

An Historic Site Interpretation Center
for
Missouri River Headwaters State Park

Mikel N. Kallestad

School of Architecture
Montana State University
June , 1986

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AN HISTORIC SITE INTERPRETATION CENTER

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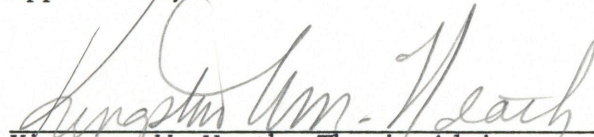
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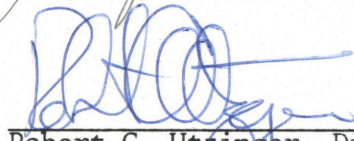
An undergraduate thesis submitted in partial
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Approved by:



Kingston W. Heath, Thesis Advisor

Robert C. Utzinger, Director

MONTANA STATE UNIVERSITY
Bozeman, Montana

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CHAPTER ONE

INTRODUCTION

An *HISTORIC SITE INTERPRETATION CENTER* can be described as an information or interpretive facility serving the park and recreation area.

While Interpretation Centers can be focused on themes relating to nature of recreation, this project addresses the historical resources of the Missouri River Headwaters State Park. Through this facility, the visitors can be oriented to the significant historical sites and informed of the epic events which occurred at these locations.

The Center will provide facilities for informational, interpretive, and visitor use programs in order to help the visitor appreciate and enjoy the park, its historical resources, and understand its significance.

The interpretation of communication process should help people relate, identify with, understand, and develop an attitude toward the resources of the park.

If an Interpretation Center's primary purpose is to serve people, or the visitors, then it can be said that an Interpretation Center exists for visitors and is a functional facility. It is but a stopping place, and in the visitor's mind it becomes basically a source of information regardless of subject matter, whether informative, instructive, or utilitarian.

The determined need for an Interpretation Center is indicative of its purpose in that there should exist a need to provide ingredients of

the interpretive program that cannot be provided in any other way. If information can be conveyed adequately in a brochure or through personal and self-guiding interpretation through on-site wayside exhibits, then an Interpretation Center may not be needed. Justification for the construction of an Interpretation Center is found in the determination that indoor media are the most effective means of communicating major elements of the park's interpretive story, and that a central public contact point is needed.

PROJECT METHODOLOGY

The purpose of the Interpretation Center is to communicate and orient the visitor to the historical resources which the park has to offer. To accomplish this, a multi-disciplinary design process which reflects the recognized historical potential in the final design solution is necessary.

An interpretive plan addressing the historical potential of the park and how that information is to be interpreted to the visitor is one aspect of this multi-disciplinary design methodology.

The interpretive plan identifies what is to be interpreted and how. Once it has been determined where the Center will be sited and the numbers of people it will need to serve, the interpretive plan serves as a guide to the architect on how the Center will function and fit into the interpretive program.

An Interpretation Center houses, aids, complements, and provides the setting for the tools or methods of interpretation. It follows, then, that the interpretive plan can and should forecast the types of spaces needed to effect the interpretation. A strong relationship exists between building requirements and interpretive requirements. This differs from one unique project situation to another, depending on the actual focus of interpretation. What is important is to recognize the potential to incorporate these relationships between building requirements and interpretive requirements into the final design solution.

The interpretation plan for this project has been conceived within a multi-disciplinary framework with input relating to historical

documentary research, archaeology, architecture, landscape architecture, exhibit design, and interior design.

Whether these issues are addressed in a cooperative team effort or by one person, as with this project, the final building design solution should demonstrate a successful integration of these skills. The end result of the interpretive plan should therefore set forth substantive content and recommend techniques for the interpretation program.

With the functional aspects and suggestions put forth in the interpretive plan available to the architect, the programming process involving the Interpretation Center can be more effectively accomplished. The programming activity for this project has been patterned after the process currently employed by the National Park Service. This stresses a simultaneous effort directed at the incorporation of relationships between building requirements and interpretive requirements.

Research into case studies of existing National Park Service Visitor and/or Interpretation Centers was useful in understanding the utilization of this design methodology.

While not all architectural design decisions are meant to be traced back to considerations contained within the interpretive plan, many of the design decisions relating to the Center's configuration and orientation, flow patterns and circulation concerns, and specific spatial allocations and exhibit techniques are directly related to the interpretive plan data. Issues such as the image, character, materials, and aesthetic qualities are left to the architect to decide, while working within a stated form concept.

PROJECT GOALS/PROBLEM STATEMENTS

- (1) There will be a design unity within the facility complementing the purpose, spirit, and theme of the area rather than competing with or dominating the park features.
- (2) The Interpretation Center will be of contemporary design, but in harmony with the area's historic resources in proportion, color, and texture.
- (3) No attempt shall be made to duplicate or mimic a historic design, nor shall any proposed construction be portrayed to the public as historic.
- (4) The Interpretation Center should appear to grow from the landform and not dominate the landscape. The design solution, with regard to form, shall recognize and respond to:
 - (a) The perceived internal forces generated by the landforms.
 - (b) Views.
 - (c) Solar orientation for heating and daylighting potential.
- (5) The Interpretation Center design solution shall recognize and respond to the relationships which exist between building and interpretive requirements, and thus result in an effective communicator of historic information.

EXISTING FACILITIES

The Missouri River Headwaters State Park currently addresses historical interpretation and public recreation. The park is located three miles north of the Three Forks, Montana exit coming off of Interstate 90 on Highway 10. The proposed Interpretation Center is to be located adjacent to the confluence of the combined Jefferson/Madison River and the Gallatin River, thus forming the Missouri River. The park is currently under the direction of the Montana State Department of Fish, Wildlife, and Parks.

The current master plan for the park addresses historical theme interpretation in a limited manner. Existing facilities for historical theme interpretation as per this master plan consist of three wayside, self-guided exhibits, one of which is located on the proposed interpretation site. Interpretive material is presented via outdoor exhibit boards which address the various historical themes. The current exhibits serve to provide a very limited amount of information about the various themes, and do not satisfactorily address the historical significance of Gallatin City.

Recreational activities currently provided for in the park exist in the form of hiking trails, camping areas, a picnic area located immediately adjacent to the proposed Interpretation Center, river access for fishing, and a boat launching ramp for fishing and river floating activities.

The proposed Interpretation Center and Field Exhibit (ongoing archaeological dig) will be an addition to the park's master plan. These additions will only displace the existing wayside exhibits and interpretive plazas at the actual Headwaters site. All other existing activities provided in the park will remain intact and continue to function as per the park's existing master plan.

Land Acquisition

At the present time, the State Parks Division controls ten acres at the junction of the Gallatin River with the combined Madison and Jefferson Rivers. Expansion of the Headwaters State Park to include the Gallatin City site is strongly recommended.

Acquisition of private land for Montana's State Park System can be accomplished through utilization of a trust fund set up for the State Park System. This trust fund was created in 1975 and is financed by a portion of the Montana Coal Severance Tax. Interest from this fund can be used for acquisition of State Park System sites. Proposed land acquisitions must meet certain requirements. Sites meeting the following criteria will be considered for park selection:

Open-spaced areas of unique scenery or other outstanding natural features of an aesthetic, historical, geological, archaeological or scientific nature. State parks will be selected on the basis of those inherent characteristics without regard to geological location.

The acquired land can possibly be obtained through direct purchase, lease, or donation from property owners.

INTERPRETIVE PLAN

Introduction

The interpretive plan serves, in part, to identify in detail the historic resources present at the park. Evaluation of an historic site should serve to expose the true interpretive potential of that site. Should an historically significant event or use of the site be overlooked or inaccurately assessed, then the Interpretation Center would not be fulfilling its intended purpose.

An example of this situation is present at the Missouri River Headwaters State Park, where the presentation of historical interpretation of the site is conducted in a very limited manner. Primary focus is aimed, by way of roadside self-guided exhibits, at the experiences of the Lewis and Clark Transcontinental Expedition and their monumental discovery of the source of the Missouri River. This event gave this location both national and international historical significance. However, on a regional (Montana) level, the significance of this area has been limited to a vague and often inaccurate understanding regarding the first settlement activity in this region. Gallatin City (1862-65), which was Montana's first non-mining, non-military related attempt at creating a permanent settlement, was located at the Missouri River Headwaters.

In the interests of attaining an accurate and complete historical interpretive assessment of the Missouri River Headwaters area, further historical documentary research regarding Gallatin City was necessary.

The findings of this research make up a portion of the total interpretive plan and are included at the end of the Interpretive Plan section.

Although the other historical themes currently addressed at the Missouri Headwaters State Park (European era, Indian occupation, Lewis and Clark, and fur trade) are adequate in content and documentation, the upgrading of the Gallatin City information clearly and greatly elevates the historical significance of the Headwaters area. This is particularly true at a regional (Montana) level.

As will be discussed in greater depth later in the interpretive plan, this research also provided the potential for field exhibit activities to be a part of the visitor program in the form of an ongoing archaeological dig at the Gallatin City site. Current archaeological investigations into an Indian-occupied site near the Gallatin City site could also be incorporated into the visitor program.

The following portion of the interpretive plan shall individually identify the historic themes to be presented in the Interpretation Center and will provide techniques and methods by which to present the interpretive program to the visitor.

Themes for Interpretation

- (1) *EUROPEAN ERA*: By the mid-1700's it was believed that by finding the Headwaters of the Missouri River, a water route going on to the Pacific Ocean might be found. If such a transcontinental route across North America were discovered, it would provide an easy passage by which furs, precious metals, and other raw materials

could be extracted to enhance the power of the possessing nation. The matter of access and ownership of the American West became one of the main issues of the American Revolution.

- (2) *INDIAN OCCUPATION:* The intrusion on the North American continent by settlers forced a general westward movement of all North American Indian tribes. As a result, the eastern slope of the Rocky Mountains (and especially the Missouri River Headwaters, because of its desirability as a hunting ground and as an east-west transportation route) became a contested area among the western Indian tribes. Also, within one mile of the Headwaters site on the Schmidt land exists an ongoing archaeological dig site. At this location, Indians tunneled into solid rock to extract a type of rock called chert, which was used to make weapons and tools. This could serve as a potential visitor site.
- (3) *LEWIS AND CLARK:* The Headwaters of the Missouri River was the specific goal of the Lewis and Clark Expedition, the first successful transcontinental attempt within the boundaries of the United States. Captain Merriwether Lewis called the Headwaters "an essential point in the geography of this western part of the continent."
- (4) *FUR TRADE:* The wealth of furs in the Missouri River Headwaters area made it the target of traders and trappers. Through this site passed many of the legendary figures of the West -- Andrew Henry,

Jim Bridger, John Colter, and Kit Carson. Because of the hostility of the Indians, fur companies found it impossible to establish permanent outposts here, such as Fort Henry.

- (5) *WHITE SETTLEMENT*: The development of steamboat navigation on the Missouri River and the discovery of gold were responsible for the rush of white settlers into the northern Rocky Mountains. Gallatin City, located just west of the exact Headwaters point, was the first non-mining, non-military attempt at creating a permanent settlement in the entire region later to become the state of Montana.

Suggestions for Interpretive Presentation

Methods by which to present historic interpretive material should take into consideration the type of material, whether it be documentary (i.e., journals, diaries, letters, research), artifacts, or archaeological dig related findings.

When addressing the historical themes relating the European Era, Lewis and Clark, and fur trade, the majority of the interpretive material is in documentary form. Some of this documentary material has been generated through research and investigation while other materials, such as the Lewis and Clark Journals, are factual writings and constitute a primary historical source. The following methods and techniques for presentation of interpretive material should prove effective for this project:

- (1) Exhibit Boards -- i.e., written, graphic information.
- (2) Murals -- i.e., written, graphic information.
- (3) Model Forms -- to portray historic events, personage, setting.
- (4) Audio Narratives -- excerpts from diaries, letters, journals, keyed to visual link (graphic); material conveyed through pick-up activated earphones.
- (5) Audio/Video Presentations -- slide, video, and movie presentations could involve theatrical recreations of historic events, or historian-narrated documentaries (10-30 minutes).
- (6) Lectures -- given by park historian.
- (7) Display of Artifacts -- relating to particular historical themes; would also include archaeological dig related findings from the Indian and Gallatin City dig sites.
- (8) Orientation of Exhibit Area Towards View of Surrounding Area -- pertaining to a particular historical theme. In the case of Gallatin City, the use of a holographic stereogram depicting the proposed city could be projected in line with the view out to the actual city site.
- (9) Standing Exhibit -- large artifacts or recreation of historic scene.

The quantity of information presented for each historical theme should be in accordance with the estimated amount of time visitors typically spend at this type of facility. The average amount of visitation time is usually 30 minutes or less. This issue is discussed in greater detail in the "Interpretation Center Users" section.

Based on the preceding premise, information selected for interpretation of a particular theme should be concise and representational of that theme's overall historical potential. For example, selected excerpts from the Lewis and Clark Journals could be graphically illustrated on exhibit boards or be available on a taped narrative via a pick-up activated earphone. Taped programs could last 5-10 minutes. Each excerpt could then be keyed visually to a graphic portrayal located on a wall mural or other two- or three-dimensional method showing the course of their travels.

The themes represented in the Interpretation Center can be arranged chronologically so as to present a sequential solution to the organizational aspects of the exhibit area(s). The terminating theme in this organizational concept could place material on Gallatin City in such a location so that the visitor could view out to the actual city site. Compared to the other historical themes, the Gallatin City site provides the most tangible visual link between the visitor and the interpretive material. The other themes address events which occurred in the general area of the Missouri River Headwaters.

Video presentations provide a method for communication of interpretive material which could be utilized for each theme. If utilization of a sequential flow of visitors through the exhibit space is employed, then the concept of path and node could create the actual exhibit space layout. At such nodes, visitors could select, via a video viewing screen, the theme desired and pause to view a 5-10 minute video presentation of the theme material.

Associated with each theme should be enough interpretive material by way of exhibit boards or artifacts so that the visitor not using the audio/video equipment would still have access to an adequate amount of interpretive information. This would create a choice for the visitor relating to the amount of time he/she has available to spend in the Interpretive Center. This issue is explored in the following material.

- (1) Visitor Spends 15-30 Minutes: This visitor would be in the biggest hurry, probably not taking time to view more than one video presentation. The visitor would have time to pass through the entire Center.
- (2) Visitor Spends 30-60 Minutes: This category comprises the desired duration of visitation for the Interpretation Center. Visitors would have time to go through the exhibit area, listen to one or two of the video presentations, and listen to a lecture or short movie presentation in the assembly space.
- (3) Visitor Spends 60 Minutes or More: This category is intended to include visitors wishing a more in-depth exposure to the interpretive themes. In an anticipated increase in regional interest in the Headwaters area, visitors from primarily the surrounding area could utilize the library and research facilities in addition to the exhibits directed at a comparatively more transient visitor.

Artifacts as Exhibits

Interviews with National Park Service historians and chiefs of interpretation suggest that artifacts are an important attraction for visitors and therefore probably serve as visible, tangible links with the historic events, and hence embrace the perceived suitability of the exhibit.

The Interpretation Center shall include as part of the exhibit program artifacts pertaining to Indian activities in the Headwaters area and settlement relating to Gallatin City. Both of these themes have an archaeological dig potential and a corresponding potential for inclusion as part of the Center's field exhibit program. This would serve to provide only artifacts which were directly linked to historical activities which occurred in the Headwaters area. This would also serve to avoid an Interpretation Center which only provided a static amount of information to the visitor. As more artifacts were unearthed, they would be added to the Center's collection.

It is also quite possible that a sharing of artifacts could be agreed upon with the existing Headwaters Museum in Three Forks, Montana.

Field Exhibits

Field exhibit activity shall be conducted on a seasonal basis during the peak visitation period (April - September). Field exhibits will be centered around a proposed ongoing archaeological dig at the Gallatin City site and the existing ongoing archaeological dig activities at the Indian chert mine located less than one mile from the Gallatin City site.

Suggestions for the field exhibit program are as follows:

- (1) Conducted on a guided tour basis only. Duration of field exhibit program would be approximately 1 hour.
- (2) Approximately 3-4 tours of archaeological activity would be conducted per day, or more or less frequently as needed.
- (3) Visitors would form a group for the tour at the Interpretation Center and walk to the point known as Ling Rock, a point on the combined Jefferson/Madison River opposite the Gallatin City site. The group would then cross the river via a contemporary ferry which would be at the same location where a ferry existed in the 1860-70's.
- (4) Upon arrival, visitors would first view the temporary facility housing the archaeological workshop. Visitors would observe the cleaning and cataloging of found archaeological artifact material.
- (5) The visitors would then be guided on a walk around the Gallatin City site and see actual archaeological dig activity in progress.
- (6) Visitors would next be shuttled via some type of motored transportation to the Indian chert mine located approximately one-half mile east.
- (7) Visitors would then be taken back to the ferry, cross the river, and conclude the tour.

Proposed funding for an ongoing archaeological dig at the Gallatin City site would be used, in part, for the construction of a workshop to

house archaeological related activity requiring an enclosed, protected environment such as: cleaning, cataloging, photographing, and storage of artifacts and equipment required to perform the dig activities. This building shall possess the following characteristics and spaces:

- (1) Workspace for cleaning of artifacts.
- (2) Lab area to conduct detailed preparation of artifacts for exhibit in Interpretation Center.
- (3) Office space for archaeological dig coordinator.
- (4) Storage space for artifacts.
- (5) Storage space for archaeological dig equipment
- (6) Comfort station for staff and visitors.
- (7) Viewing area within building to provide vantage point to observe workshop activities.
- (8) The workshop shall be temporary in construction, resting on isolated footings, and be removed from site at conclusion of dig activity.
- (9) The workshop shall be located on west end of archaeological site near the ferry landing, but so as not to be visible from the Interpretation Center.
- (10) The workshop will not impact on the historical site except for the actual building site. All waste materials will be removed as needed from the site. Upon the eventual removal of the workshop, the area affected by the building will be restored to its original appearance.

GALLATIN CITY:
ITS SIGNIFICANCE TO MONTANA'S HISTORY

GALLATIN CITY:
ITS SIGNIFICANCE IN MONTANA'S HISTORY

by
Dr. Kingston W. Heath
and
Mikel N. Kallestad

January 1986

Montana provided a new frontier to a country still young in its dual struggle for permanence and a desire for expansion. The story of this struggle during Montana's frontier period is preserved in original photographs, documents, and the accounts of early visitors to this then untamed region. Some accounts are merely day-to-day occurrences presented in a non-self-conscious manner as a personal record⁽¹⁾, while others from the start were intended for wide readership.⁽²⁾ Additionally, during Montana's territorial period (1864-1889), regional events were chronicled by Montana's earliest newspapers such as Virginia City's Montana Post and Bozeman's Pick and the Plow, as well as other regional newspapers from Salt Lake City and Denver, which focused on the mining news in the Rocky Mountain Region.⁽³⁾ In this regard, even in national publications, the predominant focus of media attention regarding settlement in the Rocky Mountain west during the 1860's was directed at gold mining activities. Beyond the primary sources that provide the documentary evidence for Montana's frontier period are the physical remains found in the archeological record and existing architectural forms.

The purpose of this paper is to correct the historical record regarding Gallatin City, Montana, using documentary and physical evidence to establish the importance of Montana's first planned, agricultural support community that served the mining camps of the 1860's.

While many of Montana's earliest settlements were mining camps, others were primarily concerned with the concept of implementing an agricultural based foothold in hopes of providing a support for mining and military activities already established. Gallatin City was one such

settlement. It was, in fact, Montana's first non-mining, non-military related attempt at creating a permanent settlement.

The need for an outfitting or support community rested in the fact that the scattered mining encampments remained cut off from readily available life support systems which typically accompanied a more gradual settlement pattern: food supplies and cooking equipment, reading material, established lodging, transportation systems, law and order, and education.⁽⁴⁾ These mining camps were the product of "instant urbanization" and, as such, they were unprepared to sustain their own burgeoning needs.⁽⁵⁾ Hence, it was left to others to support the efforts of the mining camps. A chain of interdependency developed whereby suppliers of goods in and around the camps "mined" the miners, while the miners drew upon the supplies necessary to carry on the mining activities uninterrupted.

Gallatin City, poised at a location which offered overland access to mining camps in the area, such as Virginia City, Last Chance Gulch [Helena], and Bannack, provides an important record of early speculative town planning in Montana specifically designed as a supply outpost to mining camps in the surrounding area.

Very little can be ascertained from published historical accounts on this very important beginning. When accounts do occur of Montana's earliest settlements, Gallatin City's significance in Montana's history is either ignored entirely or inaccurately assessed. The vast majority of "old reliables" traditionally consulted for information on the history of Montana, for example, do not even acknowledge Gallatin City.⁽⁶⁾ While many historians have totally omitted Gallatin City,

negating its significance to Montana history, others have incorrectly described Gallatin City to the point when all information available among secondary sources tends to distort any understanding of the purposes, motivations and demise of this first "planned" agriculturally based community in Montana to serve the gold mines and outlying areas. (7)

For example, in what appears to be the earliest historical account of Gallatin City and seemingly the source from which subsequent accounts draw their misinformation, A. K. McClure in August 1867 writes in Three Thousand Miles through the Rocky Mountains:

At this place the Missouri River begins. The Jefferson and Madison unite about half a mile above, and the three [including the Gallatin River] unite a little below, where the Missouri is formed. Gallatin City once had over sixty cabins, all erected in one season, mainly by Missourians who believed it would be the head of navigation on the Missouri, but after the city was built and no boats came for a season, someone came along and informed the enterprising residents there were great falls in the river above Benton, which stopped the boats, and the city, once so full of promise, fell away, until a single cabin now represents it. The city cabins have been taken up from time to time and scattered over the prairie on ranches, and while a speculative city has disappeared because of the want of the proper study of geography, pleasant ranches and prosperous ranchmen have taken its place, and made the prairie blossom and ripen with the golden fruits which gladden the heart of the husbandman. (8)

In this description of Gallatin City, it appears to have been McClure who was misinformed. Perhaps due to the fact that at the time of this writing (1867), Gallatin City had already reached its demise (1865), any primary source material that would contradict his information was in the hands of the individuals who wrote them, and not available. (9) Instead it appears as though McClure relied upon

inaccurate oral accounts at the time of his visit to the then abandoned Gallatin City and his own unsubstantiated conclusions regarding the founding of Gallatin City. Possibly as a result of the early date of publication of McClure's book, later historians appear to have given this source undue credence.

In 1921, Tom Stout, apparently drawing from A. K. McClure in his suggestion that the demise of Gallatin City was due to a lack of geographical knowledge, describes Gallatin City in a similar manner, but does not add any other supportive documentary evidence. In Montana, Its History and Biography he states:

In 1863 Gallatin City was laid out by certain enterprising Missourians who expected it to prove the head of navigation on the Missouri, forgetting that there was a slight obstruction below in the shape of tremendous falls. After receiving a few lessons in geography most of them abandoned the location.(10)

Likewise in 1939, in N. C. Abbott's Montana in the Making, the reader is further misled:

In 1864 a group of Missourians founded a town named Gallatin City near the present site of Three Forks. Forgetting that the great falls obstructed the channel of the river, they built what was called a 'hitching post' for steamboats which was to stand idle and unused for years as a monument to their error.(11)

Absent from these accounts are important supportive documents such as the letters by Emily Meredith and others, which would have indicated that--to the contrary--the people responsible for the organization of Gallatin City had planned out their actions in a deliberate, effective and productive manner.

Gallatin City was located at the three forks of the Missouri River on the west bank of the combined Jefferson and Madison Rivers, just

above the junction with the Gallatin River. It was founded at a time when few other settlements existed in the area. In fact, prior to March 23, 1863, this region was known as the Dakota Territory.⁽¹²⁾ After this date, the area became known as a portion of the Idaho Territory and on May 26, 1864, became Montana Territory.

The site for Gallatin City was selected on November 20, 1862. At this point in time, the only types of settlements in this region were either mining communities, as was the case at Bannack, or trading posts, such as Fort Connah and Fort Benton.⁽¹³⁾

In 1862, Mrs. Emily R. Meredith, a Bannack resident, discussed the reasoning behind the selection of Gallatin City in personal notes and letters home to her father in Redwing, Minnesota.

Exploring parties that had followed the forks of the Missouri River to their confluence reported a milder climate, good pasturage and abundance of fuel and game in that region. They were sure that in this ideal spot where the three waterways met and combined to form the Missouri, they had found the site of the future great city of Idaho. So they laid out the town and probably because while the Jefferson and Madison Rivers were frozen over, while the Gallatin remained perfectly open offering feeding ground to the wild fowl and a drinking place for game and cattle, they called it Gallatin City.⁽¹⁴⁾

On December 30, 1862, the Gallatin Town Company was organized with N. W. Burris, Alfred Ray, James Bouton, Edmund Ash, George Lemley, M. R. Burris, Felix Burton, Albert Green, William Townsley, Benjamin Townsley, B. B. Burchit, E. House, S. Stimpson, George Wiliford, Dr. Glick, P. C. Wood, H. P. S. Smith, Monroe Atkinson, J. B. Cowen, A. F. Watkins, E. P. Lewis, John Ault, C. M. Davis, G. M. Stapleton, and Samuel McCann as the

incorporators; their object was to survey and plot the town of Gallatin City as located on November 20, 1862.⁽¹⁵⁾

The promise of success for Gallatin City was in the belief that someday it would provide a head of navigation for the Missouri River. Many accounts of Gallatin City suggest that the founders were completely unaware of the waterfalls at present-day Great Falls, Montana, and after making this realization, chose to abandon their location. However, this was not the case at all. Very conclusive evidence points to the fact that these individuals were indeed aware of the geographical situation from the very beginning, and were acting in a speculative manner consistent with the original concept of the settlement. Secondly, many of the original proprietors of Gallatin City were skilled in town planning and surveying and were therefore unlikely to misjudge such an obvious obstacle since the presence of the waterfalls on the Missouri River were noted as far back as 1805 by the Lewis and Clark expedition.⁽¹⁶⁾

Steamboats had already been traveling the Missouri River as far as Fort Benton since 1859.⁽¹⁷⁾ It was proposed by the incorporators of Gallatin City that a second line of steamboats would travel the Missouri River between the Great Falls and Gallatin City. This point is mentioned in Emily Meredith's letter to her father dated April 30, 1863, in which she states, "The best way to come here [Bannack] now is I think the Missouri River. If there should be a line of boats above the Falls running to Gallatin City, one would only have 125 miles to travel overland to this place [Bannack]."⁽¹⁸⁾

Further proof of this plan to make Gallatin City a viable head of navigation lies in the actions of one of the principal incorporators of Gallatin City, Mr. N. W. Burris, a hitherto unacknowledged historical figure in the making of Montana. Mr. Burris was president of the Gallatin Town Company, which is evidenced in a land deed dated December 12, 1863, giving a Mr. John S. Rockfellow title to six lots in the town of Gallatin, Idaho Territory (Illus. 1). Mr. Burris' name appears at the bottom of the document with the title of president. Mr. Burris appears to have been a man of many grand-scale ideas. Not only was he probably the leading figure in creating Gallatin City, he was also involved in a plan to create three towns at the mouth of the Marias River on the Missouri River: Ophir, North Ophir, and East Ophir. The three townsites were to form a great metropolis with interrelated development of the surrounding region in all directions, including Gallatin City. In accordance with this scheme, Mr. Burris and his associates were granted a charter by the first Montana legislature at Bannack on February 2, 1865. The charter was granted to the Missouri River Portage and Railroad Company for twenty years, and gave necessary corporate powers for the construction of a wagon road or railroad or both for the purpose of transporting passengers, freight, and mail around the Great Missouri Falls. Two years were given for the construction of the wagon road and five years for the construction of the railroad. (19)

Not unlike the miners who came to Bannack to exploit the moment for personal gain, Sidney Edgerton, who approved this act as governor of the Territory, was one of the grantees and associates of Mr. Burris. It is

This is to certify that John S.
Rockfellow is entitled to (6)
six lots in the town of Gallatin
Idaho Territory. Deed to be
issued and delivered on present-
ation of this Certificate to the
Secretary. In witness whereof the
President & Secretary of the Gallatin
Town Company have hereunto
affixed their hands & seals this 12th
day of December A.D. 1863,
Wm Burris Pres^y
E. Lewis Sec^y

ILLUSTRATION 1: John S. Rockfellow land deed dated
December 12, 1863 (Book of Records
for Town of Gallatin and Surrounding
Country, 1862-1865, Vol. 1, City of
Bozeman, MT, Office of Clerk and
Recorder).

interesting to note that while in Montana, Edgerton recorded over seventy-five mining claims along with his involvement with Burris' development schemes.⁽²⁰⁾

As proof that not only were the developers of Gallatin City apprised of the presence of the falls as an obstacle to be dealt with, their application for the necessary legal documents to incorporate a Missouri River portage and railroad company reflects instead a sophisticated, enlightened, and ambitious scheme to address the problem of the falls in a professional manner. Mr. Burris and associates were also granted a charter as the Upper Missouri River Steamboat Navigation Company to open and remove all obstructions and make navigable the upper Missouri River from the Falls to the Three Forks at Gallatin City. This charter also gave the exclusive right to the navigation of said river between the two points mentioned to the steamboats and granted them the right to carry freight and passengers over the same for a period of fifty years.⁽²¹⁾

Gallatin City was adopted as the head of navigation and another charter was secured by Mr. Burris and associates with the authority to make additions to said town. Opposite Gallatin City and on the east side of the Missouri River, a charter was secured by Mr. Burris and associates for the town of East Gallatin, with authority to make any desired additions to this town.⁽²²⁾ In addition, another charter granted to Mr. Burris and associates was to be known as the Fort Benton and Kootenai Wagon Road Company. It provided for the construction and maintenance of a wagon road from Fort Benton through the Marias Pass to connect with the Hell Gate and Kootenai wagon road.⁽²³⁾

These charters, all related and secured from the legislature at Bannack in February 1865, were apparently devised for the rapid development of a vast region of the country from the Three Forks of the Missouri River to the Kootenai country, with the planned city of Ophir as the center. Gallatin City seems to have been the first phase of this grand plan (see Illus. 2).

Important here is the fact that Mr. N. W. Burris was no newcomer to the area of townsite development. He founded Burris City, Iowa, located on the Mississippi River at the mouth of the Iowa River, immediately north of their confluence.⁽²⁴⁾ Burris, as it was originally called, was laid out by Mr. N. W. Burris in 1855, and contained over five thousand lots. It was incorporated by a special act of the Iowa legislature, approved on January 28, 1857, and from then on known as Burris City. The city promised success due to the anticipated construction of the Air Line Railroad. By 1857, Burris City had over one thousand residents and supported many types of businesses in this growing community. Mr. Burris, who had been elected a member of the Iowa House of Representatives in August, 1856, was involved in various business enterprises such as the Burris City Hotel Company and the Burris Manufacturing Company. He also owned two thousand, eight hundred and forty-eight (2,848) of the lots in Burris City, which had an assessed value of one million, one hundred and fifty-eight thousand, one hundred dollars (\$1,158,100).⁽²⁵⁾ In an effort to attract potential residents, maps were drawn up and distributed all over the country showing Burris City as a second New York in size and importance. In 1874, The Humming Bird, a small monthly paper published in Muscatine, Iowa, a neighboring town,

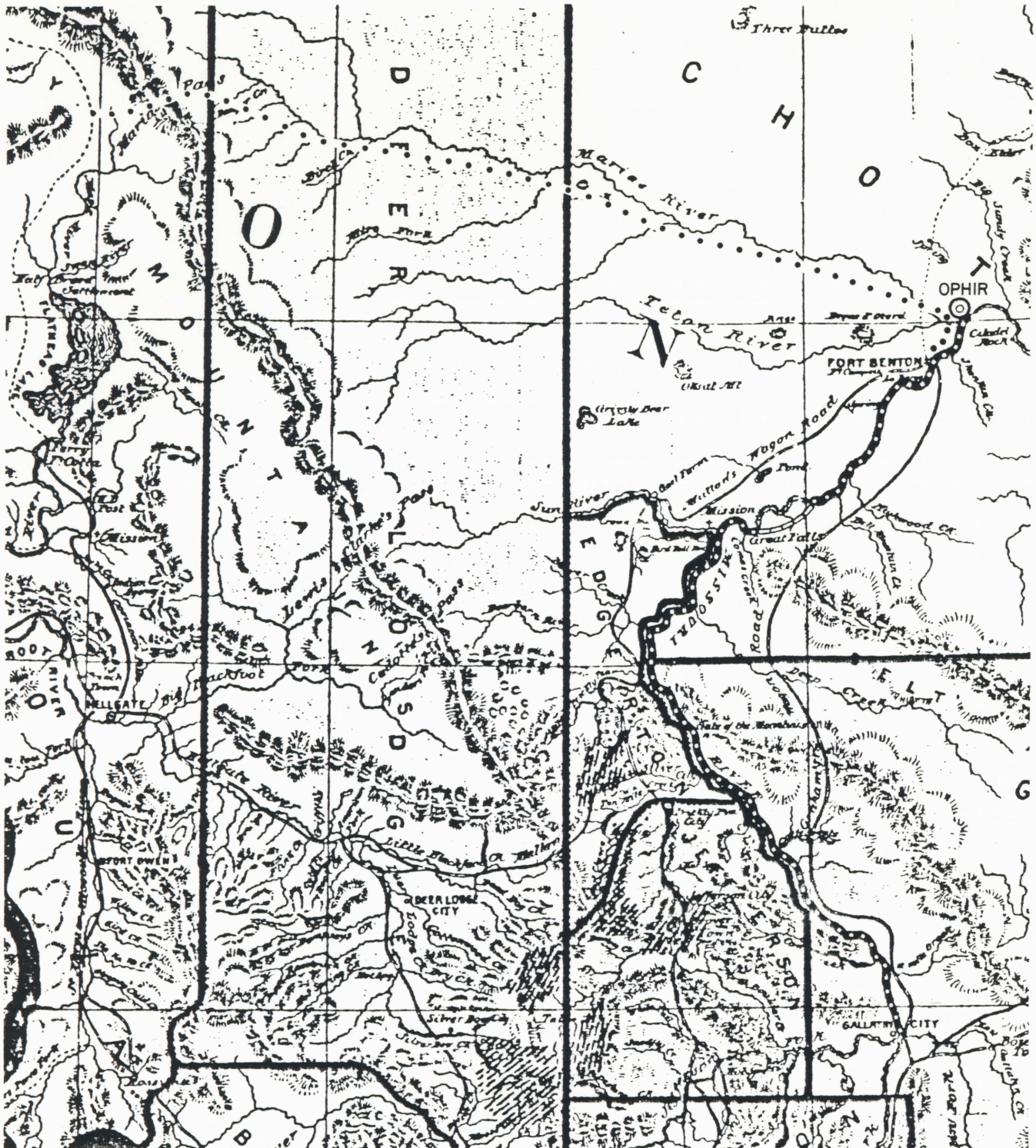


ILLUSTRATION 2:



Proposed wagon road through Marias Pass to connect with Hell Gate and Kootenai wagon road.



Proposed railroad and wagon road to go around the falls.



Proposed route of steamboats between Ophir and Gallatin City.

described this map in an article entitled, "Recollections of Burris City," as follows:

It is needless to say that the map was slightly over-drawn. It is said that a drunken man sees double. Taking this to be true, we conclude that fifteen or twenty engravers, all drunk, had each a hand in preparing the stone upon which the map was printed.⁽²⁶⁾

Burris City flourished until a flood destroyed it in the spring of 1858.⁽²⁷⁾ After disposing of his property and settling up his business, Mr. Burris went west.⁽²⁸⁾

Burris City, Iowa, offers an interesting parallel to the development plan for Gallatin City since both ventures were predicated on the exploitation of key transportation networks (the railroad for Burris City and the steamboat for Gallatin City) as stabilizing and developmental forces. Similarly, the third trade and travel conveyance available to miners and prospective settlers, overland wagon traffic, was the motivating force behind the locating of the site of "Bozeman Town."

The connection is not indirect, for once it became obvious that the important transportation link of the steamboat was not going to be developed in Gallatin City, and the need to supply the gold camps at Bannack and Virginia City still presented itself, wagon traffic through the Bozeman pass became a viable alternative. It is no accident that many of the same personalities in Gallatin City (Rouse, Beall, and Bozeman) founded and platted the town of Bozeman by August 9, 1864.⁽²⁹⁾

Mr. Burris' bad luck in Iowa seems to have followed him to Montana. Once work on Gallatin City had commenced, Mr. Burris evidently felt it was time to get the Ophir City projects underway. After securing all

the charters necessary to make the combined Gallatin City/Ophir City enterprise a reality, Mr. Burris journeyed to the mouth of the Marias River in the spring of 1865 to commence building the city of Ophir. A sawmill was set up, timber camps were established, and work began.⁽³⁰⁾

Matters proceeded satisfactorily until the latter part of May when, on May 25, 1865, Mr. Burris and nine other men were at a timber camp located a few miles up the Marias River. Three hundred house logs had been cut and were in the process of being transported by oxen to the river, to be subsequently brought down to the Ophir City location. At this time, according to Stout,⁽³¹⁾ the party was attacked by a band of one hundred and eighty Blood Indians who employed the usual tactics of circling around the ten men as they fought to reach the river and friends. Mr. Burris was a man of powerful frame and apparently was the last to die as he made a running fight nearly to Ophir. As Stout recounts, he was finally shot in the leg and another bullet penetrated his left lung. There were several gashes made by a knife on his left side and there were arrow wounds on his body. Had Mr. Burris lived, the development of this region might have occurred in a very different manner and townsites such as Bozeman, which became central to Montana history, may never have existed.

Events and timing were apparently wrong. Without the initiative of strong personalities to work out the legal and investment aspects, the project was doomed to failure. Only those people designated within the actual charters were legally able to act in this scheme. The most likely individual to take Burris' place was Governor Sidney Edgerton who, while not opposed to the enterprising scheme, had left the

territory by June, 1866.⁽³²⁾ Others such as Beal, Rouse, and Bozeman turned their attention elsewhere where their opportunities for personal gain were better assured at reduced expense and labor, and better suited their skills.

Instead, as McClure refers in 1867 to the sixty cabins which Emily Meredith states existed in February of 1863, only one remained by 1867. The remaining structures were moved to other more promising sites and only indirectly did Gallatin City serve to sponsor the growth and success of Montana.

Mr. Burris was not unique in the field of speculative town development. At the same time Gallatin City was being organized in December of 1862, another group of men from the infant mining camp of Bannack, decided they, too, would travel to the Three Forks of the Missouri River and locate their own town. The articles of association for organizing the town company were agreed upon and recorded in Bannack in advance of choosing the location of the actual townsite. Mr. James Henry Morley, a railroad surveyor, miner, and ditch developer in Bannack, was one of the trustees of the town association and president of the board. He wrote in his daily journal that on December 28, 1862, he and six other men left for the Three Forks of the Missouri in search of a townsite.⁽³³⁾

It appears that the example set by the men organizing Gallatin City inspired others to try their hand at entrepreneurial skills regarding speculative town formation. The Morley party reached Gallatin City eight days later, on January 5, 1863. In Morley's diary he notes:

The company who have preceded us here have secured a townsite opposite the mouth of the Gallatin, in a very pretty spot. Found a tolerable site for a town one and

one-half miles below the mouth of the Gallatin. The weather, although freezing cold, is quite comfortable to us. The ice is two feet thick in the streams, yet I do not feel the cold equal to an autumn day in Missouri. (34)

The next day, a site about three miles below Gallatin City, described as excellent for a town with plenty of good ground, good landings, and plenty of timber and wood, was located and staked three days later.

It appears that quite a few people in Bannack decided to brave the winter and make an early move to Gallatin City. On the way back to Bannack on January 12 and 13, 1863, Morley reports passing a total of thirteen wagons and fifty men bound for Gallatin City. (35)

The organized approach to setting up a town was no doubt in an effort to avoid claims or ownership disputes. The method for effectively recording a claim, as was done in Gallatin City, was by forming a claims association. Claims associations were common in other locations at that time, particularly in the midwest. In newly settled areas such as Montana, miners and farmers alike would form a claims association to protect their interests. Gallatin County records include a Book of Records for the Town of Gallatin and surrounding country. This record indicates the organization of a claims association. It is clear that the purpose of the association was not only to record claims, but also to promote settlement. Under the laws of the association, in order to become and retain the interest of a member of the association, it was necessary to build a house of hewn logs not less than sixteen feet by eighteen feet, to be completed and ready for occupancy by April 1, 1863. It was also necessary within twelve months to break at least five acres

of ground. Any member failing to do so would forfeit his interest in the company. (36)

It is interesting to note that the Homestead Act had passed the same year that this claims association was organized. It is questionable whether or not news of the passing of the Homestead Act had reached the Gallatin City settlement. Quite possibly members of the Gallatin Town Association were familiar with the proposed requirements contained in the Homestead Act because it, too, required building a house and cultivation of land to retain a claim. It is also important to realize that these settlers were not yet in a position to take advantage of the Homestead Act. Applications could not be submitted until the Federal Government officially opened an area for settlement, and that action rested upon the completion of the government survey. The only way, at this point, to provide at least a minimum amount of security for a land claim was by recording with an association, as was done in Gallatin City. (37)

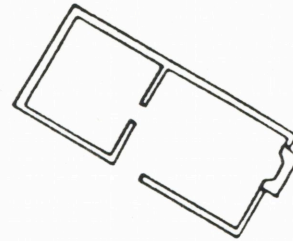
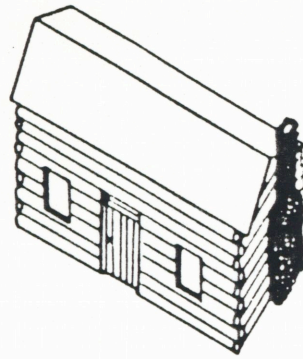
The founders of Gallatin City were very energetic in their efforts to attract settlers. According to Emily R. Meredith, "To every settler who would erect a log house 16 feet by 20 feet, a lot was given. To one who would build one twice that size, suitable for a warehouse or store, a double lot was awarded." (38) Apparently, when Gallatin City was laid out, one-fourth of all lots were appropriated for donation purposes, as follows: 75 lots to the first steamboat that should arrive; 50 to the second; 50 to the first printing press; 25 to the proprietor of the first stock of goods brought there; 50 to the first church built; 7 to the first lady who should become a resident; six to the next, and so on,

down to one.⁽³⁹⁾ Noteworthy here are the requisite entities to ensure the success of a town: transportation systems for supplies and continuous settlers, a printing press to sponsor the merits of the venture, business buildings to provide a solid economic base, and a church and women residents to provide a projected aura of decency and stability.

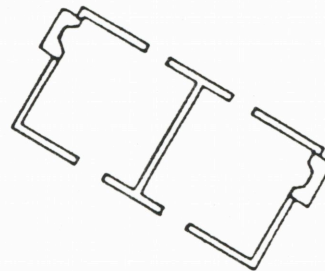
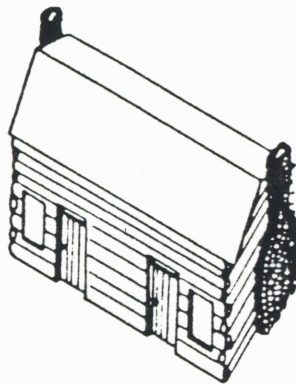
By February 8, 1863, sixty cabins had been constructed, but most were unoccupied. It seems, according to Emily Meredith, they were built for the sake of retaining a foothold there.⁽⁴⁰⁾ While there are no existing remnants of these residential structures at the Gallatin City site, it is possible to accurately speculate on the type of buildings constructed. The founders of Gallatin City were known to have previously resided in Bannack. Much is known about the building types present at Bannack from studying historical documentary evidence, physical evidence, and period illustrative material.⁽⁴¹⁾ It can be reasonably assumed that the buildings at Gallatin City were likely patterned after building types of the same period at Bannack.

For example, prevalent in the Yankee Flat (Bannack) residential district was the one-room temporary forerunner--the single pen house--to the two-room dwelling, consisting of a single window, offset door and end chimney. With an addition opposite to the end chimney, the cabin would then take on the traditional configuration of a symmetrical facade of two end chimneys, two windows and two doors--each providing access into separate chambers (Fig. 1B). A variation of the double pen house, referred to as a "saddlebag" house, adds a second room behind the chimney, thus providing a central-chimney, two-room, two-door cabin (Fig. 1C).⁽⁴²⁾

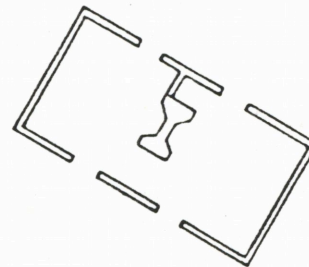
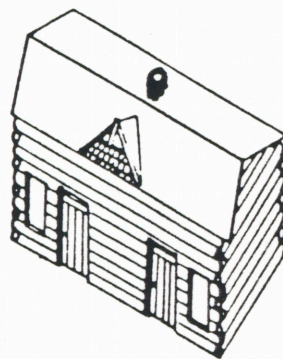
DOUBLE PEN HOUSES: THE LOWLAND SOUTH AND THE ROCKY
MT. WEST (BASED ON GLASSIE)



A.



B.



C.

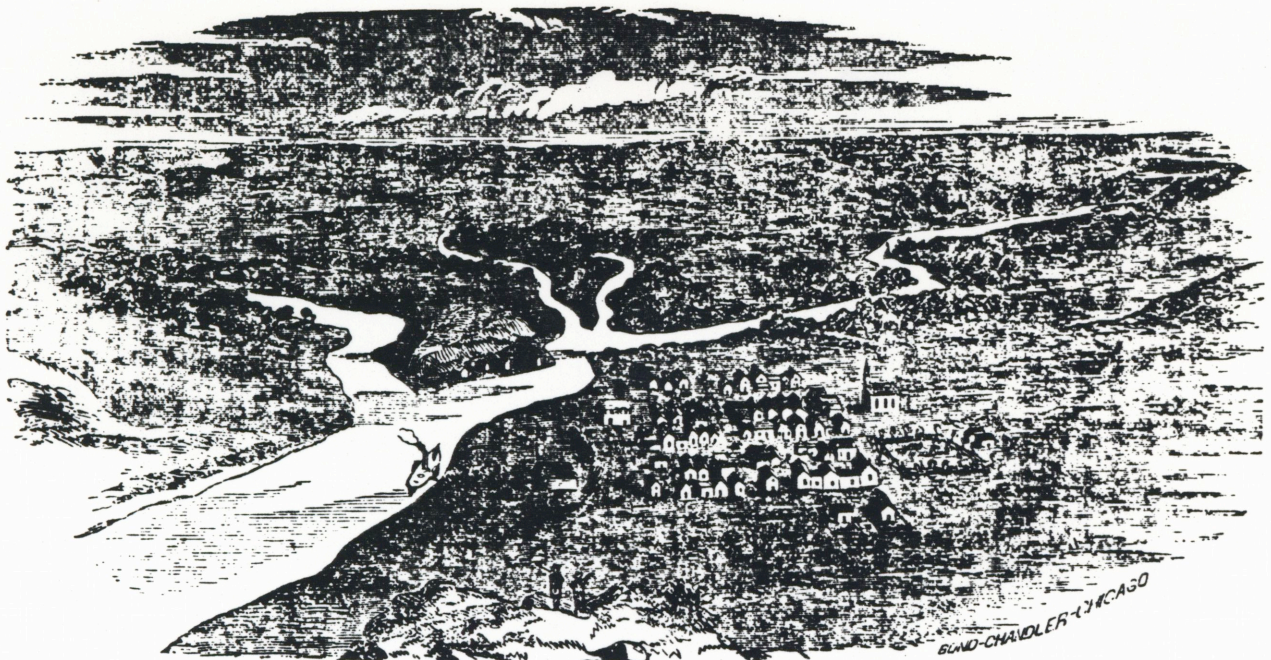
FIGURE 1: Double-pen houses: The Lowland South and Rocky Mountain West. (Rendering by Sanford Edward, 1984, after concept by Glassie and Heath.)

The log cabins of Bannack were on occasion shake roofed, but often in the early stages they were simply covered with dirt (for insulation) piled on canvas (for moisture resistance) and supported by poles. "Green cow skins" (fresh hides) provided what carpet could be found. (43)

Beyond the completion of sixty cabins, further attempts to promote Gallatin City were done in the form of a pamphlet written by Mr. J. L. Campbell and published in 1864, entitled "Idaho--Six Months in the New Gold Regions: The Emigrant's Guide." An etching created by Mr. Campbell appeared in this pamphlet bearing the title, "Gallatin City-Three Forks of the Missouri" (Illus. 3). As the author of the etching suggests, the viewer is asked "to look down the vista of the future a few years only, to behold a beautiful city towering here, locked forever in the embrace of the surrounding hills." The image depicts the town once it has taken full advantage of the site allotments and includes: a church, a steamboat docked at a wharf, a military post or school, and a residential area. Accompanying the etching was a written description of Gallatin City by Mr. Campbell himself:

Already a town has been located at the Three Forks which bears the name of the East Fork [Gallatin], and is rapidly becoming an important place. It was laid out in December, 1862 by a company from Bannock City [Bannack]. Situated at the head of navigation, in the heart of an agricultural country, surrounded as it is with rich mining camps. (44)

This pamphlet, originally printed in New York and Chicago, appears to have been written in an effort to "paint a pretty picture" of the Idaho Territory to would-be settlers from the eastern region of the country and clearly designates the importance of this location as an agricultural support community in the heart of the rich mining camps.



GALLATIN CITY—THREE FORKS OF THE MISSOURI.

ILLUSTRATION 3: Etching of Gallatin City as drawn by J. L. Campbell and as seen in his 1865 pamphlet, "Idaho--Six Months in the New Gold Regions: The Emigrant's Guide." (Courtesy of Idaho Historical Society, Boise, ID.)

However, as observed by a more local audience, Gallatin City either did not look very attractive to the sole newspaper of the territory, The Montana Post of Virginia City, or else community jealousy, in spite of the obvious benefits to Virginia City if Gallatin City were successful, prompted it to belittle the new community. Reacting similarly to the Burris City, Iowa, promotional map, in the newspaper's issue of September 3, 1864, there appeared under the caption "Gallatin City," the following editorial:

We have got the headline, and being leaded looks well on paper. Not wishing to say by any means this is a paper town, 'Oh, No!' The old mountaineers frequently resort thither when game becomes scarce in the settled portions of the territory to hunt, and antelope are readily brought down in the city limits. We don't know the town company but presume when they laid off the city, it was like the fellow that set the hen on 100 eggs; he wanted to see her spread herself.

We learn at latest advices from a gentleman who had just passed through the city that it contained one family, but they were daily looking for another. There was a certain Mr. Campbell who was some two months in the country last year [1863], and who sometimes writes for the *Chicago Tribune*. This gentleman went home with 'sore feet,' published a pamphlet giving all the particulars of our territory, in which Gallatin [City] fills a prominent part.

The picture in the pamphlet shows a church with a somewhat tall spire, a military post with paper soldiers, of course, a steamboat at the wharf busily discharging her cargoes, etc. We don't know how much he received for all his trouble, but if he got nothing he must have been taking a 'drop of the critter,' until steamboats, soldiers, churches, and large townsites danced in his imagination, for surely none before or since have been able to discover any of these things. Having thus briefly described the city and having ourselves been sold, thinking at one time to locate there, we of course feel a little tender on the subject.

Whether Gallatin [City] will be able to 'hold her oats' remains to be seen, but she is certainly at the present in bad condition, let it be recorded. (45)

It appears that the people of Virginia City knew about the existence and current status of Gallatin City, but were unaware of the long-range development plans for Ophir City, and the Kootenai Country, for it would not be until five months later (on February 2, 1865) that the development plans would be recognized as a viable enterprise by the first Montana legislature at Bannack.⁽⁴⁶⁾ At this time, Territorial Governor Sidney Edgerton approved the charters, granted to N. W. Burris and associates, which were necessary to continue development of this region.

Regional public opinion concerning Gallatin City may have been low because the city was not bustling with activity and inhabitants, since no steamboats had yet arrived with supplies and settlers to prove the merits of the venture. In a broader perspective, Gallatin City had speculative potential in that it was constructed as the first phase of a multi-phase development enterprise. For such a scheme to succeed, the end result would be dependent upon how much success was achieved in bringing an assortment of supplies and vast numbers of permanent settlers to this rapidly developed region.

Historical documentary evidence in the form of a letter written by Mr. Charles Ohle, an easterner, to Mr. John (Jack) Mendenhall, a resident of Gallatin City, on March 24, 1864, suggests that public opinion of the Idaho Territory--and Gallatin City in particular--was very positive and that the project held more merit than had been previously thought. The following excerpt from the letter pertaining to Gallatin City attests to this:

Dear Jack,

I suppose you have been leading the life of a hunter and living on game such as elk, deer, antelope, bear, etc., and passing the winter pleasantly in your cabin at Gallatin [City] when you are not out hunting. Gallatin [City] I think is destined to be a flourishing mountain city at no distant day, and I am inclined to believe that real estate will be worth having and will eventually be sold at prices that will make it profitable to deal in. You cannot form any idea of the excitement existing in the states in regard to the Idaho mines. I would not be surprised if there was thirty or forty thousand people to emigrate to Idaho this year. Thousands will leave Missouri, Wisconsin, and Iowa mines and the western states generally.

I was astonished at the excitement in Missouri when I came in last winter [1862-1863]. You hear of Idaho wherever you go, in St. Louis, Washington, New York, and every place I have been at I find persons who intend going to Idaho. Major Owens and others have given great accounts of Idaho. They not only represent the territory rich with mineral, but as being well adapted to farming, stock raising, and everything in fact that could be desired in location and climate.

There will be a fleet of boats leaving St. Louis this spring [1864] for Fort Benton and the Yellowstone. Any amount of goods will be taken to Idaho this year. I have seen quite a number of persons here this winter from the mines. Purfile [?] and Charley Davis are here. Davis [Charley] has been in Wisconsin and through the country on the Upper Mississippi River. He gave the people graphic accounts of the abundance of gold in Idaho. Charley has an interest in an Idaho freight and passenger line of steamboats. The company owns some six boats and will run them to Fort Benton and Charley says they intend running one to Gallatin [City]. The boats are all light draught and have been running on some of the small streams that run into the Upper Mississippi. Two of them I think draw twelve inches, light. The first boats leave about the first of next month [April 1864]. This company has got out printed bills and have an agency established at #264 Broadway [New York]. They advertise to carry passengers to Fort Benton for \$150 -- allow 80 lbs. baggage and then ten cents fare per pound for all over that amount. Davis [Charley] is going in, heavy; has a map of the country showing the towns that are now flourishing, Gallatin [City] being one of the first -- Bully for Davis. . . (47)

Not only does this letter indicate the degree to which Easterners were reacting positively to the information being disseminated about Gallatin City, but it also lends credibility to the organizational planning behind the development enterprise as a whole. For example, Charley Davis, as referred to in Charles Ohle's letter, may well be Mr. C. M. Davis, whose name appears as one of the original incorporators of the Gallatin Town Company. If, in fact, Charley Davis was part owner of a freight and passenger line of steamboats with plans to run between the Great Falls and Gallatin City as early as 1864, this suggests that the plans for developing this region were well thought out and progressing satisfactorily, investment money was available, and technical knowledge of the demands on river traffic (i.e., shallow draft steamboats) were well understood.

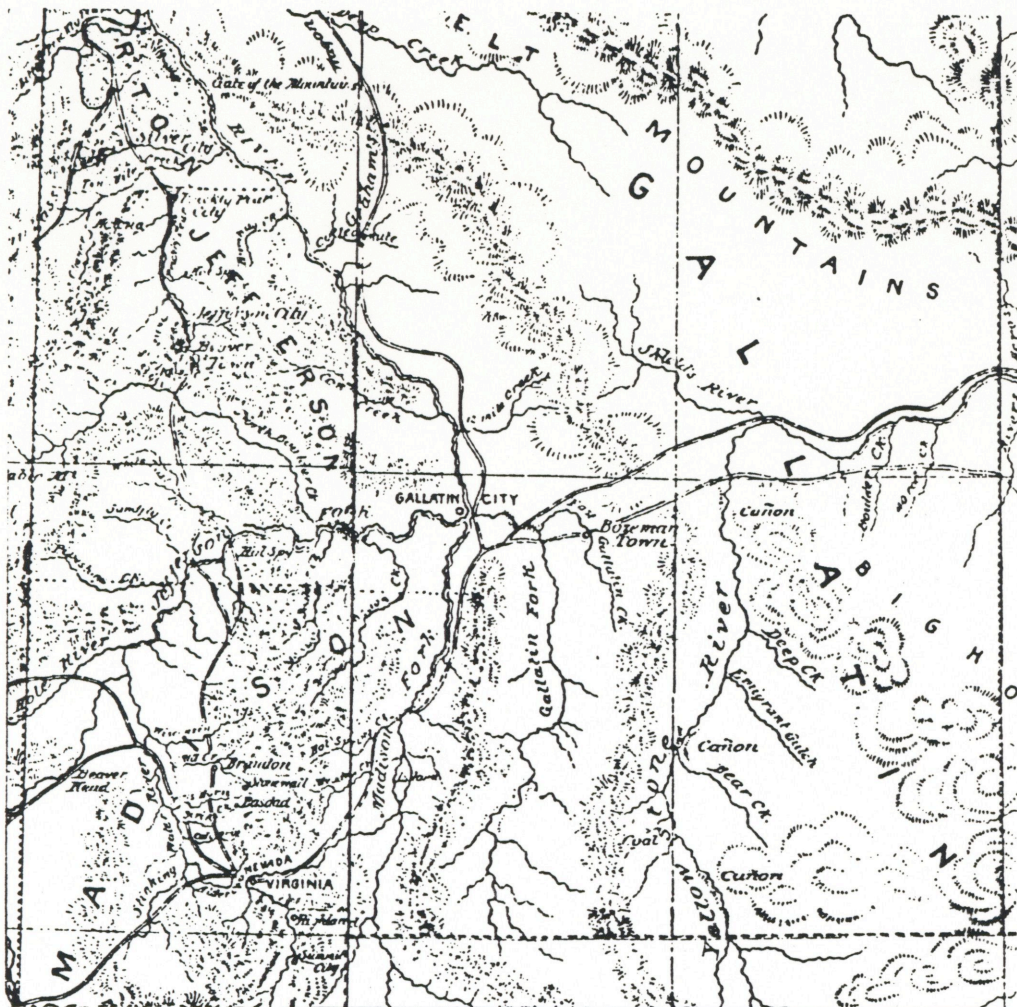
Following the death of N. W. Burris in 1865, residents of Gallatin City began moving across the Missouri River, settling between the Madison and Gallatin Rivers. This site came to be known as Gallatin City Two. The location provided closer proximity to the wagon road from Fort Benton to Virginia City. Although the original Gallatin City site was eventually completely vacated, it continued to be recognized as the current location of Gallatin City, according to subsequent maps and surveys done of this area.

For example, before the first legislature of the Montana Territory could divide the Territory into counties, a map had to be prepared. This was necessary since the county was the basis for electing members to the legislature for purposes of local government. A map was also required in order that courts could be organized and the limits of their

authority defined. W. W. DeLacy, a surveyor familiar with the Montana geography, was employed in 1865 to draw up the required map in which Gallatin City appears at its original location (Illus. 4).⁽⁴⁸⁾ Three years later, in 1868, a survey performed by Mr. B. F. Marsh not only shows Gallatin City at its original location, but also contains a grid pattern depicting city blocks (Illus. 5). This may have been due to the fact that although most of the inhabitants of Gallatin City had moved across the Missouri River to Gallatin City Two, this new town was not surveyed, platted and recorded until 1872.

When the railroad bypassed Gallatin City Two in the 1880's, that city, too, quickly faded. Today, there are no visible remains of the original Gallatin City, except impressions of what may have been the original off-axis grid plan (see Illus. 6), and evidence of site disturbances. The site is likely to yield important historical archeological evidence significant in interpreting and defining Gallatin City--a site of regional historical significance. Because of the tight occupation period of 1862-1865, any archeological remains would date from this phase of Gallatin City.

Gallatin City, although only in existence for a short time, did provide an alternative for people wishing to settle this untamed region for reasons other than mining. With the death of N. W. Burris on May 25, 1865, the enthusiasm for and viability of establishing a second line of steamboats between the Great Falls and Gallatin City appear to have diminished. Likewise, the entire enterprise including the construction of Ophir City, which already had four hundred lots laid



Map
OF THE
TERRITORY OF MONTANA
WITH PORTIONS OF THE ADJOINING TERRITORIES.
*Showing the Gulch or Placer Diggings actually worked,
and Districts where Quartz (Gold & Silver) Lodes
have been discovered to January 1st 1865.*
Gulch diggings. [Symbol] Quartz Lodes. [Symbol]
Drawn by W. W. de Lacy, for the use of
THE FIRST LEGISLATURE OF MONTANA.

ILLUSTRATION 4: First map of the Territory of Montana, drawn by W. W. DeLacy in 1864 for the first legislature of Montana. (Courtesy of Montana Historical Society, Helena, MT.)

ILLUSTRATION 5: Land survey performed by B. F. Marsh, 1868-1869, Township 2 North, Range 2 East, showing grid pattern of Gallatin City. (Courtesy of Montana Historical Society, Helena, MT.)

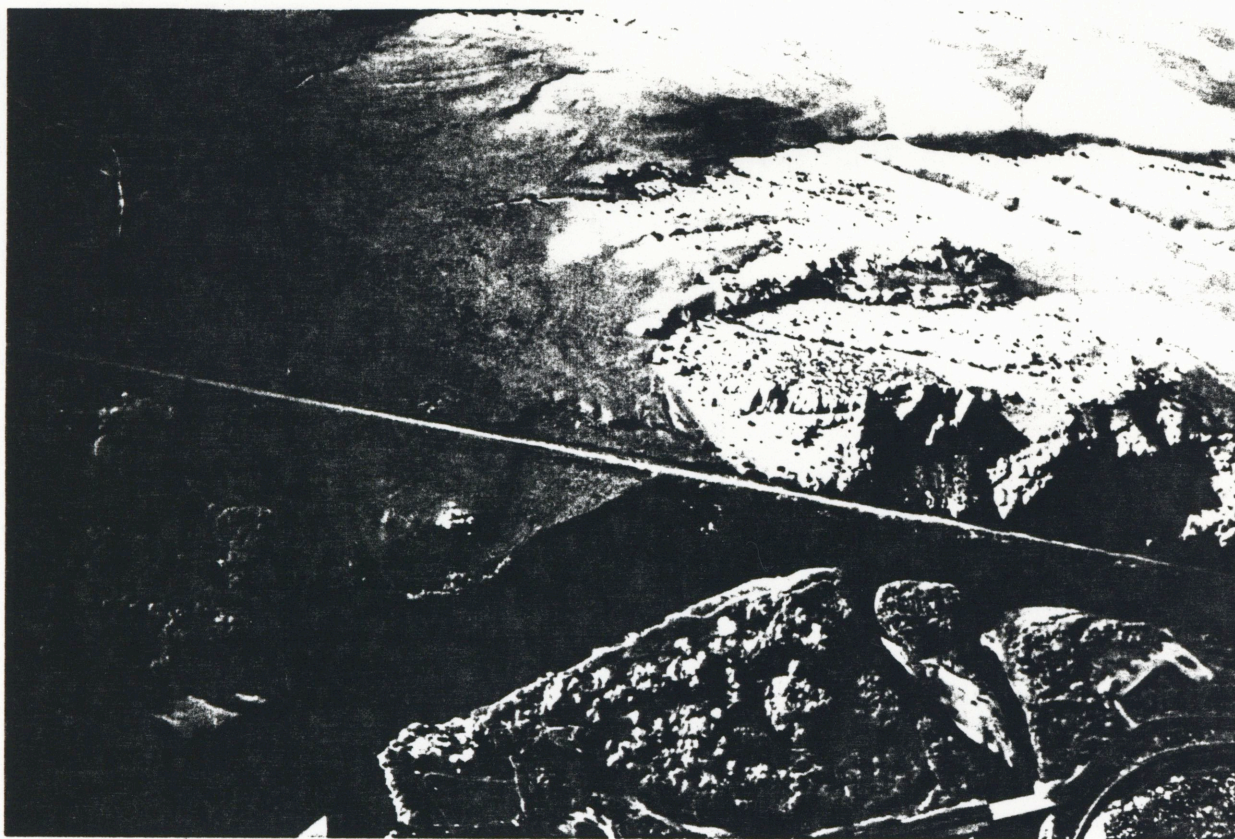


ILLUSTRATION 6: Aerial photograph of Gallatin City site showing outline of only visible impression indicating street grid pattern.

out, ⁽⁴⁹⁾ was never renewed. This can attest to the significance of the role which Mr. Burris played in bringing this dream to reality. Had all phases of the regional development scheme been completed, Gallatin City would have ultimately been the head of navigation of the Missouri River and enjoyed the status of being the primary support base for all of southwestern Montana.

FOOTNOTES

(1) "A letter by Mrs. Emily R. Meredith: Bannack and Gallatin City in 1862-1863," manuscript (Helena, MT: Montana Historical Library).

(2) From J. L. Campbell's 1864 pamphlet, "Idaho--Six Months in the New Gold Regions: The Emigrant's Guide" (Boise, ID: Idaho Historical Society), p. 20.

(3) Such as: The Rocky Mountain News, Denver, Colorado, founded April 27, 1859, or The Deseret News, Salt Lake City, Utah, founded June 15, 1850. Topics ranged from the arrival of goods, shortages of goods, gold strikes, vigilante activity, "Indian scares," the War Between the States, territorial elections, and later, the bid for statehood.

(4) Kingston William Heath, Striving for Permanence on the Western Frontier: Vernacular Architecture as Cultural Informant in Southwestern Montana, unpublished Doctoral Dissertation, Brown University, 1985, p. 6.

(5) For more information about mining camps, see: Duane A. Smith, Rocky Mountain Mining Camps (Lincoln, NE: University of Nebraska Press, 1967).

(6) The following is a partial list of sources traditionally consulted on the history of Montana which make no mention of Gallatin City:

- Cushman, Dan. Montana: The Gold Frontier. Great Falls, MT: Stay Away, Joe Publishers, 1973.
- Fritz, Harry W. Montana: Land of Contrast. Woodland Hills, CA: Windsor Publications, 1984.
- Howard, Joseph Kinsey. Montana--High, Wild, and Handsome. New Haven, CT: Yale University Press, 1959.
- Lang, William L., and Myers, Rex C. Montana: Our Land and People. Boulder, CO: Pruett Publishing Co., 1979.
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(9) Two main sources were letters by Emily Meredith and a diary by James Henry Morley. Emily Meredith, whose manuscript remains with the Montana Historical Society, left the Gallatin Valley in 1867 because of the Indian scare in Bozeman of that year. Mr. N. W. Burris, the principle developer of the Gallatin City scheme and the most qualified to set the record straight, had died in 1865.

(10) Tom Stout, Montana, Its History and Biography, Vol. 1 (Chicago: The American Historical Society, 1921), pp. 306-307.

(11) Newton Carl Abbott, A.M., L.L.D., Montana in the Making (Billings, MT: Gazette Printing Co., 1939), p. 125.

(12) Also known as "Dacotha Territory" as recorded in Book of Records for Town of Gallatin and Surrounding Country. Book of Records for Town of Gallatin and Surrounding Country, "Dacotha Territory, 1862-1865," Vol. 1 (City of Bozeman, MT: Office of Clerk and Recorder).

(13) Fort Connah (1846-1871), last of the Hudson Bay Company trading posts, is located in the Flathead or Mission Valley of Western Montana. See Kingston Heath, "Fort Connah" National Register Nomination, 1979, State Historic Preservation Office, Helena, Montana. Fort Benton, a fur post of the American Fur Company, is located on the Missouri River at what was considered the western terminus of Missouri River traffic. The role of providing safety and supplies was assumed by private fur companies at first--not by any official branch of the United States government.

(14) "Experiences and Impressions of a Woman in Montana, 1862-1863: Narratives by Emily R. Meredith," manuscript (Helena, MT: Montana Historical Library).

(15) Op. cit., Book of Records for Town of Gallatin and Surrounding Country, Vol. 1, p. 1.

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CHAPTER TWO
PROGRAMMING

SITE SELECTION

If the visitor experience is to be encouraged, the actual placement of the Interpretation Center may well require different treatment in different locations within the same park. The Interpretation Center is a building, and within it is told one portion of the park story. the total story is told by the park itself.

By considering the role of the Interpretation Center as only a part of the total park experience, it follows that the placement of the Center can occur at three locations: (1) at or near the park entrance; (2) en route between park entrance and possible destination; and (3) at a terminus.

A center located at the entrance should set the mood for the park. It should introduce and orient the public and provide positive encouragement to participate in the other interpretive facilities in the park. It should be the introduction to the total interpretation of park values.

At an "en route" location, there is the possibility that the mood of the park has already been perceived by the visitor. Hence, interpretation is more difficult because it must provide both an introduction and a synopsis of the park values already passed, as well as the encouragement to experience those values of importance that lie ahead.

A terminally located center requires the fullest treatment. The mood of the park has already had ample opportunity to make itself felt on the visitor. More of the park story has already been told. The

terminal visitor center must provide a synopsis of these park values and, in addition, it must provide the introduction to, and interpretation of, the nearby park features. These features are the reason for the park itself. "By its location alone, there is encouragement to participate" (Chabot).

For this project, the terminal location presented the most positive solution for a variety of reasons. By locating the center at the end of the park, it is able to create a more tangible link to the historic themes, plus be as close as possible to the geographical namesake of the park, the Headwaters of the Missouri River.

The specific site chosen for the Interpretation Center lies on an existing wayside self-guided exhibit area. This serves three purposes. By utilizing this location, it can be assumed that no archaeologically significant resources will be destroyed in the process of construction. Secondly, this location maximizes utilization of existing park services such as parking areas and the picnic area.

The interpretive exhibit material displaced by the proposed center might be relocated outside the center to serve any visitors during times when the center is not in operation, such as before or after scheduled Interpretation Center visitation hours.

The third factor pertaining to the site selection involved the high-reaching boundary set by the area's 100-year flood plain. Due to this circumstance, it was necessary to locate the proposed Interpretation Center on high ground, as was originally done with the existing interpretation plazas.

FACILITY USERS

The two major groups of users of the Interpretation Center are the visitors and the Park Service interpretive and maintenance staff. The visitor group can be viewed as consisting of tourist visitors (residents of Montana, non-residents, and foreign), and visitors from the local region interested in utilizing the library facility to broaden and deepen their understanding of the historic events associated with the park.

The ultimate test of the success of a design solution is its ability to satisfy and support the needs and values of these users. The following data generated by the National Park Service describes visitors in general who typically frequent national parks. The visitors included in this study are best described as generally young (mean age of 31.9), well-educated (64.3% having some college education), frequent visitors to national parks (55% visited four or more areas during the last three years), and having traveled a considerable distance to visit the parks (63% traveled more than 300 miles from their homes and 30% traveled more than 1000 miles). The majority of the visitors spend between 15 and 30 minutes in the Interpretation Center (Visitor Center Design Evaluation).

The following information regarding visitors is based on visitor origin studies conducted in 1981-1985 by the Montana State Department of fish, wildlife, and parks. This data pertains specifically to visitors to the existing Missouri River Headwaters State Park.

Visitor Groups

- (1) *Resident Visitation:* This currently accounts for approximately 20% of the total yearly visitation. Of this figure, the Montana residents primarily reside in the counties of southwest and south-central Montana.
- (2) *Non-Resident Visitation:* This focuses on U.S. citizens and accounts for the remaining 80% of the total yearly visitation. Current incentives for visits from non-residents are presumed to be:
 - (a) Geographical importance (beginning of Missouri River).
 - (b) Significance of the site in relation to the Lewis and Clark Expedition -- a nationally, historically significant event in United States history.
- (3) *Foreign Visitation:* This currently accounts for a very small percent of the visitors, with the majority being Canadian. With the increased visitation associated with an expansion of the park's facilities, this may be an important consideration. Possibly written material could be available in several predominant languages to accommodate this segment of the visitor population.

Regional Visitation

With the previously mentioned anticipated increase in general visitation, it is also a goal of the proposed Interpretation Center to experience an increase in regional use. It is hoped that an improvement

can be made on the 20% visitation rate among Montana residents. To achieve this, a library containing all available material pertaining to the historically significant events which occurred at the Headwaters area has been incorporated into the final design solution.

While this library does not intend to replace or compete with existing State Historical Society or university archives, it does intend to provide a research facility which, by virtue of its historic location, can instill a more meaningful and deeper understanding of this historic material.

Not only is the location of this facility historically significant, it is also centrally located to many communities in southwestern Montana. The potential for use among many of the various schools in the area via field trip excursions becomes obvious as well as providing a central contact point for regionally local history enthusiasts.

Intensity of Use

The Interpretation Center is intended to be in operation year-round. Depending on visitation load, the center can operate either six or seven days per week. Fluctuations of use throughout the year coincide with seasonal changes, according to both the National Park Service and the Montana Department of Parks, with April through September being the peak tourist season.

Data from both of these agencies also indicates that afternoons between 12:00 and 4:00 are normally peak visitation hours. During the "off season" (October - March), the center's business hours will be set

at 9:00 AM to 4:30 PM, with the possibility of being closed one day per week (Monday). During the peak visitation season, the center could operate seven days per week and have extended hours (9:00 AM to 7:30 PM) during daylight savings time.

Another consideration involves the Interpretation Center's close proximity to overnight campgrounds, which could indicate that the largest visitation could be during periods of bad weather when other forms of park enjoyment are precluded.

One other consideration involves an anticipated increase in group visitations in tour buses and school buses. This could pose problems in handling surges of visitors rather than a more continuous flow.

CIRCULATION AND SPATIAL INTERRELATIONSHIPS

The flow of visitors through a center is influenced by the physical design and by intervention of the park staff.

The assumption that the visitor will expose himself/herself willingly to an unfamiliar situation for the purpose of obtaining information must be one of the primary considerations. Being in an unfamiliar setting is compounded by any problems the visitor may experience such as being tired, hot, fed up with the kids, or general physical discomfort.

The first thing a person wants in an unfamiliar situation is warmth and friendliness and freedom from decision making. When the visitor has satisfied his/her creature comforts, gotten a drink of water, etc., there should be a visual invitation of a direction to follow. This encouragement is provided by the architecture as well as by park personnel. The suggestion to follow the best, even though predetermined, course should be supplied, with ample opportunity for the visitor to change his/her mind or stop at any point.

In the spirit of a warm welcome, there should be some facility for stopping to rest, both inside and outside the main entry to the Interpretation Center. These considerations pertain to the visitor at the beginning of his/her experience with the center. Next must be considered the movement of people from space to space within the building.

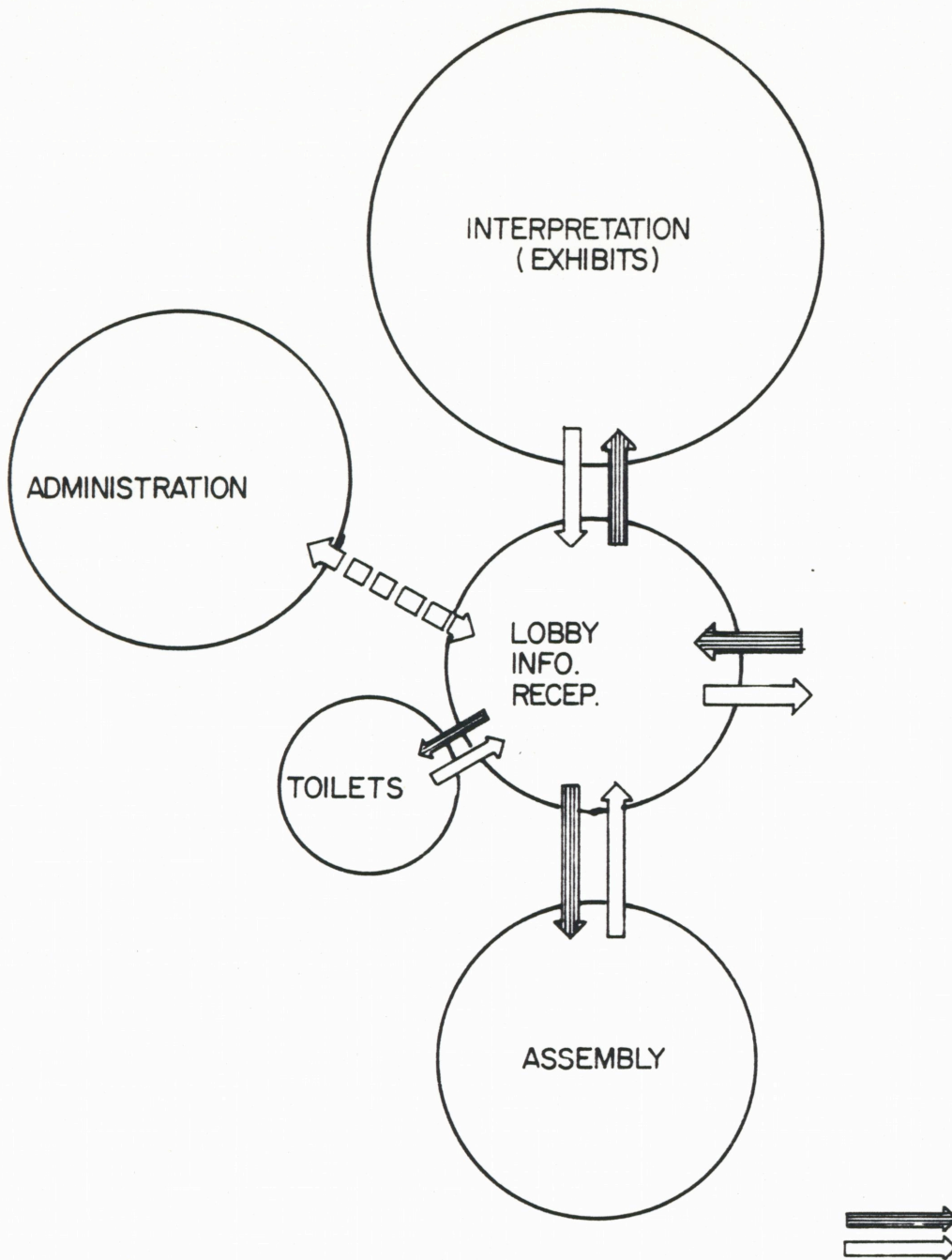
The major public activities of the Interpretation Center are perception, assembly, and interpretation. Reception is defined as a lobby space for entering and dissemination of information; assembly is

defined as an auditorium space for lectures and other audio/visual programs; interpretation is defined as the exhibit space(s) which convey the historic interpretive material via the various exhibit methods and techniques.

As a planning tool to arrive at an architectural solution which encourages or guides the visitor in the right direction, abstracted flow diagrams can communicate different design intentions.

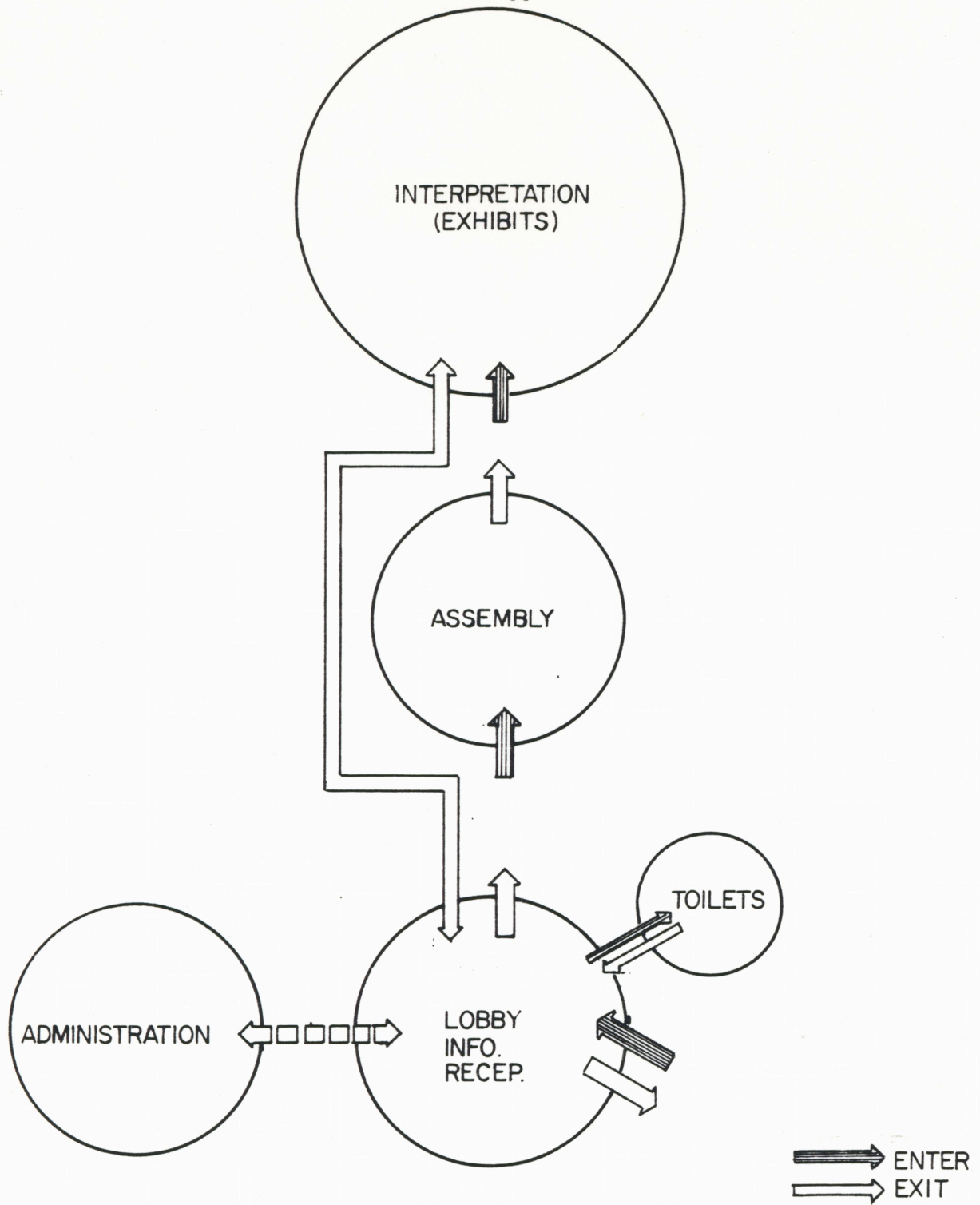
Several spatial arrangements and related flow patterns are illustrated in the following pages which utilize radial and sequential spatial relationships. In a radial plan, the visitor should be given adequate information to make the choice of which direction he/she would like best to follow. Ideally this would lead to a relatively even distribution of flow. In a sequential plan the architect attempts to take the visitor in hand and guide him/her through a predetermined sequence.

It should be noted that in all cases where these major public-use functional areas are in close proximity to each other, circulation problems can arise once a space has reached capacity. For example, if the lobby space must distribute all visitors to both primary spaces of assembly and exhibit, then it must provide the needed square footage to hold two full auditorium loads (for those leaving the auditorium and for those waiting to enter), plus a portion of the exhibit room capacity (space for those leaving and space for those arriving). Conversely, the visitor flow can be hastened by more frequent audio/visual presentations. In this way, the auditorium may be used to sweep the exhibit areas clear for a new group of incoming visitors.



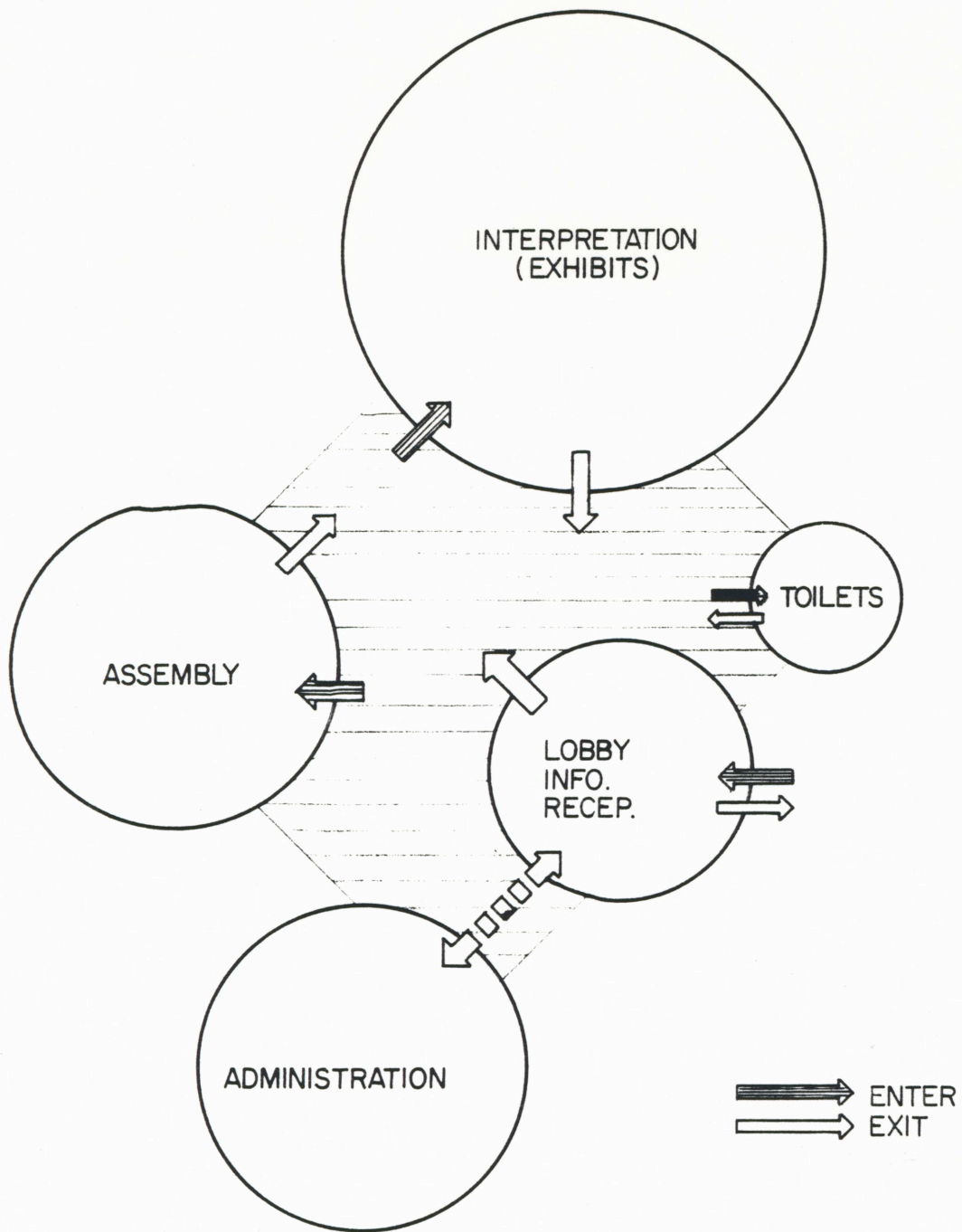
RADIAL PLAN

ALLOWS VISITORS MOST FREEDOM OF CHOICE.



SEQUENTIAL PLAN

ALLOWS VISITORS TO MAKE DECISIONS
YET GUIDES VISITORS TO MAJOR SPACES.



OPEN PLAN

ALLOWS VISITOR TO MAKE CHOICE AT ANY POINT. OPEN CIRCULATION FREES MOVEMENT OF INDIVIDUAL.

For this project, the sequential relationship of major public spaces was used. Upon entering the lobby, the visitor can decide whether to participate in any assembly activities or continue on to the exhibit space.

The exhibit space is also arranged in a sequential scheme to present the historic theme material in a chronological order. Where appropriate, as in the case of Gallatin City exhibit area, views to the outside can be integrated into the exhibit design. A view to the outside landscape was also considered appropriate for the lobby to ease the transition from exterior to interior, and avoid a feeling of sudden containment.

By recognizing the potential to incorporate views to the outside in various areas of the Interpretation Center, a variety of spatial qualities can be obtained. For example, since a significant portion of the interpretive material is two-dimensional, the absence of a view would be appropriate so as not to distract the visitor from the material. This could directly apply to the Lewis and Clark portion of the exhibits. Upon completion of this segment of the exhibit space, the visitor would then pass into the area pertaining to other Lewis and Clark sites in Montana. Here, a view would provide a contrast to the previous experience and afford a panoramic view of Lewis Rock and the actual Missouri River Headwaters.

This alternating between visual links to the outside and two- and three-dimensional exhibit material should serve to create a more varied and interesting visual experience.

Vehicular Circulation

The existing paved parking area at the proposed Interpretation Center site will require modification. It consists of a curvilinear configuration and turnaround area, and presently accommodates approximately 35 vehicles.

The proposed parking area will modify the turnaround area to create a loop back to the main highway. Approximately 20 more vehicles will be able to park, making the total parking available to 55 vehicles. A portion of this will be shared with the picnic area.

The loop portion of the parking area will serve to accommodate up to two buses and also reserve an area as a fire lane. A minimum of four parking stalls shall be designated as handicap parking. Employee parking shall be in the main parking area. Bicycle racks will also be provided adjacent to this main parking area.

The existing gravel service road to the building site will continue to serve this purpose. Trash collection and service pick-up and drop-off will be conducted on this roadway.

SPACE PROGRAM

Introduction

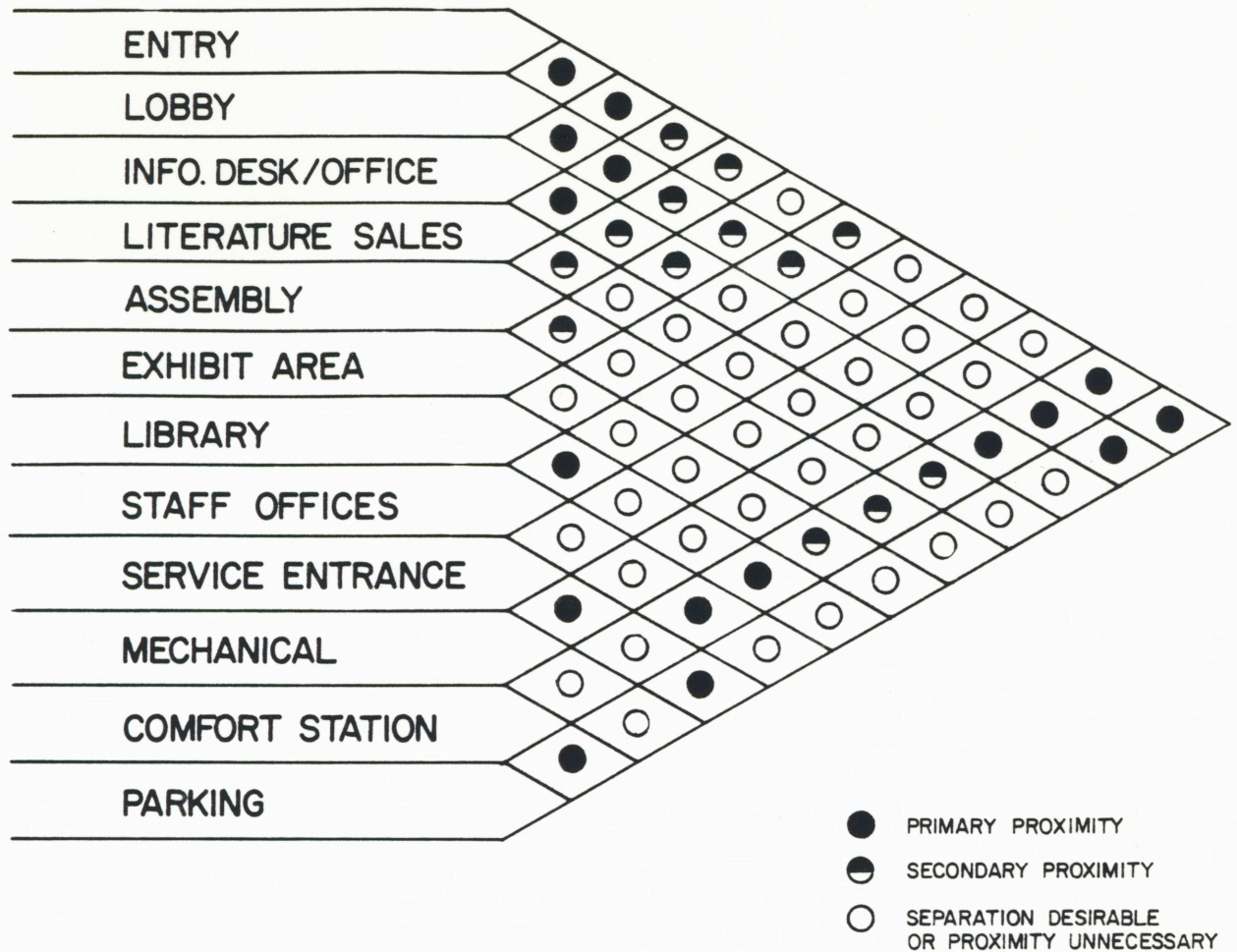
An analysis of each individual space has been provided. The analysis describes the activity that will take place, estimated size, requirements of the space, furnishings and equipment needed, and special considerations that should be kept in mind when designing that space.

The size of the facility is determined by the number of people who will use it. Assuming the parking area can accommodate 35 cars for people exclusively using the visitor area, this can determine the visitor load on the facility. It can be assumed that 80% of the parking area load figured at 2.7 persons per car will be in the facility; 10% will be en route to, and 10% will be en route from.

The following averages can be used to figure the hourly building load:

- (1) Lobbies -- 12 sq.ft. per person
- (2) Assembly Room -- 9 sq.ft. per person
- (3) Exhibit Area -- 20 sq.ft. per person
- (4) Lounge/Rest area -- 20 sq.ft. per person
- (5) Library Area -- 20 sq.ft. per person

Visitation -- 75 people per hour, peak



SPACE INTERRELATIONSHIPS / PROXIMITY MATRIX

Spaces and Their Square Footages

Services:	Lobby.....	900 sq.ft.
	Assembly.....	900 sq.ft.
	Exhibit Area.....	3000 sq.ft.
	Library Space.....	1200 sq.ft.
	Staff Offices.....	600 sq.ft.
	Mechanical @ 5% F.A.....	300 sq.ft.
	Circulation @ 25% F.A.....	<u>1500 sq.ft.</u>
	Approximate Total Area.....	8400 sq.ft.

SPACE: LOBBY

ACTIVITY DESCRIPTION:

- (1) Entering/leaving
- (2) Dissemination of information
- (3) Interpretive literature sales
- (4) Rest area
- (5) Standing exhibit area
- (6) Provides transition to:
 - (a) Assembly
 - (b) Exhibit area
 - (c) Field exhibits
 - (d) Rest area

SPECIAL CONSIDERATIONS:

- (1) Natural daylighting
- (2) Views to outside
- (3) Visual orientation to next space
- (4) Should include a standing exhibit for focal object

FURNISHINGS:

- (1) Non-slip floor surface at entry (rubber mat flooring)
- (2) Sofas for seating area
- (3) Racks for literature sales
- (4) Slate tile flooring for circulation areas
- (5) Carpet floor covering for rest area
- (6) Planters for vegetation

SPACE: *INFORMATION OFFICE AND DESK*

ACTIVITY DESCRIPTION:

- (1) Provide information to visitor.
- (2) Handle literature sales.
- (3) Control -- visual security of lobby area.
- (4) Administer first aid if necessary from injuries due to hiking, snake bite, etc.

SPECIAL CONSIDERATIONS:

- (1) Should have visual access to entire lobby area.
- (2) Should have storage capacity for literature sales.
- (3) Should have clerical and money handling capabilities.

SPACE: ASSEMBLY

ACTIVITY DESCRIPTION:

Auditorium area for lectures and audio/visual presentations

SPECIAL CONSIDERATIONS:

- (1) Projection booth for movie and slide projector
- (2) Sound system
- (3) Light well entrance
- (4) Seating for approximately 40 visitors
- (5) Area for minimum of 4 wheelchairs
- (6) Possible mural display on acoustical wall material
- (7) Storage for presentation materials
- (8) Projection screen - low -
 - (a) Low washout characteristics
 - (b) Uniform brightness, light distribution
 - (c) Use Mirror Image Screen (TM)

FURNISHINGS:

- (1) Individual seating
- (2) Carpet floor
- (3) Acoustical surface, walls, ceiling
- (4) Operable daylighting control

SPACE: *EXHIBIT AREA*

ACTIVITY DESCRIPTION:

- (1) Convey historic interpretive material.
- (2) Provide areas for audio and video presentations for individuals and small groups (5-10 people).

SPECIAL CONSIDERATIONS:

- (1) Artifact display cases and exhibit boards are visually accessible to all visitors (mounting height and letter size).
- (2) use of pick-up activated audio-narrative programs should not interfere with circulation through exhibit space.
- (3) Video presentation areas will have sound baffle entry; enclosure will be transparent to allow viewing of activity within.
- (4) No direct sunlight should reach exhibit materials.

FURNISHINGS:

- (1) Use video disc players for video presentations.
- (2) Carpet throughout.
- (3) Standing displays will be enclosed with railing barrier.

SPACE: *LIBRARY SPACE*

ACTIVITY DESCRIPTION:

- (1) Quiet reading area
- (2) Approximately 5500 books available relating to historical themes.

SPECIAL CONSIDERATIONS:

- (1) Natural daylighting, north light
- (2) View to outdoors
- (3) Acoustic materials on walls and ceiling
- (4) Special collections room:
 - (a) Access by librarian and historian only
 - (b) Temperature and humidity control
- (5) Librarian's office:
 - (a) Reference desk
 - (b) Work space
 - (c) Sink area
- (6) Historian's office

FURNISHINGS:

- (1) Comfortable seating
- (2) Tables
- (3) Copy machine
- (4) Card catalogue
- (5) Carpet throughout

SPACE: *STAFF OFFICES*

ACTIVITY DESCRIPTION:

- (1) Office space for:
 - (a) Superintendent
 - (b) Secretary
 - (c) Lecture/field exhibit person
- (2) Lounge area
- (3) Access to service entry

SPECIAL CONSIDERATIONS:

- (1) View to "bowl" area
- (2) Prevent visitors from wandering into office area
- (3) Provide storage area

SPECIAL CONSIDERATIONS

NATIONAL PARK SERVICE
VISITOR CENTER STUDY BARRIER-FREE CHECKLIST

CIRCULATION

Parking Spaces

Width: 12 feet wide to permit room at side of car for wheelchair access to or from spaces

Path of Movement: Should avoid need to pass behind parked cars

Walks

Width: Minimum 48 inches

Grade: Maximum 5 percent

Ramps

Width: Minimum 48 inches

Grade: Maximum slope of 1 in 12 or 8.3 percent

Length: Maximum of 30 feet of continuous slope between level platforms

Surface: Non-slip

Handrails: Minimum 1 side, preferably on both sides, height of 32 inches, provide additional rails at lower heights where children will use the facility, extend rails 1 foot beyond top and bottom of ramp on the side of the continuing wall or guard rail.

Entrances

Service either on grade or by ramp (see above)

Doors

Width: Minimum of 32 inches when door is open

Operation: Single action

Stairs

- Risers: Maximum height of 7 inches
- Nosing: Avoid projecting nosings
- Handrails: Minimum one side, height of 32 inches, extend rail 18 inches beyond top and bottom risers

OTHER FACILITIES

Toilet Stall

- Width: 3 feet
- Depth: Minimum 56 inches, preferably 60 inches
- Door: 32 inches wide when door is open
- Handrails: On each side, 33 inches high, parallel with floor, strong and well supported

Water Closet

- Seat Height: 20 inches
- Type: Wall hung most desirable, if floor supported, under-structure should not interfere with close approach of wheelchair

Urinal

- Wall hung, opening 19 inches above floor, floor mounted at same level as floor

Mirrors

- Height: Not greater than 40 inches above the floor

Towel Racks, Dispensers, or Shelves

- Height: Not greater than 40 inches above the floor

Water Fountains

- Height/Type: Hand operated or hand and foot operated, floor mounted side fountain--30 inches, wall hung basin--36 inches, recessed mounting not recommended, alcoves should be wider than wheelchair

Lavoratory (Sink)

Clearance: 27 inches beneath the sink

Public Phones

Dial and handset should be within reach of person in wheelchair, coin slot should be at a height of 51 to 56 inches

Identification for the Blind

Raised letters or numbers for room identification, placed 54 to 66 inches high to the side of the door

APPENDIX
SITE ANALYSIS DATA

CLIMATE

The Broadwater County Area has a modified continental climate. Several factors enter into the modification of continental climate characteristics. The more important of these factors are the frequent invasions of Pacific Ocean air masses, drainage of cool air into the valley from the surrounding mountains, and the protecting mountain shield in all directions, which combine to make temperature changes somewhat smaller than those expected of a true continental climate. Terrain is also an important factor in the pattern of precipitation in the survey area. The surrounding mountains cause a "rain shadow" effect in the valley of the Missouri River. Annual precipitation varies from less than 12 inches on the valley floor to about 40 inches at the higher elevations both east and west of the valley. About three-fourths of the average annual precipitation falls during the 6-month period of April to September. May and June are normally the wettest months.

Average Precipitation and Snowfall (inches)

<i>Month</i>	<i>Precipitation</i>	<i>Snowfall</i>
<i>January.....</i>	<i>1.0</i>	<i>6.6</i>
<i>February.....</i>	<i>0.8</i>	<i>4.1</i>
<i>March.....</i>	<i>1.1</i>	<i>4.2</i>
<i>April.....</i>	<i>1.4</i>	<i>1.7</i>
<i>May.....</i>	<i>2.3</i>	<i>1.0</i>
<i>June.....</i>	<i>3.0</i>	<i>trace</i>
<i>July.....</i>	<i>1.2</i>	<i>0</i>
<i>August.....</i>	<i>1.3</i>	<i>0</i>
<i>September.....</i>	<i>1.4</i>	<i>0.3</i>
<i>October.....</i>	<i>1.1</i>	<i>0.8</i>
<i>November.....</i>	<i>1.0</i>	<i>4.1</i>
<i>December.....</i>	<i>1.0</i>	<i>5.7</i>
<i>Year.....</i>	<i>16.6</i>	<i>28.5</i>

During the cold season, nearly all precipitation falls as snow. At the lower elevations, snow usually does not remain on the ground for extended periods of time, but in the mountains it begins accumulating in November most years, reaching the greatest depth and water content in April or early in May. Infrequently, heavy rain late in May or in June coincides with periods of maximum melting of the mountain snowpack, and this combination causes some degree of flooding in some streams. However, flooding is not a serious hazard in the survey area.

Steady rain may occur at any time of year, but summer precipitation falls mostly in showers. Winter snow tends to be heaviest in December and January, but the water content of the snow is usually low. Snowfall in the higher mountains is estimated to reach a total of about 200 inches annually. The yearly snowfall is only approximately 30 inches on the valley floor.

During winter there usually are a few invasions of very cold Arctic air which drop temperatures to well below zero. Such extreme cold usually lasts only a few days, but extended cold spells do occur occasionally. Snow and blowing snow sometimes accompany the cold air invasions, but this type of storm usually lasts only a day or two. Mild weather is common during winter, and the temperature is above freezing on the valley floor. Such mild weather is less common in the area of Townsend than along the east slopes of the Rocky Mountains.

Temperature in summer is moderate, and the maximum reading is generally less than 90°F and very seldom reaches 100°. There is usually a marked change in temperature from day to night, which tends to produce

an agreeable combination of fairly warm days and cool nights during summer. The growing season averages 103 days at Townsend, but the freeze-free season is shorter at the higher elevations.

Thunderstorms are frequent from May to August, and the maximum occurrence is in July. Only seldom is there a damaging hailstorm or a severe ice or sleet storm in winter. Strong winds can occur at any time throughout the year, but generally do not last more than a few hours at a time.

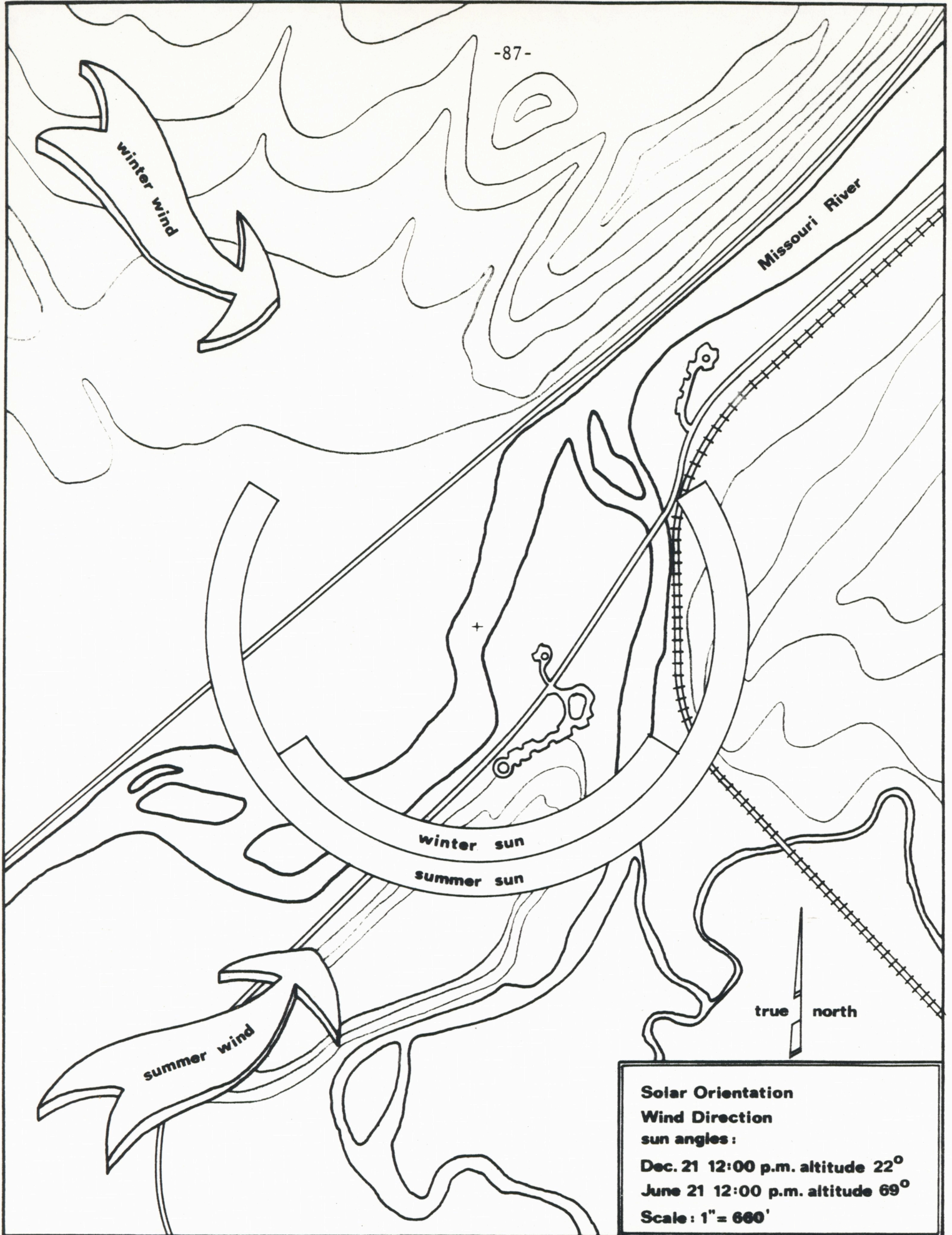
Average Maximum/Minimum Temperatures

Month	Temperature (°F)				Average Monthly Total
	Average Daily Maximum	Average Daily Minimum	Average Daily Maximum	Average Daily Minimum	
January.....	31	7	52	-20	0.5
February.....	38	14	56	- 9	0.3
March.....	44	18	64	- 6	0.5
April.....	57	28	76	14	0.9
May.....	66	37	84	24	1.8
June.....	73	44	89	32	2.5
July.....	84	48	95	38	1.1
August.....	83	46	95	35	1.1
September.....	71	38	88	24	1.2
October.....	60	29	79	16	0.7
November.....	44	20	63	- 1	0.5
December.....	36	13	54	-13	0.5
Year.....	57	29	97*	-25**	11.6

*Average annual highest temperature.

**Average annual lowest temperature.

CLIMATE SOURCE: R.A. Dightman, climatologist for Montana, National Weather Service, U.S. Department of Commerce.



Solar Orientation

Wind Direction

sun angles :

Dec. 21 12:00 p.m. altitude 22°

June 21 12:00 p.m. altitude 69°

Scale : 1" = 660'

SOIL SURVEY: MISSOURI RIVER HEADWATERS AREA



Aeric Fluvaquents

Af--Aeric Fluvaquents, 0 to 5 percent slopes. These are somewhat poorly drained and poorly drained, loamy soils. They are nearly level and gently sloping and are on low terraces and bottom lands along intermittent and perennial streams. The soil surface is somewhat irregular

because of channels and ridges. Areas of poorly drained soil make up about 30 percent of the unit. The surface layer ranges from sandy loam to clay loam, but it is mostly loam. The soils range from 10 to more than 60 inches thick over sandy gravel, but in most areas sandy gravel is at a depth of 36 to 60 inches. Small gravelly and very gravelly areas make up less than 20 percent of the unit.

Most of the soils in this unit are subject to annual flooding. They have a seasonal high water table at a depth of 20 to 60 inches. The hazard of erosion is moderate to high, and runoff is medium.

This unit is used mainly for range. Capability unit VIw-1, dryland; Subirrigated range site, 10- to 14-inch precipitation zone; windbreak suitability group 2W.

MuB--Mussel-Musselshell complex, 2 to 5 percent slopes. This complex is about 50 percent Mussel loam and 30 percent Musselshell loam and Musselshell cobbly loam. These gently sloping and gently undulating soils are on long, smooth fans that are dissected by drainageways of intermittent streams. The Mussel and Musselshell soils in this complex have profiles similar to those described as representative of their respective series, but in places the Musselshell soils do not have a cobbly surface layer. The surface layer is generally loam, but 5- to 20-acre areas of Musselshell gravelly loam and 5-acre areas of Musselshell cobbly loam are present in places.

Included with these soils in mapping, and making up about 20 percent of the mapped areas, are areas of Amesha silt loam, Crago gravelly

loam, and Crago cobbly loam. The Amesha soil is within areas of Mussel and Musselshell soils, and the Crago soils are on low ridges, terrace breaks, and steep short sides of drainageways.

The hazard of soil blowing is severe. Runoff is medium.

These soils are used mainly for range. Some areas are used for dryland and irrigated crops. Capability units IIIe-2, dryland, and IIe-1, irrigated; Mussel loam in Silty range site, 10- to 14-inch precipitation zone, and in windbreak suitability group 2M; Musselshell loam in Limy range site, 10- to 14-inch precipitation zone, and in windbreak suitability group 3L.

Rr-Rivra gravelly loam, 0 to 5 percent slopes. This nearly level to gently sloping and gently undulating soil is mostly along the Missouri River on low stream terraces. The surface is broken by low ridges and shallow drainageways. This soil is subject to overflow. A seasonal high water table is at a depth of 36 to more than 72 inches.

Included with this soil in mapping are some areas of gravelly sandy loam, very gravelly sandy loam, very gravelly loam, and Villy soils and some other poorly drained soils in shallow, concave areas. Included soils make up about 30 percent of the mapping unit. The very gravelly soils commonly are on low ridges.

The hazard of erosion is slight. Runoff is very slow.

This soil is used for range. Capability unit VIs-1, dryland; Overflow range site, 10- to 14-inch precipitation zone; windbreak suitability group 4.

TvF--Tropal-Rock outcrop complex, 15 to 60 percent slopes. This complex is about 55 percent Tropal gravelly loam and Tropal stony loam and 30 percent Rock outcrop. These steep and very steep soils are on mountainous uplands. The Tropal soils are on mountainsides and smooth, convex areas. Rock outcrop is mainly on ridgetops, but it also is in isolated areas downslope. The Tropal gravelly loam in this complex has the profile described as representative of the Tropal series. The Tropal stony loam in this complex has a profile similar to the one described as representative of the Tropal series, but the surface layer is stony loam.

Included with these soils in mapping are areas of Crago and Whitore soils that make up about 15 percent of the mapping unit. The Crago soil is on foot slopes and in swales. The Whitore soil is mostly on north-facing slopes along drainageways.

The hazard of erosion is severe. Runoff is rapid.

These soils are used only for range. Capability unit VIIe-1, dry-land; Tropal stony loam in Very Shallow range site, 10- to 19-inch precipitation zone, and in windbreak suitability group 4; Rock outcrop not assigned to a range site or wildlife suitability group.

Uf--Ustic Torrifluvents, 1 to 3 percent slopes. These are nearly level or gently sloping, well-drained soils along narrow stream valleys. They are grayish-brown or light grayish-brown sandy loam or clay loam that is generally more than 36 inches deep over sand and gravel. The surface layer in about 25 percent of this mapping unit is 15 to 50

percent or more gravel. The soil surface is irregular because of the many low dissecting drainageways.

Most areas of this unit are subject to flooding at least once a year. The hazard of erosion is moderate to high, and runoff is medium.

This unit is used mainly for range. Some small areas are used for hay. Capability unit VIw-1, dryland; Overflow range site, 10- to 14-inch precipitation zone; windbreak suitability group 2W.

SOIL SURVEY SOURCE: Soil Survey of Broadwater County Area, Montana.

DETERMINATION OF SNOW LOADS

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