet deep and often have low yields.

In the southern part of the community, the lots are located along the Fridley Creek valley and wells are completed in gravel. The wells are shallow to moderately deep and generally produce around 20 gpm. For domestic wells, drilling is usually terminated when twenty gpm is achieved.

About one-half mile east of Golden Age Village there is a low, north-south trending, basalt capped ridge. Two springs lie just east of this ridge: Murphy's Swamp and a spring just west of Peter Story's main ranch house. There is a more substantial spring named Harold's Swamp about 4,000 feet south of Golden Age



**FIGURE 3.5**  
**MAP OF WELLS IN**  
**GLASTONBURY NORTH**  
**ROYAL TETON RANCH**  
**PARADISE VALLEY, MONTANA**

**GEO**  
 RESEARCH

**Table 3-5**  
**Summary of Water Rights on Lower Friday Creek**  
**and North Fork Friday Creek**  
**Glastonbury North**

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION				OWNER NAME
				QTR. SEC	SECTION	TWP	RGE	
43B-W-193540-00	ST	--	03/01/1878	S2NE	33	06S	08E	GAYLE MURPHY JAMES MURPHY
43B-W-007378-00	IR	2.50 C	03/31/1878	SWSWSW	32	06S	08E	PETER STORY
43B-W-007383-00	IR	1.88 C	03/31/1878	NENWSW	33	06S	08E	"
43B-W-122560-00	IR	1.25 C	03/01/1880	NWNWSE	31	06S	08E	CHURCH UNIVERSAL & TRIUMPHANT
43B-W-007385-00	IR	3.25 C	05/01/1902	SESESE	31	06S	08E	PETE STORY
43B-W-007384-00	IR	1.75 C	05/30/1902	NWNESW	31	06S	08E	"
43B-W-007381-00	IR	2.00 C	05/01/1885	SWNESW	31	06S	08E	"
43B-W-193788-00	IR	0.76 C	05/21/1907	N2SENE	32	06S	08E	DAVID GAMBLE
43B-W-193789-00	FW	--	05/21/1907	N2SENE	32	06S	08E	"
43B-W-122566-00	IR	5.31 C	06/01/1866	NWSENW	32	06S	08E	CHURCH UNIVERSAL & TRIUMPHANT
43B-W-122561-00	IR	1.88 C	05/01/1900	NWSENW	32	06S	08E	"
43B-W-122557-00	IR	2.50 C	09/29/1885	NWSENW	32	06S	08E	"
43B-W-193525-00	IR	2.46 C	04/02/1973	NWSWNE	33	06S	08E	GAYLE MURPHY JAMES MURPHY
43B-W-193526-00	IR	1.88 C	03/01/1878	NWSWNE	33	06S	08E	"

NOTES: IR = Irrigation, ST = Stock; C = Cubic Feet per Second; FW = Fish and Wildlife.  
 Sources: Montana Department of Natural Resources and Conservation.

**Table 3-6**  
**Summary of Water Rights on Lower Dry Creek**  
**Glastonbury South**

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION				OWNER NAME
				QTR. SEC	SECTION	TWP	RGE	
43B-W-122558-00	IR	2.50 C	11/01/1902	SW	11	06S	07E	CHURCH UNIVERSAL & TRIUMPHANT
43B-W-122559-00	IR	0.63 C	08/01/1910	SW	11	06S	07E	"
43B-W-122563-00	IR	2.50 C	11/01/1902	NWNE	14	06S	07E	"
43B-W-122564-00	IR	2.00 C	06/10/1896	NWNE	14	06S	07E	"
43B-W-122565-00	IR	2.00 C	06/01/1904	NWNE	14	06S	07E	"
43B-W-194499-00	ST	---	12/31/1882	W2	13	06S	07E	"

NOTES: IR = Irrigation, ST = Stock; C = Cubic Feet per Second.

Source: Montana Department of Natural Resources and Conservation.

Village. A water right for fish and wildlife is filed on Murphy's Swamp and a water right for irrigation is filed on Harold's Swamp. Recharge for these springs can not be determined with certainty from existing information.

By plotting the approximate locations of the wells on the plat and topographic base map, it was determined that the shallowest wells are located along the North Fork of Fridley Creek and the deeper wells are located away from the creek. The shallower wells also have shallower water levels, as shallow as 8 feet or roughly comparable to the elevation of the creek bed. The deeper wells have water levels as deep as 100 feet, much below the level of the creek bed. Based on this information, it appears that the North Fork of Fridley Creek is a losing stream, that is, the creek is recharging the underlying aquifer. Recharge may also be occurring from the basalt aquifer along the edge of the valley and from direct infiltration of precipitation at the ground surface. Discharge from this shallow aquifer is probably to the Yellowstone River and springs and wells in the lower portions of the valley.

Based on well log data, the gravel aquifer is probably unconfined and may be semi-confined where clay beds are present. In an unconfined aquifer, pumping of a well results in lowering the water table or dewatering the top of the aquifer and the effects of pumping are limited to a relatively small distance (up to a few hundred feet) from the pumping well, depending on transmissivity and storativity of the aquifer.

Pump tests were conducted by the Church in 1992 on the two existing Golden Age Village water supply wells to determine if their capacity is sufficient to meet the requirements of the expanded village. The wells are completed in an unconfined gravel aquifer just south of the North Fork of Fridley Creek. Pump tests determined the aquifer transmissivity to be about 140,000 gpd/ft and the storage coefficient to be between 0.1 and 0.2. The pump tests determined that the well capacity is sufficient to allow the proposed expansion if improvements are made to one of the wells.

The basalt aquifer is probably a confined aquifer. Recharge probably occurs from direct infiltration or from stream beds in the mountains. Discharge is probably to the adjacent alluvial aquifer and to wells.

### **3.3.3.7 Blue House Kitchen**

The Blue House Kitchen is located on the south bank of Trail Creek just downstream from a major diversion that routes a major portion of the flow towards fields on the Yellowstone Bench. Trail Creek drains 41.8 square miles on the west side of the Yellowstone River. On the Yellowstone bench, Trail Creek is intercepted by the Eightmile Canal and the Park Branch Canal. It never enters the Yellowstone River. Water resources of this area are shown in Figure 3-6.

The U.S. Geological Survey has estimated the average annual flow of Trail Creek to be 21.2 cfs at a point about two miles upstream from the Blue House (Parrett and Hull 1986, p. 6). This point is upstream of two tributaries: Dry Creek and Pine

Creek. The Water Resources Survey for Park County lists 1043 acres of irrigation on the main stem of Trail Creek (State Engineer's Office 1951, p. 26).

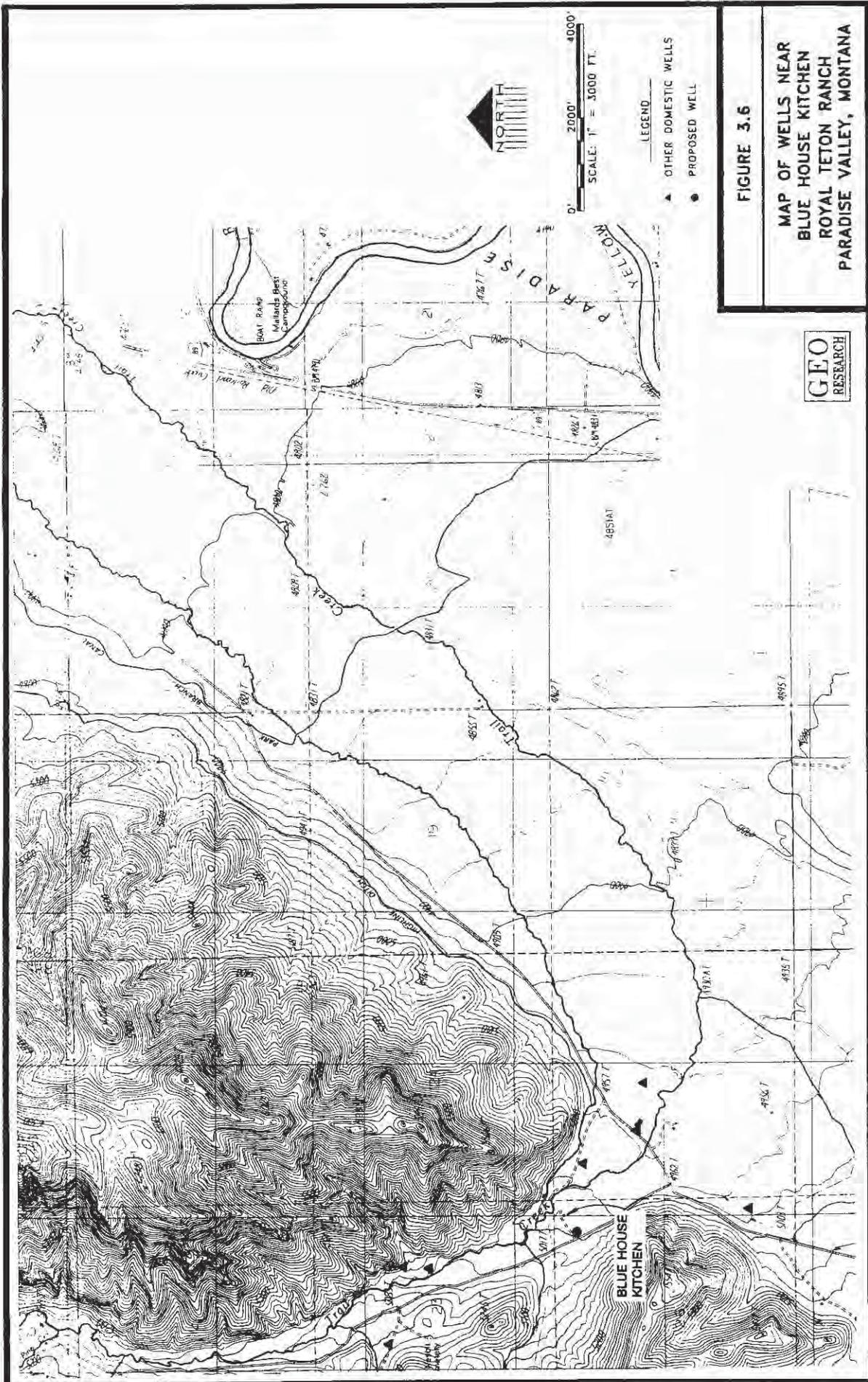
The field data collected on Trail Creek by the U. S. Geological Survey (Table 3-2) suggests that Trail Creek water has a higher specific conductance than other Yellowstone Tributaries, but is still of suitable quality for drinking water and other uses if it is not contaminated. No sediment or chemical data are available for Trail Creek.

Table 3-7 summarizes surface water rights on Trail Creek that are located downstream of the Blue House. There are a number of water rights in this reach for irrigation and stock watering that belong to the Church and other users.

Very few water wells are in the vicinity of the Blue House Kitchen. A total of 13 production wells are within approximately two miles of the proposed systems, as shown in Figure 3-6. All of the wells are in alluvial deposits of Trail Creek and valley fill sediments in the Paradise Valley. Some of the wells along Trail Creek northwest of the Blue house are shallow indicating that a shallow aquifer exists in alluvium along Trail Creek above the Paradise Valley. This is probably an unconfined aquifer which obtains recharge from Trail Creek and its tributaries.

Based on the depths of wells drilled in the Paradise Valley, an aquifer exists at a depth ranging from 100 to 380 feet. Reported static water levels indicate this is an unconfined to semi-confined aquifer. Since wells for domestic and stock watering use were drilled to this depth, this indicates that shallow ground water is not present in sufficient quantity for domestic use or is of poor quality. Existing information is insufficient to identify the recharge to the lower aquifer, but recharge may occur from deep percolation of surface water or a shallower aquifer, or through discharge from underlying bedrock aquifers. The proposed Blue House well is located between an area of known shallow wells and an area without shallow wells. The aquifer where the well will be completed is not yet known. There is no well log available on the existing Blue House well.

Three wells located southeast of the Blue House and within two-thirds mile from the house, are completed in the deeper aquifer. These wells are downslope and downstream from the Blue House and are probably also downgradient in the aquifer. They are drilled deeper than 200 feet, and two are reported to produce water at depths greater than 160 feet. If hydrogeological conditions in the Blue House area are similar to those encountered at Golden Age Village, it is likely that a shallow aquifer is not present in the valley province south and west of Blue House.



**FIGURE 3.6**  
**MAP OF WELLS NEAR**  
**BLUE HOUSE KITCHEN**  
**ROYAL TETON RANCH**  
**PARADISE VALLEY, MONTANA**

**GEO**  
**RESEARCH**

**Table 3-7**  
**Summary of Water Rights on Lower Tenth Creek**  
 Teton Ranch North - Blue House

WATER RIGHT ID	USE	FLOW RATE	PRIORITY DATE	POINT OF DIVERSION				OWNER NAME
				QTR. SEC	SECTION	TWP	RGE	
43B-W-190482-00	IR	5.20 C	06/01/1879	SEENW	25	04S	08E	CHURCH UNIVERSAL & TRIUMPHANT
43B-W-190483-00	IR	2.23 C	12/31/1886	SWNWNE	25	04S	08E	"
43B-W-190484-00	IR	2.24 C	06/01/1910	NENWNE	25	04S	08E	"
43B-W-190485-00	IR	1400 G	06/15/1879	SWSWSW	19	04S	09E	"
43B-W-190486-00	IR	2.67 C	06/01/1878	NWNWSE	19	04S	09E	"
43B-W-190487-00	IR	1.76 C	06/01/1878	NWNWSE	19	04S	09E	"
43B-W-190492-00	IR	5.63 C	06/01/1879	SWNWNE	20	04S	09E	WARREN DEPUY
43B-W-190441-00	IR	4.16 C	06/21/1893	SWNWNE	20	04S	09E	"
43B-W-040655-00	IR	0.88 C	06/20/1893	SENESE	17	04S	09E	NELLE DURGAN
43B-W-040656-00	IR	7.50 C	10/30/1928	SENESE	17	04S	09E	"
43B-W-137639-00	ST	—	04/15/1883	W2	16	04S	09E	STATE OF MONTANA, BOARD OF LANDS
43B-W-137641-00	ST	—	04/15/1883	NWNE	16	04S	09E	"
43B-W-040281-00	IR	0.81 C	12/31/1883	SEENW	25	04S	08E	DARLENE WEBER
43B-W-040282-00	IR	1.88 C	04/01/1878	SEENW	25	04S	08E	"
43B-W-101035-00	IR	1.88 C	12/31/1881	NWNWNE	25	04S	08E	JENNIE WEBER
43B-W-101036-00	IR	3.76 C	12/31/1881	NWNWNE	25	04S	08E	"
43B-W-101037-00	IR	4.00 C	06/25/1906	NWNWNE	25	04S	08E	"

NOTES: IR = Irrigation, ST = Stock; C = Cubic Feet per Second, G = Gallons per Minute.

Source: Montana Department of Natural Resources and Conservation.

### **3.3.3.8 LaDuke Hot Spring**

The water rights associated with LaDuke Hot Spring are examined in this SEIS as a related action to the Spring Creek Development. The impacts of developing water rights are discussed in light of this related action, but impact analysis is not as fully developed as it would be if the geothermal development were the subject of an EIS. The Church has not submitted any proposals for geothermal development that would require state permitting at this time. Establishing a water right in the manner that the Church did over the weekend of June 26, 1992 does not require a permit. If the Church chooses to use more than 35 gpm, they must apply to the DNRC in advance. This action could trigger an EIS process specifically for the geothermal development.

#### **Contemplated Geothermal Action**

The Church claims eight water rights for LaDuke spring totaling 22.85 cfs dating as early as 1899. The Montana Water Court has given a Temporary Preliminary Decree for a total of 11.6 cfs (5200 gpm). The Church has contemplated use of the thermal water for space heating and swimming pool complex at the proposed development at Spring Creek. The spring is on the east side of the Yellowstone River and Highway 89 and the proposed development is on the west side. In 1986, a well on the west side was drilled and pump tested and geothermal water was encountered. Rather than construct a pipeline crossing the river, the Church originally indicated it might propose to change the point of diversion for these water rights from the spring to a well on the west side of the river.

The decision on which option to choose will be influenced by future Congressional legislation. Congress is contemplating bills that could effect the use and development of geothermal resources in the Yellowstone Park region. The Church's approach to how it proposes to use its geothermal resources will depend on Congressional action.

The following permits and authorizations will need to be considered for each of the Church's contemplated development of its water rights at the hot spring:

#### **Development of the Well**

If the Church decides to develop the well, it will need the following government permits and authorizations:

1. **"Change In Place of Use" Authorization (DNRC)** - This will be for changing the present listed use of the water right.
2. **Montana Pollutant Discharge Elimination System Permit [MPDES] (DHES)** - In the course of developing the well, the Church might choose to discharge the water into the Yellowstone. If this option is chosen, the Church would need a MPDES Permit.

## **Piping to Spring Creek Headquarters**

Piping the water across or under the Yellowstone River would probably require the following permits:

1. **"Change In Place of Use" Authorization (DNRC)**
2. **MPDES Permit (DHES)**
3. **Special Use Permit For A Geo-Technical Site (USFS)** - The Church's engineering consultant will need the permit for core sampling under the river to determine the feasibility of putting a pipeline under the Yellowstone.
4. **Montana Natural Streambed and Land Preservation Act [310 Permit] (Park County Conservation District)** - This will be needed for any work that modifies the bed or banks of a stream. The Church will not need a **Right-of-Way Easement for Excavating In the Bed of a Navigable Stream** from the Department of State Lands because the designation of navigability on the Yellowstone runs from the Montana/North Dakota Border to Emigrant.
5. **Flood Plain Development Permit (Park County)** - The flood plain for the Yellowstone River has been delineated for the area of the proposed crossing, thus a permit would be needed from the Park County Planning Office.
6. **Federal Clean Water Act [404 Permit] (Corps of Engineers)** - This is for any activity that will result in the discharge of dredged or placement of fill material in "waters of the United States."
7. **Short-Term Exemption From Montana's Surface Water Quality Standards [3A Authorization] (DHES)** - Activities in state waters that will cause unavoidable short-term violations of water quality standards are required to obtain this permit.
8. **Special Use Permit For Work On The Headbox and Pipeline (USFS)** - This would include improving the existing headbox and burying the pipeline on Forest Service land.
9. **Encroachment Permit (DOT)** - The Montana Department of Highways requires this permit for underground lines in highway right-of-ways or lines placed under highways.

In addition to the requirements of the permits, any of the state or federal actions will need to be considered with respect to the National Environmental Policy Act (NEPA) and Montana Environmental Policy Act (MEPA).

## **Proposed Legislation**

New federal legislation concerning geothermal development entitled the Old Faithful Protection Act of 1991 has been proposed which could directly affect the use of the Church's geothermal well. The act would amend the Geothermal Steam Act of 1970 to prohibit use of any existing wells and development of new wells in the Corwin Springs Known Geothermal Resources Area (KGRA). The bill passed the House on November 25, 1991 and has been referred to the Senate for action. If the bill is enacted into law, the Church could pipe water directly from LaDuke Hot Spring to the Spring Creek development.

The Senate has completely rewritten the Act, now entitled "An Act to provide for the protection of Yellowstone National Park", to allow State regulation of geothermal development near the Park. The Act does not specify that geothermal development be banned, but requires the State to enact regulations concerning geothermal development and use in a manner which provides for the protection of the thermal features of the Park. If the State regulations result in loss of property (including an existing well), then just compensation shall be provided by the State. The rewritten Act was reported to the Senate on August 10, 1992 and no action has been taken as of September 15, 1992.

## **Geothermal Conditions**

Several geothermal springs and wells are in or near the study area. The largest area of geothermal activity is Mammoth Hot Springs about 9 miles south of LaDuke Hot Spring within Yellowstone National Park. A second area, referred to as the Corwin Springs Known Geothermal Resources Area (KGRA), includes Bear Creek Springs near Gardiner and the LaDuke Hot Spring area near the proposed development at Spring Creek. A third location is at Chico Hot Springs.

Geothermal activity at Chico Hot Springs is limited to a single spring. It is located along the Deep Creek fault, which is the geologic boundary between the Absaroka Range and Emigrant Valley. Geothermal activity at Chico Hot Springs is generally attributed to deep circulation of ground water along faults where water passes through heated rocks at depth. The heat source is a higher than average geothermal gradient and is not attributed to a magma source. This area is isolated from the other geothermal areas in that the Deep Creek fault does not intersect the other geothermal areas and the source of geothermal waters may be different. This type of geothermal activity occurs at many locations in southwestern Montana.

Of more relevance to LaDuke Hot Spring is the geothermal activity at Mammoth Hot Springs, and Yellowstone National Park in general, and the adjacent Corwin Springs Known Geothermal Resources Area. The Church drilled a geothermal production well in 1986. Pumping the well sparked interest in the effects on the geothermal activity in Yellowstone National Park. The well was pump-tested and a report prepared by Hydrometrics (1986). Citing concerns over geothermal development, the DHES asked the Montana Bureau of Mines and Geology to evaluate

the effects of pumping the well on Mammoth Hot Springs (Sonderegger, 1987). The MBMG report concluded that it is feasible that, in the worst case, pumping could affect Mammoth Hot Springs, and cited the need for limiting development of the source and closely monitoring the geothermal springs in Yellowstone National Park. In order to impart more geological data and more accurately evaluate the effects of development, the U.S. Geological Survey conducted several investigations of the geothermal system and produced a report (Sorey, 1991). This report serves as the primary basis for discussions of geothermal resources in this SEIS.

Geothermal activity in the central to southern part of Yellowstone National Park is generally attributed to a magmatic heat source underlying the Yellowstone caldera (a crater many times larger than a volcanic vent). The nearest expression of the caldera to the study area is near the Norris Geyser Basin. The Norris Geyser Basin and Mammoth Hot Springs represent the largest area of geothermal activity in the park outside the caldera. A north-south structural zone called the Norris-Mammoth Corridor (Pierce, et al., 1991) extends from the caldera rim north to Corwin Springs. The area generally includes a series of parallel faults, fissures, and volcanic vents in the area south of Mammoth Hot Springs. Near Mammoth and north to Corwin Springs, the east boundary of the corridor becomes bound by the Lava Creek and Gardiner reverse faults. Many of the geothermal features in the corridor are associated with faults, thus geothermal activity is largely fault-controlled.

Based on geochemical modeling (Kharaka, et al., 1991), the source of the geothermal water at Mammoth has been attributed to two possible sources. The water could result from circulation of meteoric water from seepage in the Gallatin Range west of Mammoth, with the underlying heat source being a cooling magmatic chamber underlying the area. The second possibility is a mixing of meteoric water from percolation in the Gallatin Range with thermal waters from the Norris Geyser basin.

The Corwin Springs KGRA is generally underlain by paleozoic to mesozoic sedimentary rocks folded into the northwest plunging Gardiner syncline. The axis of the syncline is parallel to the Gardiner fault zone, which is a reverse fault separating the syncline from the Beartooth uplift to the northeast. The Gardiner syncline and reverse fault are a result of compressional deformation. Near LaDuke Hot Spring, the Gardiner Fault zone is crossed by a series of north trending normal faults including the Reese Creek Fault. These faults post-date the reverse faulting, and are a result of tensional deformation.

Included in the folded paleozoic rocks are limestone and dolomite of the Madison group. The Madison group is generally considered a major aquifer in Montana and may be a significant aquifer in the study area capable of carrying thermal waters down the plunge of the syncline away from Mammoth Hot Springs.

## **LaDuke Hot Spring Thermal Area**

The area near LaDuke Hot Spring contains several geothermal features including travertine deposits, springs, and wells. In addition to the spring, three thermal wells have been drilled in the area: the Church well on the west side of the river, and the Miller and U'ren wells on the east side of the river. Based on temperature and geochemical data (Sorey, et al., 1991), these springs and wells contain thermal water from a single source. Some data concerning these features are presented in Table 3-4 and 3-8.

### **LaDuke Hot Spring**

LaDuke Hot Spring is located along the east side of the valley near the proposed community of Spring Creek. The spring consists of a collection gallery trench which currently discharges through a culvert under Highway 89 into the Yellowstone River. The flow from the spring was not accurately measured prior to 1986 when a flow of 52 gpm was measured prior to the pump test (Hydrometrics, 1986). In 1987, the outfall level was lowered and the flow rate of the spring increased to 150 gpm. The U.S.G.S. monitored flow at the lowered level for three years (1987 to 1990) and measured flow ranging from 82 to 139 gpm with an average flow of 110 gpm.

### **Other Thermal Springs Near LaDuke Hot Spring**

Geochemical and thermal studies have indicated that additional thermal springs exist along the bank of the river (Hamilton and Chambers, 1991). Total flow from LaDuke Hot Spring and the nearby thermal springs averaged 967 gpm based on four calculations from geochemical data. Most of these springs are aligned along the Reese Creek fault.

### **The Church Geothermal Well**

The Church geothermal well was completed on April 17, 1986. According to the original well log, the well was drilled to a depth of 458 feet. Pierce (et al., 1991) interpreted the lithologic log as 30 feet of glacial outwash gravels underlain by glaciolacustrine clay to a depth of 420 feet. The basal unit was bedrock of unknown lithology to the total depth of 458 feet. The well was completed with steel casing to a depth of 420 feet. Leakage through two sections of broken casing at 299 feet and 121 feet totals 40 gpm (Sorey et al., 1991). With this leakage, the static water level in the well is approximately 34 feet (Sorey et al., 1991). This level is approximately six feet above the level of LaDuke Hot Spring and 36 feet above the Yellowstone river.

According to the well log, the well was pumped at 600 gpm for two hours following completion. A pump test on the well was later completed by Hydrometrics (1986) at a rate of 400 gpm for more than 13 hours. During the pump test, a noticeable reduction in flow was measured at LaDuke Hot Spring and the flow rate recovered after termination of pumping. This indicated a definite hydraulic

connection between the well and spring. Sonderegger (1987) used the spring data to calculate a transmissivity and storativity and concluded that the aquifer was confined to semi-confined. Based on this data and the lithologic information, Sorey et al. (1991) also concluded that the aquifer was confined. Large-scale pumping in confined aquifers can, in some cases, affect water levels in wells several thousand feet distant.

### Other Geothermal Wells

At least two other wells near LaDuke Hot Spring have encountered thermal water. According to its well log, the Miller well was drilled to a depth of 195 feet and encountered warm water below 178 feet. This well is located near the Reese Creek Fault south of LaDuke Hot Spring.

The U'ren well was drilled to a total depth of 205 feet and encountered warm water below a depth of 140 feet. This well is located near a fault parallel to the Reese Creek Fault.

**Table 3-3**  
LaDuke Spring Thermal Area Data

	Temp <sup>1</sup> °F	SWL Ft.	Spring Elev.	Distance From LaDuke
Church Geothermal Well	135	5135 <sup>1</sup>		728 ft <sup>1</sup>
Miller Geothermal Well	75	5135 <sup>2</sup>		2950(e)
U'ren Geothermal Well	80	ND		2500(e)
LaDuke Hot Spring	154		5129 <sup>1</sup>	----
River Bank Hot Spring	126 <sup>3</sup>		5110(e)	<1000(e)

<sup>1</sup> Hydrometrics, 1986

<sup>2</sup> Sorey et al., 1991

<sup>3</sup> Hamilton and Chambers, 1991

ND No Data

(e) Estimated from topographic maps and Hamilton and Chambers, 1991

Note: Spring elevations are considered equivalent to pumping water levels and thus are lower than static water levels.

### Geothermal Development

Geothermal development in the study area has been very limited to date. Early in this century, thermal waters at Chico Hot Springs and LaDuke Hot Spring were

captured and diverted for use in swimming pools and spas. Chico Hot Springs is still being used for this purpose while LaDuke Hot Spring has not been used since sometime after World War II (Sorey, et al., 1991).

Based on available information (Sorey et al., 1991), some limited pumping apparently does occur at the Miller and U'ren wells. However, well logs indicate production rates of only 25 and 20 gpm, respectively.

### **Connections Between Mammoth Hot Spring and Corwin Springs KGRA**

The primary intent of the investigations presented in Sorey (1991) was to determine if withdrawal of thermal water near LaDuke Hot Spring would have an affect on geothermal features in Yellowstone National Park. Sorey (1991) made the distinction between hydraulic and hydrogeologic connections: a hydraulic connection means that water actually moves between the locations in question while a hydrogeologic connection means that a pathway exists where water could move between the locations. In general, it was concluded that a hydraulic connection does not currently exist, but a hydrogeologic connection may exist.

Pierce (et al., 1991) showed that the springs in the LaDuke area generally occurred along normal faults including the Reese Creek fault. Faulting of rocks can create permeability for transmission of water, however, the Reese Creek fault has not been shown to have post-glacial offset (Pierce et al., 1991) which could deform the glaciolacustrine clays in the valley. However, LaDuke Hot Spring does emanate from bedrock and the thickness of clay at the other springs may not be significant.

Geochemical data and the presence of travertine deposits indicate that the thermal water has contacted carbonated rocks. It is possible that the thermal water travels northward from Yellowstone National Park within Madison Group carbonates within the Gardiner Syncline. However, geochemical data (Kharaka et al., 1991) could indicate that much of the water at LaDuke Hot Spring originates on the Beartooth uplift north and east of the spring. Additionally, these data indicate the thermal waters at Mammoth are not from the same source as the thermal waters at LaDuke. The contact with carbonate rocks could be a result of flow within the near vertical limb of the Gardiner syncline from a heat source at depth.

Based on the geological, geochemical, geophysical, and hydrological investigations presented in the U.S.G.S. report, Sorey (1991) concluded that a hydraulic connection does not currently exist between the LaDuke Hot Spring area and Mammoth Hot Springs. They did, however, conclude that as much as 10 percent of the flow from Bear Creek Hot Spring (near Gardiner) may have originated at Mammoth and the travertine deposits at Gardiner indicated a connection with Mammoth in the past.

### **3.3.4 Geology**

#### **3.3.4.1 Public Issues**

In both scoping meetings, concern was expressed about the development of LaDuke Hot Spring and the possible effects to the geothermal resources in the area. The discussion of LaDuke Hot Spring is included in Section 3.3.3.

#### **3.3.4.2 General Overview - Existing Conditions**

The upper Yellowstone Valley has attracted a diverse array of people due to its beauty, dramatic landforms, structural contrasts and productive range lands.

Called "Paradise Valley," it stretches some 50 miles north of Yellowstone Park toward Livingston. The Yellowstone River and its tributaries are directed and redirected by various structural, volcanic, and geomorphic influences, forming a deep narrow canyon through Precambrian rocks 10 miles north of Gardiner, and opening once again to a wide valley from where the river passes northward beyond the portal of Yankee Jim Canyon.

North of the portal the valley is basically a geologic structure that has dropped between two other structures. It is bounded on the east by the upfaulted Beartooth Mountains, and on the west by the eastward-tilted volcanic-capped Gallatin Range.

The southern part of the Yellowstone Valley is roughly coincident with the southeast-trending Gardiner fault and associated highlands, which merge southward with volcanic realms of the Yellowstone Plateau.

#### **East Gate Work Camp**

Reference the department's *Church Universal and Triumphant - DEIS*, February 5, 1988.

#### **Spring Creek Headquarters**

Reference the department's *Church Universal and Triumphant - DEIS*, February 5, 1988.

#### **Mol Heron Shelter Site**

Bedrock beneath the overburden consists of the shales, siltstones, and fine-grained sandstones of the Cretaceous Mowry, Thermopolis, and Frontier formations. Bedrock is folded into a northwest-trending syncline (folded up) between the Gardiner reverse fault and the Gallatin anticline (inclined down). This syncline is within a horst block (an uplifted structure with respect to the rocks on either side) that is bounded on the northwest by the Mol Heron normal fault and on the southeast by the Reese Creek normal fault.

## **Golden Age Village**

The area is underlain by volcanic bedrock. It consists of lava flows, mudflow breccias (rock composed of coarse fragments), and welded tuffs (consolidated volcanic ash) of the Tertiary age. The lava flows are resistant, while the tuffs weather rapidly.

## **Blue House Kitchen**

The geology for the area includes glacial outwash and alluvial deposits. The deposits are Pleistocene or Holocene in age. They are moderately coarse to moderately fine textured, and contain numerous cobbles and pebbles. Included are deposits with dissimilar properties. Deposits which contain fewer rock fragments occur on stream bottoms or near seeps. Soils formed in these deposits are more productive and have lower bearing strength.

### **3.3.5 Soil Quality, Stability, and Moisture**

The major soil concern was possible erosion at the Mol Heron site.

#### **3.3.5.1 East Gate Work Camp**

Reference the department's *Church Universal and Triumphant - DEIS*, February 5, 1988.

#### **3.3.5.2 Spring Creek Headquarters**

The soils in the area of the proposed Spring Creek development include Lehr sandy clay and Havre silty clay. Both are alluvial soils.

Lehr sandy clay has a slope ranging from 0-4% and is found on the first terraces up from the Yellowstone River. Courser material is found on the edge to the terraces. The soils are not very deep, with sand and gravel found from 13-40" from the surface.

Havre silty clay is an alluvial deposit found on first level terraces and at this site has not experienced flooding. It has a slope of 0-2%. The soil is calcareous, containing accumulations of calcium and magnesium carbonate.

#### **3.3.5.3 Mol Heron Shelter Site**

The soils for the shelter site and petroleum land farm, just north of Aldridge Lake, are relatively well drained, with moderately coarse to fine textures, according to the Gallatin National Forest's *Soil Survey of the Gallatin Forest Area*.

The unit description for the soils in those areas was described as follows:

The surface layers of the soils are dark colored. Where deposits are derived from hard crystalline rock, soils are moderately coarse textured and have small amounts of subsoil clay. Where deposits are derived from sandstone or shale, soils are medium or moderately fine textured with subsoil clay accumulations. Where deposits are derived from limestone, soils are medium textured with very limey subsoils. These soils occupy most of the unit.

Included are small areas of dissimilar soils. Soils with light colored surface layers are in forested areas and occupy 15 percent of the units...Moderately well to poorly drained soils are on floodplains and occupy five percent of the unit. They are subject to frequent flooding and have lower bearing strength.

The major soils have brown loam surface layers, about 8 inches thick. Subsoils are pale brown, very gravelly clay loam, or sandy loam, about 10 inches thick. The substratum, a light yellowish brown, very cobbly loam or sandy loam, overlies bedrock at depths greater than five feet.

The survey indicates the soils have a "moderate" potential for erosion, and are better suited for growing grasses and shrubs than trees.

#### **3.3.5.4 Golden Age Village**

The soils for Golden Age Village range from alluvial in the eastern part, to areas of exposed bedrock along the west boundary. The areas of tilled ground surveyed by the SCS indicate the soils range from Cozberg sandy loam along the southern border to Wabek very cobbly loam and Floweree silt loam as the terrain proceeds up-slope to the north.

Cozberg sandy loam soils have slopes from 0-4%, and are alluvial. The soils are moderately deep before reaching sand and gravel.

The Wabek-Floweree complex has slopes ranging from 2-25%. The Wabek very cobbly loam is permeable with cobbles on the surface. The Floweree silt loam is deep, well drained soil that was deposited by glacial melting and alluvial outwashing.

#### **3.3.5.5 Blue House Kitchen**

The soil profile for the area of the proposed water system generally fits the description in the USFS survey for landforms that are nearly level, glacial outwashes, alluvial floodplains, and alluvial fans.

According to the USFS description:

The soils are an undifferentiated group with light and dark colored surface layers. Soils are highly variable in texture. In areas where the parent

material is derived from hard crystalline rocks, soils are moderately coarse to medium textured. Where the parent material is from sandstone and shale, textures are medium to moderately fine.

Small areas of dissimilar soils are included. Somewhat poorly drained soils are on flood plains, in depressions, and on low terraces...Also included are poorly drained soils that occur near streams and seeps. They have low bearing strength and flood periodically.

### **3.3.6 Botanical Resources**

Information on botanical resources was gathered from a number of sources including the Montana Natural Heritage Program, USFS (Gallatin National Forest), National Park Service, DHES files, and university libraries. Interviews were conducted with Dan Tyres of the USFS, Edward Francis of the Church, and Yellowstone National Park Service personnel.

#### **3.3.6.1 Public Issues**

Public scoping meetings on April 10 and October 15, 1990, elicited concerns about botanical resources, particularly with respect to weed control and threatened and endangered plant species. There is also concern over the loss of native vegetation in this portion of the Upper Yellowstone Valley because of its importance as ungulate winter range and its aesthetic value. The purpose of this analysis is to update and supplement the original DEIS (Montana DHES 1988). The existing conditions are described for permitting sites not covered by the previous EIS and site-specific impacts and site-specific cumulative effects are considered where new information is relevant. General cumulative impacts for all proposed developments may include potential future actions of the Church in the absence of a complete Church Master Plan that identifies population and development limits.

#### **3.3.6.2 General Update to Original EIS**

Because of the expanded geographic scope of the supplement EIS, a request was made for a Montana Natural Heritage Program database search that includes the area bounded by latitude 45° 38' south to the Montana Border, and longitude 110° 25' to the western border of Park County. No plant species in Montana is on the federal threatened or endangered list. The data search found element occurrences for three plant species on the Natural Heritage Program Sensitive list within the search boundary, but outside the project area. *Erigeron formosissimus* and *Carex multicosata* occur at elevations above 7,000 ft about 10 miles east of the project area. They both have a rank of G5/S1, which means they are secure globally, but are known from five or fewer occurrences in Montana. *Castilleja exilis* is known from a record at a site within Yellowstone National Park along the Boiling River near Gardiner, Montana. It is ranked G5/SH, which indicates that it is secure globally, but is known only from a 1922 historical record in Montana (Montana Natural Heritage Program 1992).

The computer search also identified 16 plant community occurrences for 11 different plant communities that occur within the database search area. None of the records is within the project area boundary and none is imperiled because of rarity; they are representative examples of native plant communities, some of which serve as long-term study plots (Montana Natural Heritage Program 1992).

No significant changes to botanical resources with respect to agricultural development, livestock and grazing, or dust and dust control have occurred since the original EIS.

The Church files a yearly weed control plan for all of its property with Park County. The plan is updated and reviewed annually by the Park County Weed Control personnel. The county also has the option to conduct bi-annual inspections for weed control, and has visited Church property on at least two occasions. The original EIS describes weed control measures used by the Church. In addition, the Church also advocates handpulling and mowing weeds for all projects under consideration for the SEIS (Sanders 1991). Montana Power Company is responsible for weed control along its right-of-way through Church property (McCollough 1988).

### **3.3.6.3 Existing Conditions**

#### **East Gate and Spring Creek Headquarters Sites**

East Gate Work Camp is a pre-existing site where an increase in building occupancy is the only change being considered by this SEIS.

The site for the new Church headquarters at Spring Creek was reviewed in the previous document. However, permit modification will increase the site to cover approximately 75-80 acres (Francis pers. comm.). The natural vegetation at Spring Creek Headquarters Site is shrub steppe and is included as part of the elk northern winter range described by Houston (1982). A general vegetation map of the area is presented in the original EIS. Big sage/Idaho fescue habit type is typical of the benchland along the upper Yellowstone River and generally occurs on alluvial valley soils on south, west, and east slopes from 1800-2500 meters (Houston 1982; Mueggler and Stewart 1980). Much of the natural bunchgrass community has been replaced by non-native annual grasses and forbs during the past one hundred years or so (Houston 1982).

In response to comments received regarding the DEIS, the Church completed a rare plant survey for the LaDuke Hot Spring area. No rare plants or thermal endemics were found at the site (Hackley 1988).

#### **Mol Heron Shelter Site**

The fuel storage tank site lies on the northwest slope of Mol Heron Creek. The native vegetation that occupied the site prior to human activity was probably that described as a mosaic of mountain grasslands and shrublands in the Soil Survey of

the Gallatin Forest Area, Montana Draft (Davis and Shovic 1984). Douglas fir seedlings invade these areas as a scattered component and dominate the upland landscape on southeast facing slopes. Perennial bunchgrasses and forbs are important in the forest understory (Davis and Shovic 1984). The upper Mol Heron Creek was chosen for the nuclear fallout shelter site, partly because it had a history of human activity (Church 1990). It had been used as pasture by previous landowners (Francis pers. comm.). The current vegetation at the shelter site is a result of restoration efforts. The grass seed mixture specified in the revegetation plans contains four introduced perennial grass species at high seeding rates and two native perennial grasses at lower rates (The Church 1990):

Introduced

30# Hard Fescue  
 30# Tall Fescue  
 15# Smooth Brome  
 15# Canada Bluegrass

Native

5# Western Wheatgrass  
 5# Slender Wheatgrass

Wet meadows occur in the Mol Heron drainage along with stringers and patches of willow riparian vegetation beside the creek and in the active floodplain (Montana DHES 1988; site visit 1992). The meadows have been altered by the Church in preparation for the annual conference. The Royal Teton Ranch News reported that "The large clearing at the meadow where the main tent and center of retreat activities were located was almost a swamp not long before conference time. In fact, when Edward and Mother first crossed the creek and walked through the field of tall grasses, you could literally sink up to your knees in water in places. But with a bit of engineering know-how, we diverted the streams that fed the field, and in a week or so the land was dry" (Royal Teton News 1983). The Church has indicated that the wet conditions were due to the deterioration of man-made flood irrigation channels and that no natural stream beds were altered. The Montana Water Resources Survey published by the State Engineer's Office indicates that the area was previously used for irrigation and shows the presence of man-made ditches (p. 43).

During installation of the shelters the meadows were used as a staging area for vehicles, containers, and other heavy equipment. Both meadows and shelter site were revegetated after construction. The meadows were disturbed again during clean-up efforts following the diesel fuel spill. Vegetation in the meadows now appears to be comprised of non-native perennial grasses.

Vegetation on the southeast side of Mol Heron Creek above the floodplain, is classified as subalpine fir/blue huckleberry and subalpine fir/grouse whortleberry at upper elevations; Douglas fir and Engelmann spruce occur on dry sites at low elevations (Davis and Shovic 1984).

## **Golden Age Village (Glastonbury North) and Blue House Kitchen (Royal Teton Ranch-North) Sites**

### **a. Golden Age Village- Glastonbury North**

Approximately 125 acres of historically irrigated and cultivated pasture occurs within the 202.91 acre parcel of reserved land in Glastonbury North that is part of the expansion area (Francis pers. comm.). The rest of the vegetation at this relatively low-elevation area (5,000-5300 ft) is native perennial grassland. Characteristic species include needle and thread, bluebunch wheatgrass, Sandberg's blue grass, and fringed sage. (Montana DHES 1988; Despain 1990). Juniper and Douglas fir are scattered within the grasslands on upland sites.

### **b. Royal Teton Ranch-North - Building Remodeling**

The Blue House remodeling project is on RTR-N. A SCS report listed 11,383 acres of RTR-N as rangeland, 2,267 acres as hayland, 545 as pasture, and 92 acres - other (SCS, 1986). The Church entered into a cooperative management agreement for these lands with the SCS that sets management practices for rangeland, haylands, pasture, and irrigation. Characteristic grass species of the rangelands include western wheatgrass, Idaho fescue, needle and thread, and bluebunch wheatgrass. Forbs include fringed sagewort, rabbitbrush, yarrow, and pussytoes (SCS 1986).

## **3.3.7 Aesthetics**

Public concern over the aesthetic impacts of proposed Church development is generally focused on US Highway 89 as an entry point to Yellowstone National Park. Other concerns include the visual intrusion of development that is more concentrated than what is typical for the rest of the valley.

### **3.3.7.1 Existing Condition of Key Views**

#### **East Gate/Ranch Headquarters/Ranch Office/Spring Creek**

Existing views of East Gate, Ranch Headquarters, Ranch Office and Spring Creek are basically the same as described in the original EIS. Changes that have occurred since the EIS include the placement of modular units at East Gate, modular units in place (but not being used) at Spring Creek, and fencing the supply area at Ranch Headquarters.

Each of the sites can be seen from both U.S. Highway 89 and from the county road on the west side of the river. Visual impacts will be focused on views from the highway.

The Ranch Headquarters is the most visible site from the highway since there are no obstructions. The Church has planted evergreen trees on the river side, but these

are quite small and it could take 20 years or more before they are large enough to effectively screen the area. Fencing around the supply yard is an improvement but generally the area appears industrial, in contrast to the surrounding agricultural/open space. Visual impacts in this area are greatest at the time of the annual summer conference, when hundreds of cars are parked at Ranch Headquarters and East Gate.

The Spring Creek site is screened to some extent from the highway. As described in the EIS, the views for the individual traveling from north to south are shielded by a rise next to the river. As the driver travels farther south, he/she will be able to view the south end of the development at the base of Devil's Slide. For the driver coming north out of Gardiner, the site is completely visible for a period. The site is undeveloped at the present time. There is some activity associated with test water wells and there are some modular/mobile units stored on-site.

The area from Gardiner to Yankee Jim Canyon is defined by high mountain slopes that rise steeply just east of the highway. The highway parallels the Yellowstone River and to the west, south of Yankee Jim Canyon, the valley broadens but is still much narrower than the northern part of the valley.

The Devil's Slide outcrop is a prominent feature on the mountain slopes to the west, just south of the Corwin Springs bridge.

The visual condition of the general area from Gardiner to the narrows of Yankee Jim Canyon is one of scattered development, primarily residential. Residences vary from mobile homes with little or no landscaping to permanent residential structures with fully matured trees. Farm and domestic animals are visible. On the Church's property on the west side of the river, land is primarily open space/agricultural with the exception of the Ranch Office, Ranch Headquarters, Trestle Ranch and a handful of private homes.

### **Mol Heron Shelter Site/Golden Age Village/Blue House Kitchen**

The Mol Heron Shelter Site, Golden Age Village and Blue House Kitchen are not visible from US 89. Because of access limitations, there basically are no views of the shelter site other than for Church-approved traffic. Persons traveling on the Mol Heron Creek road during the period of the summer conference will see the parking and camping facilities for thousands of conferees. The Golden Age Village is screened by topographies from views from Emigrant and US 89. Some of Glastonbury properties and residential development can be seen from the highway. Because the existing vegetation on the lower slopes is primarily grasses, the residential development and associated disturbance stand out on the hillsides more than if the area were heavily vegetated with large trees. The Blue House Kitchen is an existing farm house with mature trees that can be seen from Trail Creek county road.

Overall, the valley is broad and defined to the east and west by high mountains. The valley narrows dramatically just south of Livingston and at the Yankee Jim

Canyon. In general the area north of Yankee Jim Canyon to the southern fringe of Livingston development is agricultural/open space with scattered residential and small business development. Residential development is increasing in this valley.

### **3.3.8 Air Quality**

#### **3.3.8.1 Public Issues**

The primary air quality concern for this proposed development is from fugitive dust caused by construction (fugitive dust refers to dust in the air as opposed to dust on the ground). Since construction and reclamation have occurred at the Mol Heron Shelter site, there are no air quality impacts directly related to the shelter. The proposed reinstallation of fuel tanks will pose the possibility of temporarily creating fugitive dust. Fugitive dust from construction of the water and sewage treatment systems at the Golden Age Village would initially be the main concerns. The placement of modular homes should not create a lot of dust, but the future development of associated facilities might result in some temporary fugitive dust problems.

#### **3.3.8.2 Existing Conditions**

Air quality considerations range from the site of a proposed development to the general area of construction to the region between Gardiner and Livingston.

Although air quality in the Upper Yellowstone Valley has not been the subject of a scientific study, empirical observations by people living in the area (Chapman, Herriford, Hodgkinson and Parks, pers. comm.) reveal the following:

The air quality is generally good. The prevailing wind is from the southwest through west, with an occasional weather system moving down from the north. The configuration of Yankee Jim Canyon and Tom Miner Basin increases wind velocities as they flow into Paradise Valley. The velocity then decreases until it flows through Bad Rock Canyon, south of Livingston. It then increases as it moves through the Livingston area.

On the ground, air tends to move upslope in the morning. As the land warms during the day, the flow reverses, sending the air downslope.

Inversions are not common, but can occur, particularly in the winter months for brief periods of time.

The Montana Wind Energy Atlas lists meteorological data collected by the Federal Aviation Administration from January 1, 1948, through December 31, 1954, at the former Livingston airport. An analysis of the data stated:

Average seasonal wind speeds were 11.4 miles per hour in summer, 14.5 miles per hour in spring, 15.4 miles per hour in autumn, and 21.1 miles per

hour in winter. The highest average wind speeds occurred around noon in winter, early to mid-afternoon in spring and autumn, and late afternoon in summer. The lowest average wind speeds occurred shortly after midnight in Autumn, in the early morning in spring and summer, and in early evening in winter. The diurnal (daily) range of average wind speeds was greatest in summer and least in winter.

The most common wind directions were south-southwest through west-southwest. Winds from the southeast and west-northwest were least common. By direction, average wind speeds ranged from 6.0 miles per hour for southeast winds to 24.6 miles per hour for winds from the south-southwest. The strongest winds were from the prevailing wind directions.

Due to the influence of Bad Rock Canyon on wind speeds, velocities at the former airport cannot be correlated with speeds in the Paradise Valley.

The main air quality concern is the impact of fugitive dust from construction activities and dust generated by extra traffic on dirt roads in the area. Fugitive dust from construction is considered a temporary source since emissions usually cease when construction and landscaping activities are complete. Temporary control using water spray trucks during construction is normally adequate for this type of emission.

There is no air quality information pertaining to the Mol Heron Fallout Shelter/Conference site. The construction of the shelter would have classified it as a temporary source, but since reclamation is almost complete, there is no potential for significant fugitive dust problems.

Fugitive dust from traffic on gravel surfaced roads can be a long-term problem and needs to be addressed by the community. Carlo Cieri, Park County Commissioner, stated that the community has concerns about the dust from the Trail Creek Road and Glastonbury South Road. Also the 4 1/2 mile stretch from Gardiner through the park, which the Church has to use when loads are too heavy to drive over the Corwin Springs bridge, may be prone to dust problems. The county has no agreement with the Church for maintenance of these roads (Cieri, pers. comm.).

The county does have an agreement with the Church for the RTR-S roads from the Ranch Office to the bridge and from the bridge just past the Ranch Headquarters. The Church maintains the road from the Cinnabar Basin turnoff to the locked gate at the entrance to the Mol Heron Conference/Shelter Site. The Church has also done some work on the road between Ranch Headquarters and the Cinnabar turnoff.

The DHES's Air Quality Bureau (aqb) continues to encourage the development of special or rural improvement districts to pay for road maintenance and dust control in rural subdivisions. ARM 16.8.1401 reads in part, "No person shall cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter." Therefore, the Church continues to consider controls for dirt or gravel roads.

Another air quality concern is smoke from residential wood burning. William Smith, the engineer for the Church, stated that the primary heating source for the Headquarters, East Gate Work Camp, Golden Age Village, RTR-N and, in the future, Spring Creek is liquid propane gas (LP gas), with some homes using fireplaces and high efficiency wood stoves as auxiliary heat sources (Smith, pers. comm.). Air emissions from LP Gas use are minimal. There are no current requirements for residential wood stove emissions.

The primary heating sources for the Ranch Office are wood fired boilers. One boiler heats the Blue House and adjacent office, another the food processing facility #1, and the third heats the food processing facility #2. The maintenance shop is heated by LP gas. Propane also is used as a secondary heating source for the complex.

Under the Administrative Rules of Montana (ARM) 16.8.1102 (a) (ii), a permit is not required for the following: "Residential, institutional, and commercial fuel burning equipment of less than 5,000,000 British Thermal Units (BTU)/hour of heat input if burning solid fuel." The wood-fired boiler used at the Blue House and office is rated at 230,000 BTU/hour; the boiler at the food processing facility #1 at 500,000 BTU/hour, and the boiler at the food processing facility #2, 500,000 BTU/hour. These boilers are all used for either residential, institutional or commercial purposes, and are less than 5,000,000 BTU/hour. Therefore they are excluded from air quality permitting.

The gravel crusher currently operated by the Church has been permitted by the AQB. The permit for the crusher is site specific and if the plant is moved to another location, a "Notice of Intent to Transfer Location of Air Quality Permit" must be published in a newspaper of general circulation in the area to which the transfer is made. The AQB must be notified of the transfer and may modify the conditions of the permit based on local conditions of any future site.

The Montana Department of State Lands presently has contracts with the Church for the reclamation of two gravel pit sites. The first is where the crusher is presently working at Glastonbury North. The second is in the "Mol Heron Pit" in the Ranch Headquarters compound.

When an assessment is made to determine need for an air quality permit on a landfarming project, such as that associated with the Mol Heron Spill material, AQB assumes that all the hydrocarbons associated with the project will be volatilized in the first year. If this amount equals or exceeds 25 tons per year, a permit is required. According to DHES calculations, the Church's landfarming site volatilizes less than 25 tons of hydrocarbons a year and does not need a permit.

The Church's property borders Yellowstone National Park, which is a mandatory Class I area for air quality under ARM 16.8.923, Prevention of Significant Deterioration. The Church's proposed projects do not meet the definition of major stationary sources as defined in ARM 16.8.921 (22), therefore, are not subject to PSD

air quality permit review. While ARM 16.8.1102 requires an air quality permit for the construction of any air contaminant source which has the potential to emit more than 25 tons per year of any pollutant (other than lead, which has an emission standard of five tons per year) none of the Church's proposed projects would meet the criteria of this rule.

### **3.3.9 Historical and Archaeological Sites**

In 1989 the DHES issued a final environmental impact statement on the Church's proposed developments in the Corwin Springs, Montana area (MDHES 1989). Included in that original EIS were considerations of cultural resources in the proposed project areas. A ground truth, Class III survey of lands to be affected by the proposed developments preceded the final EIS as did a Class I review of literature including a detailed description of the prehistoric and historic environment of the area of the Church's holdings. The Class I and Class III inventories of cultural resources were carried out by GCM Services, Inc., of Butte, Montana, and were described in two reports (GCM 1987a, 1987b).

The purpose of cultural resource investigations for the SEIS is to determine the effect proposed Church developments will have on known archaeological sites in the project areas. These investigations would thus provide state and federal agencies with sufficient information to make management decisions relevant to significant cultural resource sites and would ensure compliance with extant legal statutes and legislative acts as described above.

#### **3.3.9.1 Public Issues**

In a letter to Tom Ellerhoff (Schwab 1/2/92) the Montana State Historic Preservation Office sounded a cautionary note in response to a request for a file search to document known sites in the North Ranch, Glastonbury-North, and Glastonbury-South areas. In that letter David Schwab, State Archaeologist, states:

It is important to note that only a small portion of the designated search area has been systematically surveyed for cultural resources. Those areas where surveys have occurred contain a rich historic and prehistoric record with significant cultural sites. This indicates that evidence for intensive long-term human activity exists along the Upper Yellowstone River in the EIS study area. The region is clearly important as a source of significant information on Montana's history and prehistory.

Schwab went on to state, "We would anticipate that numerous as-of-yet unrecorded properties currently exist within the Church study area". That SHPO file search documented the presence of 55 historic and prehistoric sites in the North Ranch and Glastonbury areas.

### **3.3.9.2 Geographic Scope for Each Proposed Action Site**

The proposed Church additions and modifications to plans covered under the original EIS include five specific localities contained within larger Church holdings at Royal Teton Ranch - South, Royal Teton Ranch - North, and Glastonbury. Those five localities include: a) East Gate Work Camp, b) Spring Creek Headquarters, c) Mol Heron Shelter Site, d) Golden Age Village, e) Blue House Kitchen.

#### **East Gate Work Camp**

This locality is part of Royal Teton Ranch-South and occurs in the vicinity of the old plunge and commercial development at Corwin Springs. As defined by GCM Services, Inc., (1987a) the original area of cultural resource investigation at this locality covered approximately 20 acres. Proposed Church plans do not call for additional development or action beyond the boundaries depicted in the GCM report. Two archaeological sites, 24PA757 and 24PA758, occur in the East Gate Work Camp project area.

#### **Spring Creek Headquarters**

This locality is also part of Royal Teton Ranch-South and occurs upstream from Corwin Springs opposite the USFS's LaDuke Hot Spring Campground. As defined by GCM Services, Inc. (1987a) the original area of cultural resource investigation at this locality involved three survey plots. The original area of Class III survey in these plots was approximately 60 acres. Two archaeological sites, 24PA762 and 24PA763, occur in the Spring Creek Headquarters project area. Proposed Church developments will involve an additional 15 acres.

#### **Mol Heron Shelter Site**

This locality is part of Royal Teton Ranch-South and occurs along Mol Heron Creek. The original GCM Services, Inc., (1987b) survey covered approximately 100 acres. Proposed Church actions will not expand beyond this 100 acre, previously surveyed area. One archaeological site, 24PA795, occurs in the Mol Heron Shelter project area.

#### **Golden Age Village**

This locality is part of Glastonbury-North and occurs near Emigrant. This locality was not surveyed by GCM Services, Inc., as a part of the original EIS and cultural resources study. Proposed Church actions will therefore involve disturbance to an area which has never undergone a Class III archaeological survey.

#### **Blue House Kitchen**

This locality is part of the North Ranch and is situated near Pray. Lands examined by GCM Services, Inc., (1987b) included the tract containing the kitchen.

Proposed Church action will not involve property beyond the boundaries of the original survey area which covered approximately 8 acres. No archaeological sites are known to occur in the Blue House Kitchen project area.

### **3.3.9.3 Historic and Prehistoric Sites Review and Updates**

Three prehistoric sites (24PA758, 24PA760 and 24PA762) and four historic sites (24PA757, 24PA759, 24PA763 and 24PA795) occur on Church lands involved with the original EIS (GCM 1987a, 1987b). Some of these sites were recorded by GCM and some were recorded earlier by other archaeologists. Six "prehistoric loci" and three "historic loci" were also noted. Loci were described as "locations of a few artifacts or a feature reflecting minimal prehistoric or historic activity" (GCM 1987a:39). Loci were considered unworthy of site status and were not issued Smithsonian site numbers. The information value of loci is extremely limited and further work or investigation was deemed unnecessary.

Of the seven archaeological sites recorded by GCM, five (24PA757, 24PA758, 24PA762, 24PA763 and 24PA795) occur on lands proposed for Church additions and modifications.

#### **Site 24PA757**

This site is historic and consists of architectural remains associated with the old Corwin Hot Springs commercial development opened in 1909 (GCM 1987a:40-43). The site is described as consisting of the old plunge, two chimneys, a concrete foundation, and a large river cobble and cement foundation. The site is located in the East Gate Work Camp area where Church actions are proposed in this SEIS.

24PA757 was recommended as potentially eligible to the National Register of Historic Places (NRHP) under criterion B (associated with persons significant to our past) and criterion C (architectural structure and style). Although direct changes to the old plunge site were not proposed by the Church in actions covered by the original EIS, it was recommended that the site be photographically recorded using large format photography and that it be further recorded using measured architectural drawings (provided original plans could not be located) if the plunge building were to be razed or substantially altered (GCM 1987a:43).

#### **Site 24PA758**

This site is prehistoric and consists of buried cultural deposits including stone artifacts, bone and fire-broken rocks (GCM 1987a:43). Limited subsurface testing was carried out during Class III investigations associated with cultural resource studies accompanying the original EIS. The site is located in the East Gate Work Camp area where proposed Church actions are covered in this SEIS.

24PA758 was recommended as eligible for listing in the NRHP under criterion D (site has potential for contributing significantly to understanding of area prehistory).

This prehistoric site is on essentially the same landform as historic site 24PA757. Therefore site 24PA758 has experienced impacts related to historic development of Corwin Hot Springs (originally named Electric Hot Springs) and has also been impacted by Church developments such as building construction, road and parking construction and wastewater system installation. However, subsurface testing by GCM indicated that significant, intact, undisturbed cultural deposits remain in portions of the site landform. Because impacts addressed by the original cultural resource study were shown to occur in area of the site where disturbance had already taken place and where subsurface testing demonstrated that cultural deposits were extremely sparse or non-existent, it was determined that proposed Church action would not have significant impact on 24PA758 (GCM 1987a:44, 50). Further work was deemed unnecessary with regard to actions proposed under the original EIS.

#### **Site 24PA762**

This site is prehistoric and consists of a lithic scatter "of no more than 20 flakes" within a 50 square meter area (GCM 1987a:47). The National Register statement for 24PA762 suggested that the site had no further potential to yield information on local prehistory and further work was not recommended (GCM 1987a:47).

#### **Site 24PA763**

This site is an historic trail, the old Yellowstone Park Trail, which consists of a visible trail or road bed portions of which are still intact within the lagoon site at the Spring Creek Headquarters (GCM 1987a:46). This trail was constructed as a toll road along the west side of the Yellowstone River between 1871 and 1874 and served tourists visiting Yellowstone Park and was used by local people up to 1924 when the present highway was constructed along the east side of the river.

The site was determined to have good information value. The trail was determined to be significant "as part of the early transportation corridor along the west side of the Yellowstone Valley" and was recommended as eligible for listing in the NRHP "primarily" under criterion A (GCM 1987a:46). That criterion indicates a site is significant if it is associated with events that have made a significant contribution to the broad patterns of our history.

Proposed Church actions covered under the original EIS were determined to directly impact a small portion of the trail. Construction of the lagoon and lagoon service area would eliminate a part of this trail. GCM Services, Inc. recommended that the trail be extensively recorded but considered that level of recordation as outside the scope of the cultural resource project (GCM 1987a:47). GCM went on to recommend that projected impacts "be viewed as an acceptable adverse effect as it will destroy a portion of the trail but will not impact the advertisement of the trash heaps" (GCM 1987a:51).

### **Site 24PA795**

This site is an historic homestead (the Taylor Homestead) and consists of a standing corral, depression from a burned cabin, and a collapsed root cellar (GCM 1987b:6). Because 24PA795 contained no standing structures except for the corral and because it was not associated with persons prominent in local communities the site was determined to be insignificant with no further information potential and was not recommended as eligible for listing in the NRHP.

#### **3.3.9.4 Golden Age Village/Glastonbury/RTR-N**

A file search by SHPO documented the presence of 55 historic sites in the North Ranch and Glastonbury areas. SHPO anticipates numerous as-of-yet unrecorded properties.

Of the 55 known archaeological sites in the North Ranch and Glastonbury areas 15 occur in Township 5 South, Range 8 East. It is in this township and range where the Church's proposed action at the Golden Age Village will occur. However there are no known archaeological sites in Sections 29 and 32 where Golden Age Village developments will occur.

Sites closest to Glastonbury-North and the Golden Age Village locality include 24PA721, the historic townsite of Emigrant, and 24PA381, a prehistoric bison kill site complex. Part of site 24PA381 is located on Church property in the NW1/4 of Section 27 at Glastonbury North. This location is not part of the Golden Age Village project site. Both 24PA381 and 24PA721 were briefly discussed in the GCM Class I inventory section of the report for the original EIS (GCM 1987a:29). 24PA381 is considered to be significant.

Other sites more distant from the Golden Age Village project locality and adjacent to the Glastonbury North property include: 24PA341, a site of probable prehistoric age containing tipi rings and rock fortification features; 24PA632, a Late Prehistoric Period rock fortification site; 24PA717, a Late Prehistoric Period lithic scatter; 24PA709, a probable prehistoric age bison kill complex with drive lines, tipi rings and lithic artifacts; 24PA422, a Late Prehistoric Period tipi ring site with cairns and lithic artifacts; 24PA706, a Late Prehistoric Period tipi ring site with lithic artifacts; 24PA715 and 24PA716, both rock cairn sites of unknown age; 24PA718, an historic trash or dump site; 24PA740, an historic bridge; 24PA969, a site of unknown age; 24PA184 and 24PA811, both lithic scatters of probable prehistoric age (SHPO 1992).

Many other archaeological sites are known from the upper Yellowstone Valley between Emigrant and Gardiner. Some of these sites have been known for some time (Arthur 1962, 1966). Other sites were recorded independently by amateur archaeologists Tom Jerde of Livingston and John Darroch of the Paradise Valley and Bozeman. Upper Yellowstone Valley archaeology was also the subject of a doctoral dissertation (Lahren 1976). More recently a number of cultural resource inventories associated with federally and state regulated projects have resulted in the recording

of numerous historic and prehistoric sites in the Upper Yellowstone Valley (Aaberg 1991, 1992; Deaver et. al. 1989; Howard and Brownell 1988; Huppe and Howard 1988; Huppe 1988; Shovers 1987; Deaver 1986; Steere et. al. 1982).

### **3.3.10 Land Use**

#### **3.3.10.1 Public Issues**

Public issues related to land use include the cumulative effects of numerous individual developments, such as residences in the Glastonbury subdivisions. Issues raised at the public scoping meetings included concerns about possible evasion of subdivision laws.

In general, many of the concerns voiced about the Church's proposed development have to do with land use. Prior to Church purchase of the RTR-S, the property was basically open space. Since Church acquisition, the developments at the Ranch Headquarters have been established and the Ranch Office, East Gate and Ranch Kitchen/Cinnabar areas have expanded. Much of the Glastonbury properties, also formerly open space, have been sold and residential development is proceeding rapidly compared to other locations in the county. The majority of the land owned by the Church has been retained as agricultural land. The area that has changed use and that which is proposed for change is small compared to the Church's entire land holdings, but the uses that are proposed are in some cases dramatically different than what has been experienced by the area in the recent past.

#### **3.3.10.2 Existing Conditions**

The State of Montana provides great flexibility for land owners to develop their property. State building permits are not required in rural areas for structures that serve fewer than six families. Local review and approval is only required for subdivisions with lot sizes that are less than 20 acres. In general, the only permits that are required for construction are those for water supply and sewer systems that serve 25 or more people for more than 60 days out of the year. The only permits required for the Church's development of Spring Creek, for example, are for public water and sewer systems and state building permits. There are no built-in mechanisms in the permitting process for ensuring adequate land use planning or integration into existing public infrastructure systems (roads, water supply, etc.).

Land use planning is a local government function (Section 76 MCA). County commissioners are empowered by the State to designate jurisdictional planning areas and to develop a master plan for the jurisdictional area. Park County has a jurisdictional area that includes Livingston and a four and a half mile boundary surrounding the City limits. Park County has a planning board that is responsible for reviewing all local subdivisions in the entire county.

Rural development was the subject of an Environmental Quality Council (EQC) study requested by Governor Stan Stephens. The governor requested the study after

state representative Orval Ellison voiced concerns about Church developments. (Bozeman Daily Chronicle, 15 June 1990) The EQC staff attorney came to the conclusion that subdivision laws, sewage permits, and other regulations are an "inadequate substitute for responsible planning and zoning".

Because Park County does not have a county-wide master plan, the only formal county-wide land use planning mechanism is county Planning Board review of subdivisions. Park County subdivision regulations provide design standards for streets, sanitary sewers, water supply, storm drainage, utilities, parks and open space, traffic control, and garbage collection. The purpose of the regulations is to provide orderly development, to coordinate roads within subdivided land with other roads (both existing and planned), to provide adequate transportation, water, drainage and sanitary facilities, to avoid unnecessary environmental degradation, and to ensure that subdivision services are adequate and will not require an excessive expenditure of public funds to supply such services. (Montana Subdivision and Platting Act 76-3-501)

Land divisions that do not fall within the legal definition of subdivision as "a division of land...which creates one or more parcels containing less than 20 acres..." are exempt from local review and approval. The Glastonbury properties are generically referred to in this SEIS as subdivisions, but these properties have been divided into parcels 20 acres or greater and are therefore exempt from local review under state law.

### **East Gate Work Camp/Spring Creek Headquarters**

The discussion of existing land use for this area includes the Ranch Kitchen/Cinnabar Campground, East Gate, Ranch Office and Ranch Headquarters. With the exception of the Ranch Kitchen/Cinnabar Campground area, the East Gate (Camp Mustang) Trailer Court at Corwin Springs, and the houses and shops at the Ranch Office, there was limited development in this area prior to Church acquisition.

Non-Church development in the narrow valley includes dispersed residences on the east side of the River, some farming and grazing, primarily for horses. The Church developments are the densest population centers in the general area, with the exception of Gardiner. The dense population clusters are effective mechanisms to promote delivery of water, sewer and other services and to retain maximum amounts of agricultural land.

The Church has adopted a general policy of clustered development. The developments at East Gate, Ranch Headquarters, and Ranch Office are reflective of this policy. There are work and housing units at each of these developments. The Church has licenses to operate housing units as work camps. (Bell, pers. comm.) A work camp is a

parcel of land on which housing is provided by a person for two or more families or individuals living separately, for the exclusive use of the

employees of such person and the families, if any, of the employees....."housing includes but is not limited to camping spaces; trailer parking spaces; mobile, modular, or permanent barracks or structures. (MCA: 50-52-101)

Work camp licenses are issued by the DHES's Food and Consumer Safety Bureau (FCSB). The purpose of the licensing requirement is to insure sanitation and protect public health. (MCA: 50-52-102)

The Church also has built a few scattered developments on the RTR-S. At the time of the DEIS, the Church had two homes within one mile of the Yellowstone River. As of March 1, 1992, the Church had added one more home within one mile of the Yellowstone River. The Church also has another seven homes on its RTR-S properties. Current non-clustered residences house a total of 35 persons. The construction of these homes does not require local land use review; however, it does require county septic permitting.

### **Mol Heron Shelter Site**

Land use in the vicinity of the Mol Heron Shelter primarily consists of the shelter facility and the conference activities. Prior to Church acquisition of these properties, land use was agricultural and recreational (vacation cabins).

The most intensive land use associated with the shelter was the construction of the facility and the clean-up associated with the fuel spill. The Church has agreed with the DHES not to use any of the individual shelter water supply and sewage systems for more than nine families or 24 persons daily for any more than fifty-nine days out of any calendar year. This agreement provides the Church with the opportunity to use the facility year-round with less than 24 persons. The Church has indicated it does not have any particular plans for use of the shelters other than for maintenance and repair and other uses conforming to the State Regulations Governing Fallout Shelters. Currently there is no sewage/septic system at the shelter.

The conference activities involve pre- and post-conference set-up/take-down over a several month period and attendance by conferees over a two week period during the summer. Conference activities are described at the beginning of Chapter 3.

### **Golden Age Village/Glastonbury Properties**

Prior to Church acquisition, the Golden Age Village and Glastonbury subdivisions were open space/agricultural land. The Golden Age Village is a locally reviewed and approved mobile home subdivision. The Glastonbury properties are exempt from local subdivision review.

Statistics for land in the Golden Age Village and Glastonbury properties is included in Table 3-9. Information on number and type of residences and shelter

**Table 3-9**  
**Status of Lot Sales/Land Data**  
**Golden Age Village & Glastonbury Properties**

	Golden Age Village		Glastonbury-N		Glastonbury-S	
	# of Lots	Acres	# of Lots	Acres	# of Lots	Acres
<b>Parcels for Sale/Lease</b>						
Parcels Sold/Leased	44	5	49	1,110	61	1,057
Parcels for Sale/Lease	5	<1	10	203	43	1,057
Total Parcels	49		59		104	
<b>Land Retained by the Church</b>						
Reserved Parcels			12	233	*	337
Common Area		16			2	213
Total Lots/Acreage	49	22	71	1546	106	3029

\* Total of 337 acres includes three reserved parcels and the former Lindorfer property.  
Source: Edward Francis. Correspondence, 13 June 1992.

facilities as of 1990 is included in Table 3-10. It is clear from reviewing these tables that there are more residences than lots that have been sold.

Park County is suing the Church for evading subdivision laws because of this kind of development. Park County records indicate five mobile homes, one modular, one wood frame house and one fallout shelter on one 20 acre parcel in South Glastonbury. There were four septic systems on the property, three of which had been permitted. There are five owners who have varying percentage interests in the property. Park County alleges that these owners are not tenants in common with a right to enter and occupy every portion of the estate held in common. Instead, Park County alleges owners of each home and fallout shelter have an exclusive right to their home and/or fallout shelter. Park County alleges this exclusive ownership meets the threshold test of a subdivision. In addition to the five owners, the Church is also named in the Park County law suit. (Civil #91-97) Park County has filed similar action against the Church and property owners of a 20 acre parcel in North Glastonbury. This property has four mobile homes, two wood frame houses and two fallout shelters with approved septic system permits for the residences and no septic permits for the shelters. (Civil #91-98)

**Table 3-10**  
**Summary of Residences on Inspected Glastonbury Properties**  
**as of Fall, 1990**

	Glastonbury-N	Glastonbury-S
No. of Lots Inspected	47	41
Mobile Homes	84	60
Houses	28	16
Shelter Facilities	15	15
Total Shelter Capacity*	695	631
Septic Permits	109	66
Lots with Septic Violation	42	37

\* Information on shelter capacity was not available for all identified shelters. These numbers include 13 shelter sites at Glastonbury-N and 8 shelter sites at Glastonbury-S.

Source: Park County Records.

In response to the Park County suit against the Church, the Church admits that there are residences on the property named in the suit and that there may be a shelter. However, the Church states that it is without sufficient information as to the specific number and character of the residences and/or shelters, ownership details, value of the residences, name of the shelter, or any specific characteristics associated with the residences, and therefore is unable to form a belief about the truth of the complaint and therefore denies it.

The Church denies all allegations related to the suit's definition of "Division of Land" and "subdivision"; and denies the suit's conclusions that the area in question meets the threshold test of a subdivision, that the Church retains ownership interest in the property beyond the future remainder interest arrangement, and that any impacts exist which may be detrimental to Park County, to Church members residing on the property, or to the general public.

The Church has developed information and rules concerning the Glastonbury properties that is fairly comprehensive. Information includes:

- General Information Report
- Declaration of Covenants
- Specifications and Standards for Mobile Homes

- Specifications and Standards for Gravel Road Construction
- Specifications and Standards for Septic Systems

The Covenants provide regulations and controls regarding development and land use. Agricultural use is encouraged and animals (including dogs and pets) must be fenced in. No commercial feed lots or swine are allowed. The Covenants contain rules for fire safety, sewage and refuse disposal, commercial and industrial activity, and surface and subsurface water use. The Covenants require that a blast-resistant fallout shelter be constructed for every dwelling or habitation on any parcel. Groups of landowners may build common shelters. Two parcels are designated as common use land for recreational purposes. The Covenants describe road and easement systems. The Covenants clarify that the Grantor, Royal Teton Ltd., (Now dissolved into the Church) is the sole administrative authority in the Community. As such, the Church is responsible for review and approval of all building and development plans, including shelter facilities.

The construction of a fallout shelter disturbs as much or more ground as residential construction and requires fuel, water, and sewage systems. According to the State Electrical Inspector, 47 electrical permits have been issued for shelters. These permits are for multiple shelters that vary in capacity from 20 to over 700 persons (including the Church's facility). Single-unit (family) shelters do not require septic system permits separate from those of the residential lot. Multiple-unit fallout shelters must obtain septic permits from the County. (Taylor and Lemke, pers. comm.)

The Church has indicated that development of the Glastonbury properties has proceeded more rapidly than on other 20+ acre divisions in Park County in part because there are better provisions for roads and utilities. (Francis, pers. comm. 20 May 1992) Other dividers may not provide any road systems or those that are minimal, and many do not provide electrical and telephone systems as in Glastonbury.

### **Blue House Kitchen/RTR-N**

The land use of the RTR-N is primarily agricultural. The Church estimates approximately 45 persons live on 20 developed acres within the RTR-N. There are currently 10 houses, 3 mobile/modular houses, one office building, one Church building and two school buildings on this property. There are no fallout shelters according to the Church. There are 14 other structures primarily used for agricultural operations. (Francis, pers. comm. 6 July 1992)

### **Other Land Uses within the Study Area**

Other land uses in the study area include agricultural, residential and commercial operations by non-Church members. Land use in the valley has changed over the past 30 to 40 years as more residential use occurs on land that was previously agricultural.

## **3.4 Human Environment**

### **3.4.1 Public Issues**

Numerous public issues were raised that deal with aspects of the human environment. Among other issues, these include impacts on roads, county services, telephone and postal service systems. The resource topics examined in this SEIS reflect those issues and the topics required for review by MEPA.

### **3.4.2 Geographic Scope**

In general, the geographic scope of analysis for human environment topics includes the entire area from Livingston to Gardiner. In some instances, the geographic scope is expanded to include all of the Park County because statistical information could not be broken down into smaller units.

### **3.4.3 Social Structure and Mores**

Refer to the DEIS, "Social and Cultural Uniqueness and Diversity", for the description of social structure and mores.

### **3.4.4 Cultural Uniqueness and Diversity**

Refer to the DEIS, "Social and Cultural Uniqueness and Diversity", for the description of social structure and mores.

### **3.4.5 Access to and Quality of Recreational and Wilderness Activities**

#### **3.4.5.1 Public Issues**

Access to public lands is an issue of general concern to the public throughout Montana. There are 14 areas designated as general areas of access needs on the west side of the Yellowstone River between Gardiner and Livingston. (Gallatin Forest Plan Management Area Map-West Side (1986)) Six were designated on the east side of the river. Up until about 20 years ago, access in this area was generally granted by permission of the landowner. Since that time, access has closed up considerably. (Salinas, pers. comm.)

#### **3.4.5.2 Existing conditions**

Access conditions on Church property are substantially the same as when the FEIS was released. (Francis 6 June 1992). The Church says it provides access to the general public for a variety of activities including hunting, fishing, hiking, photography, historical site visitation and scientific research. In all cases, participants are asked to fill out and sign the DFWP "ASK FIRST" permission and liability release form.

According to Church statistics, hunting is the major source of requests for access to enter Church property. Some free public hunting has been allowed in the past for hunters who hold antlerless deer permits, either-sex antelope permits, and permits for the Gardiner Late Elk Hunt. In addition, the Church leases property to a hunting club and licensed outfitter. (Francis 6 June 1992)

Recreational use in Yellowstone National Park includes Sportsman Lake Trail which passes through the headwaters of the Mol Heron drainage. Sportsman Lake Trail is shown on USGS topographic maps (1955 USGS 15 minute MINER, MONT.-WYO) to connect via another trail with the Mol Heron Creek Road. Access would be across Church land, and according to park representatives, Edward Francis informed the Yellowstone National Park backcountry office "that the Church is no longer allowing public access." (Hektner, written correspondence, June 1992) There are two campgrounds on Sportsman Lake Trail in Yellowstone Park, approximately 11 miles from the trailhead in Yellowstone Park. Use of these sites is limited to two nights per week due to the area's sensitivity as a Bear Management Area. Overnight use of these campgrounds increased from 102 person nights in 1982 to 272 in 1991. Peak use during this period was in 1990, with 398 person nights.

Land acquisition or land exchanges are ways to achieve public access to public land. The DEIS indicated a draft EIS was being developed by the Forest Service to address access possibilities in the West Gardiner area. This EIS was not completed. Major events, such as completion of the Gallatin Forest Plan, the 1988 wildfires, and personnel and landownership changes, forced the Gardiner Ranger District to put the West Gardiner Access project on hold. (Logan 12 Sept. 1990) Instead, the Forest Service is now pursuing negotiations with owners on an individual basis.

The proposed Forest Service-Church land exchange described in the DEIS never took place. This exchange would have involved Forest Service property within RTR-S boundaries in exchange for the OTO ranch. The Church indicates that

...progress on the land exchange by the Forest Service was slow, and in 1989 the Church reached an agreement to sell the OTO Ranch to the Rocky Mountain Elk Foundation for resale to the Forest Service....The Church has indicated to the Forest Service that it is still interested in a land exchange on similar terms as before but involving other lands.

In June 1991, the Church submitted a specific proposal for a land exchange to the Forest Service. The Church continues to oppose any right of way access into the Mol Heron drainage. (Francis 28 Sept 1990). The proposal specifies tracts of land for exchange between the Forest Service and the Church. The Church proposes that all Forest Service land within Church property boundaries in the Mol Heron drainage including Aldridge Lake and two acres in the vicinity of LaDuke Hot Spring, be exchanged for various Church properties. Church properties proposed for exchange include property north of Mol Heron including Cutler Lake and the Cinnabar Mountain area (site where Church agreed not to graze sheep), and approximately four sections in the RTR-N. Total land proposed for exchange is approximately 4,200

acres for each party. (Francis 7 June 1991) The Forest Service has not yet made a decision regarding the proposed exchange.

### 3.4.6 Local and State Tax Base and Tax Revenues

#### 3.4.6.1 Property Tax

The Church began acquiring property in Park County in 1981 under the name of Royal Teton, Ltd. Since that time, the Church has acquired additional property and made substantial improvements. Those activities have resulted in substantial increases in their assessed market and taxable valuations for purposes of determining property tax assessments. A selected historical comparison of assessed market and taxable valuation and property tax amount is presented as follows:

<u>Year</u>	<u>Market Value</u>	<u>Taxable Value</u>	<u>Tax Amount</u>
1983	898,396	111,548	28,783
1984	2,465,390	234,795	57,253
1985	2,411,859	239,470	68,589
1988	Data Not Available	Data Not Available	151,013
1991	12,091,919	583,379	160,744

Source: Park County, Montana. County Assessor Records reviewed July 1, 1992.

The Montana Legislature, 1985, revised the method of calculating property valuation from an assessed market value to true market value. The impact of this legislation resulted in values almost doubling. However, in order to prevent severe financial hardship for property owners, the legislature also reduced the percentage of market to taxable valuation on real estate from 8.55% in 1985 to 3.86% in 1986. Therefore, market values doubled, but taxable values remained virtually unchanged.

Significant developments have contributed to increases in Church property market valuation. Assessed market value of the Church in 1985 totalled \$2,411,859 and property taxes were \$68,589. In 1991 market valuation was \$12,091,919, property taxes were \$160,744. The following developments have contributed to the increase in values and taxes since 1985:

	<u>Market Value</u>	<u>Property Tax Assessed</u>
1985 Assessments	\$ 2,411,859	\$68,589
<b>Improvements 1986 - 1991:</b>		
Increase due to 1985 Legislature	(est) 918,000	457
Mol Heron Fallout Shelter	4,340,068	44,792
Corwin Springs Improvements, Equipment	(est) 1,800,000	18,576
Glastonbury Fallout Shelters	445,428	4,815
Glastonbury Improvements	365,341	3,951
Mobile Homes - Glastonbury	<u>1,811,240</u>	<u>19,564</u>
<b>Total for 1991</b>	<b>\$ 12,091,919</b>	<b>\$ 160,744</b>

Source: Park County Assessor Records, July 1, 1992.

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According to Edward Francis,

The Church presently has no property, facilities, or equipment that is exempt from real or personal property taxes in Montana for religious or educational purposes. (Francis June 6, 1992).

In addition to the Church-owned taxable property, the individual owners of Glastonbury property also pay property tax.

### **3.4.6.2 Personal and Business Income Tax**

In 1991 the operation of the Ranch Kitchen, Cinnabar General Store, Big Spur General Store, and adjacent campgrounds was assumed by Lanelle Reserves, Inc., (LRI) a wholly owned subsidiary of the Church. Their activities are all taxed as normal business operations. Also, the employees of LRI pay tax on their individually reported incomes, if necessary, to the state and federal governments. Other Church members who may not be employed by the Church, but who reside in Park County, have state and federal income tax reporting requirements.

The Church is involved in farm and ranch activities including cattle, sheep, poultry, crops grown include wheat, barley, alfalfa and other hay, oats and vegetables. Much of the livestock and crops are consumed by residents and livestock on the ranch. Some is sold through the Ranch Kitchen restaurant, and remaining amounts are sold on the open market. The sale of farm products on the open market is considered a taxable transaction and is declared on the Church's Form 990T federal and Form CLT-4 state income tax returns. Products not sold but consumed on the ranch are not considered taxable. (Francis, June 6, 1992).

Royal Teton Engineering and Construction Department including the cabinet-making activities, does not provide services to anyone other than the Church. Since

there is no revenue associated with these activities, only expense, there are no income taxes.

The publishing facility activities are exempt from federal and state income taxes since all publishing is reported as being religious in nature.

The auto maintenance shops on Church property are for Church owned vehicles only. There are no revenues to be taxed. (Francis, June 6, 1992).

### 3.4.6.3 Local Property Tax Base - General Study Area

The assessed market value and taxable value of all property, real estate, gross proceeds, personal, mobile homes and motor vehicles (excluding light vehicles) in Park County 1981 through 1991 is included in the following table for the top 15 taxpayers.

In 1991 total taxable value of all property in Park County was totalled at \$23,655,755. (See Table 3-11) Total amount of property taxes assessed was \$7,356,598. The amount of property taxes paid by the Church in 1991, \$160,744, was 2.19% of all taxes paid in the county. (Park County Assessor. Report of Taxes Levied 1991, May 29, 1991).

The top 15 taxpayers, Park County 1988, (most recent year this statistic was available) gives a good representation of the type of industry, businesses and individuals that pay property taxes. The top 15 represent 26% of all property taxes paid in Park County.

**Park County Assessor  
Top 15 Taxpayers - 1988  
Park County**

<u>Firm</u>	<u>Amount</u>
1. Mountain Bell	\$464,383.70
2. Montana Power Company	435,588.42
3. Burlington Northern	304,698.44
4. Church Universal & Triumphant	151,012.96
5. Montana Rail Link & Liv. Rebuild Center	60,520.84
6. Brand S Lumber Company	43,330.16
7. Yellowstone Pipeline	36,036.76
8. First Security Bank	35,055.32
9. Park Electric Co-op	33,338.84
10. John Tecca	30,967.94
11. Yellowstone Motor Inn	26,250.62
12. First National Park Bank	22,132.64
13. Miles Building Apartments	20,796.60
14. Livingston Enterprise	18,189.21
15. Sherwood Inn	<u>17,335.90</u>
Total	\$ <u>1,699,638.35</u>

**Table 3-11**  
**Park County**  
**Assessed Market & Taxable Valuation**

<b>Tax Year</b>	<b>Assessed Market Valuation</b>	<b>Assessed Taxable Valuation</b>
1981	\$ 192,478,515	\$ 18,755,883
1982	185,978,735	17,837,124
1983	180,347,084	17,412,079
1984	188,938,243	18,361,328
1985	194,176,484	18,912,104
1986 <sup>1</sup>	381,816,811	20,472,510
1987	383,792,306	20,149,317
1988	390,899,159	20,163,428
1989	415,204,251	21,526,982
1990	440,237,287	21,612,480
1991	478,516,141	23,655,755

<sup>1</sup> During the 1985 Legislature, the means for determining assessed property values was changed to a true market value from an assessed market value. However, in order to prevent local Governments from receiving a windfall due to significant valuation increases, the legislature also reduced this percentage of market to taxable value calculation on real estate from 8.55% in 1985 to 3.86% in 1986. Therefore, although the assessed market value increased from \$194,176,484 in 1985 to \$381,816,811 in 1986, the assessed taxable value only increased from \$18,912,104 in 1985 to \$20,472,510 in 1986.

Source: Park County Assessor records, 1 July 1992.

### **3.4.7 Agricultural, Commercial and Industrial Production**

#### **3.4.7.1 Public Issues**

Several issues have been raised in relation to the Church's agricultural and industrial production. The spread of weeds was raised at the scoping meetings on April 10 and October 15, 1990. Weeds are discussed under the topic of vegetation in this SEIS. In written testimony on behalf of the Bear Creek Council (15 Oct. 1990), Richard C. Parks indicated the following public concerns:

- the Church has too many individuals involved in its agricultural operations, creating inefficiencies and errors;
- the Church is not primarily engaged in the practice of religion but is instead engaged in several businesses;

- the Church's warehousing and food processing functions now done at the Ranch office area should be moved to the Livingston industrial park; and
- the Church's industrial activities should be relocated to the Livingston industrial park and/or other under-utilized facilities in Livingston, Bozeman or Billings.

### **3.4.7.2 Scope of Analysis**

The scope of analysis for agricultural and industrial production will be focused on the proposed actions at Mol Heron, Spring Creek Headquarters, East Gate Work Camp, Golden Age Village and the Blue House Kitchen. Cumulative impact analysis will include existing agricultural and industrial operations in addition to those related to the specific proposed developments.

### **3.4.7.3 Existing Conditions**

#### Church Agricultural, Commercial and Industrial Operations

##### a. Proposed Action Sites

##### 1) East Gate Work Camp

The East Gate Work Camp/Camp Mustang area includes worker/member housing, the engineering facilities, and the Montessori International/Longfellow Academy. "Royal Teton Engineering and Construction" is an internal department of the Church and provides services only to the Church organization. Services are not provided to Church members as individuals. (Francis, 6 June 1992)

##### 2) Spring Creek Headquarters

There are no agricultural or industrial operations taking place at this site at the current time. There are modular units being stored at the site. Tests for the public water supply wells were completed in May 1992.

There are two other Church operations on the west side of the Yellowstone River to the north and south of the proposed Spring Creek Development. The Ranch Office is located approximately one mile to the south. The Ranch Office is the site of modular housing for approximately 24 persons, a vegetable processing and bakery facility, and a Church office. (Francis, pers. comm. 20 May 1992)

The Ranch Headquarters are located approximately one and a half miles to the north of the proposed Spring Creek Development. The operations at the Ranch Headquarters include editorial and publishing staff, audio and video production, construction operations, cabinetmaking, auto and equipment maintenance shop, tools and building materials supply yard and warehouse, chapel, tree farm and nursery, gravel crushing, and housing for staff/members. All services are conducted for the

Church. Services are not provided to individuals except within the context of Church operations. (Francis, pers. comm. 20 May 1992)

3) Mol Heron Shelter Site

There are no agricultural or industrial operations taking place at this site, other than what is associated with shelter completion, revegetation, and supply checks and maintenance. The Church holds its annual outdoor convention across Mol Heron Creek from the shelter. The convention facilities include concessions that sell publications and other religious materials.

4) Golden Age Village

The Golden Age Village includes lots for 49 mobile units, chapel/meeting hall, Church office, Thomas More School, and maintenance/garage facility.

5) Blue House Kitchen

This is currently the site of a Church staff/member residence not used for any commercial or industrial operation.

b. Other Commercial/Industrial Operations

A listing of Church corporations, legal entities, tradenames, and business names is included in Appendix A.

Most commercial activities are conducted by the Church's taxable subsidiary, Lanello Reserves Inc. (LRI) (Francis, 24 March 1992) LRI is a California business corporation wholly owned by the Church. LRI operations include the Ranch Kitchen restaurant, Cinnabar General Store, Cinnabar Campground, BSC, Paradise Players (performance group at the Ranch Kitchen restaurant), Blue Horizon Records, LR Distributors, and Aquastar Systems Sales.

The Church conducts other nonprofit commercial operations directly. These include the operation of Summit University, Community of Glastonbury and Golden Age Village. The Glastonbury properties have been divided into lots of 20 acres or greater that are being sold to Church members. The Golden Age Village is a mobile home subdivision operated by the Church. The Glastonbury properties and Golden Age Village are discussed in Section 3.4.10 "Distribution of Population and Housing".

The Summit University Press is the Church's religious publishing house. The publishing plant, graphic arts, data processing, distributing, and warehousing for publishing supplies and products are located at the Livingston Railroad Yard. A lease renewal is currently being negotiated with the Livingston Rebuild Center and will at a minimum include an additional four years' occupancy at the Livingston location.

The Church leases 30 to 40 acres east of Livingston for the storage of various supplies and materials including grain, mobile home units and the 32 fuel storage tanks that were removed from the Mol Heron shelter.

c. Agricultural Production

The agricultural operations of the Royal Teton Ranch include harvestable crops, beef cattle, sheep, poultry, leased property, and limited timber harvesting.

The Church participates in the U.S. Agricultural Stabilization and Conservation Service farm program. As part of this program, the Church has filed a compliance plan concerning farming practices for highly erodible soils and wetlands. The SCS conducts status reviews to ensure that participants understand and follow the plans. The Church developed its plan in September of 1989 and has until the end of 1994 to implement it. The Church requested early review in September of 1991, but has not received SCS status review. Review is now scheduled for the end of September or early October, 1992. (Sullivan, pers. comm.)

Crops produced by the Church include wheat, barley, hay, canola, oats and vegetables. (Williams, pers. comm.; Francis, 6 June 1992) Root crops are grown only on RTR-N. For the 1992 crop year the Church plans to sell approximately 25,000 bushels of wheat, 7,000 bushels of barley, and 800 tons of alfalfa and other hay. Some of the wheat, barley, hay, and other crops are consumed by ranch residents or livestock. Substantially all of the oats and vegetables are consumed on the ranch, with only small surpluses (if any) sold on the open market. The sale of farm products on the open market is a taxable transaction and is declared on the Church's federal and state income tax statements. (Francis, 6 June 1992)

The Church is in the process of increasing its cow and sheep operations. As of the summer 1992, there were approximately 55 cows being raised in a cow/calf operation on the RTR-S. Out of the total calf production, approximately 27 heifer calves will be saved for increasing the herd. Up to a dozen steer calves will be fattened for use by ranch residents or the Ranch Kitchen restaurant. The remainder will be sold on the open market. The Church plans to increase herd size to approximately 150 cows over the next several years. It is anticipated that approximately 75% of the calf crop will be sold. The ranch raises approximately 1,300 sheep. Approximately 500 to 1,000 lambs will be sold on the open market and the balance of 300 to 500 ewe lambs will be saved for increasing the size of the flock. Wool is also sold on the open market.

The Church raises turkeys and chickens on RTR-N. Approximately 2,000-4,000 turkeys and 10,000 to 15,000 chickens are raised each year and no poultry products (meat and eggs) are sold on the open market. The Church processes its poultry at a licensed facility at the RTR-N. The processing facility is used exclusively for poultry; beef and lamb processing takes place at local USDA-inspected facilities. The licensed annual capacity of poultry processing plant is 20,000 birds. The processing plant is used three or four times per year with an average of 1,000 chickens or 400

turkeys per eight hour day. Unusable by-products are bagged and transported to the Livingston incinerator for disposal. A septic system has been approved by the state for wastewater from processing and staff restroom. (Francis, 6 June 1992)

The Church leases property to a hunting club, licensed outfitter and to individuals for farming and grazing. The Church has individual lease agreements for 375 cattle and approximately 500 acres for share-cropped farming.

The Church indicates that timber harvesting is for Church use and not for resale purposes. Only very small amounts of timber have been harvested from the RTR-S since it was purchased in 1981. During 1982-85 several acres of pine beetle-infested lodgepole pine were harvested in the Mol Heron drainage. When the Church purchased the RTR-N in 1983, it was subject to a timber contract. The contract was bought out by the Church and logging operations halted after the removal of timber already cut. Since that time, timber harvest has been conducted primarily for firewood and post and pole material for use on the ranch. (Francis, 6 June 1992)

### **Agricultural, Commercial and Industrial Operations - General Study Area**

Park County's economy relies heavily on transportation/public utilities (railroad and trucking), agriculture, government, and tourism. According to statistics reported by the Bureau of Economic Analysis, U.S. Department of Commerce, the four largest sources of personal income in 1990 were transportation/public utilities \$21,624,000, services \$27,517,000, government (state, local, and federal) \$13,176,000 and retail/wholesale trade \$14,608,000. These four areas represented 74% of the total personal income in Park County. (See Table 3-12)

Railroads are reported under the transportation/public utility category. In 1981, railroad personal income totalled \$26,893,000, and over 32% of all personal income in Park County. By 1990, the railroad personal income level dropped to 17,213,000, or 16.5% of the total personal income in Park County.

Manufacturing and mining represented about 10% of all wages paid in Park County in 1990. Manufacturing is primarily lumber. Mining operations consist of two hardrock mines located in Jardine and Cooke City areas.

These employment statistics may not adequately reflect the impact agriculture has on Park County's economy, but agriculture contributes significantly to the trade, service, and transportation industry classification. The majority of privately held land in the County is used for livestock production (Park County Economic Development Plan, 1992).

In 1990, Yellowstone National Park had a record number of visitors, 2.8 million representing a 42% jump in the number of people who traveled through the park compared to 1980 (National Park Service, 1990). Growth in tourism and recreation

**Table 3-12**  
**Park County**  
**Personal Income by Major Source**  
 (Thousands of Dollars)

Industry Classification	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Farm	3,858	632	1,166	1,516	946	3,757	5,142	2,568	7,959	6,422
Agriculture/Forest/Fish	455	320	793	669	575	535	770	796	779	825
Mining	627	399	529	1,630	1,409	3,423	647	468	3,500	4,430
Construction	4,176	6,330	5,049	4,674	4,255	3,834	3,947	4,865	5,680	6,070
Manufacturing	5,387	4,850	5,515	5,792	5,409	5,587	5,318	5,128	5,370	5,822
* Transportation/Public Utilities	32,305	29,943	28,121	30,482	30,894	24,871	24,759	25,770	23,140	21,624
Wholesale Trade	1,112	1,195	1,204	1,906	2,168	1,467	1,567	1,647	1,922	2,679
Retail Trade	9,623	9,586	9,904	10,261	10,155	9,137	9,704	10,202	11,246	11,929
Finance/Insurance/Real Estate	2,955	2,529	2,870	2,944	3,057	3,184	3,894	2,864	2,906	3,330
Services	13,558	14,238	16,249	19,061	17,721	19,494	20,612	22,909	25,763	27,517
Government	8,953	9,785	10,795	11,281	12,003	12,018	11,680	12,349	12,513	13,176
Total	83,009	79,807	82,195	90,216	88,592	87,307	88,040	89,566	100,778	103,824
* Railroad Amount Included Above	26,893	24,777	23,314	25,425	25,462	19,003	19,292	19,161	19,312	17,213

Earnings by Place of Work.  
 Does not include self-employed proprietors.  
 Data not available for 1991.

Source: Regional Economic Information Systems, Bureau of Economic Analysis.

has obvious economic implications. Use of guides and outfitting businesses, retail stores, hotels, and restaurants bring outside dollars to the area.

### **3.4.8 Human Health**

#### **3.4.8.1 Public Issues**

The three areas of public concern derived from the scoping sessions included: 1) communicable diseases, 2) the disposition of solid waste, and 3) hazardous waste, particularly ammonium nitrate.

#### **3.4.8.2 Public Health**

Many Church followers practice a "holistic" approach to human health. This can include such things as proper diet, exercise, avoiding harmful substances, fasting, home births and natural healing methods. This is supplemented with the choice by some persons to use midwives and the option of conventional medical practices and treatments.

The Church has staff nurses and access to chiropractors and physicians at its medical facility in Corwin Springs. One of the registered nurses is licensed as a nurse practitioner. The medical dispensary is composed of four former tourist cabins, just north of the Ranch Kitchen.

The medical staff serves the Church's employees and those attending conferences and special events. The medical services are not available to the public or members who are not employed directly by the Church.

According to the Church, one of the present medical doctors and a partner are planning to purchase a home north of Corwin Springs. The two physicians would turn the building into professional offices.

If the new practice occurs, the Church plans to retain its nursing staff, and contract medical services with the physicians. The doctors would also have public practices.

The Church believes by contracting with physicians and other medical professionals and using its existing nursing staff it can more than adequately serve the additional personnel who would be housed at the Spring Creek and East Gate Work Camp facilities. Homeowners in Glastonbury South and North (including Golden Age Village) who are not members of the Church staff are responsible for their own medical needs. (Francis, pers. comm.)

In instances of emergency medical service, the Church has trained emergency medical personnel and owns its own ambulance. The ambulance service is licensed with the DHES.

Problems occur in instances where large numbers of people practicing holistic medicine do not supplement it with some form of traditional preventive medicine. An example is the practice of not immunizing infants and children. This can lead to outbreaks of communicable diseases.

The first large-scale outbreak of a communicable disease in southern Park County was rubeola or "hard" measles. A post Park County Health Department analysis said the first confirmed case was reported to health officials on July 9, 1988. The source of the outbreak was later traced to an unvaccinated individual from Portugal who was attending a conference at Corwin Springs. About 2,500 persons from throughout the United States and from foreign countries were also attending the conference.

On July 15, 1988 former Park County Health Officer Brian Priest, MD, notified the Park County Commissioners of the possible epidemic. The commission authorized the health department to use money from the Public Safety Fund for surveillance work.

The county report said:

The Park County Health Department was aggressive with the management and control of the measles epidemic, thus limiting the reported number of measles cases to 22. The nursing staffs were involved not only in giving immunizations, but assisted in the notification of contacts and the identification of susceptible persons.

Five hundred and twenty-one (521) nursing hours were used for measles surveillance during the months of July, August, and September. A total of 10 Special Immunization Clinics were held....

According to the county's report, the total personnel services costs alone for limiting the spread of the disease and reducing the possible effects of the outbreak was \$5,186. The DHES costs and costs related to vaccine, investigation and inter- and intrastate case follow-up were not included in the county cost figures (Paulsen, pers. comm.).

A year later, in May and June, another communicable disease outbreak occurred. This time the disease was pertussis (whooping cough). Follow-up information from the DHES indicated that 71% of the cases reported during the outbreak were from Park County, with the majority of those reported cases from the Corwin Springs/Emigrant areas.

According to past and present Park County health officials, the Church's attitude toward immunization began to change after the pertussis outbreak. The possible risks associated with vaccination were out-weighted by the prevention aspects and the negative publicity derived from the two communicable disease outbreaks (Dr. Priest and Brown, RN, pers. comm.).

Although there seems to be a move toward using traditional medical means for practicing preventive medical measures by the Church's local followers, the conferences still create the potential for outbreaks from unimmunized visitors.

## **Solid and Hazardous Waste**

### **a. Solid Waste**

Park County formed the Park County Refuse Disposal District (district) to fund and maintain facilities to collect, process, and disposal of solid waste. The district holds Solid Waste Management System licenses to operate a rural container system, a solid waste incinerator, and a Class II (municipal solid waste) landfill.

The container system consists of a number of metal containers situated at approximately 30 sites throughout the county. These containers are emptied at least once a week by the district and the wastes collected are transported to the Park County Incinerator in Livingston. The wastes are burned, which reduces their volumes by approximately 60 to 90%. The resulting ash is taken to the Park County landfill for disposal. The landfill is east of Livingston. The site accepts the ash from the incinerator and other solid wastes generated in Park County that are not acceptable for incinerators, such as large bulky wastes, metal items, and industrial sludges.

The county incinerator has a maximum annual capacity of approximately 22,000 tons. During 1991 the incinerator handled 12,906 tons of solid waste. The landfill accepted the resulting ash and an estimated additional 600 tons of wastes. Recently a consultant for the district estimated that at the present rate of disposal the Park County landfill facilities are sufficient to handle moderate increases of solid waste generated and disposed of within the county. Modifications of the projected lifespans of these facilities may occur due to changes in regulation and subsequent design modifications.

The operations of the district facilities are funded through a residence and commercial property assessment. The county has in the past negotiated with the Church to determine a fair assessment for the members, businesses, and other activities of the Church. The fiscal year 1992 solid waste district assessment for Church was \$20,900.

The Church's assessment pertains only to property it owns. Individuals owning property in Glastonbury South and North are charged the same rate as any private property owner in Park County.

### **b. Hazardous Waste**

If the Church generates waste from activities on its own property, the waste's reactive characteristics must be identified to determine if it is a hazardous waste.

If it is hazardous, it must be managed and disposed of in accordance with the Montana Hazardous Waste Administrative Rules, Title 16, Chapter 44.

The areas in which this may be applicable include, but are not limited to the following:

- A. Ammonium Nitrate - The Church uses an ammonium nitrate fertilizer in its agricultural operations. A 10,000 gallon tank of this liquid fertilizer is situated above ground just north of the Yellow Barn in the Mol Heron Drainage, north of Aldridge Lake.
- B. Livingston Industrial Park
  - 1. Warehouse
  - 2. Grain Storage
  - 3. Agriculture
  - 4. Publishing and Printing
  - 5. Construction
- C. Livingston Railroad Yard - Publishing and Printing
- D. Royal Teton Ranch (RTR-N and RTR-S)
  - 1. Farm Equipment - Maintenance and repair.
  - 2. Pesticides and Fertilizers

### **EPCRA Compliance**

The Church has not filed any information with the State Emergency Response Commission (SERC) indicating it has reportable quantities of hazardous substances on its properties in Park County. This notification would be in compliance with the federal Emergency Planning, Community Right-To-Know Act (EPCRA - also referred to as the Superfund Amendments and Reauthorization Act [SARA] Title III).

The law mandates that any organization receiving substances which are required to have material safety data sheets for shipping, must consider if the substances need to be reported to the local fire department, Local Emergency Planning Committee (LEPC) and the SERC.

The Church's present storage of vehicle and heating fuel, and possibly agricultural products, would indicate a need to report at least one or more of these substances.

Reporting is voluntary, however if spills or releases occur and there is no record of compliance with the federal law, enforcement by the Environmental Protection Agency can result in substantial fines.

### **3.4.9 Quantity and Distribution of Employment**

#### **3.4.9.1 Public Issues**

The Church has proposed several additions and modifications to its development plans. When evaluating the impacts concerning employment and the distribution of employment, based on planned developments, the following issues are of public concern.

- What will be the impact of additional Church employment and increased number of members residing in Park County on overall county employment?
- What is the impact of this employment to the overall economy of Park County?
- The influx of Church members creates increased competition for available jobs. (Public Scoping Comment)

#### **3.4.9.2 Scope of Analysis**

The scope of the analysis will be to determine the impact of permit approval or denial on employment to the Church and surrounding communities. In addition, an analysis will be made of the compensation for employment and the resulting impact on local economies.

#### **3.4.9.3 Existing Conditions: Church Employment**

An annual summary of Church employees in Montana from 1981 to 1991 is in the following table provided by Edward Francis in a letter dated July 6, 1992:

<u>Year</u>	<u>Total No. of Part/Full Time Salaried Employees</u>	<u>Total Value of Compensation for Part/Full Time Salaried Employees*</u>	<u>Monthly Average Part/Full Time Volunteers</u>
1981	12	\$ 11,330	N/A
1982	33	143,765	N/A
1983	114	302,827	N/A
1984	119	493,913	N/A
1985	132	676,975	82
1986	173	873,465	149
1987	446	2,438,342	280
1988	437	2,682,459	252
1989	540	3,028,450	291
1990	536	1,826,177	366
1991	378	2,165,791	288

\*Included in total compensation in addition to cash salaries is room and board benefits, for certain staff, valued at \$450/month/salaried employee.

Other tangible benefits afforded without charge to many Church staff members include schooling for children of staff members, transportation, utilities, family medical care, etc. These are not included in the total compensation value shown in the above table.

In addition to full and part-time staff, the Church has full or part-time volunteers, as reported in the last column. Most volunteer work is on a short-term basis. Room and board benefits for volunteers are not included in the total compensation figure.

Salaries are based on demonstrated needs and may vary significantly from month to month.

In 1991 the operation of the Ranch Kitchen restaurant, Cinnabar General Store, Big Spur General Store, and adjacent campgrounds was assumed by Lanello Reserves, Inc., (LRI). These employees were not reported on the previously noted table. Many of LRI's employees are part-time and are staff members of the Church. LRI employees do not receive room and board benefits. The total number of LRI employees in 1991 was 128 with a total payroll of \$114,222 (Francis, 6 July 1992).

Church employees are involved in the following activities:

- Religious services
- Church management
- Religious outreach

- Writing and research
- Audio/video productions
- Crop farming, sales, storage
- Poultry raising, slaughtering, and processing
- Road maintenance
- Equipment and vehicle maintenance
- Transportation
- Agricultural products processing
- Ranching, cattle and sheep
- Ranch kitchen restaurant
- Engineering and construction
- Cabinet-making
- Church publishing plant
  - graphic arts
  - data processing
  - mailing and distribution
  - warehousing
  - audio and video tape production
- Timber harvesting (firewood, post and pole material)
- Campgrounds, support and maintenance
- Mobile home park support and maintenance
- Conference promotion and support
- Fallout shelter maintenance and repair
- Schools - Montessori International/Henry Wadsworth Longfellow Academy and Summit University
- Volunteer fire department
- Church activity support
- General store - retail operations
- Leased property management

The number of full and part-time employees of the Church was at its highest, 540 in 1989 and 536 in 1990, when construction of the Mol Heron Shelter was in full swing. Project activities included the East Gate Work Camp housing project, Mol Heron Fallout Shelter, food processing plant/septic systems, Mol Heron Yellow Barn and ranch headquarters/wastewater system. Since then the number of employees has tapered off to 378 in 1991 (Francis, July 6, 1992).

#### **3.4.9.4 Quantity and Distribution of Employment, General Study Area**

Full and part-time employment in Park County by industry classification is disclosed in Table 3-13. Personal income, in total by industry classification, is disclosed in Table 3-12. During the ten year period 1981-1990, most industries reflect very little change in the number of full and part-time employment. Two exceptions are transportation/public utilities, which decreased from 1,288 employees in 1981 to 643 employees in 1990, and services which increased from 1,346 employees in 1981 to 2,067 in 1990.

**Table 3-13**  
**Park County**  
**Full-Time and Part-Time Employment by Major Industry**

Industry Classification	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Farm	561	571	585	569	555	552	555	547	533	533
Agriculture/Forestry/Fisheries	70	75	94	99	87	94	102	90	91	92
Mining	17	7	17	56	42	90	24	15	98	110
Construction	303	377	310	270	237	228	226	247	281	305
Manufacturing	366	319	378	360	340	332	294	276	284	289
Transportation/Public Utilities	1288	1121	914	968	958	803	773	780	668	643
Wholesale Trade	54	57	74	114	130	87	92	96	101	139
Retail Trade	1103	1080	1071	1116	1127	1015	1041	1034	1104	1178
Finance/Insurance/Real Estate	348	319	350	352	396	413	402	386	385	401
Services	1346	1377	1494	1626	1616	1726	1789	1912	2013	2067
Government	687	716	690	710	720	717	683	697	710	708
<b>TOTAL</b>	<b>6143</b>	<b>6019</b>	<b>5977</b>	<b>6240</b>	<b>6208</b>	<b>6057</b>	<b>5981</b>	<b>6080</b>	<b>6268</b>	<b>6465</b>

Does not include self-employed proprietors.  
 Data not available for 1991.

Source: Regional Economic Information System, Bureau of Economic Assistance.

The trend of increasing service sector employment is consistent with the rest of the country. As predicted by the U.S. Bureau of Labor statistics, (Cocoran and Weber, 1989) Service sector employment will be the leading source of new employment, creating nine out of ten jobs nation-wide between 1985 and 1995.

The number of mining jobs has a roller coaster history, 17 in 1981, 90 in 1986, 15 in 1988, and 110 in 1990. The most recent upswing is the result of reactivating mining activities in the Jardine and Cooke City areas.

There are some quantifiable activities which contribute to the trends noted above. The decrease of employment in the Transportation/Public Utilities is the result of the Burlington Northern pullout and reductions in timber harvesting. The increase in the service sector employment results from increased tourism to Yellowstone Park, increases in small service-oriented businesses and increases as a result of Church-related activities.

The employment number for the Church is not included in the statistics released by the Bureau of Economic Assistance. The numbers representing Lanello Reserves, Inc., are included in the statistics. The trend in Church-related employment was reported in the first table in this Section 3.4.9.

Table 3-12 represents employment income by industry classification from 1981 to 1990. The trends are similar to the employment numbers disclosed in Table 3-13. Significant increases in mining and services and a sizable decrease in transportation/public utilities. The overall trend in total personal employment income from 1981 to 1990 was \$83,009,000 in 1981 increasing to \$103,824,000 in 1990. The Church related employment income and non-cash benefits increased from \$493,913 in 1984 to \$2,682,459 in 1988 (Francis, July 6, 1992). This is due primarily to an increase in full and part-time employees, from 119 in 1984 to 437 in 1988.

#### **3.4.10 Distribution and Density of Population and Housing**

As indicated by Table 1-1, the Church indicates approximately 676 persons were living on Church properties as of March 1, 1992. (Francis 6 July 1992). The count included 78 students, staff and residents on Church-owned or leased property in Glastonbury. It does not include other residents in the Glastonbury properties.

For RTR-S properties analyzed in the DEIS, there was a total of 249 persons accounted for at the time of the DEIS. A total of 359 persons now live on these properties and reflect increases at East Gate and Ranch Headquarters, according to the Church.

The current number of residents at Ranch Headquarters exceeds the projected proposed population by 60, nearly one-third greater than proposed. The Church submitted a work camp permit application for 251 residents and day employees, but the application is now on hold pending the completion of this SEIS. (See pg. 1-5 of this SEIS)

Census data for 1990 is shown on Map 3-1 by tract and block for the general study area. Church-owned property and Glastonbury properties are also shown on this map. Tracts and blocks do not correspond with property ownership, but some observations about the Glastonbury properties can be made from reviewing the map. These properties represent the largest concentrated population centers in the area surrounding them. According to the 1990 census, there were 729 persons in the census tracts/blocks encompassing the Glastonbury properties.

Park County population grew by more than 13.2 percent between 1980 and 1990. County population in 1980 was 12,869 and 1990 population was 14,562. County population growth was the fourth highest in the state. The Church began operations in Park County in 1981 and now has 676 persons. This influx alone accounts for more than one-third of the growth in Park County and does not include Church members who do not reside on Church-owned property. Population in the city of Livingston decreased from 6,994 to 6,701. According to the US Census figures, the population of Gardiner increased from 209 in 1980 to 511 in 1990.

### **3.4.11 Demands for Government Services**

#### **3.4.11.1 Schools**

Schools in the study area include public schools, private schools and home school alternatives. Attendance statistics are included in Table 3-14.

##### **Public Schools**

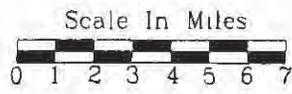
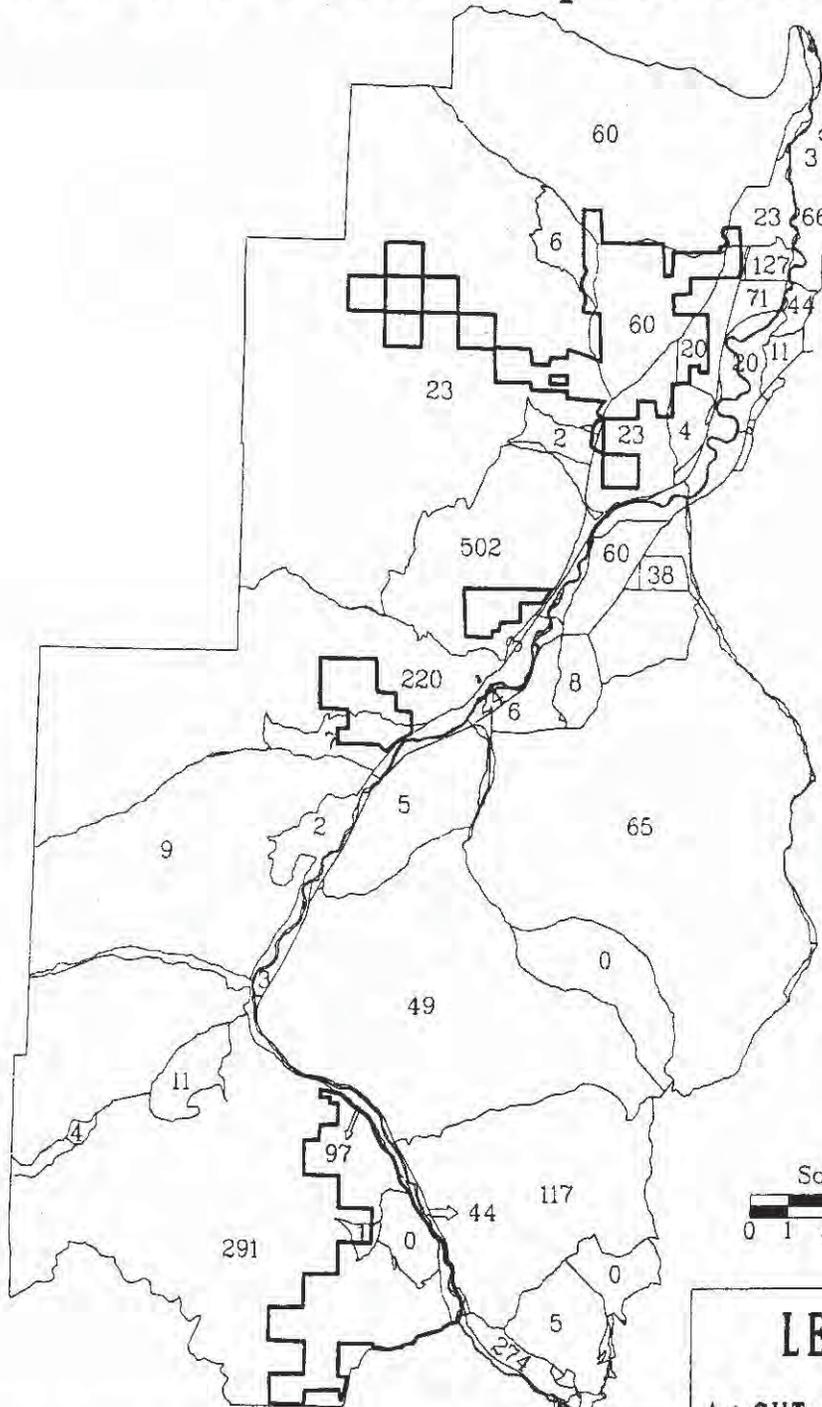
Public school districts in the study area include Richland, Pine Creek, Arrowhead, Livingston and Gardiner. There are elementary schools in each of these districts and high schools at Livingston and Gardiner. Richland, Arrowhead and Gardiner are the districts that include most of the Church-owned, leased and Glastonbury properties.

The attendance statistics reflect head counts taken in October of each year. Fluctuations do occur during the year, so that at a single point in time there may have been more or less children enrolled at the school. (Fleming, pers. comm.) Based on the statistics in Table 3-13, all school districts, with the exception of Gardiner elementary have experienced decreased enrollment between 1981 and 1991. Years of peak enrollment vary by school but generally appear to indicate that peak enrollment was in the first half of the decade.

The Church developments in the Corwin Springs area are included in the Gardiner district. This district was the only one to experience growth over the ten year period from 1981 to 1991. The Gardiner elementary district increased by 27 percent, but the high school decreased by 14 percent. Assuming elementary students remain in the area, the high school will likely see growth in the future.

The Glastonbury properties, which are being developed for Church members' residences, are located within Arrowhead school district. The Arrowhead elementary

# Church Universal And Triumphant Land Ownership With 1990 Census Tract and Block Population Totals



## LEGEND

- ▬ CUT Land Ownership
- ▬ 1990 Census Tracts

Map 3-1

The base map was generated using digital data obtained from the United States Geological Survey, Department of the Interior. Boundaries for church land ownership were digitized from the 1988 EIS. Census data is from Census Bureau 1990 TIGER files. Each number represents the total population for the Census Tract and Block. Map Created July 10, 1992



**Table 3-14**  
**Historical School Enrollments in the Study Area**

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	% Change 1981 - 1991
<b>1. Public Schools</b>												
<i>Elementary Districts</i>												
Richland	30	26	22	16	10	10	12	21	21	18	9	-70%
Pine Creek	44	38	35	27	31	34	30	29	33	26	23	-48%
Arrowhead	61	60	59	48	51	61	73	68	64	50	54	-11%
Livingston	1173	1214	1215	1222	992	1049	1056	1087	1038	1063	1113	-5%
Gardiner	139	135	122	126	108	110	146	165	175	173	177	+27%
<i>High School Districts</i>												
Livingston	668	616	593	580	585	589	507	488	455	467	481	-28%
Gardiner	81	87	89	85	101	94	96	90	81	69	70	-14%
<b>2. Private Schools</b>												
Montessori/Longfellow			8	16	30	37	56	57	68	66	65	+71%
Thomas More									78	86	79	+<1%
<b>3. Home Schools</b>												
Home Schools/Park County								45	85	97	96	+113%

Source: Park County Superintendent of Schools. 1 June 1992.

school saw a net loss of 11 percent between 1981 and 1991. This was the least of all other rural schools in study area. Pine Creek School enrollment is half of what it was in 1981 and Richland enrollment is a third of what it was in 1981.

### **Private Schools**

The Church and/or its members operate several private schools in the study area. The Church directly operates the Montessori International School, the Henry Wadsworth Longfellow Academy, and Summit University in the Corwin Springs area. The Church has had a Montessori International Preschool at the RTR-N since 1988. The Thomas More School is run by parents/teachers in the Golden Age Village in Glastonbury North.

The Corwin Springs Montessori and Henry Wadsworth Schools provide services for preschool through grade 12. The RTR-S Montessori International School included preschool ages (three to six years) through grade 12 from 1981 to 1990. Since 1991, grades 7-12 have become the Henry Wadsworth Longfellow Academy. (Francis, 6 June 1992) The preschool/kindergarten portion of the school is now located on land leased from the Forest Service on the old OTO ranch on the east side of Highway 89. Grades 1-12 are located at the East Gate Work Camp. Tuition fees are waived for Church staff.

Statistics in Table 3-14 indicate a 71% increase in attendance at the Montessori/Longfellow Academy between 1983 and 1991. The statistics in Table 3-14 do not reflect preschool numbers. The Church provided attendance figures for preschool through grade 12 from 1982 through 1991. The Church numbers indicate a startup enrollment of four preschool students in 1982, peak enrollment of 119 Preschool through Grade 12 students in 1986, and a 1991 enrollment of 102 students. (Francis, 6 June 1992)

Summit University offers post-secondary religious and educational courses. Student ages range from 18 to over 80. Courses are held quarterly for 12 and 8 week sessions. Summit University was conducted in California through the Fall of 1987. Since that time they have been held at the Ranch Headquarters at the RTR-S. Enrollment at the RTR-S location began with 90 students in 1988, peaked at 154 in Spring of 1989, and had 96 students in the 1992 winter session. Of a total of 19 possible sessions since the first session in Montana, a total of 12 sessions have been actually conducted. (Francis, 6 June 1992)

The Thomas More School began operations in 1989 with an enrollment of 78 students. The enrollment figures are listed in Table 3-14. The school is located at the Golden Age Village and primarily serves students from the Glastonbury properties.

## **Home School Alternatives**

The home school alternative allows parents to directly control their children's education by teaching at home. The number of home schools in Park County increased by 150% (from 25 to 63) between 1981 and 1991.

### **3.4.11.2 Fire Protection**

Fire protection for Church properties in the study area includes Rural county District #1, which includes the RTR-N and Big Spur properties, and Church-provided fire protection services.

The Church maintains its own volunteer fire department as was indicated in the DEIS. The department has a fire truck, fire fighting equipment and a trained staff of ten fire fighters. According to the Church, the planned firefighting facilities for the Ranch Office and Ranch Headquarters have been completed as described on page 109 of the DEIS. The East Gate fire fighting facilities have not yet been implemented. Fire protection for East Gate is currently provided by the Church's volunteer fire department.

The Emigrant-Chico-Pray volunteer fire department is no longer active. According to the Church, it has been informed that members of the former volunteer group have recently organized a subscription fire department which will include new equipment, a fire hall, and 23 volunteers. (Francis 6 June 1992)

### **3.4.11.3 Law Enforcement**

#### **Public Issues**

The impact of increased Church staff and member population on the cost and adequacy of law enforcement in the area were raised as public issues. Other concerns include impacts related to illegal weapons brought into the area.

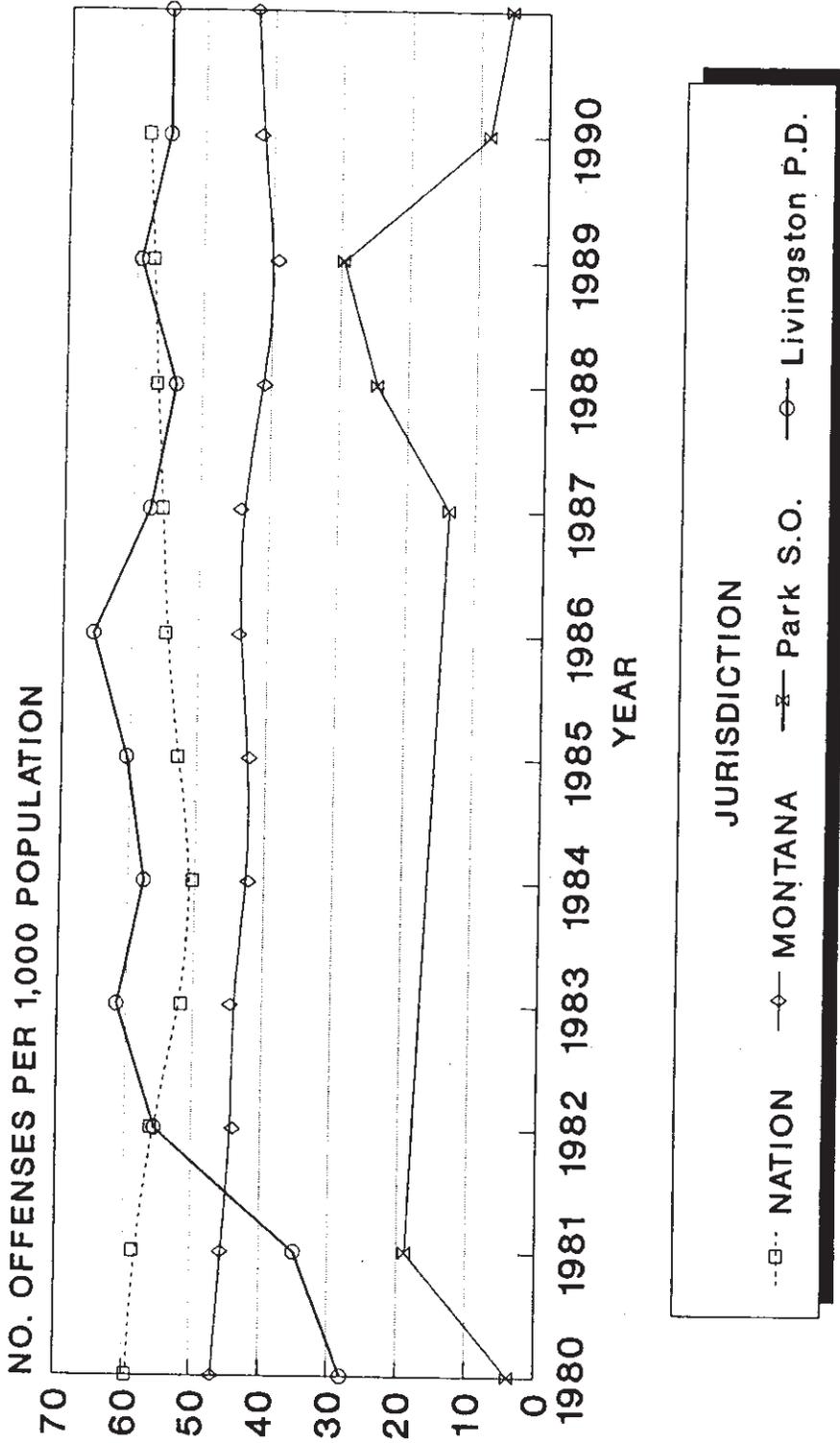
#### **Existing Conditions**

##### **a. Park County**

Annualized crime rates in Park County from 1980 - 1990 were below state and national levels. The Montana Uniform Crime Report for the Park County Sheriff's Office reflects an increase in crime rates in 1981, and a 200% increase in crime rates between 1987-1989. See Figure 3-7. However, in 1990, this figure dropped back below pre-1987 levels. Annualized rates for motor vehicle thefts indicate that Motor Vehicle thefts in Park County increased 500% in 1989; however, in 1990, this figure dropped below pre-1988 levels. Statistics for property crimes (includes burglaries, larceny, and motor vehicle theft), indicate the same pattern. See Figures in Appendix C. (Montana Department of Justice, Board of Crime Control, Uniform Crime Reports)

FIGURE 3-7

# ANNUALIZED CRIMES RATES Park County



Source: Montana Uniform Crime Reports  
Crime in Montana, 1980-1991

The Montana Uniform Crime Report for the Livingston Police Department indicates that between 1980 and 1982, annualized crime rates for Livingston nearly doubled, and exceeded national levels in all years between 1982 and 1989 with the exception of 1988. Crime rates slowly decreased after 1986. Statistics for property crimes (includes burglaries, larceny, and motor vehicle theft), reflect a similar pattern (See figures in Appendix C). (Montana Department of Justice, Board of Crime Control, Uniform Crime Reports)

Additional law enforcement problems include complaints of trespassing on Church property, harassment related to religious beliefs, complaints from former Church members, and complaints of automatic weapons fired. Traffic complaints include speeding and roads being blocked because of heavy equipment. During the period of heavy construction in 1988 the Mol Heron/Cinnabar road, which is only one lane, became blocked. Also, after a weight limit was placed on bridges on the Mol Heron, additional deputies were stationed in the area to redirect traffic and issue citations as needed. (Tanascu, pers. comm.)

At the time of the DEIS, there were seven staff members in the Park County Sheriff's Office. As of July 23, 1992, there were 10 staff. (Johnson, pers. comm.)

b. Federal Agencies

Records indicate that two church members were arrested on gun charges (Vernon Hamilton, July 7, 1989; and Frank Black, on October 13, 1989). Edward Francis, Vice President of the Church, was convicted of gun conspiracy charges in 1989.

The Forest Service has experienced difficulty in managing and regulating national forest system lands that are surrounded by Church properties. Forest Service personnel indicated that they can see violations taking place, such as use of off-road vehicles, but cannot directly address the problem until they have formally requested permission from the Church for access. By the time this process is completed, the perpetrators are usually gone. (Hoppe, pers. comm.)

Representatives of the National Park Service indicated there have been a few isolated problem incidences, such as a problem related to a hunter, but that these have easily resolved and created no major problems. (Ozment, pers. comm.)

Numbers of illegal aliens were also cited as a public concern. No official statistics are kept on illegal aliens by state where arrests are made.

### **3.4.11.4 Roads and Traffic**

#### **Public Issues**

Numerous public issues have been raised relating to the Church's impact on traffic, road and bridge conditions, and soil and vegetative disturbance as new roads are constructed. Issues include:

- dust control and impacts of extra weight on roads and bridges,
- the condition of the Corwin Springs bridge and the routing of heavy truck traffic that cannot use the bridge through Gardiner and the county road through Yellowstone Park,
- increased volume of traffic both day and night,
- construction of new roads,
- damage to roads during bomb shelter construction,
- safety issues related to traffic the Church generates

Some issues relating to impacts on county roads at RTR-S were resolved by implementation of a cooperative agreement between the Church and Park County. (See Section 3.2.2.2)

### **Scope of Analysis**

The scope of analysis for transportation systems will be focused on the proposed actions at Mol Heron, Spring Creek Headquarters, East Gate Work Camp, Golden Age Village and the Blue House Kitchen. Cumulative impact analysis will include the Glastonbury properties and traffic between Livingston and Gardiner.

### **Existing Conditions**

#### a. Existing Conditions of Public Road Systems in the Study Area

##### 1) Public Roads/Bridges

Public roads between Livingston and Yellowstone National Park include U.S. Highway 89 and numerous county roads. US 89 is a two lane highway with road widths from 32 to 48 feet. There are two bridges on the highway south of Livingston, one at Point of Rocks and the other at Gardiner. Bridges are in good condition (Zon, pers. comm.). Road widening and new overlay is projected to begin in March, 1994 for a 22.1 mile section extending south from the Livingston City Limits. (Zon, pers. comm.)

County roads in the study area parallel much of the highway on opposite sides of the Yellowstone River and also provide access to the east and west, including Church properties and the Glastonbury subdivisions.

The county is also responsible for bridges on county roads including the Corwin Springs bridge and bridges on the Mol Heron Creek road. The Corwin Springs bridge is basically as it was described in the DEIS. The bridge is scheduled for replacement as indicated in the DEIS and is Park County's number one priority for bridges across the Yellowstone.

Montana maintains a bridge replacement program in which bridges are inspected every two years and assigned a sufficiency rating (SR), based on National Bridge Inspection Standards (NBIS), to determine eligibility for the program. Currently, the

bridge replacement program for Montana has been funded and scheduled through 1996.

The Corwin Springs Bridge is not included among the bridges scheduled for replacement through 1996, and has not been given a priority ranking by the state. The bridge, which was last inspected in March, 1990, was assigned a SR of 43 (100 is the maximum positive rating; bridges with ratings below 50 are eligible for funding). MDOT (Meyer, pers. comm.) indicates that although a bridge may be eligible for funding, funds are limited, and bridges with the lowest SR's (the bottom half of the group with sufficiency ratings below 50) will generally receive highest priority for replacement.

MDOT has categorized the Corwin Springs bridge as a "5" ("satisfactory") on a scale of 1 - 9 (with "9" being a new bridge). MDOT has identified the following problems with the Corwin Springs bridge: Low load capacity (11 tons), low clearance (14 feet), and narrowness (one lane). Based on the last inspection and the problems identified, the Corwin Springs Bridge may not be selected for the replacement program before the year 2000. (Meyer, pers. comm.)

Trucks weighing more than eleven tons cannot use the bridge and must take an alternate route through Gardiner and a portion of Yellowstone National Park. There are two routes through Gardiner. One follows the route to the gate to the Park along Park Front Street and requires several sharp turns difficult for large semi or construction trucks to maneuver. The other route is along Stone Street, a graveled road that ends in the Gardiner school parking lot. The county road is on the other side of the parking lot. Truck traffic cuts across the school parking lot to access the county road on the west side of Yellowstone River. (Cieri, pers. comm.)

## 2) Traffic

Baseline traffic information from automated traffic recorders is available for two sites south of Livingston on U.S. Highway 89. Station A-20 is located approximately 17 miles north of Gardiner. Station 5 is located approximately 1.25 miles south of the Livingston-US 90 freeway interchange. Statistics by year for these two stations are included in Table 3-15. The statistical change from year to year is presented in Table 3-16 and compared to visitation records for Yellowstone National Park. Table 3-16 displays visitation statistics for all access points in Wyoming and Montana, as well as a separate column for the North entrance statistics.

The data in Tables 3-15 and 3-16 indicate a general increase in traffic and Park visitation between 1981 and 1991. There is no generalized trend among the two traffic stations and Park visitation on an annualized basis. There is a general increase for traffic and Park visitation for the ten year period between 1981 and 1991, but there is a significant spread among growth rates. Park visitation from all access points and separately for the North entrance increased by approximately 16 percent, but traffic at station A-20 increased by 55 percent. Traffic increase at station A-20 was also double that at station 5, indicating more traffic growth in the

southern part of the valley than around the city of Livingston and access to the interstate freeway.

Since the majority of Park visitors must also travel across station 5, it is assumed that the increase in the southern part of the valley is from local use. Local traffic uses include some logging, the mine at Jardine, Church activities, and travel to and from residences. Mining and logging operations in the County employ several hundred fewer employees than the Church. (See Tables 3-13 and Section 3.4.9.3) The population of Gardiner increased by approximately 300 between 1980 and 1990 and there had been additional population growth in surrounding areas. Population growth attributable to the Church includes 359 persons living on Church properties in RTR-S and an additional several hundred persons living in the Glastonbury properties.

The largest one-year increase in traffic at station A-20 occurred in 1989, which was during the period of shelter construction. It was also the year of greatest increase in Park visitation.

The peak hour of traffic is tabulated each month for each automated traffic recorded in the State of Montana. Station A-20 had peak hours that were completely outside of the range of all other stations 16 times out of 36 during the period from 1989 through 1991. Typically, the range reflects mid-morning to early evening (10:00 am to 6:00- 8:00 p.m.). Station A-20 had peak hours ranging from 11:00 p.m to 3:00 a.m. as indicated in Table 3-17. The greatest number of out-of-range peak hours was in 1990, a year of intensive activity for the Church related to the fallout shelter.

Increased traffic has not resulted in proportionate increases in traffic accidents. According to information provided by the Montana Department of Highways (Butzlaff), there were 426 accidents reported on U.S. 89 from the Yellowstone park Boundary to the Livingston urban limits between 1981 and 1991. In 1981, there were 48 accidents, in 1991 there were 45. The fewest accidents were recorded in 1984 at 25, the most were in 1989 at 49. Accident rates on U.S. 89 between Gardiner and Livingston are less than the statewide average. The statewide average accident rate is 1.60. The accident rate for the section from Yellowstone Park to the Chico Hot Springs junction is .93; from the Chico junction to the Livingston urban limits the accident rate is 1.24.

b. Proposed Action Sites

The Church develops and maintains roads on its properties, provides mass transportation for members and staff, and has established speed limits and driving procedures for its properties. As part of the Mitigation Agreement of the EIS, the Church and county work cooperatively to maintain and suppress dust on county roads in the RTR-S area. The cooperative efforts were fully described in Appendix B

**Table 3-15**  
**Annual Traffic Volume - US Highway 89**  
**1981-1991**

<b>Year</b>	<b>Station A-20<sup>1</sup></b>	<b>Station 5<sup>2</sup></b>
1971	239,075	-----
1981	340,180	1,069,450
1982	340,545	1,109,600
1983	363,175	1,080,400
1984	369,380	1,007,400
1985	365,730	-----
1986	401,135	1,219,100
1987	438,365	1,211,800
1988	475,230	-----
1989	570,495	1,562,200
1990	565,020	1,368,750
1991	525,581	1,394,300

<sup>1</sup> Station A-20 is on US 89, 17 miles north of Gardiner

<sup>2</sup> Station 5 is on US 89, south of Shamrock Lane, approximately 1.25 miles south of Livingston - US 80 interchange.

Source: Montana Department of Transportation.

**Table 3-16**  
**Percent Change in Traffic Volume on US 89**  
**Compared to Yellowstone National Park Visitation**

Year	Station A-20	Station 5	Yellowstone Park	North Entrance YNP
1981	-----	-----	-----	-----
1982	+0.10%	+3.75%	-5.66%	+2.29%
1983	+6.65%	-2.63%	+1.00%	-12.41%
1984	+1.71%	-6.75%	-5.93%	-3.15%
1985	-0.10%	-----	-0.02%	+2.19%
1986	+9.68%	+21.01%	+6.30%	+13.98%
1987	+9.28%	-0.06%	+8.87%	-0.61%
1988	+8.41%	-----	-15.25%	-2.77%
1989	+20.05%	+28.91%	+20.78%	+5.72%
1990	-0.01%	-12.38%	+6.59%	+4.77%
1991	-6.98%	+1.90%	+3.53%	+5.80%
<b>Total Percent of Change</b>				
1981-1991	55%	30%	+16%	+15.81%
1981-1986	18%	14%	-6%	+2.90%
1986-1991	31%	14%	+23%	+26.89%

Source: Highway Data provided by Montana Department of Transportation. Yellowstone Park Data provided June and September 1992 (Hektner).

(Mitigation Plan Agreement) of the EIS. The Church operates buses and shuttles between Church and Glastonbury properties. A detailed description of these services is included at Section 3.2.2.3. Speed limits and driving procedures are published in informational material given to visitors and attendees at the Church's annual conference.

1) East Gate Work Camp

The East Gate Work Camp is located just west of Highway 89 and adjacent to the county road. Roads within the Work Camp are graveled.

2) Spring Creek Headquarters

Spring Creek Headquarters is currently undeveloped with no established roads. It is to the east of the county road.

3) Mol Heron Shelter Site

An existing county road crosses public and private lands through the Mol Heron drainage. The road is privately maintained between the locked gate and the shelter/conference site. No traffic counts have been officially conducted on this road, but estimated use is included in Table 3-18.

The Mol Heron road and access to it via Corwin Springs and Gardiner had heavy traffic during construction of the shelter facility. Law enforcement officers were stationed at county road bridges to enforce weight limits. (Tenascu, pers. comm.)

Aside from shelter construction, the road is most heavily used for the annual conference. Shuttle buses and vans are used to minimize the number of trips to/from the conference site. Conferees are encouraged to park cars at the East Gate and Ranch Headquarters areas and to use the shuttle facilities. The parking facility at East Gate accommodates 300 to 400 vehicles and the Ranch Headquarters accommodates an additional 500-600 vehicles. The Church operates approximately 30 buses and 15 vans for shuttle services between the conference, Ranch Headquarters, bus station, airport, Gardiner motel and Glastonbury properties. Approximately 500 additional vehicles are parked in parking lots and campsites at the conference site. The conference was held at the Ranch Headquarters in 1989, 1990 and 1991 so impacts associated with the conference were minimized in the Mol Heron area during that period. (Francis, pers. comm. 20 May 1992 and 6 May 1992)

4) Golden Age Village

Access to the Golden Age Village is gained via approximately .7 miles of county road and an additional .07 miles of private access roads. The roads average 24 feet in width and are graveled. The private access road is being rerouted through the Story Ranch and requires county approval of a boundary line readjustment.

**Table 3-17**  
**Station A-20 Peak Traffic Periods by Month**

	Station A-20	All Other MT Stations (Range of Peak Hours)	
		100%	95%
<b>1989</b>			
January	16-17	9-18	12-18
February	17-18	7-19	13-18
March	2-3	9-19	18-18
April	0-1	11-19	13-18
May	17-18	8-18	12-18
June	16-17	8-21	11-18
July	1-2	2-21	8-21
August	---	---	---
September	16-17	10-21	12-19
October	1-2	8-18	12-18
November	---	---	---
December	0-1	0-18	10-18
<b>1990</b>			
January	1-2	12-23	12-19
February	23-24	12-23	12-18
March	17-18	8-18	10-18
April	1-2	8-18	13-18
May	2-3	11-18	12-18
June	0-1	8-19	11-18
July	0-1	9-24	11-19
August	18-19	5-20	11-20
September	13-14	8-21	12-19
October	22-23	6-20	12-19
November	10-11	9-19	11-18
December	1-2	8-18	12-18
<b>1991</b>			
January	2-3	9-22	13-18
February	17-18	8-23	11-18
March	9-10	11-24	12-19
April	17-18	9-18	13-18
May	20-21	12-20	13-18
June	9-10	6-19	10-19
July	12-13	9-24	10-19
August	10-11	10-21	13-19
September	17-18	11-18	12-18
October	11-12	11-18	12-18
November	6-7	10-22	11-20
December	23-24	8-18	12-18

Source: Montana Department of Transportation Automatic Traffic Recorder Data.

Note: Months when Station A-20 was completely out of the range of all other stations are highlighted with shading.

In 1988, Morrison-Maierle completed a site investigation and as-built plan review of the access road to and interior private roads of the Golden Age Village subdivision. Their conclusion was that the Golden Age access road had a few deficiencies but the road surface appeared reasonable. In this same report, Morrison-Maierle indicated that Park County and the Church should "...jointly investigate the bridge's capability to carry future traffic volumes and other limitations; and, intersection site distance improvements..." (Schunke, correspondence). At the time of Morrison Maierle's review, roads in the subdivision were not up to subdivision standards. The bridge in question has since been replaced by the County. (Cier, pers. comm.)

Alternate access to the Golden Age Village is via Glastonbury North roads. These roads are private and do not require local review. Access to the entrance to the Golden Age Village is on the county road out of Emigrant and off of Highway 89 at the Trail Creek Road.

5) Blue House Kitchen

Main access to the Blue House Kitchen and to other RTR-N locations is on county roads.

c. Other Church-Affiliated Sites/Transportation Data

The Church builds and maintains other roads on Church-owned and Glastonbury properties.

Access to the Glastonbury properties is via county roads. Access to Glastonbury North is described above. Dry Creek road, a graveled public county road, is the access to Glastonbury South. This road traverses the Glastonbury development from east to west. Parcel Numbers 68-102 are reached by traveling 1.7 miles over a dirt and gravel county road and approximately 1.4 miles over a dirt private easement road.

The road systems for both Glastonbury properties contain approximately 21 miles of private roads. The Church, as developer, was responsible for the initial construction of all internal roads to a basic gravel and dirt consistency. Parcel owners are responsible for ongoing road maintenance expenses through annual community assessments. The road maintenance program includes all necessary repairs and ongoing upkeep of road surfaces. Snowplowing is also conducted by the developer in most areas. Finished road types include:

- solid gravel and dirt base with fine gravel or oil and rock finished surface,
- native slope, soils and rock base material with coarse-to-fine gravel surface, and
- jeep trails and foothill roads with no fill or surface and wide enough for one vehicle. (General Information Report - Community of Glastonbury)

**Table 3-18**  
**Estimated Traffic - Mol Heron Creek Road**

<b>Activities</b>	<b>Peak Season(s)</b>	<b>Frequency/ Duration</b>	<b>Average No. of People/Day</b>	<b>Average Peak Daily Traffic</b>
Fuel Spill Remediation	All Year	Daily/Until Complete	2-6	2-3
Shelter Maintenance	All Year	Occasionally/ Ongoing	4-8	3-4
4 Residences	All Year	Daily/Ongoing	20	10
Hunting	Fall	Annually/6 Wks.	25	25
Fishing	Summer	Occasionally/ 3-6 Months	3-6	2-3
Hiking/Skiing (Non-Conference)	All Year	Occasionally/ Ongoing	5-10	2-5
General Recreation	All Year	Occasionally/ Ongoing	5-10	3-6
Group Outings (i.e., Boy Scouts, Campouts, Outdoor Services, Etc.)	All Year	Occasionally/ Ongoing	?	?
Agricultural (i.e., Ranching and Farming)	Summer	Annually/4-5 Months	5-10	3-6
Timber Management	Winter	Annually/3-6 Months	6	4
Storage Warehouse	All Year	Daily/Ongoing	4-8	2-4
Road Maintenance	All Year	Occasionally/ Ongoing	2-4	2-3
Summer Conference	June/July	2+ Months		50-100
Pre & Post Conference	June/July	2 Weeks	4000-6000	500+

Source: Francis, Edward. Correspondence 6 May 1992.

All other roads in the Glastonbury properties are the direct responsibility of the owner, subject to Specifications and Standards for Gravel Road Construction (Glastonbury 1987-2), and approval by the Glastonbury Project Review Committee. (Glastonbury 1987-2: 2)

Dry Creek road, which is county-maintained, has had substantial traffic increase since the development of Glastonbury South. Up until Church purchase of the properties in Glastonbury South, Dry Creek road served two families. The county sent staff out twice a year to maintain the road prior to the Church purchase. The Church has sold or leased 61 lots in Glastonbury South and has 43 lots remaining to be sold/leased. The County indicates that road maintenance is now required on at least a monthly basis. (Cieri, pers. comm.)

#### **3.4.11.5 Postal Services**

The impact of Church development on postal services was raised by the public as an issue of concern. A history of workload service credit (WSCs) patterns is included in Table 3-19.

Increases in workload service impact the Postal Service in several ways. WSCs determine the postmaster's salary level. Changes in WSCs can affect the number of hours a post office is open per day. WSCs reflect the amount of mail handled by a particular office and any dramatic increase may mean that a facility would no longer be able to accommodate the workload and facility expansion would be required.

The Corwin Springs post office is being closed because the post office was located in the post mistress's home. When she retired, she no longer offered the space. Although the post office ran an ad for space, no one in the area offered any; therefore an "emergency suspension of service" was issued and the post office was closed. Residents may collect mail by using the P.O. boxes in Gardiner. The Church petitioned the Postal Service for a "Community Service Contract" to allow a private business to provide all postal service to customers within a defined area. Public service contractors are paid \$100 per year and are usually run in conjunction with a business. The Church petition was granted and on July 31, 1992, the community service contract will take effect and will be located in the Corwin Springs General Store. The Postal Service will issue a proposal to permanently close the Corwin Spring post office. At that time, the public may appeal the proposal. The decision to close the post office would then be made by the Postal Rate Governing Division of the Postal Service. (Hagen, pers. comm.)

The new post office in Emigrant was opened in direct response to a tremendous increase in post office box requests. The original post office was a one-person facility serving approximately 25 customers in a 6-8 hour day. After the requests for additional P.O. boxes, an additional 350 boxes were installed, but were still insufficient to meet demand. Later, a mobile unit with another 200 boxes was added. Finally a new facility was opened in October 1991 and currently has over 600 boxes in use. (Hagen, Steinhauer, pers. comm.)

**Table 3-19**  
**Workload Service Credit Patterns**  
**Gardiner, Corwin Springs and Emigrant, Montana**  
**by Postal Fiscal Year**

	<b>Gardiner</b>	<b>Corwin Springs</b>	<b>Emigrant</b>
1978	192	18	23
1979	189	17	21
1980	181	20	23
1981	214	22	25
1982	224	24	26
1983	242	38	37
1984	262	61	52
1985	273	77	75
1986	294	81	78
1987	339	141	94
1988	366	168	129
1989	402	173	196
1990	435	*72	270
1991	504		236

\* Office discontinued due to retirement of postmaster and unavailability of a replacement facility

Source: Heinz Steinhauer, MSC Director, Field Operations, US Postal Service, Billings, Montana. 8 July 1992.

Note: As a general description, a workload service credit (WSC) is a quantitative measure applied to an element of the job performed by a postmaster. The major factors which drive workload service credits are number of customers served and how served (i.e., post office box or delivery), and revenue generated by the office, which in turn is driven by the amount of postal business done by the office.

The post office in Gardiner has expanded the post office box section and extended the area served by the highway contract carrier. The Gardiner post office is facing the possible replacement of the existing facility.

The other two offices in the area have been similarly impacted. Livingston has experienced some population impact and considerable postal revenue impact and Pray has felt a minor population impact, though much less than the others. (Steinhauer, pers. comm.)

### 3.4.11.6 Welfare

The social welfare impact of Church staff with lower-than-average wages (DEIS 106-7) was raised as an issue of public concern.

Historical trends for food stamps, aid for dependent children (adc) and medical payments in Park County and in the State of Montana are displayed in Table 3-20. The trends indicate a steady increase over the past ten years for both the state and the county. With the exception of medical payments, welfare benefits in Park County have grown at nearly double the state rate over the past ten years. Welfare statistics are not kept by religious affiliation.

### 3.4.12 Telephone Service

Problems with telephone service and concern about getting emergency calls through when lines were all busy were brought up by the public at the scoping meetings in April and October of 1990.

According to the US WEST Communications Community Affairs Manager, telephone service in the study area was adequate prior to 1981. Year-by-year additional gains are shown in the following table.

Access Line Gain in Livingston-Gardiner Area

Year	Livingston-Pray	Gardiner
1980	102	33
1981	41	9
1982	20	10
1983	77	11
1984	(118)	36
1985	(67)	10
1986	(214)	5
1987	21	63
1988	233	71
1989	383	61
1990	142	17
1991	67	23
<b>TOTAL</b>	<b>687</b>	<b>349</b>

**Table 3-20**  
**Welfare Payments in Park County 1981-1992**

Year		Food Stamps	ADC	Medical	Total
01/1981	Park County	229	77	324	630
	State of Montana	17,039	7,848	19,709	44,596
01/1986	Park County	404	122	345.30	870
	Statewide	21,537	8,675	21,405	51,616
01/1992	Park County	470	151	595	1,216
	Statewide	25,199	10,966	33,916	70,081

These figures do not include General Relief and State medical.  
 Source: Park County Office of Human Services, June 1992.

Livingston includes the area north and east of Livingston. Gardiner includes Corwin Springs and Jardine. There was a total of 5632 customers in the Livingston-Pray area and 763 in the Gardiner area at the end of 1991.

The greatest increase in customers occurred from 1987 through 1990. In 1986, there were five new additions in the Gardiner area; in 1988 there were 63. In 1987 in the Livingston-Pray area, there were 21 additions. The following year, there were 233 and the year after that there were 383. The Pray area includes the Glastonbury properties.

New customers create needs for additional telephone equipment. Most often, this entails adding cable to new locations or re-enforcing existing outside plant facilities. Equipment must sometimes be added to central office facilities.

Between March and April of 1990, the period of crisis during which the Church was preparing the shelters, there were telephone problems in the Pray and Gardiner areas. Circuits were overloaded which caused delays in getting dial tone.

Expansion capabilities in the existing central office in Pray were exhausted at this point. No additional equipment could be added without a building addition or a new, digital, electronic central office. US WEST was in the planning stages at that time to undertake a five year modernization plan across the state to upgrade central offices from electro-mechanical to digital electronic switching systems. The decision was made to go ahead and upgrade the Pray office. Until this was completed, there was a negative impact on service that included slow dial tone, busy circuits and an embargo on additional customers on the network. (Sterling, pers. comm.)

### **3.4.13 Locally Adopted Environmental Plans and Goals**

There are no locally adopted environmental plans and/or goals. The US Forest Service and National Park Service have planning documents that incorporate public comments but do not require local ratification. The Church does not have a long-term plan other than what is presented in this SEIS.

Park County does not currently have a comprehensive plan, nor is it undertaking comprehensive planning at this time. A community development needs assessment was conducted in 1991 and of 237 surveys received by August 21 1991, 56 percent indicated need for such planning was "important" or "very important". An Economic Development Plan was developed in 1992. Park County does have a Planning Board responsible for review of subdivisions (as defined by State Law).

The city of Livingston is in the process of updating its comprehensive plan, last prepared in 1967. The plan would include the city and a four and a half mile area outside of the city limits.



**Chapter 4**  
**Environmental Impacts**





## **4.0 CHAPTER 4 - ENVIRONMENTAL IMPACTS**

### **4.1 Introduction**

This chapter discloses the environmental consequences of implementing the alternatives. The Chapter 3 description of the affected environment provides the baseline for describing these consequences. A comparison of the alternatives is presented in Chapter 2. The analytic basis for comparison is disclosed in the discussion of environmental effects in this chapter.

The effects on each resource are described as changes from the current situation in terms of significance, magnitude and duration. Where applicable, three types of impacts are considered in determining environmental effects: (1) primary, (2) secondary, and (3) cumulative. Primary effects are caused by the action and occur at the same time and place. Secondary impacts are further impacts to the human environment that may be stimulated or induced by or otherwise result from a primary impact. Primary and secondary impacts are also referred to as direct and indirect impacts in this SEIS. Cumulative impacts are impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

The Church has indicated it does not have any formal plans for the future other than what is presented in this SEIS. The Church, like other landowners, is not required to have plans for the indefinite future. Without such plans, analysis of the reasonably foreseeable future Church actions was limited. In order to respond to public concern about potential cumulative impacts, and given the lack of planning documents, the analysis of potential cumulative impacts has been addressed based on the Church's potential for maximum development, a scenario that presents the worst case for environmental impacts. These potential cumulative impacts are speculative and may never materialize if the Church does not engage in a large amount of development or expansion above and beyond what it has presently proposed. Given the lack of definite or tentative future plans beyond what is presented in this SEIS, additional significant actions may not be reasonably foreseeable at this time.

### **4.2 Physical Environment**

#### **4.2.1 Wildlife (Terrestrial Life and Habitats)**

##### **4.2.1.1 Analysis Methods**

The DEIS text, FEIS synopsis and public comments were re-examined in the light of legal actions in the First and Sixth Judicial Districts of Montana, and the decision to expand the geographic scope of the SEIS to include all the properties owned or leased by the Church in Livingston and south to the border of Yellowstone National Park.

The general review of information in the original EIS was determined to be adequate -- at least given the absence of field studies designed for the project -- but the Montana Department of Fish, Wildlife & Parks (MDFWP) commented (DHES 1988:41) that "too much emphasis [had been placed] on impacts unrelated to the proposed developments." The MDFWP went on to say (DHES 1988:42): "As development increases, with associated increases in the human populations [sic], the cumulative results will add to a significant impact." This focus on cumulative effects was not as fully developed as possible in the original EIS process, even though the FEIS was quite suggestive of potential cumulative effects scenarios. For example, the FEIS states (DHES 1989:16) that the Church will grow toward a complete community by "developing private, in-house capabilities for schooling, garbage collection and disposal, group transportation, fire control and emergency medical response for ranch residents." Subsequent Church plans indicate that this infrastructural development is under way. Francis (letter to T. Ellerhoff 1 March 1992) writes that the "publishing, distribution, data processing and warehousing functions of the Church, along with vehicle maintenance and cabinet-making, are all now intended to be located at the Royal Teton Ranch-South."

Thus the SEIS impact analysis methodology is considerably broader in scope than the original document. Impact analysis areas for primary and secondary effects, and site-specific and general cumulative effects, are as described in Section 3.3.1.2. General cumulative impacts were projected assuming no constraints on future development, other than those necessitated by county septic permitting regulations.

Pertinent literature, not available for the original EIS, was reviewed, and recent analyses of wildlife movements and ecology were compared with those used in the original document. Telephone and personal interviews were conducted with biologists from the National Park Service, Interagency Grizzly Bear Team, U.S. Forest Service, Montana Department of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service and OEA Research, the private firm that prepared the earlier analysis.

#### **4.2.1.2 Primary and Secondary Effects Common to All Action Alternatives**

The geographic scope of primary and secondary impacts was determined to be the area of disturbance for the proposed projects. The DEIS (DHES 1988:28) when evaluating developments of approximately similar scale, determined that this constituted "destruction of habitat for a small number of nonmobile species [which] should not be significant to the local populations."

This statement holds true for primary and secondary impacts of Alternatives 2 and 3. Significant impacts are only anticipated for cumulative impacts, as described in the following sections.

### **4.2.1.3 East Gate and Spring Creek Headquarters Sites**

#### **Alternative 1: Denial**

Activities are ongoing at East Gate, Ranch Office and Ranch Headquarters. The effects of these projects and the Spring Creek development (at a smaller scale than currently proposed) were the subject of the original EIS. The effect of denying this new generation of permit requests may have the effect of redirecting Church energies rather than freezing development in place. Largely decentralized "cottage" type industries on single-family plots could replace the concentrated approach now proposed, deriving economic and communal benefits from the land without the need for DHES permits. The effects on wildlife from such a scenario could be as great or greater than either of the action alternatives. Therefore, general cumulative effects of Alternative 1 should be considered similar to those described in Section 4.2.1.6.

#### **Alternative 2: Approval**

See Section 4.2.1.2 for a description of primary and secondary effects. Site-specific cumulative impacts assume a state of development at full "build-out" of all Church property in the area. That virtually eliminates its value as winter range, especially for pronghorn. Given the interspersed public (federal) lands, such a situation might eventually violate the Illegal Enclosures Act. If this pronghorn population's genetic uniqueness qualifies it for protection under the Endangered Species Act, or if the full development of RTR-S (including the Mol Heron Drainage) were realized, a "taking" of pronghorn, grizzly bear or bald eagle could occur under the terms of the same Act. For general cumulative effects, see Section 4.2.1.6.

#### **Alternative 3: Approval with Mitigation Plan and Recommendations**

See Section 4.2.1.2 for a description of primary and secondary effects. Site-specific and general cumulative impacts under this alternative would *not* entail significant irreversible or irretrievable commitments of natural resources if a Habitat Conservation Plan (HCP) or a Multiple Species Conservation Plan (MSCP) is created. It is recommended that future planning by the Church consider participation in a HCP and/or a MSCP. This HCP and/or MSCP could guide future ranch development (and long-term cumulative impacts) by creating wildlife refuges, travel corridors, and by conserving key habitats. Written in cooperation with state and federal agencies, the HCP planning process could avoid the "worst case" speculation when Church authorities seek further permits in the absence of a master plan, and protect resources in a more effective manner than a piecemeal, action-specific list of mitigation requirements.

#### **4.2.1.4 Mol Heron Shelter Site**

##### **Alternative 1: Denial**

As with the East Gate and Spring Creek Headquarters sites, permit denial does not mean a return to pristine conditions. Denial might simply substitute above-ground storage tanks and might or might not result in the moving or dismantling of the shelter facility.

Since site impacts may be a trade-off between disturbing habitat to bury the new tanks (Alternatives 2 and 3) and possibly disturbing habitat to dismantle and move the shelter, permit denial must be considered to have as great or greater primary and secondary impacts as either of the two "action" alternatives. The present status of the site indicates the Church's ability to successfully restore and revegetate to a biologically stable condition.

It is impossible to predict the fate of the annual conference if this alternative is selected, as the choice of the Mol Heron site is assumed to be driven by spiritual as well as practical considerations.

##### **Alternative 2: Approval**

See Section 4.2.1.2 for a description/assessment of primary and secondary effects. Cumulative effects are largely the result of the summer conference near the shelter site. Disturbance phenomena are notoriously difficult to predict, and the FEIS was quite correct to point out (DHES 1989:153) that hundreds of thousands of people use Yellowstone National Park every year, yet many species are commonly visible and apparently unperturbed. It is clear, however, that the yearly gathering in the future will be an impressive and exclusive use of nearly 100 acres of diverse and productive wildlife habitat. This is spread over many weeks, and peaks at about 5,000 visitors and 500 vehicles. At a minimum, biological productivity is reduced by a significant amount on those 100 acres. However, as is also the case in Yellowstone Park, there are many thousands of acres of similar adjacent habitat that will remain relatively undisturbed, unless additional development occurs. For general cumulative effects, see Section 4.2.1.6.

##### **Alternative 3: Approval with Mitigation Plan**

See Section 4.2.1.2 for a description/assessment of primary and secondary effects. Site-specific and general cumulative impacts under this alternative would *not* entail significant irreversible or irretrievable commitments of natural resources if an HCP or a MSCP is created. Impacts and results of this alternative are basically the same as those described under Alternative 3 for Spring Creek.

#### **4.2.1.5 Golden Age Village and Blue House Kitchen**

##### **Alternative 1: Denial**

As with the other facility sites, permit denial does not mean a return to pristine conditions. Denial could result in locating the Golden Age Village expansion elsewhere, or scattering the trailer sites as individual residences throughout Glastonbury North. Permit denial might, therefore, contribute to the same general cumulative impacts described in Section 4.2.1.6.

##### **Alternative 2: Approval**

See Section 4.2.1.2 for a description/assessment of primary and secondary effects. The expansion area for the Golden Age Village is a foraging area for kestrels and red-tailed and Swainson's hawks, and construction in this area will diminish the forage base for these species. For cumulative effects, see the discussion of general cumulative effects in Section 4.2.1.6.

##### **Alternative 3: Approval with Mitigation Plan**

See Section 4.2.1.2 for a description of primary and secondary effects. The expansion area for the Golden Age Village is a foraging area for kestrels and red-tailed and Swainson's hawks, and construction in this area will diminish the forage base for these species.

Site-specific and general cumulative impacts under this alternative would *not* entail significant irreversible or irretrievable commitments of natural resources if an HCP or MSCP is created. Impacts and results of this alternative for these sites are basically the same as those described under Alternative 3 for Spring Creek.

#### **4.2.1.6 General Cumulative Effects**

The following section describes the general cumulative effects that are possible under alternatives 1,2 and 3 if an HCP or MSCP is not created.

##### a. General Wildlife

##### 1) Cumulative Effects: Ungulate Migrations, Carnivores

The assumption in the EIS that the wooden boundary, jackleg-type fence "should pose no obstacle to any wildlife movement" (DHES 1988:28) has been questioned by Yellowstone Park. Scott (1992) found that overall crossing success was 87-91 percent for all species observed (mule deer, pronghorn, bison and elk). He further noted that elk and pronghorn appear to sometimes become trapped within the structure, and expressed concern (Scott pers. comm.) about the effects of fence crossing efforts on animals under nutritional stress.

Survival necessitates animals adapt to new situations. For ungulates, any fence is an obstacle. No matter whether it is a barbed wire or jackleg fence, each requires that animals go over, through or around it. In the case of the jackleg fence, ungulates may find the open gates, go under or choose to avoid the fence altogether. Scott's survey was taken the first year the fence was installed.

The long-range, cumulative effects of the boundary fence must be judged against other types of fencing, not open range. The "no-action" alternative does not imply that the land reverts to public ownership. Continued use of the land for livestock grazing is the most probable "default" for the area north of the fence; as such, some type of fencing would be required and any fence type in common use on private ranches would have similar negative effects, since wildlife passage guidelines are not routinely followed for barbed wire fences. It has been noted that the Church has complied with an additional request by YNP to add more openings to the fence for the passage of migratory wildlife. It is recommended that more data be obtained to monitor the present performance of the fence.

Northern Range mule deer can number over 1,000 on Church property. (Lemke, pers. comm.) In some ways, the least "glamorous" and most common of local ungulates, mule deer winter range and movement patterns could be seriously disrupted, with cumulative effects greater than those described for elk (see below).

Carnivores with large home ranges (such as the mountain lion) and with a sensitivity to habitat and human disturbance (such as the wolverine) will probably fare well as long as there is an abundance of prey. Internal fencing in addition to the boundary fence -- for residences or horse pastures, for example -- might fragment the ranges of these predators, causing a switch to domestic livestock as prey and inevitable conflicts usually resolved to the detriment of the wild animal.

## 2) Cumulative Effects: Bison

The stated purpose of the jackleg boundary fence was to restrict bison from passing onto Church property and being hunted (Royal Teton Ranch News 1989:10). Scott (1992) found that 40 percent of bison crossing attempts were unsuccessful, and that most successful crossings involved actually breaking through the fence. Put another way, given certain population levels and certain weather conditions, bison will move through the fence, and in large numbers. When these animals are on Church land they damage property and the Church will want them removed. The State of Montana also has a policy of requiring the separation of wild bison from domestic livestock.

Cumulative effects of developing Church property in this bison migration (or, more properly, movement) corridor depend to a large extent on decisions to be made on the future management of this herd. A recent Environmental Assessment (Yellowstone National Park 1992:4) stated that "The NPS has long recognized that because the Park is not ecologically complete for ungulates on the northern boundary, the policy of natural regulation cannot work as it does in the interior of the Park,"

and recognizes a *de facto* responsibility by state and federal agencies to restrict movement. The EA puts this quite bluntly: "All bison that leave the Park would be killed, field dressed, and removed to a suitable location for storage or processing (Yellowstone National Park 1992:7)." If herd management in future years targets a form of "zero tolerance" for bison in the area, then cumulative impacts of the Church on bison will equally be zero. Meagher, however (pers. comm.) suggests that long term management will probably set up "bison management areas" beyond park borders where less drastic options will be pursued. Development on Church land would then have a substantial (but not significant) effect, limiting the options for management to the public land east of the Yellowstone River. However, the Church's land may not qualify as a bison management area since domestic livestock use this area.

### 3) Cumulative Effects: Elk

In the absence of a vigorous control program, numbers of elk will likely remain high, subject only to periodic "crashes" such as occurred in 1988/1989. The possible reintroduction of the wolf as a predator will not likely rectify the situation. Houston (1982:194) indicates that wolf densities were historically low, but even if the population arrived at a balance between wolves, elk and range forage, current conditions would make it difficult for an effective predator-prey system to reassert itself.

Most of the elk migrating north from the Park travel along the eastern side of the river, and use of Church lands rarely exceeds 15 percent, now that the OTO Ranch is no longer Church-owned (Lemke pers. comm.). A "worst-case" cumulative effect scenario for the elk would involve a virtual "lock-out" for 15 percent of the migrating elk, who would then be forced to join the rest of the herd on the eastern side. This might have several effects: for example, a range extension further north and an increase in the late winter elk harvest. Continuing the "worst case" model, and assuming east side winter range to be at carrying capacity, the herd might be reduced by 15 percent. Given the wide fluctuations in elk numbers driven by exogenous factors (certainly greater than 15 percent around the mean herd size), it is arguable that cumulative effects would not be significant. There is no indication that the Church currently wishes to eliminate elk migration on its property, particularly since substantial revenue is derived from paid hunting.

### 4) Cumulative Effects: Pronghorn

Pronghorn damage control hunts, strenuously opposed by the Park Service (DHES 1989:36), are a logical consequence of cumulative growth on pronghorn winter range. The herd has increased, however, in spite of hunts which continued after the FEIS was published. Between 1985 and 1989, an average of 23 animals were killed each year, between three and ten percent of the estimated herd (Singer 1990). This mortality occurred spanning the severe winter of 1988/89, when an estimated 200 animals, nearly a third of the population perished (Scott 1991). As with the elk, direct human-caused mortality, even at a cumulative level of analysis, can be

rendered relatively insignificant by the effects of random natural events. Moreover, the events may not be additive; hunting mortality may, in fact, decrease mortality due to other causes (Bartmann et al. 1992). Risks to the herd from exposure to livestock diseases may be real, but cattle grazing can be expected to persist in the Valley regardless of the alternative selected.

A greater threat to the long-term health of this genetically unique population is loss and fragmentation of habitat. High mule deer and pronghorn densities (Singer 1990) on RTR-S owe much to the irrigated hayfields on the ranch, but placing the hub of the Church's activities at Spring Creek invites supposition that livestock forage production will not be the preferred land-use indefinitely on RTR-S. Increased development and roading, a plausible if distant scenario, can reduce habitat effectiveness significantly. This scenario is described for deer and elk by Perry and Overly (1977), and for deer by Mann (1985).

b. Threatened or Endangered Species

1) Cumulative Effects: Grizzly Bears

The interaction of humans and bears has been the subject of several recent analyses; most support a rather pessimistic view of continued grizzly viability. Mattson (1990:43) cites several reports published since the original EIS that show decreased habitat effectiveness with human vehicular traffic and near recreational developments. Removal of "problem" bears, those able to accommodate human activity, simply exacerbates the problem by leaving behind animals who are wary and use remaining habitat in an even less effective way (Keating 1986).

The cumulative effects of Church activities will significantly add to the problems associated with the Gardiner area population "sink", although encounters with grizzlies have been, and will probably continue to be, rare. According to the DEIS (DHES 1988:26) two bears had been trapped and removed from RTR-S; five bears were removed from private inholdings within the Ranch boundaries (DHES 1988:30). In 1988, after the publication of the DEIS, a single adult grizzly was sighted on the Ranch (Francis 1992c) and a cub died from a tranquilizer overdose while being transported from the ranch (Montana First Judicial District 1989:31). The DEIS concluded that "Direct impacts to grizzly bears are expected to be minimal (DHES 1988:30)", but on the broader cumulative scale the conclusion must be quite different.

In the Gardiner area, seven bears were killed in the seven years before 1987, four of them female (CRS 1987:149). Females only produce cubs once every two or three years; combined with the low population levels, the loss of one or two adult females per year from the population can make the difference between a slowly expanding or a slowly contracting population (CRS 1987:49). If, for example, ten bears are removed from Church property in a decade, and if one bear in ten dies as a result of removal, the loss can combine with other area losses, and with the effects of other sinks, to comprise a serious cumulative impact even before the effects of habitat alteration are considered. The question of whether this constitutes a legal "taking"

of grizzly bear under the Endangered Species Act is difficult to resolve, especially since removal of "problem" bears is part of species management as practiced by the U.S. Fish and Wildlife Service (Harms pers. comm.). If a "taking" determination is made as a result of this analysis, the Service would be compelled to develop an EIS on the federal level, and a Conservation Plan under the provisions of the ESA, Section 10.

In light of this type of information, Cumulative Effects Modelling, requested for the first EIS and for the SEIS at the public meeting on October 15, seems superfluous. The cumulative effects model consumes a large amount of expensive resource data (in the form of habitat classification) but produces little of predictive use without a quantification of the effects of human disturbance, a "routine" within the model which has as many as 16 different activity classifications. Considering only the direct effects of the proposed action, effects would be negligible (above the current ambient level). The model's value for longer range assessment, in the absence of a Church master plan, would be no less conjectural than the narrative discussion presented here.

## 2) Cumulative Effects: Eagles and Peregrine Falcons

Development and human disturbance occurring along the Yellowstone River between Corwin Springs and the confluence of Joe Brown Creek and the Yellowstone may directly affect occupancy and productivity of bald eagles nesting at the Bear Creek (Jardine Mine) site. The destruction of the nesting tree near Emigrant in 1992, while not alleged to have any relation to Church activity, is suggestive both of the potential for nesting eagles within the Yellowstone River plain and the significant negative effect human activity, with its predictable percentage of shooting and poaching, will have on these nesting efforts.

Cumulative development would require electricity, and electricity requires power lines. There is a risk of collision with powerlines. The risk increases in poor visibility conditions such as heavy snow or fog. These effects can be mitigated to some extent (see Mitigation Measures, below). Traffic, both automotive and foot, can reduce efficient habitat use by eagles, and combined with reduced ungulate movements and diminished carrion, to add another source of environmental stress.

There are, however, many examples of wintering eagles in close proximity to high levels of human activity (see for example Taylor and Bechard 1991), and some well-defined standards for the protection of nest sites from disturbance. A rigorously developed and implemented Habitat Conservation Plan might reduce possible long-term cumulative impacts below the level of significance. In the absence of such a plan, overall cumulative effects could become a significant negative impact on the ability of eagles to winter and breed along the Yellowstone River between Gardiner and Livingston.

Peregrine falcons have proven to be much more adaptable to humans, as long as exogenous factors (prey base and environmental toxins) do not restrict their hoped-for return to the Yellowstone River valley.

### 3) Cumulative Effects: Reintroduction of the Gray Wolf

Only a few crude guesses can be made concerning the effects of cumulative development on an animal currently absent from the ecosystem. However, Singer (1990) compared hypothetical wolf to ungulate ratios on the Yellowstone northern range in several different combinations, one of which assumed that the prey animals from Gardiner to Dome Mountain would be unavailable due to the presence of humans and extensive road access. Even with this large segment (over 4,000 animals) removed from the prey base, wolf to ungulate ratios fell within those reported by Keith (1983) for occupied range elsewhere in North America. At least theoretically, Church property development would not affect the ability of a minimally recovered wolf population (100 individuals) to feed themselves.

Poaching or insistence on control of wolves in the area could have a much more significant impact, but how great that impact would be is impossible to predict.

#### **4.2.1.7 Suggested Mitigation Recommendations for Wildlife**

1. All provisions of the "Mitigation Plan Agreement" in the original FEIS (DHES 1989:345) are considered to be applicable to the permit modifications and expansions proposed in the current document.
2. Construct all powerlines on Church property according to the criteria and techniques for raptor safety (separation of conductors, perch installation, etc.) outlined in Olendorff et al. (1981).
3. Recommend the Church take part in the development of a Multiple Species Conservation Plan that identifies and protects sensitive wildlife resources. This approach was developed to provide for a "taking" permit under Section 10(a) of the Endangered Species Act of 1973, as amended in 1982. Although the "taking" of eagle or grizzly bear by the project under consideration is highly speculative even at the cumulative effects analysis level, use of the Conservation Planning Process could avoid much of the costly confusion and controversy surrounding the Church's lawful use of its property in the future.

The Endangered Species Act (ESA) of 1973 was interpreted by the courts as functioning to protect not only individual animals but their essential habitat as well. The problem of habitat modification by a private entity engaged in otherwise lawful activity (e.g. under a state or county permit) was encountered almost immediately, and Congress amended the law in 1982. The U.S. Fish and Wildlife Service can now issue a permit under Section 10(a) of the Act which basically permits such activity if a conservation plan is prepared that demonstrates the "taking" (of habitat) will not appreciably reduce the chances of the recovery of the species in the wild.

Conservation Planning under ESA has evolved into what is called either a habitat conservation plan (HCP) or a multiple species conservation plan (MSCP) and shows some promise in resolving land-use conflicts occurring directly or indirectly under ESA. The benefit to private developers, particularly those uncertain about their long-range plans, is the relief from additional mitigation measures for endangered species except as contemplated in the HCP. The benefits for wildlife is relief from serious habitat loss from a lengthy series of incrementally minor degradations. The benefit to both sides is a solution that avoids controversy and legal conflict every time a new environmental impact is anticipated.

To do this, HCP's implicitly accept the inevitability of development and put their energies into designating those lands which are critical to the maintenance of a listed species or, in the most recent versions, general biological diversity. Speaking plainly, the plan does not tell you where to put your house; it tells you where not to put your house and beyond that does not try to regulate you or to insist that you make decisions before you are ready. You give up some options and in return have a reasonable expectation of being able to build without angry letters from your neighbors, environmental groups, or the state or federal regulatory agencies. When the HCP process works, it achieves predictability through consensus.

A typical plan might have the following components:

1. Protection of open space. Designation of a percent total of the planning area to be undisturbed, through recorded covenants and restrictions. Monitoring and enforcement are thus the same as with any other deed restriction on private land.
2. Diversity of habitat protected. A listing of special natural habitat types to be protected by the open space provisions of (1), to include such things as unique vegetation types, ungulate migration corridors, etc.
3. Protection during construction activities. Protective measures to be taken on all development projects.
4. Funding of plan activities. The developer(s) would pay a per acre "development fee," to cover the costs of Plan development and implementation.
5. Ongoing management of public and private habitat. The Plan coordinates various jurisdictional areas within the plan boundaries, so that it subjects both public and private activities to the conservation principles in the Plan.
6. Assurance to the private landowner. The implementing agreement assures landowner(s) that no further mitigation or compensation will be required as long as there are no new major changes, such as the identification of previously unidentified threatened and endangered species. Under the Plan, the landowner would not need to complete new wildlife studies as long as the proposed development meets plan criteria.

Production of the plan is the responsibility of an executive committee. The composition of this committee is flexible, but should include the private landowner(s), government agency representatives (e.g. U.S. Forest Service, U.S. Fish and Wildlife Service, Montana Departments of Fish, Wildlife and Parks and Health and Environmental Sciences, Park County) and the representatives of environmental interests, at least those which have participated in previous challenges to the adequacy of environmental analysis.

The HCP or MSCP process is lengthy and usually expensive. In the current situation, an order-of-magnitude guess would be at least a year and at least \$100,000. There is no guarantee of success, and several HCP and MSCP efforts have collapsed. At worst, the process breaks down and site- or project- specific procedures again become operative. At best, and with compromise on all sides, the desire by all parties to minimize litigation and maximize long range environmental and economic stability is met, within a legally sanctioned framework.

## **4.2.2 Aquatic Life and Habitats**

### **4.2.2.1 Introduction/Methods**

Due to the increasing concern with the Yellowstone cutthroat trout and its status as a "Species of Special Concern," impact analysis focused on this species. For all streams, we assumed the presence of this species, even if hybrid populations have been identified.

### **4.2.2.2 Effects Common to all Alternatives**

Impacts common to most alternatives include those produced by increased sedimentation. Sedimentation can result from increased erosion due to construction activity, road improvement, streambank and riparian disturbance, nonpoint source runoff, and sewage spills.

Sedimentation in streams and rivers can be detrimental to aquatic life. The effects of sedimentation on eggs and benthic and fish communities have been documented in numerous papers (Cordone and Kelly 1961, Lemly 1982, Alexander and Hansen 1983, Berkman and Rabeni 1987, Nelson et al. 1987). Decreases in egg and fry survival, as well as reductions in aquatic plants and bottom organisms, have been observed in streams subject to sedimentation. Due to lowered prey abundance, growth rates in trout can also decrease. High sediment loads can reduce spawning habitat suitability and availability as well as physically disrupt fish spawning.

### **4.2.2.3 Impacts by Site and by Alternative**

#### **East Gate Work Camp**

a. Alternative 1: Denial

No direct impact to aquatic resources in the Yellowstone River is expected if permitting of the proposed activity is denied. Cumulative impacts could result from other future development.

b. Alternative 2: Approve

Increased occupancy at East Gate Work Camp will result in increased use of the sewage septic system. Because the output of nutrient loading is expected to be very small (see water quality section), impacts of the proposed activity to aquatic life in the Yellowstone River are expected to be negligible unless a sewage spill went unchecked for a long period of time.

c. Alternative 3: Approval with Mitigation Plan

No mitigation is recommended if septic systems are built to standards with appropriate monitoring systems recommended by the DHES.

#### **Spring Creek Headquarters**

a. Alternative 1: Denial

No impact to aquatic resources in the Yellowstone River is expected if permitting of the proposed activity is denied.

b. Alternative 2: Approval

Construction of new buildings may result in increased erosion which may cause release of sediments into Yellowstone River. Sedimentation can have negative impacts on benthic and fish communities (see Section 4.2.2.2). The effects of increased sedimentation into the Yellowstone River is difficult to quantify. Riparian vegetation and the presence of a large natural earth berm between the proposed site and the river will help to buffer sedimentation.

As with the East Gate Work Camp, increased wastewater discharge at the Spring Creek Headquarters will result in the probability of increased nutrient loading and microbiological contamination. These effects, however, are expected to be negligible and will not significantly change water quality conditions in the Yellowstone River (see water quality section).

Hazardous waste produced by the publishing company will be handled separately from sewage waste and will be treated and disposed of off site according to state and

federal standards. The potential exists for a hazardous waste spill during on-site storage or during removal and transportation off-site. If this material reached the Yellowstone River, effects on aquatic life would be significant and fish kill would be expected.

Increased development along the Yellowstone River will have cumulative impacts on aquatic resources due to streambank and riparian disturbance and increased nonpoint source runoff contributing to sediment loads in the river. In addition, increased human activity increases the risk of accidents, such as sewage spillage or hazardous waste leaking, that may impact water quality in the river.

c. Alternative 3: Approval with Mitigation Plan

Placement of hay bales around construction areas will help to prevent sedimentation into the Yellowstone River and into small drainages which eventually meet the main river. Revegetation of all construction sites should take place immediately following completion to help control further erosion. Large areas of hard packed soil, gravel, and or paving contribute to nonpoint source runoff. Where feasible these areas, which include parking areas, should be landscaped and designed to reduce runoff. This could include landscaping islands within parking areas and landscaping at the perimeter of paved/hard packed and graveled areas.

A contingency plan should be developed between the Church and DHES to establish a protocol for spill containment. A previously established emergency plan would help to minimize entry of hazardous waste materials into the Yellowstone River in the event of an accident. Materials to contain spills should be kept on-site and be readily available for use.

**Mol Heron Shelter Site**

a. Alternative 1: Denial

No impact to aquatic resources in Mol Heron Creek is expected if permitting of the proposed activity is denied. Cumulative impacts from conference and other activities will continue.

b. Alternative 2: Approval

Installation of new USTs will result in ground disturbance in the Mol Heron drainage. Direct effects of ground disturbance will be increased erosion and possible sedimentation into the creek below (see Section 4.2.2.2). Other negative effects may result from leaking USTs and spillage of fuel products into the stream, or possible accidents during transportation and delivery of fuel products to the shelter site. Double wall steel tanks will be installed with a tertiary containment system and electronic fuel sensor (E. Francis, pers. comm.) which will reduce the likelihood of spills reaching Mol Heron Creek.

Cumulative impacts of the Church activities to Mol Heron Creek and Yellowstone cutthroat trout populations could occur due to increased human activity and disturbance of riparian habitat and streambanks. In June 1992, conference preparation activities included road grading, construction of a new parking lot, and installation of large temporary tents in the immediate vicinity of Mol Heron Creek, all of which will contribute to increased sedimentation.

Fishing pressure from conference attendees, although expected to be light, is concentrated for a short period of time during cutthroat spawning season (June-July) and may significantly affect spawning fish populations. Because creel records are not kept, impacts of this harvest on trout population from previous conferences are unknown.

c. Alternative 3: Approval with Mitigation Plan

Sediment catchment techniques (hay bales) described in the DEIS should be used to prevent sedimentation in the stream during tank installation and reclamation.

A contingency plan should be developed between the Church and DHES to establish a protocol for spill containment. A previously established emergency plan would help to minimize entry of fuel products into Mol Heron Creek in the event of an accident. Materials to contain spills should be kept on-site and be readily available for use.

A current baseline study documenting invertebrate communities and use by spawning fish is recommended. In the event of a spill or human-caused major erosion event, baseline data would allow an evaluation of extent of impact as well as aid in rehabilitation of aquatic resources in Mol Heron Creek to pre-project conditions. Currently, little baseline data for the upper regions of Mol Heron exist. The macroinvertebrate study conducted in 1990 provides some baseline data; however, this study was conducted following a spill and no follow-up study has been conducted to date to evaluate current conditions downstream of the shelter site. Due to electrofishing equipment problems, fish surveys conducted following the spill were not entirely successful and no quantification of fish populations could be made using the limited data collected (B. Shepard, correspondence, 6-22-92).

Baseline data collected should include fish and macroinvertebrate abundances, fish length frequency, age class structure, biomass, and condition factors, use of habitat by spawning fish, and electrophoretic analysis to determine genetic purity of Yellowstone cutthroat populations. This information will aid the DHES in evaluating impact from future activities requiring permitting as well as provide data to the MDFWP and USFS for ongoing cutthroat trout management plans.

The DFWP should evaluate the need for enacting fishing restrictions for Mol Heron Creek during Church conferences. These could include a catch and release only for Yellowstone cutthroat trout to protect this species. The use of bait and barbed hooks by visitors could be prohibited. Studies have shown that Yellowstone

cutthroat populations have responded positively to catch-and-release programs (Varley and Gresswell 1988).

### **Golden Age Village**

#### a. Alternative 1: Denial

No impact to aquatic resources in Fridley Creek is expected if permitting of the proposed activity is denied. Cumulative impacts from existing development and from new construction and roads in the subdivision will continue.

#### b. Alternative 2: Approval

Permitting of the activity will result in development of approximately 66 acres of open field in the vicinity of Fridley Creek. Impacts from this activity include those associated with construction (sedimentation), increased wastewater discharge, and non-point source urban runoff.

Fridley Creek has not been identified as an important cutthroat spawning tributary and does not contain pure strain cutthroat in the vicinity of Golden Age Village. As a result, impact to Yellowstone cutthroat from proposed activities is minor. However, pure strain cutthroat have been found in the upper reaches of this stream, making it a potential target for future cutthroat management plans.

Construction of new mobile home lots, a sewage system, and a water supply system will increase erosion and possible sedimentation into Fridley Creek. Sedimentation can be harmful to macroinvertebrate and fish populations (Section 4.2.2.2).

In addition, increased wastewater discharge at Golden Age Village may result in increased nutrient loading and microbiological contamination in Fridley Creek. These effects, however, are expected to be negligible and will not significantly change water quality conditions in the Fridley Creek (see water quality section).

Post-construction impacts include the introduction of nonpoint source pollutants into the creek. Runoff from urban development can cause increased nutrient loading, sedimentation and turbidity.

#### c. Alternative 3: Approval with Mitigation Plan

Hay bales should be placed around construction areas during and following construction to control sedimentation. Revegetation should take place immediately following construction. Where possible, landscaping should be used in place of paving to control nonpoint source runoff. The existing or an improved vegetation buffer zone should be maintained between the development and Fridley Creek.

## **Blue House Kitchen**

### a. Alternative 1: Denial

No impact to aquatic resources in Trail Creek is expected if permitting of the proposed activity is denied.

### b. Alternative 2: Approval

Trail Creek has not been identified as an important cutthroat spawning tributary; however, because there have been no trout and/or macroinvertebrate surveys on this creek, the presence of cutthroat trout should be assumed.

Construction of a new ground water well and associated piping could result in increased sediment loads into the Trail Creek drainage. In addition, an increase in septic use may result in increased nutrient loading and microbiological contamination. The impact of both these effects is expected to be minimal (see water quality section).

### c. Alternative 3: Approval with Mitigation Plan

Hay bales should be placed around construction areas during and following construction to control sedimentation. Revegetation should take place immediately following construction.

Impact to aquatic resources in Trail Creek will be negligible if these mitigation recommendations are followed.

## **4.2.2.4 Cumulative Impacts**

Unless properly managed, Yellowstone cutthroat trout populations will continue to decline in the upper Yellowstone River drainage. Hybridization with non-native species, coupled with loss of habitat, have had the biggest impact on this fishery. In addition, high catchability of this species has made the species vulnerable to overharvest.

Hybridization with rainbow trout (*Oncorhynchus mykiss*) and other species of cutthroat trout has been the greatest cause of declines in Yellowstone cutthroat trout populations. None of the currently proposed activities by the Church is expected to contribute to this specific problem; however, the cumulative effect of hybridization and developmental activities in Paradise Valley may be significant. Impacts to Yellowstone cutthroat due to overharvest may occur in the Mol Heron drainage and are discussed above under the Mol Heron impacts discussion.

Habitat degradation has been caused by dewatering, domestic grazing practices, development, and sedimentation by both the Church and other landowners' activities. Water from many of the upper Yellowstone River tributaries is diverted during late

spring and summer, interrupting the cutthroat's spawning season (Clancy 1988). In some cases, streams are completely dewatered causing existing cutthroat populations to become fragmented and genetically isolated (Darling et al. 1992). Grazing in the riparian zone has resulted in channel instability, erosion and loss of riparian shading (Foster and May 1990). Increased agricultural and construction activity has also increased sediment levels in the streams. Runoff from point and non-point sources has also contributed to degradation of aquatic habitat in this region.

Some of the activities of the Church may have beneficial impacts on the aquatic resources in the area. Use of organic and biological farming methods by the Church will reduce nutrient loading and herbicide and pesticide runoff into streams. The Church is building up its cattle and sheep herds, but stocking rates have decreased since the Church bought Royal Teton Ranch and are currently less than 50% of range-carrying capacity (E. Francis, correspondence, 6-6-92). These practices will help reduce overgrazing and riparian and streambed disturbance. In addition, current reduced water usage, due to both reduced demand and more efficient irrigation practices, by the Church has resulted in year-round flow in streams such as Mol Heron Creek.

Negative impacts include an increase in land disturbance activities leading to increased erosion and sedimentation in streams. This includes the Church placement of facilities near important streams such as Mol Heron Creek and the Yellowstone River. Other human-related activities (road improvements, annual conferences, fish harvest) will also contribute to cumulative impacts in the area. Sources of nonpoint pollution increases with increased development and can contribute to sediment loading, increased turbidity, and introduction of toxins (through spills) in nearby drainages. Increased growth of the Church, which is probable given current patterns, may result in increased food supply needs. Increases in livestock populations and agricultural activity to serve these needs may result in more grazing activity and water diversions, respectively, which will further degrade aquatic habitat.

Current sedimentation levels in the Yellowstone River drainage may be mainly due to natural erosion processes. Typically, high levels of suspended sediments and turbidity are observed during snowmelt (April-June) in the Yellowstone River and its tributaries. In response to citizens' concerns that turbidity levels were increasing in the Yellowstone River drainage, studies were conducted to quantify suspended sediment and turbidity in the Yellowstone River (Mohrman et al. 1988), identify significant sediment contributing tributaries (Mohrman et al. 1988), and determine major sediment source areas in Yellowstone National Park and the Gallatin National Forest (Shovic et al. 1988).

The results of these studies indicate that sediment contributions are actually higher in Yellowstone Park than in the Gallatin Forest, mainly due to lack of highly erosive land in the latter area. Differences in sediment contribution were attributed to differences in glacial history of the two regions. One sediment source, the Wanigan Slump near Pray, was associated with human-caused disturbance (i.e. road

construction, agriculture). Other than this feature, little other evidence of erosion induced by human activity was cited in these reports.

In addition to streams discussed above, other streams occurring on the Church property are subject to cumulative impacts, mainly from water diversions. These streams include Reese Creek, Bassett Creek, and Cedar Creek. These streams would not experience direct or indirect impacts from the proposed development.

The Church diverts water for irrigation from Reese Creek, which forms the southern boundary between RTR-S and the Yellowstone National Park. Prior to recent agreements, Reese Creek was often completely dewatered during spring and summer months by three diversions located 0.8, 1.6, and 2.0 km upstream of its mouth. Studies conducted by the National Park Service in 1984 and 1985 indicated that the creek was being used by cutthroat trout and that opportunity for population and spawning habitat enhancement existed with increased streamflow (Jones et al. 1989). Further studies were undertaken to determine adequate flows needed to sustain aquatic life in the lower segment of Reese Creek.

In July 1990, an agreement between the National Park Service and the Church was reached regarding water rights on Reese Creek. As a result of this agreement, minimum instream flow will be maintained in Reese Creek below the diversion structures (R. Jones, USFWS, pers. comm). New flow control structures were recently installed at the diversion locations and will allow upstream movement of fish as well as prevent fish from entering diversion canals. Monitoring of aquatic life in Reese Creek will be continued to document effectiveness of agreement terms. In June 1992, electrofishing surveys revealed use of the stream by spawning rainbow trout in an area that was historically dewatered (D. Mahoney, Yellowstone National Park, pers. comm.).

Basset Creek is a small tributary of the Yellowstone River located to the south of the Ranch Kitchen, owned by the Church, in Corwin Springs. The Church and another landowner, W.B. Brogan, divert water to irrigate small parcels of land near Corwin Springs. Water is also diverted by Brogan approximately 1 km upstream from the river for use in a small hydropower plant. Near its mouth, the stream gradient is steep and does not appear to be ideal trout habitat. No Yellowstone cutthroat have been recently found in this stream (B. May, USFS, pers. comm.). Brook trout were historically stocked. Hadley (1984) rated this stream as containing limited habitat value for Yellowstone cutthroat and MDFWP has classified this stream as a "nontrout" stream.

The Church uses existing water rights on Cedar Creek, which borders a portion of the Royal Teton Ranch property. Although no pure Yellowstone cutthroat have been identified, Cedar Creek is considered a prime place for possible re-introduction (B. May, pers. comm.). Like Mol Heron Creek, this stream was rated as high-quality habitat for supporting Yellowstone cutthroat populations and spawning (Hadley 1984, Clancy 1988) and recent studies have confirmed this description. More than 5,000 cutthroat trout fry were captured in fry traps in Cedar Creek from July-September,

1990, and during June 1991, several redds were counted immediately above the creek's mouth (B. Shepard, correspondence, 6-22-92).

Concern over declining cutthroat trout populations in the Yellowstone River drainage have prompted several organizations, including MDFWP, USFS (Gallatin National Forest), USFWS, University of Montana (Missoula), American Fisheries Society (Montana Chapter), and the Montana Natural Heritage Program, to collaborate in an attempt to manage the Yellowstone cutthroat fishery. The Yellowstone Cutthroat Trout Working Group, consisting of fishery scientists from these organizations, has prepared a draft Yellowstone cutthroat management guide (Darling et al. 1992) which presents management goals and strategies for preserving the genetic integrity of Yellowstone cutthroat. The guide presents strategies to protect and enhance existing cutthroat populations within the historic range, to restore populations within the historic range, and to manage populations currently established outside of the historic range.

Strategies proposed in this guide include further genetic identification studies, stricter stocking programs, harvest regulations, installation or maintenance of passage barriers, habitat protection and enhancement, eradication of non-native and hybridized species, and introduction of pure-strain species to enhance existing populations as well as increase range. In Yellowstone National Park measures are already being taken to eradicate non-native species (Gresswell 1991). Sub-basin management plans will be implemented to address drainage-specific programs and will require cooperation from land owners such as the Church and other interested parties.

### **4.2.3 Water Resources**

#### **4.2.3.1 Introduction**

The proposed actions of the Church could affect water resources of the upper Yellowstone Valley. Potential effects include lowering of ground water levels, increased sedimentation, increased nutrient concentrations and resulting algal blooms, and effects of spills and leaks of hazardous materials.

The actions could affect relatively small areas such as individual wells or entire water resource systems such as the Yellowstone River which are fed by the smaller systems. The local effects will be evaluated for each alternative; then the effects of all proposed actions on the Yellowstone River will be evaluated.

The effects on water quantity and water quality are likely to be delayed in time as well as in location and are therefore best described as indirect effects. However, some effects, such as spill of hazardous substances, could directly affect water resources. Cumulative effects are considered for the local region of each proposed action although for several proposals there are no significant cumulative effects in the immediate areas of the proposed action. However, cumulative effects

of the proposed actions together with other development activities may have impacts on the Yellowstone River and therefore are considered in a concluding discussion.

#### **4.2.3.2 Methods of Analysis**

The three main impacts on water resources that required analysis were sediment yield, nutrient loading, and ground water withdrawal. Similar methodologies were used to evaluate sediment yield and nutrient loading at all affected sites and these methods are described in this section. The quantitative analysis of ground water withdrawal was performed only for Golden Age Village and is described under the impact analysis for this proposed action.

##### **Sediment Yield**

Sediment yield for the proposed construction projects was determined using the Universal Soil Loss Equation (USLE) developed by the U. S. Department of Agriculture (Wischmeir and Smith 1978). The USLE is

$$A = RKLSCP$$

where

**A** is the computed soil loss per unit area (tons/acre/day).

**R** is the rainfall and runoff factor.

**K** is the soil erodibility factor.

**L** is the slope-length factor.

**S** is the slope-steepness factor.

**C** is the cover and management factor.

**P** is the support practice factor.

The **C** and **P** factors are equal to one for a disturbed site with no cover or management practices to prevent erosion. **R** is determined from a chart provided in the publication and **K** is determined from soil characteristics such as grain size distribution. **L** and **S** are determined from the topographic features of the site.

Computations of potential sediment yield were developed for the Spring Creek site, Mol Heron Shelter Site, and Golden Age Village and the results are summarized in Table 4-1. At Eastgate Work Camp, no additional disturbance is proposed and sediment yields should not increase. At the Blue House Kitchen, the amount of disturbed area is so small (less than 0.25 acre) and of such short duration that sediment yield should be negligible.

**Table 4-1  
Summary of Soil Loss from Proposed Actions**

Site	Acres	Annual Soil Loss	Duration
Spring Creek	93	585 tons/year	12-18 months
Mol Heron Creek - Shelter Site	0.3	6 tons/year	6-12 months
Golden Age Village	66	200 tons/year	9-12 months
<b>Total</b>	<b>159</b>	<b>791 tons/year</b>	---

The computation for the Spring Creek development includes 75 acres of disturbance for the village and 18 acres for the sewage lagoon site and pipe trenches outside the developed areas for a total disturbance of 93 acres. The proposal reviewed under the original EIS was for a total of 71 acres and would have generated somewhat less sediment. The sediment generated on this site, if not properly mitigated, could enter the normally dry channel of Spring Creek and be transported to the Yellowstone River or reach the river directly.

At the Mol Heron Shelter Site the acreage disturbed by shelter installation (about 13 acres) has been reclaimed and should not produce sediment in greater quantities than would be produced by undisturbed ground. The proposed action to install eight underground tanks will result in relatively little disturbed acreage and small sediment discharge. The 6 tons per year which could reach Mol Heron Creek if no mitigation measures are implemented is only 0.15% of the total sediment load of Mol Heron Creek.

The sediment yield for Golden Age Village is based on 66 acres of disturbance and an additional 5 acres for the drainfield area for a total of 71 acres. This does not include the acreage of the Phase I development which is already developed and revegetated. The sediment from this site could reach the North Fork of Fridley Creek if runoff is not properly mitigated. No sediment transport data are available for Fridley Creek and it is therefore not possible to estimate the effects of sediment on this water resource.

The total sediment yield from all the proposed actions is 791 tons/year. Potentially, all this sediment could reach the Yellowstone River if no mitigation measures are implemented. The sediment yield of the proposed projects represents about a 0.1% increase beyond the average sediment transport of the Yellowstone River at Corwin Springs of about 880,000 tons per year (Mohrman and Carty 1988). Although this increase in sediment transport would not be measurable in the river as a whole, it is possible that sediment could accumulate in noticeable amounts at the

points where it enters the river. It is therefore desirable that mitigation measures be implemented to prevent sediment from leaving the construction sites.

The calculated sediment yields for the proposed actions are for the construction phase only. After construction, land restoration activities should reduce the sediment yield to natural conditions or lower. The Church has provided land restoration and stormwater drainage control plans with its Spring Creek and Golden Age Village applications. The land restoration plans apply specifically to the areas disturbed by the installation of water and sewer systems. The restoration of other site disturbances, such as building construction and roads, has not been addressed in the applications. If similar measures to those proposed for the sewer and water system construction are applied site wide, sediment should be adequately controlled.

The land restoration plans for Spring Creek site and Golden Age Village provide for site grading, placement of four inches of suitable topsoil, revegetation with suitable seed mixtures, and weed control.

The stormwater drainage control plans for the two sites provide for straw-bales during construction to trap sediment. Other measures, possibly including sediment control ponds, will be implemented if the straw bales are inadequate. These measures should be adequate for sediment control during construction if any problems with the straw bale mitigation are rapidly resolved. The mitigation of stormwater runoff after the completion of construction is also addressed by the plans. Stormwater would be diverted into radial discharge sumps or, in the case of Spring Creek site, diverted into a retention pond as well.

No plans for land restoration after installation of the USTs at the Mol Heron have been submitted and none is required by the state's UST Program. However, the Church stated in a letter to DHES on May 6, 1992, that reclamation after installation of the tanks will substantially follow the reclamation plans previously submitted to DHES for the shelter reclamation.

The reclamation plans for the Mol Heron shelters provide for stormwater control using straw bales and other measures as needed. The site restoration portion of the plan provides for topsoil replacement, finish grading, reseeding disturbed areas, mulching the finished surface, and weed control. These measures should be adequate to control erosion on this site if vegetation is reestablished before freezeup so the ground is protected during spring runoff.

### **Nutrient Loading**

The effects of increased nutrient loads on water resources are to create conditions that may promote algal growth in surface waters in objectionable quantities. The excess algae can be aesthetically unpleasing and can also harm fisheries by depleting oxygen and trapping hatching fish. The growth of algae in river systems is affected by many factors besides the concentration of nutrients. Some of these other factors are concentrations of micronutrients; rate of nutrient uptake by algae; water

temperature; turbidity and light penetration; substrate size, texture and composition; sediment deposition; scour; current velocity; colonization from upstream; and grazing by macroinvertebrates.

The method of determining the possible effects of nutrient loading on surface waters follows that used in the original DEIS (MDHES 1988, pp. 56-65). In summary, the original DEIS calculated the expected inorganic nitrate and ortho-phosphate loads from each waste water discharge. It was assumed that the entire loads could eventually reach the Yellowstone River and the increased nutrient concentrations in the Yellowstone River were calculated by dividing the additional nutrient loads by the average flow of the Yellowstone River. The increased nutrient concentrations were compared to the average nutrient concentrations in the river and it was determined that the river already contained saturation concentrations of nutrients and, therefore, the addition of more ortho-phosphate would not cause significant increases in algal biomass.

A crucial component of the nutrient analysis is the concept of saturation concentrations of nutrients. In studies of the effects of phosphate on diatom algae in the Thompson River of British Columbia, Bothwell (1989) found that the sustainable algal biomass did not increase significantly at concentrations greater than 0.030 mg/l phosphate indicating a saturation effect. The average ortho-phosphate concentration of the Yellowstone River is 0.026 mg/l, just below the saturation limit determined by Bothwell. Although Bothwell did not attempt to derive the exact shape of the saturation curve, his data suggest that the concentration of phosphate in the Yellowstone River (0.026 mg/l) would be sufficient to sustain 99% of the algal biomass if algal growth conditions are similar on the Yellowstone River. Therefore, any addition of phosphate could not increase the algal biomass by more than 1%.

The work of Bothwell is limited to phosphate in a river system dominated by diatom algae. On the Yellowstone River, diatoms dominate in the spring and fall and green algae (Cladophora, Enteromorpha, and Ulothrix) dominate in the summer (MDHES 1988, p. 62). The response of green algae in rivers to nutrients has not been studied and it is not known if the same saturation concentrations are appropriate.

If phosphate is present in concentrations that do not limit algal growth, it is possible that nitrogen could also limit algal growth. Seasonal data indicate that nitrogen may be limiting in spring and summer (MDHES 1988, P. 62). If this is the case, addition of nitrate to the Yellowstone River could increase the level of algal production during the spring and summer.

Table 4-2 presents the loads of nutrients expected to be added to the Yellowstone River under the original EIS, the Supplemental EIS proposed actions, and the increase due to the modifications of the original EIS. These loads are based on all nutrients eventually reaching the river from drainfield systems and the leakage from the sewage lagoons and storage pond reaching the river from the Spring Creek treatment system. It is assumed that the irrigation water from the Spring Creek

**Table 4-2  
Predicted Nutrient Loads from Waste Water Disposal**

Site	Nitrogen (lb/yr)			Phosphorus (lb/yr)		
	DEIS	SEIS	Increase	DEIS	SEIS	Increase
East Gate Work Camp*	915	1570	665	128	220	92
Camp Mustang	86	--	--	12	--	--
Cinnabar Campground	0	--	--	0	--	--
Ranch Headquarters	1973	--	--	276	--	--
Ranch Office	832	--	--	116	--	--
Spring Creek*	1101	1900	799	154	266	112
Golden Age Village*	0	3080	3080	0	432	432
Blue House Ranch Kitchen*	0	52	52	0	7	7
<b>Totals</b>	<b>4907</b>	<b>6602</b>	<b>4596</b>	<b>686</b>	<b>925</b>	<b>643</b>

Note: \* - Proposed action in SEIS.

**Table 4-3  
Average Change in Nutrient Concentrations in  
Yellowstone River**

	Nitrogen (mg/l)	Phosphorus (mg/l)
Original DEIS	0.00078	0.00011
SEIS Alone	0.00105	0.00015
Increase under SEIS	0.00073	0.00010
Combined DEIS & SEIS	0.00151	0.00021

Note: Average annual flow of Yellowstone River at Corwin Springs is 3090 cfs.

storage pond would not percolate beyond the root zone of the crops and that the nutrients from the irrigation water would be taken up by the plants. In this case, only 13.5% of the nutrients would percolate deeply and possibly reach the Yellowstone River.

Table 4-3 converts the total loads calculated in Table 4-2 to concentrations in the Yellowstone River. These concentrations are derived using the average annual flow of the Yellowstone River of 3090 cfs. The increase in nitrogen load over the original EIS load is 0.00073 mg/l for a combined load increase of 0.00151 mg/l. These load increases represent a 0.3% and 0.6% increase in existing concentrations of inorganic nitrate in the Yellowstone River which is 0.26 mg/l. Thus, the inorganic nitrate concentration will remain well below the EPA recommended maximum nitrate concentration of 1.0 mg/l which is a guideline for prevention of nuisance algae growth (MDHES 1988, P. 62).

The increase in phosphate load over the original EIS load is 0.00010 mg/l for a combined load increase of 0.00021 mg/l. These phosphate load increases represent 0.4% and 0.8% increases in concentrations beyond the average existing orthophosphate concentration of 0.026 mg/l. Again, the phosphate concentration will remain well below the EPA recommended maximum phosphorus concentration of 0.1 mg/l. If the saturation theory developed by Bothwell for the Thompson River algal population holds in the Yellowstone River, these very small percentage increase in phosphate concentrations should translate to negligible increases in algal biomass.

#### **4.2.3.3 East Gate Work Camp**

The only proposed action at East Gate Work Camp is to change the occupancy limit from 64 people to 110 people. This would require no additional construction because facilities are already in place to serve this number of people. Therefore, no increased sediment yield is expected from this site due to construction.

Increased pumping rates in the existing East Gate wells are unlikely to affect other wells in this area because the only nearby well is completed in a different aquifer. Nutrient loads to the Yellowstone River may increase if the drainfield develops saturated fronts that could transport nitrogen and phosphorus to the underlying ground water system or the river.

#### **Alternative 1: Denial**

No environmental effects beyond existing conditions on the Yellowstone River and its associated aquifers are anticipated if the permit change is denied.

#### **Alternative 2: Approval**

The approval of the application could, under certain conditions, increase nitrogen loads by 665 lb/yr and phosphorus by 92 lb/yr to the Yellowstone River and its associated aquifers. The effects of these loads on the Yellowstone River would be less

than that of the total loads from all the proposed actions which were documented in Table 4-2. It is unlikely that these loads will be attained because the drainfield should allow nutrients to be taken up by plants thus reducing the deep percolating nutrient load. It is also possible that the uppermost aquifer does not discharge to the Yellowstone River and the river would be unaffected in this reach.

### **Alternative 3: Approval with Mitigation Plan**

No mitigation plans are proposed at East Gate Work Camp because the effects on the Yellowstone River and its associated aquifers are likely to be insignificant. Therefore, the effects of Alternative 3 are the same as Alternative 2 at this site.

### **Cumulative Effects**

Because there are no local water resources other than the Yellowstone River which could be affected by the proposed action, cumulative effects on the Yellowstone River will be discussed at the end of this section.

#### **4.2.3.4 Spring Creek Headquarters**

The proposed development at Spring Creek Headquarters is the largest of the Church's proposed actions and potentially could have the greatest environmental effects on water resources. However, there is no perennial tributary that would be affected by the proposed development and water resource effects would be limited to the Yellowstone River and its associated aquifers.

The proposed action at Spring Creek Development will include drilling and appropriating water from two ground water production wells for the proposed community. The development also includes three test wells, one of which has already been drilled. The locations of the production wells have not yet been determined, but are expected to be two of three test wells. This would place the wells within the Spring Creek area.

Proposed ground water development includes a peak design flow of 83 gpm (Smith 1991b, p.4) and a proposed pumping rate of 156 gpm per well. This excludes lawn and garden irrigation which will be handled with a separate surface water system utilizing existing water rights on a reclaimed water system using the effluent from the waste water system.

Since the nearest existing wells are located approximately one-half mile from the probable production well locations, there will not be a noticeable effect on the production from these existing wells. Based on the total peak design flow, ground water withdrawal may be on the order of 120,000 gallons per day. Since lawn and garden irrigation will be addressed in a separate water system, the sewage treatment design flows are the same as the proposed potable water flows which means there will be minimal consumptive use prior to sewage treatment.

Following treatment, sewage effluent will be used for irrigation. Some recharge of the aquifer will occur due to over-irrigation and pond leakage at the treatment plant. The leakage will reduce the total consumptive use slightly and the recharge will decrease effects on the shallowest aquifer along the Yellowstone River. Leakage from the sewage lagoons and water storage pond may result in nutrient loading to the Yellowstone River and its associated aquifers.

### **Alternative 1: Denial**

No environmental effects in addition to existing conditions on the Yellowstone River and its associated aquifers are anticipated if the application for the Spring Creek Development is denied.

### **Alternative 2: Approval**

The approval of the application would increase ground water withdrawal in the area but is unlikely to affect existing wells adversely because of the distance to the nearest wells. Development of the village and waste water treatment area would disturb 93 acres and could result in as much as 585 tons/year of sediment loss for a period of 12 to 18 months. However, the Church has proposed sediment controls which should reduce the sediment loss to a small fraction of this amount.

Spills of hazardous material associated with the proposed printing shop at Spring Creek would not be likely to affect water resources because of the considerable depth to ground water and the lack of surface water within the village. Under normal usage these materials would be recycled and would not enter the waste water treatment system.

It is possible that the proposed action would increase nitrogen loads by 1900 lb/yr and phosphorus by 266 lb/yr. to the Yellowstone River and its associated aquifers. However, the uppermost aquifer may not discharge to the Yellowstone River and, in this case, the river would be unaffected by increased nutrient loads in this area.

### **Alternative 3: Approval with Mitigation Plan**

No mitigation plans beyond those included in the Church's application are proposed at the Spring Creek Development. Therefore, the effects of Alternative 3 are the same as those of Alternative 2 at this site.

### **Cumulative Effects**

Because there are no local water resources of special concern at this site (other than LaDuke Hot Spring which will remain unaffected by the proposed actions), cumulative effects on the Yellowstone River will be discussed at the end of this section.

#### **4.2.3.5 Mol Heron Creek Shelter Site**

The proposed action at the Mol Heron Creek site is the installation of eight USTs. Installation of the tanks could result in sediment production and fuel spills during filling or leakage from failed tanks. Chances of spills during transportation of the fuel to the site are increased by the lack of design standard, all-weather access roads. The chances of leakage at the site are minimized by the use of double wall tanks with redundant leak detection systems and a tertiary containment system. However, site conditions are unfavorable for the retardation and control of any fuel leaks that might occur.

##### **Alternative 1: Denial**

No environmental effects in addition to existing conditions on Mol Heron Creek and its associated aquifers are anticipated if the application for installation of underground tanks is denied. The existing tanks have been removed and cleanup of the 1990 fuel spill is progressing.

##### **Alternative 2: Approval**

The approval of the application to install the USTs would pose some degree of risk due to sedimentation of Mol Heron Creek and fuel spills or leaks. Soil loss could be as high as six tons per year for a period of 6 to 12 months. However, the mitigation measures proposed by the Church should be adequate to reduce or even eliminate any sediment discharge to the stream.

Spilled or leaked fuel could enter the ground water and surface water systems resulting in fish kills and destruction of aquatic insect and plant communities. Terrestrial wildlife could also be affected by loss of drinkable water sources. The risk of spills is compounded by the lack of design standard, all-weather access roads.

The Church has proposed to minimize the risk of leaks by installation of double-walled steel tanks with redundant leak detection systems and with a tertiary containment system. The soils in which the tanks will be buried is very transmissive and has a steep hydraulic gradient which could result in a contaminant transport rate of 10 feet per day (Envirocon 1990, p. 2). The presence of ground water drains in the shelter facility increases the likelihood that contamination could migrate rapidly towards Mol Heron Creek. This pathway resulted in some contamination of Mol Heron Creek in the 1990 spill.

##### **Alternative 3: Approval with Mitigation Plan**

Additional mitigation plans for the installation tanks could include an emergency response plan for remediation of potential future fuel spills. An emergency plan should include emergency recognition and communication procedures, definition of personnel roles, personnel training, and emplacement of emergency protective,

medical, and remediation control equipment. Such a plan could greatly reduce the likelihood of environmental damage if a spill or leak occurs.

### **Cumulative Effects**

Cumulative effects on Mol Heron Creek could be significant because of the amount of development that has occurred and potentially could occur in this largely privately owned basin. Some of the other activities which have occurred to date in this drainage (all related to Church activities) are:

- Development of a 100 acre conference site and campground in the upper portion of the drainage which hosts about 4,000 people for a two week period in July. The facility includes a well, shower houses, a septic system, and temporary hand wash facilities. Two bridges were installed over Mol Heron Creek which had the potential to increase erosion. However, riprap was installed pursuant to 310 permits issued by the Park County Conservation District.
- Four permanent residences.
- A landfarm site for remediation of fuel contaminated soils. This facility is located in the Aldridge Lake tributary drainage.
- Storage of ammonium nitrate in two tanks at the Yellow Barn in the Aldridge Lake tributary drainage.
- Temporary storage of diesel fuel in above-ground tanks near the Ranch Headquarters and within 450 feet of Mol Heron Creek.
- A gravel crushing operation and batch concrete plant on the south bank of Mol Heron Creek at Ranch Headquarters.
- The Ranch Headquarters site with trade shops, maintenance shop, housing units, and food facilities.
- Sheep holding pens and several residences on the north bank of Mol Heron Creek opposite the Ranch Headquarters.

In addition to the above facilities, the Church has plans to install septic systems with drainfields at the Mol Heron shelter facility. These systems will be reviewed by the Park County sanitarian.

These operations have the potential of increasing sediment loads to Mol Heron Creek and contaminating ground water or Mol Heron Creek with nutrients, bacteria, fuels, or ammonium nitrate. Contamination could occur through spills, leakage, or natural catastrophes such as flooding. The small number of wells and the great

distance between facilities probably ensures that ground water depletion in this drainage will not be a concern in the near future.

#### **4.2.3.6 Golden Age Village**

Glastonbury North is a community comprised of twenty acre lots and a mobile home park, Golden Age Village, which has 49 trailer spaces. The park has a community water and sewer system. The proposed action will add 77 more mobile home lots and will require additional ground water withdrawals from the existing wells and the installation of a new sewage treatment system.

#### **Effects of Ground Water Appropriation**

The water system is supplied by two wells, Golden Age Village #1 and Golden Age Village #2, which were drilled in 1985 and 1986, respectively. The wells currently have water rights totaling 95 gpm for the two wells. The drillers log reported a maximum discharge of 100 gpm each totaling 200 gpm. Shortly after well completion pump tests were conducted on the wells. Golden Age Village #1 was pumped at 130 gpm for three hours with a maximum drawdown of 1.2 feet. Golden Age Village #2 was pumped at 150 gpm with a maximum drawdown of 8.4 feet.

Additional pump tests were carried out on these two wells in 1992. These tests were performed at higher pumping rates and confirmed the availability of sufficient water for the proposed expansion if improvements are made to one of the wells. Aquifer characteristics determined by these tests verified those calculated from the earlier tests.

The two wells supplying Golden Age Village are completed in the gravel aquifer south of the North fork of Fridley Creek. The wells are 120 and 130 feet deep, comparable to nearby wells. One well (Golden Age Village #2) is located in the southwest corner of Lot 3 and the other (Golden Age Village #1) is located in Lot 5. The wells are currently permitted to pump 47 to 48 gpm each. Six domestic wells, located in lots 1, 2, 5, and 10, are estimated to lie within 1000 feet of the Golden Age Village wells. The Keathley well in lot 5 appears to be the closest well, estimated to be 200 feet from Golden Age Village #1.

Based on water rights data from April 1992, the gravel aquifer in Sections 29 through 33 has 349 gpm appropriated. The proposed action would increase appropriation to 550 gpm.

Well log data and pump test data provided in the Preliminary Engineer's Report (Smith 1991a, Appendix D) were used to estimate transmissivity using a simple computer program based on specific capacity (Bradbury and Rothschild, 1985). The pump test data were not sufficiently detailed to allow calculations using more refined methods. Based on the computer program, the aquifer at Golden Age Village #1 appears to have a very high transmissivity, estimated to be between 150,000 and 200,000 gallons per day per foot (gpd/ft) and the aquifer at Golden Age Village #2

appears to have a high transmissivity, estimated to be between 20,000 and 35,000 gpd/ft.

Using these transmissivity estimates and well log data, pumping of the Golden Age Village wells was simulated using a simple computer program by Walton (1987). The simulated pumping rates were chosen based on information supplied in the engineering report (Smith 1991a, p. 2 and 6) for the development. The current pumping rate is reported as 93 gpm and the proposed pumping rate is reported as 296 gpm. Using the proposed average day demand of 148 gpm, each well would average 74 gpm. Actual pumping rates are designed at 148 gpm each, but the wells do not pump all of the time resulting in an average of 74 gpm. The design flow for the Golden Age Village as a whole was given as 80 gpm (p.5) with the current design flow as 26.5 gpm and the proposed action adding 53.5 gpm.

Although a current average demand was not given, the same reductions from the current pumping rate were applied. This results in a current average demand of 46.5 gpm (half the pumping rate) divided over two wells resulting in average pumping rate of 23.25 gpm each.

Each well was simulated to be pumped at the current rates and at the proposed rates for a period of one year and drawdowns at selected distances were calculated. It should be noted that a storativity of .05 was assumed and if the actual storativity was different, then the shape of the cone of depression around the wells would be different. For example, a higher storativity would affect nearby wells more significantly and farther wells to a lesser degree.

The locations of the two wells were assumed to be the same and the calculated drawdowns were added. Since the distances to the domestic wells in the area were only estimated, the assumption of a single location results in small errors which are to the conservative side, that is they may slightly overestimate drawdowns.

Eleven wells were estimated to be located within one quarter mile of the Golden Age Village wells. Considering the number of assumptions made in calculating drawdowns, this is considered the outer limit where the estimates may be reliable. The calculated drawdowns to these wells from pumping of the Golden Age Village wells is estimated to be on the order of 0.2 to 0.4 feet at the current pumping rate. At the proposed rate, the drawdowns increase to between 0.7 and 1.2 feet resulting in an increase in drawdown on the order of 0.5 to 0.8 feet. Independent calculations based on pumped test data acquired by the Church in 1992 result in drawdowns that are substantially in the same range.

The specific capacities of the wells were estimated using data from the drillers' logs for each affected well. The specific capacity is a measure of the discharge from the well based on drawdown. Multiplying the specific capacities by the estimated drawdowns, the loss of production from each affected well was estimated. The current losses of production are in the range of 0.2 to 0.3 gpm. As a result of the proposed increase in pumping, the eleven wells were estimated to have losses on the

order of 0.4 to 1.1 gpm. The difference in losses was estimated to be on the order of 0.3 to 0.7 gpm as a result of the proposed increases in pumping. Relative to the maximum discharge rate reported on the drillers' logs, the increase in losses are on the order of 1 to 8 percent of maximum production from the affected wells within 100 feet of the Golden Age Village wells.

Numerous assumptions were involved in this analysis including assuming no recharge from septic effluent or infiltration losses from irrigation. Since the drainfield for Golden Age Village Phase II is located more than 2000 feet from the Golden Age Village wells and probably more than 1000 feet from the nearest domestic well and the proposed location of additional irrigation is more than 1000 feet from the Golden Age Village wells, this assumption is valid for the proposed action. Since the drainfield and irrigated ground for Phase I are closer to the Golden Age Village wells, there may be some recharge effect which could reduce total drawdown estimates.

### **Alternative 1: Denial**

No environmental effects in addition to existing conditions on Fridley Creek and the Yellowstone River and their associated aquifers are anticipated if the application for the Golden Age Village Development is denied.

### **Alternative 2: Approval**

The approval of the application would increase ground water withdrawal in the area and cause 1 to 8% loss of well capacity in the wells nearest the Golden Age Village wells. Development of the village and waste water treatment area would disturb 66 acres and could result in as much as 200 tons/year of soil loss for a period of 9 to 12 months. However, the Church has proposed sediment controls which should reduce the soil loss to a small fraction of this amount or even zero.

Because the ground water in the Golden Age Village is at a lower level than the North Fork of Fridley Creek, ground water does not contribute to the flow of the North Fork in this area. If bacterial contamination or nutrients from the waste water treatment system should migrate to the uppermost aquifer, these constituents could not reach the North Fork of Fridley Creek in this area. However, there are springs in the downgradient direction from the village that could be connected to the uppermost aquifer. If the uppermost aquifer were to be contaminated, it is possible that the water quality of the springs would be adversely affected.

If contamination reaches the uppermost aquifer, the contaminated ground water would eventually discharge to the springs or to the Yellowstone River. It is possible that the proposed action would increase nitrogen loads by 3080 lb/yr and phosphorus by 432 lb/yr. to the Yellowstone River and its associated aquifers. The effects of this load on the Yellowstone River are evaluated along with other potential nutrient loads at the end of this section on effects to the Yellowstone River.

### **Alternative 3: Approval with Mitigation Plan**

The absorption trenches proposed for the Golden Age Village drainfield are deeper than conventional drainfield trenches and may cause bacteria and nutrients from the waste water to percolate deeply and eventually reach the uppermost aquifer. Use of conventional shallow trenches could decrease the probability that bacteria and nutrients would reach the uppermost aquifer and decrease the chances of these constituents affecting downgradient springs or the Yellowstone River. However, conventional trenches would require about six times as much area and may not be feasible for a system this large.

As a mitigation measure, the use of a lagoon for final treatment of the waste water should be considered. If the treated effluent is stored in a pond and spray irrigated, nutrient loads entering the ground could be greatly reduced. The Church has proposed using an effluent storage pond without a treatment lagoon but has not made it an integral part of the design at this point. Such an improvement could become a phased part of the project.

### **Cumulative Effects**

Cumulative effects in the Fridley Creek drainage need to be considered because other development has taken place and will probably take place in this drainage. The Church mentions plans in its application for Golden Age Village Phase II for eventually adding a community center, a general store, and related facilities. The North Glastonbury Subdivision has 59 lots not all of which have been developed at this time. These 20 acre or larger lots are sometimes developed for multiple homesites. This additional development has the potential to increase soil loss due to road building and house and fallout shelter construction. It could also increase bacterial and nutrient loads to the ground water and, eventually, surface water systems. Further development in this area will result in lower ground water levels and may cause some already marginal wells to go dry.

Cumulative effects on the North Fork of Fridley Creek appear to be minimal because no changes in surface water appropriations are proposed and contamination is not likely to reach Fridley Creek by the ground water route. Ground water withdrawal from wells is taken from aquifers that are deep enough that they are unlikely to influence flows in the North Fork of Fridley Creek. Some gradual increase in sedimentation could be expected as more homesites are developed in the North Glastonbury Subdivision. The gradual increase of ground water withdrawal in this area will eventually cause some of the wells in the area to experience a reduction in production.

The proposed increase in ground water withdrawal at Golden Age Village alone will probably result in loss of production from existing wells. However, ground water development in the area of Glastonbury North by private individuals will have a cumulative effect on ground water availability. In the area of Glastonbury North where the wells are completed in the gravel aquifer, ground water recharge to the

gravel aquifer from septic system infiltration and over irrigation will reduce consumptive use, and net losses of ground water will be relatively small at the current level of development. However, in the areas where wells are completed in the bedrock aquifer, recharge of septic effluent and irrigation waters will be to the gravel aquifer and not the bedrock. This results in a loss of all water withdrawn from the bedrock aquifer and a gain to the gravel aquifer. Many of the existing bedrock wells produce marginal amounts of water and continued withdrawal may have observable reductions in production in wells already completed in this aquifer. These effects may also be applicable to other areas where bedrock aquifers are utilized as development progresses including, but not limited to, some areas of Glastonbury South.

Cumulative effects on the Yellowstone River are discussed at the end of this section.

#### **4.2.3.7 Blue House Kitchen**

Currently, the Blue House houses five residents and a nearby mobile home houses a family of four. One existing well and septic system serve the house and mobile home. The proposed action is to increase activities at the kitchen to serve approximately 85 meal per day to workers in addition to residential use. In order to meet the increased water needs, a new well will be installed at the site. The existing sewage treatment system, which was approved by Park County in 1985, will be used with the addition of a grease trap.

Since no well log is available on the existing Blue House well and no pumping test data are available in the Blue House area, analysis is necessarily qualitative. It is unclear at this time whether the new well will be completed in the shallow alluvial aquifer associated with Trail Creek or in a deeper aquifer. In either case the nearest wells are at least 1000 feet distant and are unlikely to be affected by the small ground water withdrawal (4,126 gpd).

#### **Alternative 1: Denial**

No environmental effects in addition to existing conditions on Trail Creek and the Yellowstone River and their associated aquifers are anticipated if the application for the Blue House kitchen is denied.

#### **Alternative 2: Approval**

The approval of the proposed potable water system and existing sewage treatment system by either the DHES or Park County at the Blue House is unlikely to produce significant environmental effects on the water resources of the area. The effect of the ground water withdrawal should not be noticeable because of the small volume consumed and the distance to other wells. Construction of the well and pipeline should produce negligible soil erosion. Additional nutrient load to the ground water and eventually the Yellowstone River is also minor with maximum loads of 52 lb per

year of nitrogen and 7 lb per year of phosphorus predicted. Because the ground water system appears to be much lower than Trail Creek, it is not likely that contaminated ground water could enter the stream. Flooding of the septic system drain field may occur in this location and could result in bacterial contamination of Trail Creek. The risk of flooding has not been assessed because no determination of the 100 year flood plain has been made.

### **Alternative 3: Approval with Mitigation Plan**

If the septic drain field lies within the 100 year flood plain, replacement with a system outside the plain should be considered as a mitigating measure. The location of the flood plain should be determined from estimates of the 100 year flood volume, surveyed stream cross-sections, and an appropriate water-surface profile model. This would reduce the chance of bacterial contamination of Trail Creek during floods. No other mitigation measures are needed to protect water resources given the minimal impacts of the proposed action.

### **Cumulative Effects**

The Church has other developments in the vicinity of Trail Creek, namely, a large sheep shed in Section 25 and the North Ranch Headquarters which contains a poultry processing facility. Because the Church has no plans to expand these facilities at present, and because the facilities are distant from one another and few in number, it is unlikely that any cumulative impacts to the Trail Creek water resources will accrue from these developments. Sedimentation, nutrient loading, and ground water depletion from these small facilities are insignificant whether considered individually or cumulatively.

#### **4.2.3.8 Effects on the Yellowstone River**

The proposed actions taken together could result in effects on the Yellowstone River that are greater than those of the individual actions. The main effects on the Yellowstone River would be increased sedimentation during construction and long-term increased nutrient loads. Ground water withdrawals are unlikely to affect the flows in the Yellowstone River because of the large volume of river flow and the lack of direct connection between the river and the source aquifers. Spills of hazardous materials are also unlikely to affect the Yellowstone River to any significant degree because of the large flow of the river and the distance of most activities involving hazardous substances from the river.

### **Alternative 1: Denial**

No environmental effects in addition to existing conditions on the Yellowstone River and their associated aquifers are anticipated if the application for the proposed actions are denied. It is possible that some of the proposed activities could be redirected in forms that do not require state review and some of the effects on the Yellowstone River would still be realized. For example, denial of the Golden Age

Village Phase II application could result in increased development of the 20 acre lots of the North Glastonbury Subdivision which are not subject to state review.

### **Alternative 2: Approval**

The DEIS estimated maximum sediment loads that could enter the Yellowstone River due to development of the East Gate and Spring Creek sites. This maximum sediment load was about 0.1% of the 1985 and 1986 annual average sediment transport of the river (MDHES 1988, P. 56). The maximum sediment load that could reach the Yellowstone River (without mitigation measures) under the current Church proposals is 791 tons per year (Table 4-1). This would translate into another 0.1% increase in sediment transport in the Yellowstone River. Because construction is complete on the original proposals (except for Spring Creek), those sediment yields, which are valid only during construction, do not accumulate and the predicted maximum increase in Yellowstone River sediment due to Church activities is only 0.1%. The proposed mitigation measures should ensure that actual increases in sediment loads will be much smaller than this number.

Maximum potential increases in nutrient concentrations in the Yellowstone River for the original DEIS and the current proposal (SEIS) are documented in Table 4-3. The increase in nitrogen loading due to the current proposals alone is 0.3% of the inorganic nitrate concentration of the Yellowstone River. The combined actions of the original and current proposals represent a maximum increase in nitrate of 0.6%. The corresponding maximum increases in ortho-phosphate should be 0.4% for the current actions and 0.8% for the combined actions. These very small increases should result in minimal increases in algal biomass, especially if the saturation effects observed by Bothwell apply to the Yellowstone River.

### **Alternative 3: Approval with Mitigation Plan**

The mitigation measures for sediment control proposed in the Church's applications should be adequate to prevent significant sedimentation of the Yellowstone River and no additional measures should be needed. The nutrient loading to the Yellowstone River could be reduced by use of a lagoon and spray irrigation system at Golden Age Village rather than the proposed infiltration trenches. Use of this mitigating measure could potentially reduce nutrient loads due to the proposed actions by 40% thus lessening the likelihood of any increase in algal growth.

### **Cumulative Effects**

The Church owns many facilities in the upper Yellowstone Valley some of which were in existence before the Church acquired them and some of which the Church has developed. In addition, there are unincorporated towns, subdivisions, ranch houses, and campgrounds throughout the valley that contribute to water resource degradation. At the upper end of the valley, just north of Yellowstone National Park,

is the town of Gardiner and a major gold mine at Jardine. Both the town and the mine have the potential to degrade water quality.

Cumulative effects on the Yellowstone River are of the same type that have been discussed in individual locations: sediment yield, nutrient loading, and spills and leaks of hazardous substances. Ground water withdrawal is unlikely to have any significant effects on the Yellowstone River but may affect certain tributaries. No ground water withdrawal effects due to Church actions have been identified on tributary streams because the affected tributaries appear to be losing streams, that is, they do not obtain water from the adjacent aquifers. In general, surface water in the upper Yellowstone valley is over-appropriated and additional surface water development is unlikely to occur. Some tributary streams may have improved flows in the near future as the Montana Department of Fish, Wildlife and Parks develops its pilot study instream leasing program.

Increased sediment yield is generally due to building site construction, road construction, logging, mining, and other development activities. Sediment yield could potentially be increased by the 1988 fires in upper Mol Heron Creek although the Postfire Sediment Study undertaken by the Research Division of Yellowstone National Park has not yet reached a conclusion on this question. A change in agricultural practices could also contribute to sediment yield, for example, the conversion of range land to crop land. If best management practices are followed, sediment yield can be minimized during construction. Proper reclamation, landscaping programs, or best management practices should reduce sediment yield to pre-construction levels in most cases. The impact of development on sediment yield is therefore largely a function of the management practices implemented during construction and after development is completed.

The nutrient loads that could potentially reach the Yellowstone River from wastewater treatment facilities developed by the Church have been documented in Table 4-2. Additional waste water systems, such as the town of Gardiner and individual systems (whether Church members or not) have not been included in this computation. Church activities are only one potential source of nutrients in the Yellowstone River. Fertilizers applied to agricultural crops are another source of nutrients that have not been evaluated but could effect algal growth in the Yellowstone River and its tributaries.

Table 3-1 presented nutrient data collected on the Yellowstone River beginning at a point below Gardiner (McConnell Access) and ending at Emigrant for the purpose of determining if nutrient levels are increasing in this reach due to Church or other activities (Bahls 1992). It was found that all parameters except Kjeldahl nitrogen decreased in this reach of the river at this time. This may be attributable to the presence of significant sources of nutrients at the upstream end of the system, such as the Gardiner waste water treatment discharge and naturally high nutrient levels from park thermal waters. It is possible that these nutrient sources are diluted by downstream tributaries. It is also possible that algae are taking up nutrients from the water and creating additional biomass in the river at this time of

year. It will be difficult to detect changes in the nutrient concentrations in the Yellowstone River against background loads of this magnitude.

#### **4.2.3.9 LaDuke Hot Spring**

The water rights associated with LaDuke Hot Spring are examined in this SEIS as a related action to the Spring Creek Development. The impacts of developing water rights are discussed in light of this related action, but impact analysis is not as fully developed as it would be if the geothermal development were the subject of an EIS. The Church has not submitted any proposals for geothermal development that would require state permitting at this time. Establishing a water right in the manner that the Church did over the weekend of June 26, 1992 does not require a permit. If the Church chooses to use more than 35 gpm, they must apply to the DNRC in advance. This action could trigger an EIS process specifically for the geothermal development.

The effects of the proposed single geothermal well near LaDuke Hot Spring were investigated by the USGS as discussed in Section 3.3.3.8. The USGS investigations relied on raw data from the pump test (Hydrometrics, 1986) and a review of the pump test report by MBMG (Sonderegger, 1987). In addition to the single well, Sorey also considered development on a larger scale in the area. Their conclusions were adapted for the various alternatives for this SEIS and are presented below.

Sorey (1991) has concluded that a hydraulic connection between LaDuke Spring and Mammoth Hot Spring does not currently exist and that the thermal waters at LaDuke are not derived from Mammoth. However, he concludes that a hydrogeologic connection could conceivably exist and that the lack of hydraulic connection could be due to the existing hydraulic head distribution.

Sorey concluded that unmanipulated diversion of flow from LaDuke Hot Spring would have no effect on the thermal activity at Mammoth. However, the existing flow from the spring is approximately 110 gpm which is far less than the decreed rights of 5200 gpm. In addition to flow from LaDuke Hot Spring, capturing natural flow from the other thermal springs along the east river bank would also have no effect on thermal activity at Mammoth. However, the Church does not hold rights on these springs. Although these springs are probably connected to LaDuke Hot Spring, capturing this water would require either a change in the point of diversion, the same as for the proposed well, or a new water right from a source which is apparently already over-allocated.

The effects of pumping the Church geothermal well at up to 400 gpm have not been quantified. Based on the pump test data (Hydrometrics, 1986), pumping at this rate would tend to dry up LaDuke Hot Spring within a day, however, the effects on the other thermal wells and Mammoth Hot Springs are not well known. Based on all available information, the effects of pumping may be observable at the other thermal wells in the area within a reasonable time frame and it is conceivable that the effects could alter the current head distribution and cause a slight reduction in

flow at Mammoth Hot Springs. The effects are only possible if a hydrogeologic connection exists between the Church well and the other locations. The only hydrogeologic connection which has been determined to exist is between the Church well and LaDuke Hot Spring. Longer term pumping may determine if a connection exists between these two locations and the Miller and U'ren thermal wells. If a connection exists, the effect on these wells would be to lower the water levels in these wells and cause a reduction in the maximum production rate from the wells. The degree of reduction is not known, but is expected to be minimal. Depending on aquifer dimensions and recharge rates, the effect on these wells may be significant.

The potential effect of pumping on the flow at Mammoth Hot Springs is highly speculative given the current level of information. However, Sorey (1991) stated:

Fluid production from the existing CUT geothermal well has been shown to divert thermal water from LaDuke Hot Spring to the well. **Thus, sustained production of this well at rates near the flow of LaDuke Hot Spring (5-9 L/s) [77 to 143 gpm] would pose no risk of adverse effects on thermal features in Yellowstone National Park.** It is most likely that sustained production from this well at rates near 25 L/s [400 gpm], which is near its capacity, would also be obtained mainly from diversion of thermal water from LaDuke Hot Spring and other thermal springs and seeps that currently discharge into the Yellowstone River. **Under this condition, reservoir drawdown would remain small and the risk of adverse effects on the Park's thermal features would also be avoided.**

Based on this statement, pumping of the well at 33.5 gpm as the Church has done would pose no risk of adverse effects on the thermal features in the Park. However, pumping the well at any discharge rate is likely to have a direct affect on the flow from LaDuke Hot Spring.

Additional production significantly beyond the proposed 400 gpm and beyond the 967 gpm combined flow for all springs in the LaDuke area, could conceivably result in changes in hydraulic head great enough to cause some effect on flow patterns at Mammoth Hot Springs.

#### **4.2.4 Geology**

The proposed Spring Creek development is in an area which has a number of identified geologic faults (Reference 3.3.3.8 LaDuke Hot Spring - Geothermal Conditions).

The Montana Building Codes Bureau reviews all nonresidential building plans for proposed structures situated outside approved local authorities (farm, ranch, and mining buildings are exempt from the bureau's jurisdiction). The plans for the Church's Spring Creek development will be reviewed by the bureau.

Due to geologic faults, the proposed site is in an area classified as a seismic Zone 4 for building. This designation requires that structures be designed with the most stringent construction specifications for possible earthquake activity.

The Church has submitted plans and specifications on prior projects to the bureau for review and approval.

#### **4.2.5 Soil Quality, Stability and Moisture**

Erosion is the primary concern for possible impacts on soils. During the scoping meetings the focus was the Mol Heron Shelter site. With respect to development in general, erosion is always an environmental consideration at any construction site.

The shelter site has been landscaped, seeded and a ground-cover established. With respect to the reinstallation of fuel tanks at the site, the Church says it will use the same erosion prevention and reclamation plans that it used on the original restoration (Francis, pers. comm.).

The proposed plans for Spring Creek, Golden Age Village and the Blue House Kitchen all have erosion control and site reclamation plans in the appendices. The additional use of the wastewater system at East Gate Work Camp will not require construction.

#### **4.2.6 Botanical Resources**

##### **4.2.6.1 Introduction/Methods**

Due to concern regarding loss of native plant communities, replacement by non-native plant species, and the spread of weed species, impact analysis focused on these issues.

##### **4.2.6.2 Effects Common To All Alternatives**

Impacts common to all sites will result from disturbance of botanical resources. Human activities often fragment native plant communities. The effects of extreme fragmentation or isolation of plant populations on plant genetic variability and pollinator populations has been documented in numerous papers (Harper 1977; Harris 1984; Schaal 1975).

Introduction of non-native plant species and release of weed seeds from the soil seed bank is an inevitable result of removing plant cover (Harper 1977). Native plant communities where this disturbance occurs may undergo conversion to annual grasslands dominated by introduced plant species. Noxious weeds are common invaders of newly exposed ground and have to be treated by mowing, handpulling, and/or by measures approved in the Church Weed Control Plan.

### **4.2.6.3 Impacts by Site and by Alternative**

#### **Spring Creek Headquarter Site**

##### **a. Alternative 1: Denial**

There would be no primary or secondary impacts to this site if DHES denies the permit-requiring activities. However, denial of these permit requests may have the effect of decentralizing Church activities. The effects on native plant communities could be as great or greater than either action alternative, depending upon new site conditions.

##### **b. Alternative 2: Approval**

###### **1) Primary and Secondary Impacts**

Potential problems associated with a grass mixture dominated by crested wheatgrass are discussed below with respect to the Spring Creek Site.

According to the FEIS (Montana DHES 1989), approval of the Spring Creek Headquarters would result in disturbance to about 109 acres of shrub steppe habitat on the bench site above the Yellowstone River. With permit modifications, impacts would be somewhat greater. Initial construction is expected to last from 12-18 months, after which restoration and revegetation will begin. Additional construction is expected to occur over a number of years. (Francis pers. comm.).

The Spring Creek development activities will replace some native vegetation with buildings, access roads, and a water storage reservoir at the base of Devil's Slide. Native plant cover will also be removed during installation of sewage and water systems. Studies of plant succession in native perennial grasslands that have been cultivated and later abandoned indicate that native bunch grasses do not readily reestablish; exotic annual grasses, introduced perennial grasses, and weedy forbs persist decades after disturbance because of specialized life history factors (Stromberg et al. 1991; Harper 1977). Exotic weed seeds, released and dispersed by vehicle activity and ground disturbance, colonize patches of bare ground in the headquarters site and in adjacent lands (Kline and Howell 1987). Noxious weed seeds like spotted knapweed, Canada thistle, and leafy spurge are known to spread by catching on the undercarriage of vehicles (Gallatin National Forest). Heavy vehicle activity will compact the soil and retard natural revegetation (Veith et al. 1985). Annual grasses and forbs that occur around the thermal well on the Spring Creek Site are indicative of vegetation that will result from construction activities.

Church Engineering plans recommend reclaiming irrigated lands with non-native perennial grasses. A "Native Prairie Mixture" proposed for non-irrigated lands includes both native and non-native perennial grasses (Sanders 1991):

## Native Prairie Mixture

### Introduced

Fairway Crested Wheatgrass 35%  
Dura Hard Fescue 10%

### Native

SlenderWheatgrass 10%  
Side Oats Grama 10%  
Western Wheatgrass 10%  
Prairie Sand Reed 10%  
Green Needle Grass 15%

Success of the restoration effort depends heavily on seeding rates, site preparation, and adaptation of the plant materials to environmental conditions (Redente and Deput 1988). Under the plan outlined in the preliminary engineer's report, it is likely that crested wheatgrass, a vigorous and aggressive introduced species will replace the native plant community. During the first few years following revegetation annual grasses will probably dominate the site (McLendon and Redente 1990).

The weed control plan outlined in the preliminary engineer's report will control noxious weed species (Sanders 1991).

### 2) Site Specific Cumulative Effects

Conversion of native shrub steppe plant communities to annual grassland and exotic weeds may result from construction activities. Studies in other native perennial grasslands have shown that sites that were cultivated or experienced soil disturbance decades ago have not returned to native perennial bunchgrasses (Stromberg et al. 1991; White 1966; Foin and Hektner 1986). Revegetation plans outlined in the Church preliminary Engineering Reports will probably replace native plant communities with grasses that are either not native or are not necessarily components of the native flora on the site.

The presence of native grasses rather than introduced species has been shown to maintain native wildlife habitat for birds, insects and small mammals (Bock et al. 1984). However, it must be noted that much of the area has already been affected by the introduction of non-native species due to past farming and ranch practices.

### c. Alternative 3: Approve with Mitigation Plan

#### 1) Primary and Secondary Effects

The impacts discussed in Action Alternative 2 could be lessened through implementation of future vegetation planning that has two objectives. The first is to prepare a habitat map of all plant communities throughout Church properties that can be used to identify and permanently protect patches of native plant habitat. Establishment of these protected habitats could guide future ranch development and ensure maintenance of viable populations of individual plant species and their

pollinators. Such a design for land management would also help the Church to achieve its environmental goal: "The long-term restoration, preservation, and enhancement of the beauty of the land, and the careful balancing of human activities so as to peacefully coexist with nature and wildlife is our primary goal" (Francis 1989).

The second objective is to adopt mitigation prior to new large-scale development suited to the particular environmental conditions of the Church property in order to minimize the impact of human activities on native plant communities. Recommended mitigation is listed in Section 4.2.6.5 of this document.

## 2) Site Specific Cumulative Effects

If a plan is developed and specific mitigation practices are adopted, cumulative effects to native vegetation will diminish. Revegetation efforts will be more likely to return disturbed areas to pre-disturbance conditions. Adjacent perennial grassland will be less likely to be invaded by weedy, exotic plant species.

### **Mol Heron Shelter Site**

#### a. Alternative 1: Denial

Denial of the replacement of the fuel storage tanks will have little direct or indirect impact on native vegetation because of previous disturbances.

#### b. Alternative 2: Approval

##### 1) Primary and Secondary Impacts

Significant localized impacts to the Mol Heron Creek vegetation have already resulted from alteration of the meadow hydrology, installation of fuel storage tanks and nuclear fallout shelters, and soil and tank removal after the diesel fuel spill (Section 3.2.1.3.1).

##### 2) Site Specific Cumulative Impacts

The non-native seed mixture used in the revegetation and restoration efforts following both fallout shelter construction and the fuel spill will potentially contribute to the spread of non-native plant species to adjacent undisturbed habitat.

In May-June 1992 construction activities related to the conference site, including bridge and foot-path construction, occurred in the riparian and meadow areas along upper Mol Heron Creek. These activities required state 310 Permits and may also be subject to individual permits under Section 404 of the Clean Water Act. The yearly gathering brings up to 5000 visitors and 500 vehicles to the area during the summer. Future impacts to the nearly 100 acres of habitat are impossible to predict,

but visitor numbers may increase, requiring additional facilities on additional acreage.

c. Alternative 3: Approval with Mitigation Plan

1) Primary and Secondary Impacts

Impacts have already occurred during drainage of the meadow, installation of fallout shelters and tanks, and removal of soil and storage tanks. Disturbance to the relatively localized area associated with replacement of the tanks will not cause additional significant site-specific impacts entailing significant irreversible or irretrievable commitments of natural resources.

2) Site Specific Cumulative Effects

Church activities within the upper reaches of Mol Heron Creek have had a variety impacts on botanical resources. Drainage of the meadow at the conference site, bridge and foot-path construction activities that have required State 310 Permits and possibly individual federal permits under Section 404 of the Clean Water Act for wetlands, disturbance associated with installation of shelters and remediation of the fuel spill have impacted the vegetation. A future vegetation plan could target some native habitat in Upper Mol Heron Creek for protection and set guidelines for mitigation and habitat restoration efforts on the permitted sites. With a plan in place, site specific cumulative impacts would not entail significant irreversible or irretrievable commitments of natural resources.

**Golden Age Village - Blue House Kitchen**

a. Alternative 1: Denial

1) Primary and Secondary Effects

Denial of the expansion of the water and waste-water systems at an existing building in Royal Teton Ranch North will result in no impacts to botanical resources in the localized areas where the Church planned access roads, drainfields, and well construction activity.

Denial of permits for expansion of Golden Age Village may result in locating the project elsewhere or scattering trailer sites throughout Glastonbury North. Open space will be affected in all of these scenarios, but permit denial could result in decentralization of activities that could still impact native plant communities.

2) Site Specific Cumulative Effects

If the area is not developed, the vegetation at this site may remain as open native grassland and cultivated/irrigated fields, but development could occur on other dispersed sites.

b) Alternative 2: Approval

1) Primary and Secondary Impacts

The expansion and modification of water systems at RTR-N will impact botanical resources near the well and drainfield. Revegetation plans call for reseeding with non-native perennial grasses on irrigated sites and a "Native Prairie Mixture" which contains both native and exotic perennial grasses for the non-irrigated sites (Sanders 1991). The effects of these revegetation efforts were discussed in the review of Alternative 2 for East Gate and Spring Creek.

Sixty-six acres of previously cultivated/irrigated fields and native perennial grassland will be affected by the Phase II addition of 77 single family residences at Golden Age Village. Additional acreage will be used for a chapel, a school, employee housing, and other facilities (Francis pers. comm.). Problems associated with disturbance of vegetation will be the same as those described for the Spring Creek Headquarters site.

2) Site Specific Cumulative Effects

Use of non-native plant species in revegetation may promote the growth of annual grasses like *Bromus tectorum* (Mack 1981). These areas will become a seed source for the spread of annual grasses, non-native perennial grasses, and weedy forbs to adjacent native plant communities. Plant succession to predisturbance conditions in native perennial grassland communities will take decades if it occurs at all.

c. Alternative 3: Approval with Mitigation Plan

1) Primary and Secondary Impacts

Vegetation planning similar to that described in Section 4.2.6.5 could guide present and future Church activities. Impacts to botanical resources could be lessened as described in the discussion on Alternative 3 for Spring Creek.

2) Site Specific Cumulative Effects

Under a vegetation plan, efforts could be directed to restoring plant communities to pre-disturbance conditions. Habitat enhancement of abandoned cultivated/irrigated fields could occur if these lands are revegetated with native seed mixes.

#### **4.2.6.4 General Cumulative Effects**

##### **Alternative 1: Denial**

The "no-action" alternative does not imply that the proposed activities will not occur. The Church may choose to disperse the projects throughout ranch property.

In addition, the fate of native plant communities is partially dependent upon activities on all properties in the upper Yellowstone Valley. Many activities that remove native vegetation are not subject to state or federal environmental review. Fragmentation of habitat, loss of plant species, and introduction and distribution of non-native plant species will continue to occur throughout the valley in the absence of county-wide planning measures to address these issues.

### **Alternative 2: Approval**

Approval of these projects, particularly the Spring Creek headquarters and Glastonbury North expansion, will reduce the amount of native shrub and grasslands on Church property. Some habitat will be replaced by permanent construction, others will undergo conversion to annual grasslands. Without a Church master plan that sets a final limit to population growth and construction, one can only assume that development will continue to impact the remaining native vegetation.

### **Alternative 3: Approval with a Mitigation Plan**

If the Church develops and implements a plan for botanical resources, such a plan would identify and protect portions of the remaining native plant communities on Church property. Such a plan for botanical resources would complement a Multiple Species Conservation Plan suggested for mitigation of wildlife resources. The plan could also establish guidelines for mitigating impacts to project areas.

#### **4.2.6.5 Suggested Mitigation Recommendations for Botanical Resources**

1. Prepare a vegetation map of all plant communities on the ranch. Identify and protect adequate amounts of native plant habitat to ensure maintenance of healthy plant populations. Such a plan could complement a Multiple Species Conservation Plan suggested under Mitigation Recommendations for Wildlife. Prepare plant species lists for all plant habitats on the ranch so that revegetation seed mixes contain the appropriate plant species.
2. Restoration of vegetation in sagebrush steppe communities is difficult, but numerous scientific papers address the problems, many with respect to sites in Montana (Farmer et al 1974; Deput et al, 1980, 1978; Doerr et al 1984; Brown and Wiesner 1984; McKell, C.M. et al. 1979). The Church should consult reclamation specialists and review the scientific literature during preparation of a vegetation plan that will accelerate and direct revegetation toward preconstruction activity species composition and diversity.

Some recommended specific mitigation measures are listed below:

- a. Stockpile 2-6 inches of topsoil from construction sites and replace soil when construction is complete. The topsoil should be replaced to a minimum depth of two inches as soon as possible to insure survival of native plant seed and the best results for revegetation. Top soil should be replaced within the

same season that it was removed because populations of microorganisms beneficial to plant growth decrease rapidly in stored soil (Chambers, 1989; Williams 1992).

b. Restrict heavy vehicle traffic to construction sites and access roads to avoid unnecessary soil compaction. Compacted zones should be raked and aerated before replacement of topsoil (Williams 1992).

c. If additional seed is necessary, the Church could collect seeds from the project site prior to construction. Seeds from the project are often closely adapted to the particular environmental conditions. Montana-based companies can also provide seeds that are generally suited to the environmental conditions of the region (Chambers 1989).

d. Monitor restored sites closely after reseeded to determine whether or not irrigation is necessary.

e. Mulch, if required, with materials free of weed seed. Straw and hay bales used for mulch or erosion control should be weed-free (Williams 1992; Gallatin National Forest).

f. Avoid driving vehicles in weed-infested areas; contractors who work in fields infested with spotted knapweed and/or leafy spurge should wash equipment and vehicles including the undercarriages (Gallatin National Forest).

g. Gravel-pits that are a source of gravel or fill for construction projects should be free of weeds.

#### **4.2.7 Aesthetics**

Analysis methodology included review of the preliminary engineer's report for each proposed action site and site visits. The process for identifying impacts was based on the following format:

- Identify the key views to determine if and how proposed development areas are seen from key travel routes (See Section 3.3.7),
- Analyze existing visual resources in relation to the general setting (See Section 3.3.7),
- Describe the proposed project appearance from the identified key view points,
- Assess project impacts in terms of change from existing conditions, and
- Identify mitigation measures to reduce or eliminate negative visual effects.

#### **4.2.7.1 East Gate/Ranch Headquarters/Ranch Office/Spring Creek**

##### **a. Alternative 1: Denial**

Denying the requested permits for Spring Creek and East Gate would mean no development with public water and sewer systems. Denial would still leave the Church with the opportunity to develop their property without such systems, but would limit the Church's ability to cluster population centers. Development could be scattered and leave less open space than is available under cluster-type development. Visual impacts for existing operations would continue.

##### **b. Alternative 2: Approval**

Under Alternative 2, the visual impacts would be primarily those associated with Spring Creek since there is no construction required for East Gate. Visual impacts for existing operations would continue as described under Alternative 1.

The proposed expansion to Spring Creek would double the population that was projected under the original EIS for this site. Development will include modular units, and eventually some permanent structures. The plans include 20 apartment structures, 36 modular dwellings, 18 office buildings, 15 school buildings, 2 church buildings (one with a seating capacity of 2500), and a publishing facility with approximately 87,000 square feet. Construction of these various facilities will take place over a multiple year period, as yet undetermined.

Some of the development will be seen from US Highway 89 as described in Section 3.3.7. The preliminary engineer's report for the proposed project indicates that dimensions and placement of the buildings are approximate, and some buildings may include a basement and more than one floor. Church representatives have indicated that buildings will not exceed two stories. (Francis, pers. comm.) As outlined in the preliminary engineer's report, the publishing facility and apartment units would be located on the southern end of the site. This is the area that will be most visible from the highway. A shelter belt is proposed for the west end of the site.

Due to the preliminary nature of the site plans, it is difficult to assess the "as-built" visual quality impacts. As proposed in the preliminary engineer's report, some of the development would be seen from the highway. Coming from south to north, the development will appear to be right at the base of Devil's Slide.

Visual impacts during construction will include the land disturbance and construction activity. Construction could be extended over a several year period.

##### **c. Alternative 3: Approval with Mitigation Plan**

Mitigation measures for visual impacts could include requirements for the Church to establish development guidelines for building heights, design criteria (building color, roof line and building placement) and vegetation. Vegetation "softens"

development. Mitigation could include requirements for fast-growing shelter belts on the south end of the development which would eventually partially block the view from the highway. Tree plantings within the development would also soften the overall visual impact of the development.

#### **4.2.7.2 Mol Heron Shelter Site/Golden Age Village/Blue House Kitchen**

The Mol Heron Shelter Site is not visible in general to the public. Revegetation has been completed and revegetation plans are included as part of the tank installation proposal. Visual impacts under any alternative would be minimally different from existing conditions. Visual impacts from the conference will continue under any alternative.

The Golden Age Village is not visible from US 89. Visual impacts at the site will change from existing conditions under the proposed action, but will primarily be viewed only by members of Golden Age Village and by residents of the surrounding Glastonbury properties. The County Planning Board will review visual impacts at the site as part of its subdivision review and approval process.

The existing structure at the Blue House Kitchen will remain unchanged from the outside. Therefore there is little change from existing conditions.

#### **4.2.7.3 Cumulative Impacts**

Cumulative impacts from any unsightly development will continue from any other development in the county, including non-Church properties, until regulations or policies are adopted by the county to manage such development.

### **4.2.8 Air Quality**

#### **4.2.8.1 Alternative 1: Denial**

##### **a. Primary Effects**

Denial would mean there would be no potential for temporary fugitive dust from construction at the Spring Creek, Mol Heron Shelter, Golden Age Village or Blue House Kitchen sites.

##### **b. Secondary Impacts**

Road dust problems are normally worsened by increased traffic. If the developments were denied, the potential for greater numbers of vehicles and trips would not occur. The Church could proceed with other forms of development, but since alternate forms of development would likely be more dispersed, the potential for road dust problems would be appreciably less.

The potential costs to the county and Church for dust maintenance would be considerably less if the proposed projects were denied.

#### **4.2.8.2 Alternative 2: Approval**

There could be impacts from fugitive road dust if roads are not properly maintained. Construction may create fugitive dust for short periods of time. There could be possible long-term impacts if road maintenance is not properly done. More traffic will create the potential for more dust. Improper road maintenance could add to cumulative effects for fugitive dust in the area. It will be an expense for the Church and county to maintain the roads, yet the environmental benefit will be the control of fugitive dust. There may be a need to consider long-term road maintenance.

#### **4.2.8.3 Alternative 3: Approval With Mitigation Plan**

Fugitive dust from construction can be controlled by applying water to settle the dust.

### **4.2.9 Historical and Archeological Sites**

#### **4.2.9.1 Scope of Work**

The Montana DHES determined that an additional Class III, cultural resource survey was not necessary as part of historic and prehistoric sites considerations for the SEIS. The Montana DHES indicated that the original Class I and Class III inventories carried out by GCM Services, Inc. adequately covered all areas which could be potentially impacted by proposed Church additions and modifications. The primary task of SEIS cultural resource investigations is to review all archaeological documents relevant to lands and sites contained within tracts proposed for additional development by the Church. Of particular importance is review of the two reports prepared by GCM Services, Inc. as a part of the original EIS. These reports give archaeological site locations and descriptions and provide specific significance ratings based on National Register of Historic Places criteria. The GCM reports also give specific management recommendations with respect to specific sites and actions proposed as a part of the original EIS.

Analysis of known cultural resources on Church property will focus on direct, indirect, and cumulative effects (as defined in the GRI SEIS proposal) of proposed additions and modifications to specific archaeological sites. Direct effects are those that would occur in the project area/site area during execution of the proposed action such as construction. Direct effects result in actual disturbance to or destruction of a landform or soils which contain archaeological sites. Indirect effects occur as a result of the proposed action but are separate from it in time or space or both. Indirect impacts include such things as vehicular traffic over an archaeological site during access to and from a construction site. Cumulative impacts include direct and indirect effects from any other activities in the area that overlap the impacts of the

proposed action in either time or space. Cumulative impacts must also address the effects of reasonably foreseeable future development in the analysis area. Such impacts to cultural resource sites include increased pedestrian and vehicular traffic both on and off roadways thereby exposing sites to things such as erosion and artifact collecting. Direct, indirect and cumulative effects will be discussed for each archaeological site involved in the proposed Church action.

#### **4.2.9.2 Impacts by Site**

##### **East Gate**

##### **a. Site 24PA757**

Based on understanding of proposed actions at the East Gate Work Camp direct impacts or effects of these actions to site 24PA757 are not apparent. Approval to the proposed action with regard to effect on 24PA757 is based on the conditions set forth by GCM in the cultural resource report prepared in conjunction with the original EIS (GCM 1987a:43,51). Denying the permits would not change impacts from existing conditions.

Indirect and cumulative effects of proposed actions on 24PA757, covered under the original EIS, were not discussed in the two GCM cultural resource reports. Some developments which degraded heritage values at 24PA757 preceded acquisition of the property by the Church and some followed acquisition (those that followed Church acquisition were not subject to state review). Since direct effects of the proposed action at the East Gate Work Camp on 24PA757 are not apparent it follows that indirect effects are not apparent. Cumulative effects to historic site 24PA757 are a consideration. Without stabilization, structural integrity of the plunge building will continue to degrade. Degradation to the structure may be accelerated as future construction occurs. Vibrations from heavy equipment and vehicular traffic will likely have a long term effect on structural integrity. As the Church population in and around the East Gate Work Camp grows, pedestrian traffic in and around the old plunge building will likely increase. The deleterious effect of pedestrian traffic on historic buildings is well known from classical Greek and Roman sites and from sites in other parts of the world. The long term mitigation of cumulative effects would involve consideration of the structural rehabilitation of the old plunge building.

##### **b. Site 24PA758**

As was mentioned during the above discussions of 24PA757, further construction action is not currently proposed by the Church for the East Gate Work Camp site. Based on understanding of proposed Church actions direct impacts or effects on 24PA758 are not apparent. Approval of the proposed action with regard to effect on 24PA758 is based on conditions set forth by GCM (1987a:44). A final stipulation set forth by GCM suggested that any future, land-altering developments within the boundaries of 24PA758 be preceded by additional subsurface testing.

Indirect and cumulative effects of proposed actions on 24PA758, covered under the original EIS, were not discussed in the two GCM cultural resource reports. Some developments which degraded heritage values at 24PA758 preceded acquisition of the property by the Church and some followed acquisition (those that followed acquisition were not subject to state review). Since direct effects of the proposed action at the East Gate Work Camp on 24PA758 are not apparent it follows that indirect effects are not apparent. Cumulative effects to prehistoric site 24PA758 are a consideration. As the Church population in and around the East Gate Work Camp grows associated support facilities development will likely occur. Development of such facilities will likely involve land-altering construction which could disturb or destroy cultural deposits at 24PA758. The proposed action discussed in the GCM cultural resource report involved installation of an additional sewer line to the drainfields. Growth in the East Gate Work Camp would logically center around basic facilities such as wastewater disposal systems with the inevitable result of degradation of 24PA758. If growth continues in the East Gate Work Camp area, long term mitigation of cumulative effects would require more extensive subsurface excavation of the site.

### **Spring Creek**

#### **a. Site 24PA762**

Because of site insignificance, proposed Church actions will not result in significant impacts.

#### **b. Site 24PA763**

Direct effects or impacts to 24PA763 include construction of the sewage lagoons, service roads and lagoon yard that would eliminate portions of the old Yellowstone Park Trail. Indirect impacts would likely include damage to visible portions of the trail as a result of increased vehicular traffic in and around the lagoon yards. Cumulative effects of proposed Church action would result from focus of population growth in and around the Spring Creek Ranch Headquarters with its associated basic service facilities such as the sewage treatment system. Future growth may require expansion of the lagoon or treatment facility which would have an obvious impact on 24PA763.

The best choice of solutions to impacts from proposed Church actions on 24PA763 would be to avoid the site by selecting a new location for the sewage treatment facility. If avoidance is not practical then mitigation is recommended. GCM Services, Inc. (1987a:47) suggested "extensive recording" as a mitigative effort. Further mitigation is advised herein. Small scale excavation of select localities along the portion of the trail contained within the lagoon project area is recommended since they are likely to experience indirect and cumulative impact from Church actions. GCM described the presence of historic trash scatters and an advertisement for a Gardiner store printed on a boulder within the trail segment investigated at the lagoon locality. Excavation of trash scatters could provide information on periods of use on the trail and might even provide information on specific people or groups who

used the trail. The historic advertising boulder should be photographically recorded and mapped while in place and should be removed from the impact area prior to construction and be curated in an appropriate museum facility.

Conditional approval might be given to lagoon construction if guarantees could be made that the historic trash dumps and historic sign-boulder would not be disturbed. Given the proximity of these historic features to proposed construction areas it seems likely they would be indirectly disturbed. If the historic dumps and boulder-sign were fenced off and protected from heavy equipment and vehicular traffic, damage to the information-rich portion of the trail in the lagoon area might be avoided.

### **Mol Heron Shelter Site**

Site 24PA795 has been determined to be insignificant; therefore none of the alternatives has any significant impact.

### **Golden Age Village/Glastonbury/RTR-N**

High densities of archaeological sites are known to occur in the Upper Yellowstone Valley and some of these sites are extremely significant. Therefore it is imperative that a cultural resource, Class III inventory take place at the Golden Age Village project site. Potential impacts to cultural resources cannot be addressed without knowing what those resources are. Field reconnaissance is recommended for the Golden Age Village locality.

#### **4.2.9.3 Cumulative Effects**

The entire area of the Upper Yellowstone Valley is one of rich and varied cultural resources. As the Church property is developed with a growing member population the chances of disturbing significant archaeological sites will increase. If the Church were to undertake a comprehensive Class III inventory of cultural resources on all its properties in the Upper Yellowstone Valley, a management plan could be devised and implemented and damage to cultural resource sites could be minimized or avoided.

#### **4.2.10 Land Use**

Analysis was conducted by reviewing information and reports related to proposed development, covenants and other informational material related to the Glastonbury properties and Golden Age Village; Park County file information on the Golden Age Village and Glastonbury properties; subdivision laws and regulations, and correspondence from public interest groups and individuals. Personal interviews were conducted with representatives from the Church, Park County, and DHES.

#### **4.2.10.1 Effects Common to All Action Alternatives**

The impacts to land use under any alternative for the Blue House Kitchen are the same. There will be no change from the present land use patterns directly related to approving or denying the Blue House Kitchen proposal.

#### **4.2.10.2 East Gate Work Camp/Spring Creek Headquarters/Mol Heron/RTR-S**

##### **Alternative 1: Denial**

If the proposed actions at the East Gate Work Camp and Spring Creek Headquarters were denied, land use impacts from existing activities would continue. In addition, the Church has the flexibility to develop other less extensive or densely clustered projects without state approval. Any county permits that would be required do not inherently contain land use provisions. Considerable change from existing land use is a possible impact in the future as a result of denying the permits now.

##### **Alternative 2: Approval**

If state permits for Spring Creek headquarters were approved, land use would be much more intense than under current conditions. The impacts of this intensive development are described under each separate resource topic in Chapter 4 of this SEIS. There are no laws or regulations that would prevent such development. The purpose of this SEIS, as prescribed by the Montana Environmental Policy Act (MEPA), is to describe the environmental impacts of such development and to study, develop and describe appropriate alternatives. (75-1-201) General environmental policy is also outline in MEPA; specific land use policies are not prescribed. Land use policy is the prerogative of local government as described in Chapter 3, Section 3.3.11.1.

##### **Alternative 3: Approval with Mitigation Plan**

Mitigation of impacts from the proposed RTR-S development and cumulative impacts is described under the various resource topics in Chapter 4 of this SEIS.

#### **4.2.10.3 Golden Age Village/Glastonbury Properties**

##### **Alternative 1: Denial**

Denial of the Golden Age Village water and sewer permits would result in no change from present conditions for land use. Under present conditions, other development is still possible as long as it does not require a public water and sewer system as presented in this SEIS.

## **Alternative 2: Approval**

If the water and sewer permits were approved, land use would still be controlled by the County Planning Board. The Planning Board would be responsible for reviewing and approving the expansion to this mobile home subdivision.

## **Alternative 3: Approval with Mitigation Plan**

No specific land use mitigation measures are recommended for this site since it would undergo County Planning Board review and approval.

## **Cumulative Impacts**

Many of the issues related to the Glastonbury properties reflect problems that can be encountered by any division of land exempt from subdivision review. Similar problems are likely to be encountered in the study area as more exempt properties are developed.

This phenomenon of residential development on agricultural land is occurring throughout Montana. The exclusion of 20+ acre lots from local subdivision review processes indirectly promotes this type of development.

Subdivisions have sprung up around the state - not just in the Paradise Valley south of Livingston -- with inadequate sewer and water systems. They have been built on ground that is not sound environmentally, Gilbert [Chairman of the Environmental Quality Council] said. Builders with no knowledge of environmental concerns have put up houses. No soil and water samples were taken. No agency was there to require soil or water tests. Neighboring land has suffered as a result. (Great Falls Tribune, 21 June 1990)

Implementation of a county land use plan could reduce the impacts of all unreviewed development, not just Church-related development.

## **4.3 Human Environment**

### **4.3.1 Social Structure and Mores**

Refer to the "Social and Cultural Uniqueness and Diversity" section of the DEIS.

### **4.3.2 Cultural Uniqueness and Diversity**

Refer to the "Social and Cultural Uniqueness and Diversity" section of the DEIS.

### **4.3.3 Access to and Quality of Recreational and Wilderness Activities**

Denying or approving the proposed actions will not change existing property ownership and property rights of the Church. Therefore there would be little to no difference for access among the alternatives. Acquisition and land exchange are being pursued directly by the Forest Service and the Church and are not directly related to the actions proposed here.

The quality of the existing recreational experience could be indirectly affected by proposed development at the RTR-S. Persons who may want to see the portion of Yellowstone Park that is accessed by the county road west of the Yellowstone River will experience more road traffic than what exists currently. Other recreational experiences, such as river floating and fishing, may also be indirectly impacted by the proposed development. Impacts would include appearance of the less visible area as more developed. Although the existing and proposed sites are in general less visible from the river than from the highway, many visitors' first visual experience of the proposed development would be from the highway and may affect a decision to recreate on this portion of the river. Mitigation measures for visual impacts are addressed in Section 4.2.7. Mitigation measures for traffic impacts are addressed in Section 4.3.9.4. Cumulative impacts of Church and other development in the valley may also impact recreational experience. Cumulative impacts of development are discussed in Section 4.2.10.

### **4.3.4 Local and State Tax Base and Tax Revenues**

Church expansion and development under any alternative would increase the tax base in Park County. How much the Church's property tax liability would grow would depend on the assessed market value of the improvements, the amount by which livestock numbers would increase, the acquired value of vehicles, equipment, furniture and fixtures, and the value of mobile homes moved on Church property.

The following table describes the potential property tax liability per every \$1,000 worth of improvements or acquired property, by location and the recipient government, based on current mill levy assessments. The amount of tax due each government may vary each year depending on the number of mills levied by the respective governing bodies.

Tax revenues from business income resulting from new or expanded operations would be based solely on the profitability of the business activity. The expansion of the publishing facility would not impact tax revenues because it is tax exempt.

### **4.3.5 Agricultural, Commercial and Industrial Production**

#### **4.3.5.1 Effects Common to All Action Alternatives**

Under any alternative there is potential for future new or expanded industrial and commercial activity. Currently, there are no county or state regulations or

**Church Universal and Triumphant  
Property Tax Calculation  
Per \$1,000 of Assessed Improvements or Equipment**

<b>Location of Improvement</b>	<b>Schools</b>	<b>State</b>	<b>County/ Special Dist.</b>	<b>Total</b>
Corwin Springs	\$ 7.52	\$ .23	\$ 2.57	\$ 10.32
Ranch Area North	6.79	.23	2.74	9.76
Glastonbury North & South	8.00	.23	2.57	10.80
Industrial Park	8.48	.23	2.73	11.44

policies to prohibit such development as long as it meets water and air quality standards. If the Church proposed a facility that would be used by numerous staff, require a public water supply or wastewater system or other state action/approval, it could possibly trigger an EIS under the Montana Environmental Policy Act.

For agricultural, commercial and industrial production, there is no difference among the alternatives at the East Gate Work Camp, Mol Heron fallout shelter, and Blue House kitchen sites.

#### **4.3.5.2 Spring Creek Headquarters**

##### **Alternative 1: Denial**

The impacts of denying the proposed permit applications at Spring Creek Headquarters will not eliminate future potential industrial and commercial development.

Current agricultural, commercial and industrial activities in the surrounding area at the Ranch Headquarters, East Gate Work Camp, Ranch Office, Ranch Kitchen Restaurant and Cinnabar Campground and General Store would continue. These operations could expand within the limits of existing licenses and water supply and wastewater systems.

Agricultural land use could potentially be impacted if the Church built numerous residences, exempt from state review but subject to county septic regulations, to house members/staff.

## **Alternative 2: Approval**

The direct/primary impact of approving the Spring Creek development would be to take land out of future possible agricultural operation. Development would also result in the eventual move of the publishing facility, now located in Livingston, to the Spring Creek site. Spring Creek development would also include a large recreational/swimming pool complex. Facilities at nearby existing sites such as the Ranch Office, East Gate Work Camp, and Ranch Headquarters would continue but functions would change. The Ranch Headquarters will become the headquarters for the ranching, engineering and construction staff. The East Gate Work Camp would continue as an expanded work camp with 110 residents and some construction or other Church work. Activities at the Ranch Kitchen Restaurant and Cinnabar Campground would continue.

Many of the public comments (such as those outlined by Richard Parks in Section 3.4.7.1) indicate concern over location of industrial and commercial activities in areas that are currently agricultural or open space. There are industrial/commercial parks in the study area, primarily at Livingston. In addition, the cities of Bozeman and Billings have larger and more comprehensive industrial/commercial facilities.

Placing the publishing facility at Spring Creek Headquarters will make it the largest nonmining, nongovernment industrial/commercial employer in the Gardiner area. The publishing facility will have minimal impact on the local work force since the operation is already staffed in Livingston and the Church is proposing to relocate workers. It will have an impact on the existing visual resources as noted in Section 4.2.7, though it could also result in a reduction in traffic between Livingston and RTR-S if most or all workers live at Spring Creek Headquarters.

## **Alternative 3: Approval with Mitigation Plan**

There are no state laws or county regulations to prevent industrial development in rural areas. Mitigation recommendations related to aesthetics are described in Section 4.2.7. For more discussion on land use, please refer to Sections 3.3.10 and 4.2.10.

### **4.3.5.3 Golden Age Village**

Preliminary plans for the Golden Age Village expansion include expanded administrative offices, maintenance/garage, new chapel/meeting hall of up to 500 seats, a new school for up to 350 students/faculty, new community center, general store and athletic/playing fields. A preliminary schematic developed in 1989 also included a cafeteria.

Denial of permits for this development may result in possible relocation of clustered community facilities and mobile home park expansion. Existing development would remain. Commercial and industrial development is allowable

under the Covenants of the Community of Glastonbury and within state and local rules and policies as long as air and water quality standards are met.

Approval of permits would mean that development would take place but could take several years. The general store is the only identified commercial activity in the proposed plans. Establishment of a general store could potentially impact the businesses where Golden Age residents are currently making purchases.

#### **4.3.5.4 Cumulative Effects**

##### **Church-Owned/Affiliated Commercial and Industrial Operations**

The plans currently proposed by the Church indicate continued operation of existing commercial and industrial operations. New developments include the possible future construction of a general store at Golden Age Village, the recreational/swimming pool complex at Spring Creek, and continued sales of land in Glastonbury.

The Church's educational/religious activities may impact local commercial operations. The summer conference brings in thousands of people who have a short-term temporary impact on local businesses during the height of the summer tourist season.

As Church members move into the study area, they must find work in the local economy and/or the Church, have a steady independent income, and/or develop commercial or business operations of their own. Existing local businesses may be impacted by new business, but increased competition may benefit consumers. The number of home-run businesses has increased in Livingston since the Church first bought property in 1981. Complaints about home businesses prompted a city ordinance regarding business operations in residential areas. (Nerud, pers. comm.) Business data cannot be tracked by religious affiliation and therefore impacts cannot be assessed.

##### **Church Agricultural Operations**

The specific proposed developments will not change overall approach in the Church's agricultural operations. If approved as submitted, a limited amount of acreage may be taken out of potential future agricultural use. Denying the permits for clustered development could possibly result in greater loss of agricultural land for residential use.

The Church conducts agricultural operations for Church use and for sale on the open market. Continued increases in persons residing on Church property and/or being served Church-provided meals could place increased demands on the Church's agricultural operations. This is particularly true for the poultry and vegetable production since the Church has indicated that there is very little or no surplus for

these two commodities. Additional poultry and vegetable production might require diversion of existing resources.

### **Agricultural, Commercial and Industrial Operations - General Study Area**

The proposed Church developments will have only a minor impact on the overall agriculture, commercial, and industrial operations in Park County. The planned engineering and construction work will be performed by Church employees. (Francis, 6 June 1992) The impact on employment is discussed under Section 3.4.9.

Historically, the majority of Church construction supply purchases over the past three years have been made in south central Montana. Therefore, an impact on commercial trade would be effected as the Church makes one-time purchases of supplies during construction phases.

The Church is presently negotiating a lease renewal at the Livingston railroad yard. The terms will include, at a minimum, an additional four years of occupancy. (Francis, 6 June 1992) Mr. Francis further indicated in his 6 June 1992 letter that the transfer of the publishing plant, warehouses, and staff could occur within a 4 to 10 year period. Presently, this would have little impact on the commercial and industrial setting in the county.

The impact on agriculture is difficult to measure. In general, the ups and downs of grain and livestock markets and the prospect of lucrative real estate deals make it difficult to forecast economic impact on agricultural activities. For all agricultural properties including non-Church properties, it is likely that more land will be converted from agricultural use to residential and recreational use, thus adversely affecting agriculture in the long-term. The Church's proposed developments are not expected to change the Church's overall agricultural operations in the near-term.

### **4.3.6 Human Health**

#### **4.3.6.1 Public Health**

The Church appears to be changing its attitude toward vaccination for communicable diseases. The outbreaks of rubeola and pertussis appear to have had some influence in causing a shift in prevailing attitudes.

Although there appears to be a change in thinking locally, the potential for epidemics exists as long as people choose not to be vaccinated. Persons from other parts of the United States and foreign countries still pose a means for concern. The Church can encourage its members to be vaccinated for communicable diseases, but beyond that it is an individual choice.

Yellowstone Park faces a similar situation on a larger scale. It has large groups of visitors, domestic and foreign, among whom there will likely be some who have not

been vaccinated. However, the interaction of the park's visitors might not be as close and for as extended a period.

#### **4.3.6.2 Solid and Hazardous Waste**

The Park County Refuse Disposal District appears to have ample capacity to meet the future needs of the county, including the Church's proposed developments.

Hazardous substances are used daily by businesses, farms and ranches. When used and disposed of properly, these substances pose no threat to people or the environment. Improper disposal creates a variety of problems.

The Church does use hazardous substances in its commercial printing operations and its farming and ranching operations. Other than the petroleum leaks at the Mol Heron Shelter Site, there have been no substantiated misuses or illegal disposal of hazardous wastes by the Church since the DEIS and FEIS were written.

If the Church is required to comply with the federal SARA Title III act, not to do so is a calculated risk on its part. The law does have enforcement provisions which allow the EPA (the primary enforcing entity), state and local governments, or private citizens to bring suit against any business or enterprise that violates the law. If found in violation, the offending party can face substantial fines.

#### **4.3.7 Quantity and Distribution of Employment**

The impact of denying the proposed permit applications will not affect current employment levels directly. Denial will not eliminate future potential industrial and commercial development by the Church.

Approval of permits would mean that development would take place and there would likely be increased employment by the Church. The Church has indicated it will use Church staff members for construction work. The direct and indirect impacts on the surrounding communities would likely be minor. There might be some impact on services, construction, and retail trade employment as the Church buys construction materials and solicits certain types of construction service expertise. However, this impact would be short-lived during the construction phase.

Overall, the impact of approving or denying the proposed development permits on employment and the distribution of employment will be minor. The number of full and part-time Church employees was 7.66 percent of all other full and part-time employees in Park County. Total compensation for Church employees in 1990 was \$1,826,177, 1.72 percent of all other compensation in Park County. If you subtract the non-cash value of Church employee compensation, disposable income is even smaller. The effect on the economy of Park County and the State of Montana due to the potential increase in Church employment will be minor due to the compensation levels of Church employees. Persons with low incomes receive public services that are the same as or greater than those received by individuals with higher incomes.

In this sense, the lower wages paid by the Church could impact the costs of providing public services for the state, county and federal government, although the Church has indicated that "accepting state welfare benefits is strongly discouraged by the tenets of our faith". (DEIS: 108)

The increase of Church members may serve to increase competition for available jobs in the county. Also, the fact that Church staff members may be willing to work for less wages could indirectly drive the average wage base to a lower scale, although, an analysis of historical personal income (Table 3-12) indicates just the opposite--that income levels are increasing. It is virtually impossible to analyze the impact that Church development, and potential increased population growth can have on creating competition for available jobs in the county. Employment statistics are not kept by religious affiliation.

### **4.3.8 Distribution and Density of Population and Housing**

#### **4.3.8.1 Alternative 1: Denial**

The proposed plans would result in clustered population centers with densities that are typically greater than those in the rest of the valley. Denying the permits would prevent the cluster type development and associated densities but would not necessarily prevent increases in population at Church-owned sites and in the rest of Park County. Impacts from short-term population increases associated with the annual summer conference would continue.

#### **4.3.8.2 Alternative 2: Approval**

The Church anticipates total populations at various sites under the proposed action as follows:

	<u>Proposed Population</u>	<u>Current Population</u>
East Gate	110	62
Camp Mustang	42	57
Cinnabar	40	42
Ranch Headquarters	138	198
Ranch Office	36	36
Spring Creek	519	0
Other Areas -RTR-S	50	35
Golden Age Village	290	N/A
Big Spur	119	119
North Ranch	45	45

\* The Church indicates that it is uncertain what its involvement at the BSC may be once Spring Creek Headquarters is finished, if approved. The Church has stated that "It is possible that some of the 19 mobile home spaces... may be made available to staff.. or rented to other Church members or the general public." (Francis 13 June 1992)

It is clear from the above table that three of the sites have current populations that are higher than the proposed population (Camp Mustang, Cinnabar and Ranch Headquarters). Populations at these sites will be reduced to the proposed populations once residential facilities are made available at Spring Creek. Total population at RTR-S is projected 935, which is nearly double the 1990 Census figures for Gardiner (551 persons).

Impacts from existing and proposed population are described under the various resource topics in this SEIS. Impacts from existing population and from short-term population increases as a result of the summer conference are expected to continue.

#### **4.3.8.3 Alternative 3: Approval with Mitigation Plan**

The impacts associated with increased population and appropriate mitigation measures are identified under the various resource topics addressed in this SEIS.

#### **4.3.9 Demands for Government Services**

##### **4.3.9.1 Schools**

###### **Effects Common to All Action Alternatives**

There are two main items common to all the action alternatives:

1. The proposed actions and alternatives at Mol Heron and the Blue House will not result in any primary or secondary impacts to schools in the study area.

2. Church members are not required to send their children to Church-run schools, and some members may choose to send their children to public school. (Francis, pers. comm., 20 May 1992) Influx of new students can place burdens on existing school facilities, especially when there is little or no advance notice. For example, the Richland district budgeted for two students one year and had a total of 12 attend. (FEIS 109) The suggested mitigation measure is to have the Church encourage its members to notify public schools with as much advance notice as possible.

It is also possible that influx of new students as a result of Church-related growth would result in some benefits to local school districts. There might be some social benefits for student and parents in cases where a school that might otherwise have closed due to low enrollment might remain open with increased enrollment. This scenario would apply most to the Richland school district, which serves the RTR-N. Because the Church has not proposed actions that would indicated new population growth on the RTR-N, this scenario is unlikely under current proposals submitted by the Church. However, as indicated throughout this document, the Church could develop its RTR-N properties in ways that do not require State permits.

It is also possible that there could be some economic impacts from increased enrollment as a result of Church-related growth, however it is difficult to assess without projected enrollment growth. The state provides foundation funding to school districts based primarily on the number of students. Therefore, the greater the number of students, the more funds will be received from the state. More students also result in greater costs, particularly if school facilities or classrooms are already at capacity. If the addition of new students requires new teachers, classrooms or other facilities, the net result could be increased costs to the local school district. If classes are under capacity, the addition of new students could result in a net increase in funds to pay for teachers and facilities.

### **East Gate Work Camp**

Denial of the East Gate Work Camp would mean that the Church would need to find housing elsewhere for the 46 additional persons proposed for this site. It cannot be determined at this time where those persons might locate and if they would require public school services. If the East Gate Work Camp permit is approved, there would be an increase of approximately 46 persons at this location. Some of these persons may be school age and may require public school services. The Gardiner School may potentially be impacted by such demand.

### **Spring Creek Headquarters**

Denial of the Spring Creek Headquarters development would mean that the Church would have to find another suitable building site or construct units that don't require state permitting. Because of the range of possible actions under the denial

alternative, there could still be potential impacts to the existing school systems in Park County.

Approval of the Spring Creek Headquarters would result in facilities for 500 residents and school facilities for approximately 550 students (including Summit University). The school is ranked high on the construction priority list. There may be demands placed on the Gardiner public school system until construction is complete. There is some economic benefit to Park County in that the Church will pay property taxes used for public school support but will provide its own schooling.

Church members who choose to send their children to public schools could potentially impact existing public facilities. The Gardiner elementary school could handle an immediate increase of approximately 30 students with current facilities (Mavencamp, pers. comm.)

### **Golden Age Village**

Denial of the Golden Age Village expansion would mean that the Church would need to find another suitable building site for approximately 77 residences, chapel/meeting hall, school for approximately 350 students and faculty, and other facilities. The impacts of denial might result in dispersed location of residences and the resultant impact on public schools cannot be assessed. There could be increased temporary demands for public schools until another school building site was identified and construction completed. If no new school was constructed, there would be potential for long-term demands on public schools and/or increase in home school facilities and Church-run schools at RTR-S.

Approval of the Golden Age Village expansion may not immediately result in expanded school facilities. According to the Preliminary Engineer's Report, no specific plans exist for constructing the chapel, school and related facilities. Once constructed, there would be some economic benefit to Park County in that Church members will pay property taxes used for public school support but will continue to provide and expand private schooling.

New Golden Age Village residents who choose to send their children to public school could potentially impact the Arrowhead school district.

### **Cumulative Impacts**

In general, Church expansion and related influx of new residents to the study area could potentially impact a variety of existing school systems. Church members are not required to live on Church-owned or Glastonbury properties. As new members with school age children move to the area, they will either utilize public schools, church schools or provide home schooling. It is assumed that the Church has taken into account such impacts in its plans for new school construction at RTR-S and Golden Age Village. Projecting public school enrollment increases that are not tied to major economic development, such as a new factory or mining operation, is

difficult at best. Therefore, public schools may continue to experience some impacts as new students enroll in the Fall and throughout the year.

#### **4.3.9.2 Fire Protection**

##### **Alternative 1: Denial**

Under the denial alternative, fire protection would likely remain as described in Section 3.4.11.2. Glastonbury properties, including Golden Age Village, are not served by a rural volunteer fire district, but a subscription department is being initiated.

##### **Alternative 2: Approval**

If permits are approved, the Church plans to build a permanent fire station at Spring Creek. Both the Spring Creek and Golden Age Village plans include a water storage reservoir with fire protection volume of 120,000 gallons and fire hydrants that will provide a minimum of 1,000 gpm for up to two hours of emergency fire flow. Fire protection service for Golden Age Village would be from the subscription department.

Fire protection at other Church locations would be the same as those described in Section 3.4.11.2. Fire protection at East Gate is still not complete.

##### **Alternative 3: Approval with Mitigation Plan**

Impacts under alternative 3 would be similar to those under alternative 2. Impacts associated with lack of a fire protection system at East Gate could be mitigated by completion of the plans identified in the DEIS.

#### **4.3.9.3 Law Enforcement**

Analysis methodology included review of the Montana Board of Crime Control Uniform Crime Reports for the years 1980 through 1990 and interviews with members of the Park County Sheriff's Office, Livingston Police Department, U.S. Forest Service and National Park Service.

Data described in Section 3.4.11.3 indicates a possible correlation between increases in crime and increased Church activity during the period 1987 and 1989. Arrest statistics do not include religious affiliation. Other activities in the county were growing at the same time, including mining, recreation, and park visitation.

Increased population in the area, under any alternative, could increase law enforcement needs. The population of the town of Gardiner more than doubled between 1980 and 1990. Since arrest statistics do not include religious affiliation, it is difficult to assess and project impacts on law enforcement for the specific actions proposed by the Church in this SEIS. Cumulative impacts associated with the

annual conference are described in the DEIS. As the conference grows, the demands placed on the legal system may also increase.

#### **4.3.9.4 Roads and Traffic**

##### **Impact Analysis Area**

The impact analysis areas are the same as those described in "Scope of Analysis" for Roads and Traffic in Section 3.4.11.4.

##### **Analysis Methodology**

Analysis was conducted by reviewing information and reports related to traffic and transportation facilities provided by the Church; covenants and other informational material related to the Glastonbury properties; Park County file information on the Golden Age Village and comments on the DEIS; Montana Department of Transportation statistical reports; information from Yellowstone National Park; and correspondence from public interest groups and individuals. Personal interviews were conducted with Church representatives and with Park County, Yellowstone National Park, and Montana Department of Transportation officials.

##### **Impacts by Site and by Alternative**

###### **a. East Gate Work Camp/Spring Creek Headquarters**

Discussion of impacts at these two sites includes other activities in the general vicinity including the existing Ranch Headquarters, Ranch Office, Cinnabar Campground and Ranch Kitchen Restaurant.

###### **1) Alternative 1: Denial**

If the proposed action were denied, existing activities would continue at the Ranch Office, Ranch Headquarters, East Gate and Cinnabar/Ranch Kitchen areas. Traffic to/from these areas and other Church areas in the study area would continue. Denial would not eliminate the Church's right to develop its property in ways that do not require State permits. Development and expansion is possible within limits of existing licenses and permits, and with acquisition of county septic permits. Construction activities on the west side of the Yellowstone River would necessitate routing trucks of eleven tons and greater to drive through Gardiner and Yellowstone National Park. It is anticipated that truck traffic would not be as intense under this alternative as under the other two alternatives.

###### **2) Alternative 2: Approval**

Estimates for existing and projected traffic for these areas were included in a traffic survey report prepared by the Church. The Church estimated existing vehicle

trips on the county road between the Ranch Office and Ranch Headquarters at 526 per day. The proposed development was projected to result in approximately 581 vehicle trips per day, a ten percent increase. The existing population documented by the Church at the time of the DEIS was 214 (DEIS: 117). The projected population was estimated at 596 (DEIS: 117), an increase of over 150 percent. The Church indicated that projected traffic estimates reflected increased efficiencies from clustering population near work centers and a resultant decrease in vehicle trips per day per person from an existing average of 2.02 to 1.09.

a) Post Construction Traffic

The Church provided an update to the traffic survey reflecting proposed changes in the Spring Creek Headquarters development. Updated projected traffic information is included in Table 4-4.

<b>Table 4-4 Projected Future Traffic Volumes After RTR-S Developments are Completed</b>			
<b>(One-Way Trips Per Day)</b>	<b>South Road (South of Corwin Springs Bridge)</b>	<b>North Road (North of Corwin Springs Bridge)</b>	<b>Total</b>
	1,008	437	1,444

Source: Francis, Edward. 6 July 1992.

i) County Road

The total of 1,008 trips per day on the portion of the road south of the Corwin Springs bridge was calculated based on trips for residents at Spring Creek Headquarters, students attending classes at the site, and additional traffic generated by trips to the Ranch office and commuters traveling from other locations to Spring Creek. Resident traffic was calculated at a rate of 1.09 vehicle trips per day per resident for a total of 545 trips per day. Student traffic was projected to generate an additional 200 trips per day. Commuter traffic was projected at 119 trips per day and Ranch Office trips at 144 trips per day.

According to the Church's 1987 Traffic Survey Report, existing traffic on the south portion of the road in 1987 was 203 trips per day. Projected traffic was estimated at 554 based on the Spring Creek Headquarters plans presented in the

DEIS. Based on the Church's update, projected traffic will be five times that of the 1987 usage.

It is possible that traffic impacts may be even greater if the Church cannot achieve its goal of cutting trips per day per resident by half (from 2.02 to 1.09). The Church already employs a comprehensive mass transportation system designed to reduce personal vehicle trips. Clustering population centers near work centers will likely result in efficiencies, but it is difficult to project if these efficiencies will actually reduce vehicle trips by half.

ii) US Highway 89

Church-related traffic patterns on US 89 may change once the Spring Creek Headquarters development is completed. The Church projects that most of the workers will live on-site and current commuting patterns will be significantly reduced. Until the publishing facility is located permanently at Spring Creek, there will be continued traffic for publishing business and staff along US 89. After completion of the publishing facility at Spring Creek, distribution of supplies and finished products will require transport on US 89. Traffic from other Church-owned or related properties to RTR-S will continue. The Church indicates that BSC, originally leased to house workers for the publishing facility in Livingston, may continue as Church-operated housing even after the publishing facility is moved to Spring Creek. (Francis, 6 June 1989: 18) Church members will continue to live at the Glastonbury properties and on RTR-N.

iii) Corwin Springs Bridge

The proposed development will result in traffic increases on the Corwin Springs bridge. Additional traffic will create added stress for this structure.

b) Construction Traffic

The Church projects that approximately two to twelve heavy trucks per day will require routing through Gardiner and Yellowstone Park during peak construction activity.

c) Cumulative Impacts

If construction is not complete by 1994, construction traffic between Spring Creek and Livingston could be slowed down as a result of the scheduled road improvements over a 22 mile section of road south of Livingston. Truck traffic through Gardiner can slow summer tourist traffic and increase congestion near the entrance to Yellowstone National Park. The unusual patterns of late-night and early morning traffic are likely to continue on U.S. 89.

3) Alternative 3: Approval with Mitigation Plan

a) Post Construction Traffic

Existing county roads were not designed to handle the traffic projected to result from the Spring Creek development. Road paving and widening in the future is recommended. Such measures will increase safety provisions and lessen the impact of heavy trucks and equipment on these roads. Impacts of this mitigation measure could be increased costs to the Church. Since the road is public, Park County could continue to fund an amount equal to that under the current arrangement.

b) Construction Traffic

Truck traffic through Gardiner will create a significant impact that could possibly continue for several years based on the Church's indefinite timeline for actual construction. Truck traffic impacts local residents, schools and Yellowstone Park traffic. Mitigation for this impact could involve replacement of the Corwin Springs bridge prior to Spring Creek development. Alternative mitigation measures could include alternative routes and specific mitigation agreed to by the Church, Park County, Yellowstone National Park and Gardiner residents. This alternative mitigation would require public meetings and a formal resolution process.

c) Cumulative Impacts

Cumulative impacts would be similar to Alternative 2.

b. Mol Heron Shelter Site

Cumulative impacts are similar for all three alternatives. The greatest traffic impact on the Mol Heron is the annual conference, an activity for which no new State permits are currently required. Creating mitigation measures for the impacts of the annual conference is a matter that requires direct negotiation between Park County, which is responsible for the road's maintenance, and the Church.

1) Alternative 1: Denial

If the permits for the underground fuel storage tanks were denied, much of the existing traffic described in Section 3.4.11.4 for the Mol Heron would continue. The biggest impact is related to the annual conference and this would continue under the denial alternative. Impacts associated with intense periods of heavy traffic include road deterioration and stress on the bridges.

2) Alternative 2: Approval

If permits were approved, there would be a period of installation and truck traffic on the Mol Heron Creek Road. Potential impacts could affect safety and road conditions.

3) Alternative 3: Approval with Mitigation

Mitigation measures could include strict enforcement of weight limits, joint Church-county review of road and bridge conditions before and after installation, and road re-conditioning as necessary after installation.

c. Golden Age Village

1) Alternative 1: Denial

If the Golden Age Village expansion is denied, impacts would remain from existing development in the Village and from the surrounding residential development in Glastonbury North. There are currently 49 residences in the Golden Age Village. Using the ITE figure of 4.3 trips per household per day, approximately 211 trips are currently generated by the Golden Age Village.

2) Alternative 2: Approval

If the Golden Age Village expansion is approved, another 77 mobile home lots will be established with expansion capabilities for a larger chapel/meeting hall, school and other facilities. Using ITE figures of 4.3 trips per household, this would generate approximately 331 additional trips per day for the new residential development. The expanded facilities would also increase to/from the Golden Age Village from within Glastonbury properties (North and South).

Construction may take place over several years to complete the additional facilities (school, chapel, etc.)

3) Alternative 3: Approval with Mitigation Plan

No mitigation measures are proposed. Traffic impacts associated with the Golden Age Village will be reviewed by the Park County Planning Board and appropriate mitigation measures identified by the Board.

4) Cumulative Impacts

Cumulative impacts include the existing and projected traffic for the Glastonbury properties. An estimate of the average daily number of vehicle trips based on all parcels being sold and developed is contained in Table 4-5. Projected vehicle trips are based on the ITE figure of 4.3 trips per household and a Church-provided estimate of two houses per twenty acre parcel. Increased traffic would have an impact on existing public roads. Of particular concern is Dry Creek Road, which almost exclusively serves the Glastonbury properties, but is publicly maintained.

Other cumulative impacts include the roads developed by private landowners within the Glastonbury properties. Although subject to the *Specifications and Standards for Gravel Road Construction* (Glastonbury 1987-2), disturbance from

road-construction is visible and includes excessive parallel roading and short-cut routes that may contribute to road instability. (Page 4, July 1992 and Schunke 1988). Private road development is not subject to any state or county regulations, except those related to federal Clean Air and Water legislation. Air and water impacts are discussed separately in this SEIS.

d. Blue House Kitchen

1) Alternative 1: Denial

If the permits were not approved for development of the Blue House as a public kitchen facility, traffic would likely stay similar to existing conditions in the near future. In the long term, the Church may construct other developments such as additional housing that do not require state permitting that would increase traffic to/from the area.

2) Alternative 2: Approval

The Church has indicated (Francis, 6 May 1992) that an increase in traffic volume of approximately 15 to 30 trips per day can reasonably be expected as a result of the kitchen operations. Peak traffic will probably occur around meal hours. Potential impacts from such an increase are minimal

3) Alternative 3: Approval with Mitigation

Since impacts are anticipated to be minimal, no mitigation is recommended.

### **Cumulative Impacts**

Cumulative road impacts from all Church activities include traffic increases on state, county and private roads. The unusual patterns of peak hour traffic at unusually late and early morning periods are likely to continue.

#### **4.3.9.5 Postal Services**

Impacts to the postal service as a result of denying the permits are likely to be spread over time and therefore not as significant as those associated with permit approval. Impacts include more postal service needed to serve a growing Church membership in the general study area. No expansion to the postal system is envisioned by the Postal Service at this time. (Hagen, pers. comm.)

An additional 500 residents in the Corwin Springs area would have a significant impact on postal service requirements. Such an increase would need to be addressed in the Postal Systems's five year plan to determine what additional services and facilities may be required to handle the increased usage from residents and from the proposed publishing facility. Existing postal facilities would be adequate to handle

increased residency at East Gate. The new post office in Emigrant should be adequate to handle increases in the Golden Age Village. (Hagen, pers. comm.)

If additional facilities are needed in the Corwin Springs area, there could be additional public costs. Generally, the Postal Service has felt various cost increases to meet expanded service requirements in the area. There have been salary increases, facility expense increases and delivery cost increases. These have been partially offset by increases in revenue. The expansion of postal services has also resulted in increased jobs, both temporary and permanent.

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<b>Area</b>	<b>No. of Houses</b>	<b>No. of<sup>1</sup> Uses</b>
Glastonbury North <sup>2</sup>	120	516
Golden Age Village <sup>3</sup>	126	542
Glastonbury South <sup>4</sup>	206	886

<sup>1</sup> The ITE figure of 4.3 trips per household is applicable here to estimate the approximate maximum use of the roads since the Glastonbury communities fit the description in the ITE manual for a rural community.

<sup>2</sup> A maximum of 60 parcels are likely to be sold. An average of 2.0 houses per 20-acre parcel is assumed for estimating purposes.

<sup>3</sup> A maximum of 126 houses are possible (one house per lot when both Phase 1 and Phase 2 are filled).

<sup>4</sup> A maximum of 103 parcels are likely to be sold. An average of 2.0 houses per parcel is assumed for estimating purposes.

Source: Francis, Edward. 6 July 1992.

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#### **4.3.10 Telephone Service**

The US WEST Community Affairs Manager has indicated that they are prepared to handle additional growth in this area. With the new electronic offices, additional central office equipment can be added as needed to handle the increase. The outside plant facilities in the area would have to be reinforced. (Sterling, pers. comm.)

Because no new additional central plant facilities would be required, it is assumed that there would be little to no difference among the alternatives.

#### **4.3.11 Locally Adopted Environmental Plans and Goals**

The lack of locally adopted environmental plans and goals is described in Section 3.4.13. The analysis of impacts in Chapter 4 of this SEIS describes how such a lack exacerbates the potential for cumulative environmental and social impacts. Refer to Section 4.2.10 for more information on impacts to overall development in the general study area.



## **Chapter 5**

# **Consultation and Preparation of the SEIS**



## **5.0 CHAPTER 5 - CONSULTATION AND PREPARATION OF THE SEIS**

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## 5.2 List of Source Materials

- Aaberg, Stephen A. Cultural Resources Survey of the Dailey Lake Fishing Access Site and Environs. Contract report to the Montana Department of Fish, Wildlife and Parks, Helena, MT., 1991.
- Addendum to Cultural Resource Inventory and Assessment of Royal Teton Ranch Developments, Lynn Fredlund, Editor. Contract report prepared for Church Universal and Triumphant, Inc., Royal Teton Ranch, Box A, Corwin Springs, Montana, 1987b.
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## **Appendix A**

# **Documentation of Church Corporations and Tradenames**





# Royal Teton Ranch

Box A, Corwin Springs, Montana 59021-0881 406/848-7381

March 24, 1992

Mr. Thomas M. Ellerhoff  
Assistant Administrator  
Environmental Sciences Division  
MONTANA DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL SCIENCES  
Cogswell Building  
Helena, Montana 59620

Re: Supplement EIS

Dear Tom:

I am writing to address the remaining questions included in your letter of February 14, 1992, concerning "business activities" of the Church and future development plans.

1. You requested that we prepare a listing of the incorporated entities of the Church doing business in Park County and explain how they relate to each other. You then mentioned several names, some of which are names of corporations and some of which are not. You also mentioned "assumed businesses," which I take to mean assumed business names or tradenames of the Church and related organizations in Montana.

The following listing and brief descriptions include the corporations or other legal entities together with the registered tradenames and/or assumed business names that are owned or controlled by the Church and that conduct activities in Park County, Montana. Some of those that do not have any appreciable activities in this area or that are no longer in use may not be included.

Mr. Thomas M. Ellerhoff  
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a. CHURCH UNIVERSAL AND TRIUMPHANT, INC. This is the principal nonprofit Montana corporation under which most of the activities and affairs of the organization are conducted. Tradenames or "assumed business names" of the Church include the following:

(1) The Summit Lighthouse. Original name of the Church, still used for religious publishing and distribution to the Church membership. Publishing activities are primarily conducted out of the facility at the Livingston Railroad Yard in Livingston, Montana. Registered trademark of the Church in the U.S. Patent and Trademark Office.

(2) Summit University. Name of the Church's private post-secondary religious and educational program of instruction. Classes are held periodically at the Royal Teton Ranch in Corwin Springs, Montana. Registered trademark of the Church in the U.S. Patent and Trademark Office.

(3) Summit University Press. Name of the Church's religious publishing house and mass distribution program located in the facility at the Livingston Railroad Yard in Livingston, Montana. Registered trademark of the Church in the U.S. Patent and Trademark Office and registered with the office of the Montana Secretary of State.

(4) Keepers of the Flame. Also known as the "Keepers of the Flame Fraternity," this is the name of a separate category of membership and level of religious study in the organization. Registered trademark of the Church in the U.S. Patent and Trademark Office and registered with the office of the Montana Secretary of State.

(5) The Inner Retreat. Name used to describe the religious activities and community of the Church at the Royal Teton Ranch in Park County, Montana. Registered trademark of the Church in the U.S. Patent and Trademark Office and registered with the office of the Montana Secretary of State.

(6) Royal Teton Ranch. Name of the ranch property and agricultural activities conducted by the Church in Park County, Montana. Registered with the office of the Montana Secretary of State.

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(7) Montessori International. Name of the Church's private school (preschool and grades 1-6) for the children of staff members working at the Royal Teton Ranch. Registered with the office of the Montana Secretary of State.

(8) Henry Wadsworth Longfellow Academy. Name of the high school portion (grades 7-12) of the Church's private school for the children of staff members working at the Royal Teton Ranch. Registered with the office of the Montana Secretary of State.

(9) Community of Glastonbury. Name of the rural land development for members of the Church located near Emigrant, Montana. Registered with the office of the Montana Secretary of State.

(10) Golden Age Village. Name of a mobile home park subdivision for members of the Church located within the Community of Glastonbury. Registered with the office of the Montana Secretary of State.

(11) Royal Teton Engineering and Construction. Name used by the engineering and construction department of the Church for projects located on the Royal Teton Ranch. Registered with the office of the Montana Secretary of State.

(12) Other Tradenames. Other tradenames of the Church, for which there is little or no appreciable activity in Park County, Montana, include the following: "Chamuel Records" (record label for religious music recordings produced by the Church), "Kali Productions" (label for religious pictures and prints produced by the Church), "Summit University Bookstore" (book and sundries store for students and staff, store not currently operating but likely will be at the new Spring Creek Headquarters facility), "Freedom Technologies" (in-house computer equipment and parts purchasing, no sales), and "Aguastar Systems" (in-house audio-visual equipment and parts purchasing, no sales).

b. THE SUMMIT LIGHTHOUSE, INC. Nonprofit Montana corporation that is affiliated with Church Universal and

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Triumphant, Inc. The corporation was originally established to carry on the activities of the Church in Montana when the organization's headquarters were physically located in California. The corporation is now dormant.

c. SUMMIT UNIVERSITY. Nonprofit California educational corporation affiliated with Church Universal and Triumphant, Inc. The corporation was formed to fulfill legal requirements for operating the university in California. The activities of Summit University are now carried on directly by the Church and the corporation is mostly dormant. The corporation is qualified by the Montana Secretary of State to conduct business in Montana.

d. CHURCH UNIVERSAL AND TRIUMPHANT, THE VICAR OF CHRIST, A CORPORATION SOLE. Religious nonprofit Montana corporation sole affiliated with Church Universal and Triumphant, Inc. The corporation is dormant.

e. ALPHA-OMEGA TRUST. Nonprofit religious and charitable organization designed to financially support organizations affiliated with or functioning in agreement with the tenets and principles of faith of Church Universal and Triumphant, Inc. It does not conduct any physical activities or programs. Registered with the Internal Revenue Service.

f. CHARTERED COMMUNITY TEACHING CENTERS. Non-profit organizations, generally unincorporated, that are chartered by the Church to carry on the activities of a local congregation of Church Universal and Triumphant, including the holding of regular religious services and functions. Each chartered community teaching center is managed by an independent board of trustees. Chartered community teaching centers in the area include the following:

- (1) Church Universal and Triumphant  
Livingston Community Teaching Center  
201 South "F" Street  
Livingston, Montana 59047

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- (2) Church Universal and Triumphant  
South Glastonbury Community  
Teaching Center  
P.O. Box 979  
Emigrant, Montana 59027
- (3) Church Universal and Triumphant  
North Glastonbury Community  
Teaching Center  
P.O. Box 1619  
Emigrant, Montana 59027

The Church also charters "study groups" for the organized study of the teachings published by The Summit Lighthouse and the holding of some religious services and functions. However, there are no study groups currently active in Park County, Montana.

g. LANELLO RESERVES, INC. California business corporation wholly owned by Church Universal and Triumphant, Inc. Qualified to conduct business in Montana by the Montana Secretary of State. Tradenames or "assumed business names" of Lanello Reserves, Inc. include the following:

(1) The Ranch Kitchen. Name of the restaurant located at Corwin Springs, Montana. Registered with the office of the Montana Secretary of State.

(2) Cinnabar General Store. Name of the general store located at Corwin Springs, Montana. Registered with the office of the Montana Secretary of State.

(3) Cinnabar Campground. Name of the public campground located at Corwin Springs, Montana. Registered with the office of the Montana Secretary of State.

(4) Big Spur Campground. Name of the public campground located 13 miles south of Livingston, Montana. Registered with the office of the Montana Secretary of State.

(5) Paradise Players. Name of the performing group which gives dinner theater performances at The

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Ranch Kitchen restaurant. Registered with the office of the Montana Secretary of State.

(6) Blue Horizon Records. Name of record label for published musical recordings, including songs performed by the Paradise Players. Registered trademark of Lanello Reserves, Inc. in the U.S. Patent and Trademark Office and registered with the office of the Montana Secretary of State.

(7) Other Tradenames. Other tradenames of Lanello Reserves, Inc., for which there is little or no appreciable activity in Park County, Montana, include the following: "LR Distributors" (general goods and merchandise sales) and "Aquastar Systems Sales" (audio-visual sales).

As you can see, the activities carried on by the Church and affiliated organizations are predominantly noncommercial. "Business activities" are mostly carried on through the Church's taxable subsidiary, Lanello Reserves, Inc.

2. You also requested that the Church list future development plans for its property in Park County for a span of time, such as 5, 10 or 20 years. Regardless of the period envisioned, we can of course list only those development plans that are presently known or contemplated. That was the purpose of the "Listing of Currently Contemplated Plans and Projects" of the Church submitted to the Department last fall. We have agreed to update that listing or otherwise notify the Department when changes occur or as additional plans become known or contemplated while the Supplement EIS is being prepared. As you know, the listing has been updated once already.

I am taking this opportunity to again update the listing (Rev. 3/24/92 enclosed). The additions to the list are miscellaneous plans and projects that have come to our attention since the last listing was issued (Rev. 11/13/91). Some of these have already been communicated to the Department.

As previously stated, I cannot guarantee that this listing will remain valid for 5-20 years, or even for one

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MONTANA DEPARTMENT OF HEALTH AND  
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year. We do not generally plan things as government agencies do; and, of course, even government agencies often change or supplement their plans with little warning. If, however, significant new plans do arise we will notify you in accordance with the terms of the Partial Consent Decree dated October 18, 1991.

3. We are in the process of producing the location maps requested by you and listed in my reply of March 1, 1992. I anticipate that it will be several more weeks before these are finalized as camera-ready copy.

Should you need any additional information or details relating to these subjects, please feel free to contact me.

Very truly yours,

CHURCH UNIVERSAL AND TRIUMPHANT, INC.

A handwritten signature in black ink, appearing to read 'Edward L. Francis', with a long horizontal flourish extending to the right.

Edward L. Francis  
Vice President and Business Manager

ELF:tcb

Enclosures





## **Appendix B**

# **Summary of Water Quality Data**





**Table B-1  
Summary of Water Quality Data - Yellowstone River at Corwin Springs, Montana**

SAMPLE SUMMARY	pH (field) (ml)	Water Temp (°)	Specific Conductivity us/cm @25°C	Turbidity (NTU)	Diss. Oxygen	% Saturation D.O.	Total Calcium (col/100ml)	Total Hardness as CaCo <sub>3</sub>	Diss. Calcium	Diss. Magnesium	Diss. Sodium
Maximum	8.7	20.5	432	2.8	13.2	119	8300	87	23	7.1	28
Minimum	6.1	0.0	78	1.7	8.1	0	4.0	0.0	7.9	2.7	5.6
Average	7.7	7.98	216	-	10.6	23.1	326	48.8	14.9	4.9	17.6
Sample Size	47	165	144	2	44	11	29	45	33	33	33

Notes: 1. All units shown are in mg/l unless otherwise noted.  
2. Source: U.S. Geological Survey, Montana.  
3. Value is estimated by using a log-probability regression to predict the values of data below the detection limit.

**Table B-1 (continued)  
Summary of Water Quality Data - Yellowstone River at Corwin Springs, Montana**

SAMPLE SUMMARY	Sodium %	Sodium Adsorption Ratio	Diss. Potassium	Alkalinity as CaCo <sub>3</sub> (field)	Bicarbonate as HCO <sub>3</sub> (field)	Carbonate as CO <sub>3</sub> (field)	Diss. Sulfate	Diss. Chloride	Diss. Fluoride	Diss. Silica	Diss. Solids, Residue at 180°C
Maximum	43	1.3	5.9	114	73	0.0	81	22	1.1	29	220
Minimum	0.0	0.0	1.5	17	-	-	7.5	2.1	0.3	19	60
Average	15.7	0.77	3.53	60.7	-	-	31.3	9.6	0.76	-	151
Sample Size	14	33	10	32	1	1	46	39	33	4	37

Notes: 1. All units shown are in mg/l unless otherwise noted.  
2. Source: U.S. Geological Survey, Montana.  
3. Value is estimated by using a log-probability regression to predict the values of data below the detection limit.

**Table B-1 (continued)  
Summary of Water Quality Data - Yellowstone River at Corwin Springs, Montana**

SAMPLE SUMMARY	Sum of Solids Constituents Diss.	Diss. Solids (Tons/Day)	Total Nitrogen (as N)	Diss. Nitrogen, NO <sub>3</sub> +NO <sub>2</sub>	Nitrogen, Ammonia Diss.	Nitrogen, Ammonia + Organic Total	Total Phosphorous as P	Diss. Phosphorous as P	Diss. Ortho Phosphorous as P
Maximum	141	2710	0.6	1.9	0.370	0.400	0.480	0.280	0.090
Minimum	0.0	0.0	0.0	<0.100	0.00	0.110	0.010	<0.010	<0.010
Average	15.7	771	0.31	0.263*	0.029	0.264	0.086	0.044*	0.026*
Sample Size	9	45	9	21	27	9	34	21	9

- Notes:
1. All units shown are in mg/l unless otherwise noted.
  2. Source: U.S. Geological Survey, Montana.
  3. Value is estimated by using a log-probability regression to predict the values of data below the detection limit.

**Table B-1 (continued)  
Summary of Water Quality Data - Yellowstone River at Corwin Springs, Montana**

SAMPLE SUMMARY	Diss. Arsenic	Diss. Beryllium	Diss. Cadmium	Diss. Chromium	Diss. Cobalt	Diss. Copper	Diss. Iron	Diss. Lead	Diss. Manganese	Diss. Mercury
Maximum	80	0.0	1.0	1.0	0.0	18.0	160	5.0	760	1.8
Minimum	0.0	-	0.0	0.0	-	0.0	24.0	0.0	0.0	0.0
Average	13.8	-	0.125	0.167	-	4.5	-	0.875	108.8	0.329
Sample Size	7	8	8	6	1	8	3	8	8	7

- Notes:
1. All units shown are in g/l unless otherwise noted.
  2. Source: U.S. Geological Survey, Montana.
  3. Value is estimated by using a log-probability regression to predict the values of data below the detection limit.

**Table B-1 (continued)  
Summary of Water Quality Data - Yellowstone River at Corwin  
Springs, Montana**

SAMPLE SUMMARY	Diss. Molybdenum	Diss. Nickel	Diss. Selenium	Diss. Silver	Diss. Zinc	Suspended Sediment (mg/l)	Suspended Sediment Discharge (T/Day)
Maximum	3	23	6.0	1.0	20	975	3960
Minimum	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Average	1.5	4.5	3.0	0.25	9.62	119	110
Sample Size	8	8	7	8	8	43	43

- Notes:
1. All units shown are in *g/l* unless otherwise noted.
  2. Source: U.S. Geological Survey, North Dakota.
  3. Value is estimated by using a log-probability regression to predict the values of data below the detection limit.



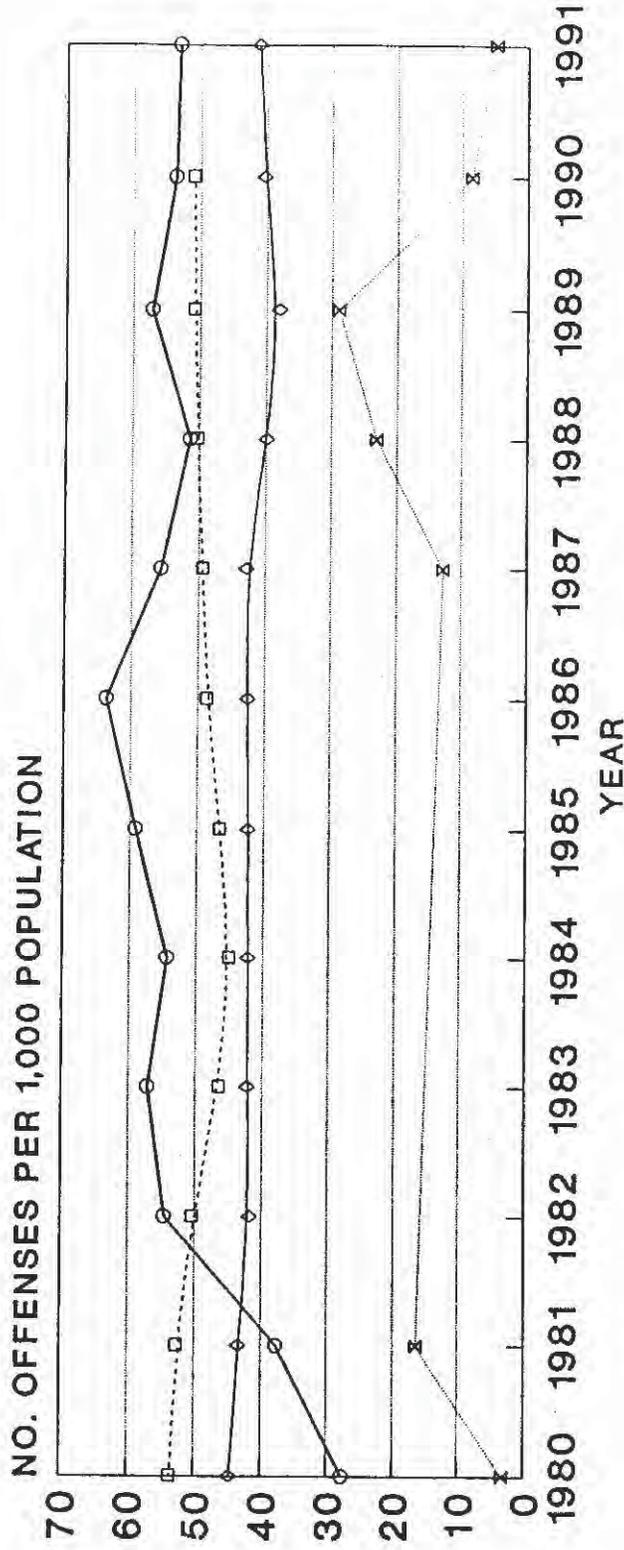
## **Appendix C**

# **Montana Crime Reports 1980-1991**



# ANNUALIZED RATES FOR PROPERTY CRIMES

## Park County

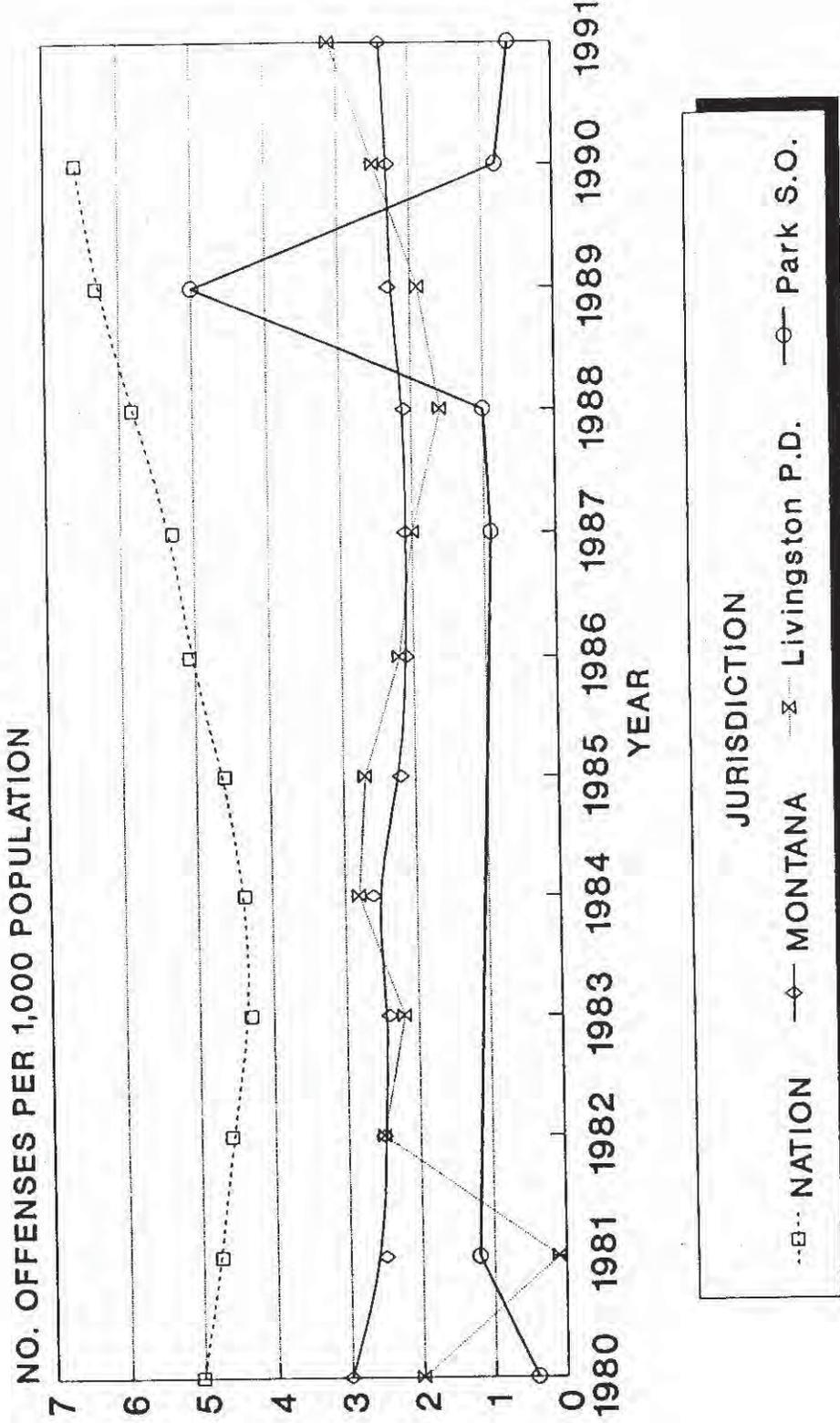


JURISDICTION

NATION   
  MONTANA   
  Park S. O.   
  Livingston P.D.

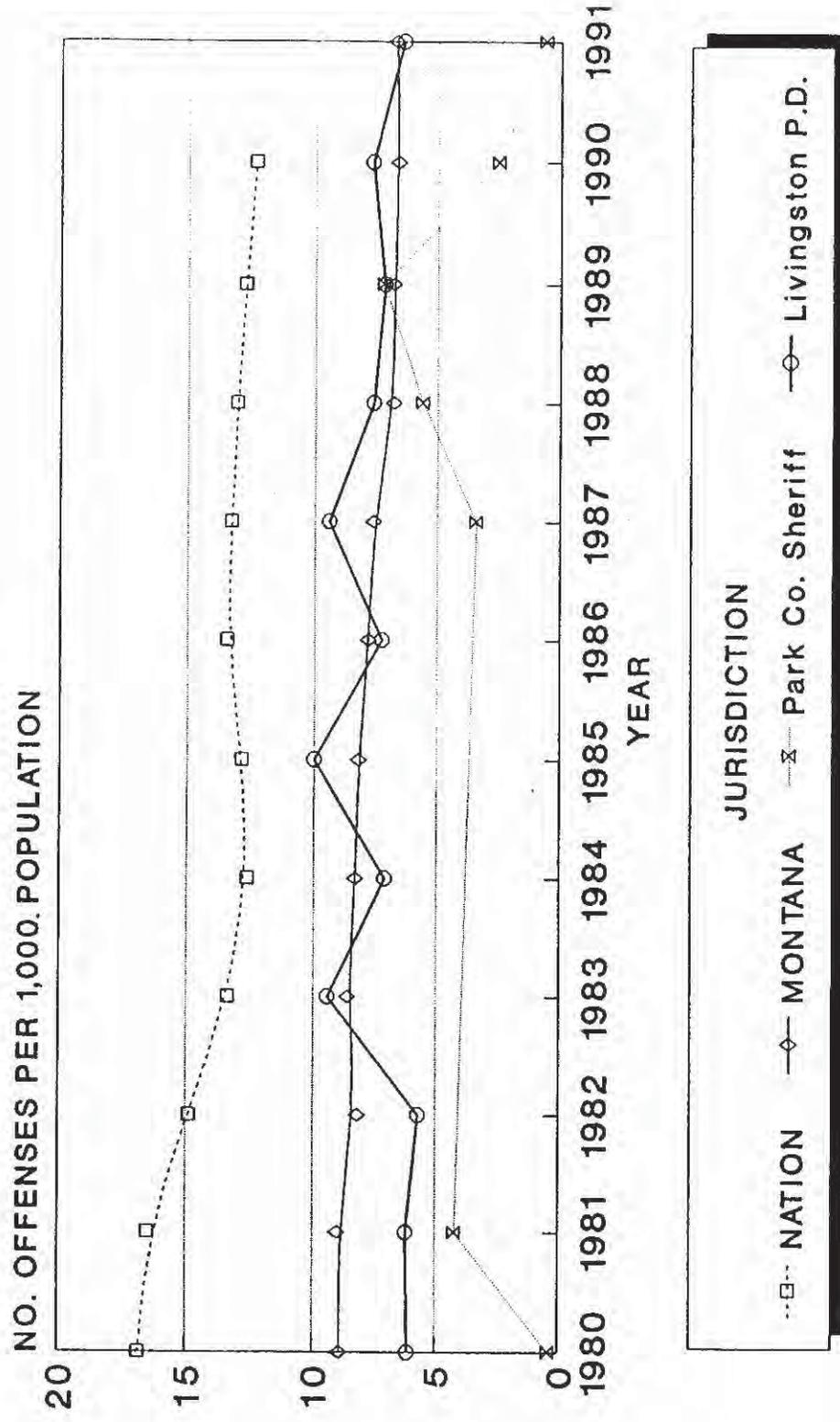
Property Crimes are Burglaries, Larceny and Motor Vehicle Theft  
 Source: Crime in Montana--1980-1991

# ANNUALIZED RATES FOR MV THEFTS Park County



Source: Crime in Montana--1980-1991

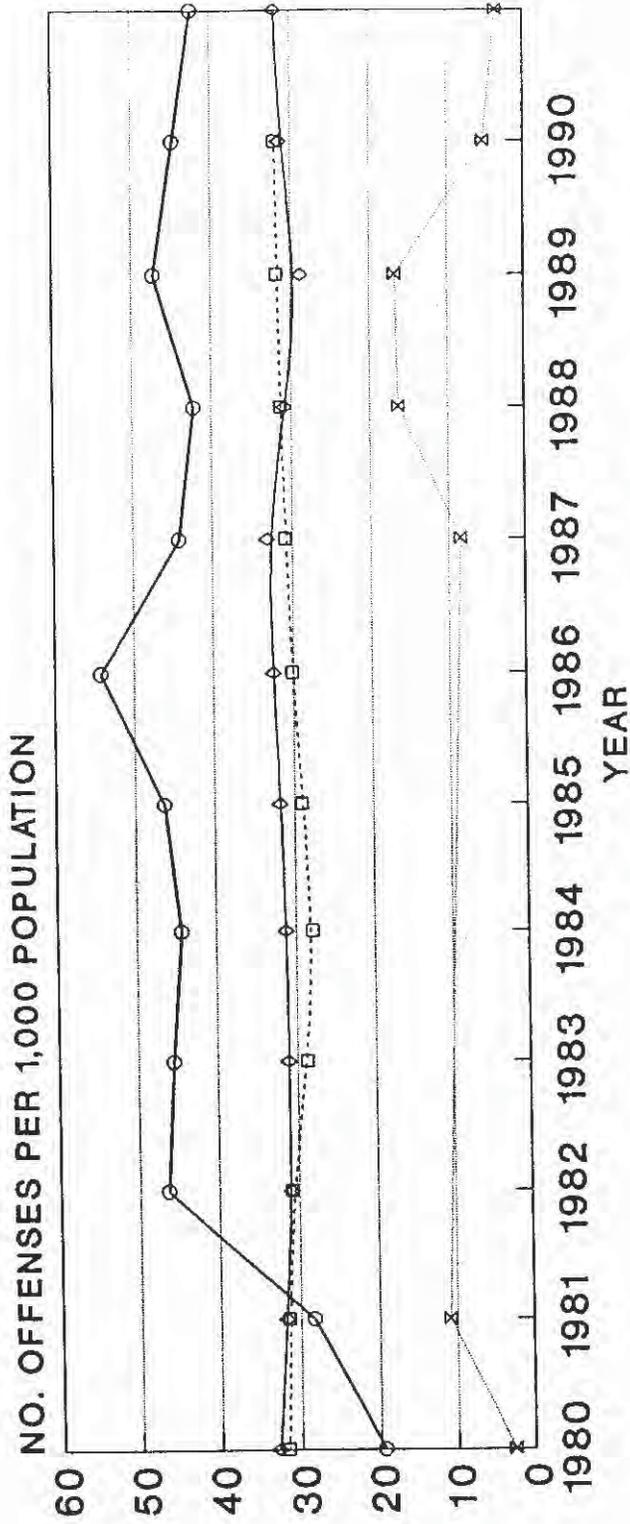
# ANNUALIZED RATES FOR BURGLARIES Park County



Source: Crime in Montana--1980-1991

# ANNUALIZED RATES FOR LARCENIES

## Park County



JURISDICTION

--□-- NATION    --◇-- MONTANA    --x-- Park S.O.    --○-- Livingston P.D.

Statistics do not include Motor Vehicle Thefts  
 Source: Crime in Montana--1980-1991

## **Appendix D**

# **Listing of Currently Contemplated Development Plans of the Church Universal & Triumphant**

(As of March 24, 1992)



CHURCH UNIVERSAL AND TRIUMPHANT, INC.  
LISTING OF CURRENTLY CONTEMPLATED  
DEVELOPMENT PLANS AND PROJECTS FOR THE  
MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

- A. Future Development Plans or Projects (or Changes to Projects) Which Will Require a License, Permit or Approval from the Department of Health and Environmental Sciences (DHES)
1. Installation of new underground fuel storage tanks and underground piping at the Mol Heron Shelter Site.
  2. Expansion of the Golden Age Village mobile home park at Glastonbury North and associated groundwater appropriation (County subdivision approval will also be required in the future).
  3. Modification of the original design plans for the East Gate Work Camp housing development to allow for increased occupancy.
  4. Modification of the plans for the Spring Creek Church Headquarters Project to provide for more housing, a larger chapel, an eventual move of the organization's publishing facilities and staff from Livingston to the site, and a corresponding increase in the size of the water and wastewater systems (including the addition of a 25% reserve capacity to accommodate future expansion with approval of the DHES). A groundwater appropriation and work camp licensure will also be required. In addition, the Church will be proceeding to seek state approval to either (a) change the point of diversion and use of its LaDuke Hot Spring water rights to the geothermal well located at the Spring Creek site, or (b) change the place of use of the water rights to the Spring Creek site by piping the water directly from the surface overflow of the spring--either option being limited to less than the natural discharge of the spring.
  5. Remodeling and adaptation of an existing building, including associated water and wastewater systems, at the Royal Teton Ranch North for use as a community kitchen for the preparation of meals for ranch staff members.
- B. Development Plans or Projects Which May Require a County License, Permit or Approval, But No DHES Approval
1. Site-built single-family home near existing Mol Heron residences (County septic permit).
  2. Installation of Mol Heron Shelter wastewater systems (County septic permit, on hold pending completion of Supplement EIS).

3. Single-family home on separate parcel adjacent to the Tree Farm area west of the Ranch Headquarters complex (County septic permit).
4. Rerouting of Glastonbury North access road through the Story Ranch and re-adjustment of common boundary line along the new roadway as per settlement agreement with Peter R. Story (County approval of boundary line re-adjustment).

C. Development Plans or Projects Which Do Not Appear to Require Any Licenses, Permits or Approvals from Either the DHES or the County

1. Completion of landscaping and yard fencing work at the Ranch Headquarters.
2. Possible relocation of Livingston publishing facility to new interim quarters.
3. Additions to farm and ranch shop buildings at Ranch Office to increase interior working space for winter use.
4. Installation of buried irrigation system at Venable Field at RTR South.
5. Ongoing installation and modification of irrigation systems on Church agricultural properties.
6. Development and implementation of a forest stewardship plan for the Royal Teton Ranch South in consultation with the University of Montana School of Forestry.

D. Significant Maintenance and Repair Activities and Significant Modifications to Existing Facilities Which Do Not Appear to Require Any Licenses, Permits or Approvals From Either the DHES or the County

1. Mol Heron Shelter/Conference Ground Site
  - a. Installation of chain link fence around shelter facility.
  - b. Painting of outside storage units and all surface penetrations.
  - c. Telephone cable repair, exterior transformer installation.

- d. Culvert repairs.
  - e. Bridge replacement.
  - f. Foot bridge installation.
  - g. Relocation of grain bins.
  - h. Site cleanup and reclamation.
  - i. Road and foot path restoration and maintenance.
  - j. Preparations for 1992 and future summer conferences (including gravel on tent sites and small concrete footings for main tent).
  - k. Graded parking area near conference grounds.
2. Completion of Glastonbury road system.
  3. Remodeling of East Gate and Cinnabar Campground shower-houses.
  4. Painting of numerous ranch houses and structures.
  5. Re-roofing of numerous ranch houses and structures.
  6. Modifications and repairs to uninstalled modular units inside of a shop to transform them from dormitories into single-family housing units (to be inventoried for installation at Spring Creek).
  7. Amendment to the Farm Security Act conservation compliance plan for the Royal Teton Ranch (North and South) in consultation with the U.S. Soil Conservation Service, with consideration given to plans for diversification of crops and oilseed production.
  8. Replacement of wire fences on the Royal Teton Ranch South that have been damaged or destroyed by buffalo and other wildlife migrations with sturdier wooden fences (with provision made for accommodating customary wildlife movements).
- E. Development Plans or Projects to be Completed for Which State or County Licenses, Permits or Approvals Have Already Been Received
1. Sphinx Lodge single-family house remodeling job (County septic permit received).

2. Laundry room addition at the Ranch Headquarters (on approved plans for Wastewater System 2).
3. Installation of Yellow Barn septic system at the Ranch Headquarters (previously shown on RHQ approved site plan, County septic permit still required).
4. Ranch Headquarters Shop (previously shown on RHQ approved site plan, Wastewater System 1).
5. Ongoing gravel crushing, screening and washing at existing crusher locations (renewable crusher permit).
6. Installation of groundwater monitoring systems.
7. Completion of Ranch Headquarters water system upgrade to "public" status.
8. Addition to former ranch house at Golden Age Village for chapel and assembly use (building permit received, part of previous subdivision approvals).

**Note:** The above descriptions do not include ongoing activities of which the DHES is already aware, interior remodeling, alterations and improvements to any existing structures and facilities or internal systems, and minor or routine repairs, maintenance and improvements.





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