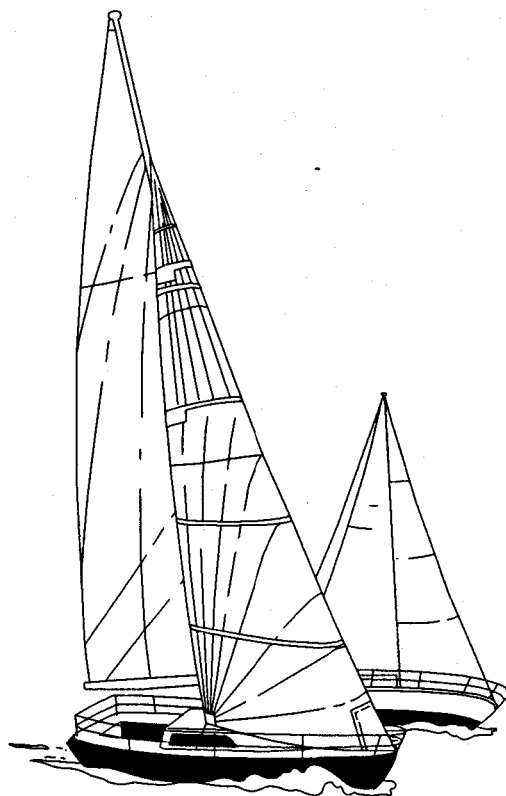


Recreational Boating on the Mid-Columbia River (St. Helens to The Dalles)



**A Cooperative Project of
the Oregon State Marine Board
and the
Oregon State University
Extension Sea Grant**

Planning for A Network of Public Transient Tie-Up Facilities

**RECREATIONAL BOATING ON THE
MID-COLUMBIA RIVER
(ST. HELENS TO THE DALLES)**

**PLANNING FOR A NETWORK OF
PUBLIC TRANSIENT TIE-UP FACILITIES**

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EXECUTIVE SUMMARY

This study is the second of a three-part project to determine potential locations for public transient tie-up facilities along the Columbia River. The goal of the three studies is to identify opportunities for developing a network of facilities, which will enable recreational boaters to safely traverse Oregon's portion of the Columbia River. Developing a network, as opposed to placing facilities on a random, individual basis, will benefit both the boating community and other users of the river in many ways. A network will help eliminate the duplication of facilities, protect environmentally sensitive areas by drawing boaters away from these areas and attracting them to areas able to accommodate a larger number of boaters, and reduce conflicts between boaters and other users of the river caused by overcrowding. A network of public transient tie-up facilities will also benefit local river communities by attracting boaters to these areas and providing them access to local facilities.

Several considerations must be taken into account when determining suitable locations for public transient tie-up facilities. The primary consideration is the distance away from other tie-up facilities. The goal of this project is to provide a network of tie-up facilities located within a day's cruising distance of any other facility. This will enable boaters to safely traverse the entire river. Physical features of the river and the surrounding area determine safe areas for a tie-up facility. The water depth must be great enough to allow cruising boaters safe access. The facility should offer protection from winds (primarily from the west in the Gorge) and protection from waves and wakes created by passing river traffic. The facility should provide access to land and ideally should have a sandy beach.

A network of public transient tie-up facilities will help alleviate some of the conflicts boaters encounter with the multiple user groups of the Columbia River. A common conflict that boaters encounter on the Mid-Columbia River is fouling in Native American fishing nets. This conflict occurs because the two user groups often occupy the same area. A tie-up facility will provide a safe location for boaters to moor their boat and will allow Native Americans continued access to accustomed fishing sites. Conflicts are often created between recreational boaters and commercial traffic in the Portland metro area. A network of public transient tie-up facilities will draw boaters to safer, less crowded areas of the Mid-Columbia River. Passing through the navigational locks on the Columbia River is often difficult for recreational boaters because they do not have a safe location to wait before they are allowed passage. A tie-up facility above and below each dam will ease this barrier for recreational boaters.

Three methods were used by the researcher to determine proposed locations for the facilities:

- (1) survey of and interviews with recreational boaters;
- (2) physical appraisal of the river and adjacent land;
- (3) interviews and discussions with federal, state, local, and non-governmental agencies associated with the Columbia River.

Thirty-five locations were examined, and ten priority A sites were identified with the immediate potential for development. The ten identified sites are:

The Cove Marina	Cascade Locks Boat Basin
Bartlett's Landing	Government Cove
Lewis and Clark Marine Park	Wyeth Waterfront
Rooster Rock State Park	Mayer West State Park
Bradford Island	Crate's Point

Several of these sites are already at least partially developed as a boating facility. Existing facilities are a high priority for development to avoid duplicating existing facilities and to reduce development of pristine and sensitive areas. Bradford Island and Crate's Point were selected for development because they are "special destination" sites and have characteristics beyond a tie-up facility to attract boaters. A facility on Bradford Island will provide much needed moorage for recreational boaters at the navigation lock and will provide access to the Bonneville Dam Visitors' Center. The Gorge Discovery Center is proposed to be built at Crate's Point. A transient tie-up facility will provide much needed boating access to this center.

The other 25 sites were ranked as priority B, C, D (in decreasing priority order for recommendation) and "small boat." The small boat areas should be considered to provide facilities for day-use by boaters with small watercraft.

Priority A and B designations are to meet existing demand for additional boating facility development. Priority A and B sites typically do not have any major obstacles to development, such as environmental or cost related problems.

Priority C and D sites have been designated as alternative sites that may be developed at a future date to accommodate demands as recreational boating continues to increase in popularity. Priority C and D sites will require more in-depth site evaluation, due to difficulties in development, including environmental constraints, ownership conflicts and permitting and possible mitigation requirements.

This study is a preliminary planning recommendation to the Oregon State Marine Board (OSMB). The OSMB should now work with the agencies and local communities involved with the sites to determine the logistics and feasibility for development of a public transient tie-up facility in the recommended location. Some recommended sites may ultimately not be feasible, while others not recommended herein might become attractive for development in the future. The purpose of this project is to encourage various agencies to become involved in dialogue and planning for a network of public transient tie-up facilities along the Columbia River.

I. INTRODUCTION

The Columbia River is the largest river in the Pacific Northwest with an average annual flow of 6,657 m³/s and a drainage system of 670,810 km² (Becker and Neitzel 1992). The river is a major mode of transportation for cargo ships and barges which carry fuel, grains, wood, and other raw materials. However, the Pacific Northwest depends upon the Columbia for more than just water transport. The Columbia River is valuable for agriculture and irrigation, hydroelectric power, navigation, fisheries, and recreation.

The population of Oregon has steadily increased since 1960 (U.S. Bureau of Census 1991). (Figure 1). This increase of over one million in 30 years has put an increased demand on the natural resources of Oregon, the Columbia River included. Careful planning and management are necessary to help conserve the very resources, such as the rivers, that attract people to the Northwest in the first place.

Recreational river cruising is one demand on the Columbia River that has recently escalated to unprecedented levels (OSMB 1990). (Figure 2). A portion of this increase may be explained by the population growth of Oregon, but the rate at which boating has increased exceeds what could be explained by normal population growth. Until the middle of this century, recreational boating was the prerogative of the very wealthy. The combined effects of increased affluence and leisure and new technologies have raised the demand for recreational boating opportunities and facilities (Kenchington 1990).

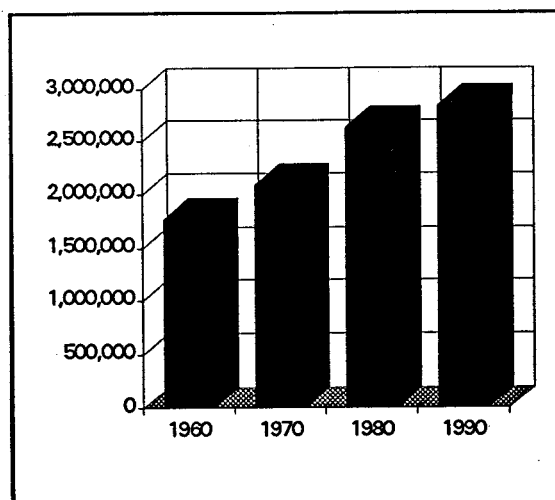


Figure 1. Population trend of Oregon from 1960-1990.

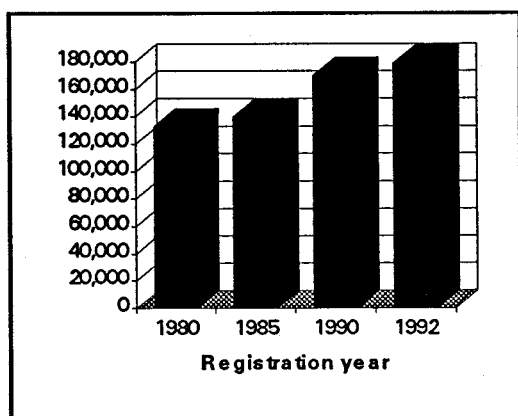


Figure 2. Number of registered boats in Oregon (1980-1992).

Recreational boating can be damaging to the environment and may destroy natural resources if a high degree of use occurs in limited sections of the river. However, it can be a non-consumptive use of the river if properly planned for and managed. At low levels, and if use is dispersed along the river, recreational boating may cause relatively little damage to the environment. If additional facilities are strategically located, they will draw boaters away from crowded areas, disperse use, and help protect sensitive areas by encouraging use to occur only in developed areas.

Additional launching ramps and tie-up facilities on the Columbia River can help protect the natural resources that attract boaters to the river by dispersing boater use to areas that are able to withstand a high degree of recreational use. A network of public transient tie-up facilities along the entire stretch of the Columbia River will disperse activity and will benefit the boating and river communities by providing additional recreational opportunities.

A. Purpose of the study

In Oregon, the Oregon State Marine Board (OSMB) is responsible for managing recreational boating activities. The goal of the OSMB is "[t]o provide the leadership necessary to ensure quality boating opportunities in a manner that protects and enhances the livability of our state for Oregonians and visitors" (OSMB 1990). The OSMB licenses and registers motorboats and sailboats. The funds generated from license and registration fees, as well as marine fuel taxes, are returned to the boaters in the form of enhanced education, law enforcement, and public facilities.

A major program of the OSMB is to provide boating facilities for users of Oregon waterways. This study, "Planning for a Network of Public Transient Tie-up Facilities on the Mid-Columbia River," is the second part of a three part project to study recreational boating on the Columbia River. These studies are funded by the OSMB to assess the needs and opportunities for transient tie-up facilities along Oregon's 310 River Mile (RM) portion of the Columbia River.

The first study examined the Lower Columbia River from the mouth of the river at Astoria to St. Helens at 86 RM (Cassell 1991). This study examines the Mid-Columbia River from St. Helens to The Dalles at 190 RM. A future study is needed to examine the Upper Columbia River from The Dalles to RM 310 where the Columbia comes from Washington state. The outcome of these studies will be to identify options for developing a network of public transient tie-up facilities along the Columbia River from the Pacific Ocean to the point at which the river comes from only Washington.

The focus of this study is primarily the Oregon side of the river, despite the fact that there are also suitable locations for tie-up facilities on the Washington side of the river. A bi-state project would be preferable, but it is a function of politics and government that it is not happening. Although this study is not a bi-state planning project, it examined the Washington side of the river in areas where opportunities for development were limited or non-existent on the Oregon side. Boaters cruising the Columbia River do not care which side of the river facilities are located; they are just looking for a quality facility in a protected and scenic area.

This study makes significant progress in the preliminary planning of new facilities and it may be merged with similar studies from Washington for a comprehensive development of public transient tie-up sites on the Columbia River. A planning study should be done in the future that examines potential sites on the Washington side for inclusion to the network developed by this project.

In the future, coordination between the State of Oregon and the State of Washington, through the Interagency Committee for Outdoor Recreation (IAC) should be pursued. The IAC is charged with statewide comprehensive outdoor recreation planning and could provide a new opportunity to open communication channels and expand planning efforts between Oregon and Washington. There is the possibility of a co-sponsorship between the IAC and OSMB for the Upper -Columbia River Transient Tie-Up Study, which will constitute the final segment of the study.

The state of Washington has three boating facilities located on the Mid-Columbia River (Table 1). Boaters use both sides of the river indiscriminately, preferring the best facility in the most scenic area and convenient location (Oborn 1992). Washington boaters were found at Oregon facilities and Oregon boaters were found at Washington facilities. Twenty five percent of the boaters surveyed on the river (Appendix A) and responding to the *Freshwater News* survey (Appendix C) were Washington residents.

Table 1. Washington public transient tie-up facilities.

Name of Facility	RM	Facilities and Services
Port of Camas-Washougal	122	Launch lanes, parking, pumpout station, restrooms
Beacon Rock State Park	141	Launch lanes, parking, camping, restrooms
Bingen Marina	172	Launch lanes, parking, restrooms

As noted in the previous study by Cassell (1992), there is little coordination between Oregon and Washington planning agencies for recreational boating facilities on the Columbia River. In fact, Michael Nagler, Planning Director, Hood River County (1992), suggested that a means of communication and coordinated planning efforts between the two states is the topic in need of the greatest study along the Columbia River. Planning should be coordinated between the two states to avoid duplication of effort and facilities along both sides of the river.

Despite these observations and recommendations, this study was unable to focus sufficiently on this problem for several reasons. Unlike Oregon, Washington does not have a coordinated system or a lead agency for planning for recreational boating facilities. Before bi-state planning efforts can occur, Washington agencies must coordinate with one another and assign a lead agency to be responsible for developing a comprehensive plan for recreational boating facilities in Washington. Until it is made obvious that Washington agencies are willing to plan for, fund, and build public transient tie-up facilities, the OSMB should work

independently on planning a network of public transient tie-up facilities on the Oregon side of the Columbia River.

However, as a result of the Scenic Area Act and the Gorge Management Plan, an increased amount of bi-state planning and regional coordination has begun. The Columbia River Gorge Commission and the Forest Service have initiated several task forces, such as the Joint Recreation Task Force to address this issue.

B. Goals of the study

The goals of this study are:

- (1) to determine the tie-up facility needs of recreational cruising boaters on the Mid-Columbia River;
- (2) to determine if boaters' needs are being met; and
- (3) to suggest low environmental risk options for development of Oregon boating facilities.

A coordinated planning and management effort of all agencies involved with the natural resources of the Columbia River is called for to make the goals of this study and the development of a network of public transient tie-up facilities successful.

This study identifies potential locations for public transient tie-up facilities along the Mid-Columbia River by answering three research questions.

- (1) What are boaters' perceived facilities needs in the Mid-Columbia River? This question was addressed by surveying recreational boaters.
- (2) What is the potential for support of tie-up facilities by agencies involved with the Mid-Columbia River? The potential was determined by interviewing the various agencies and organizations located in the Mid-Columbia River.
- (3) What are the environmental impacts of alternative tie-up sites along the Mid-Columbia River? The impacts were determined by on-site river and land appraisals and through discussions with various individuals knowledgeable about the river ecosystem.

II. BACKGROUND AND CONTEXT OF THE STUDY

A. Recreational boating

The natural diversity of Oregon's physical features offers a variety of recreational opportunities to residents and visitors alike (Oregon State Parks and Recreation Division 1988). The mountains and valleys, deserts and coastal lands, rivers and ocean, provide an outdoor playground, unparalleled in any other state. Recreational boating activities are found in coastal waters, bays, estuaries, and inlets along the coast, as well as rivers, inland lakes, and reservoirs. By far, the most heavily used waterway in Oregon is the Columbia River (OSMB 1990). Figure 3 shows the heavy usage of this river.

The watercraft used and the activities pursued while boating are as variable as the locations. The craft can vary from a self-propelled canoe to a diesel-driven 65-foot cruising vessel and from a sail board to a sailboat. Recreational boating activities can encompass fishing, waterskiing, personal watercraft use, sail boarding, day use, and overnight cruising. Fishing and cruising are the two most popular boating activities pursued on the Columbia River. Because boating is primarily a weather-dependent activity, the vast majority of all boating activities takes place during the warmer and drier summer months of July, August, and September (OSMB 1990).

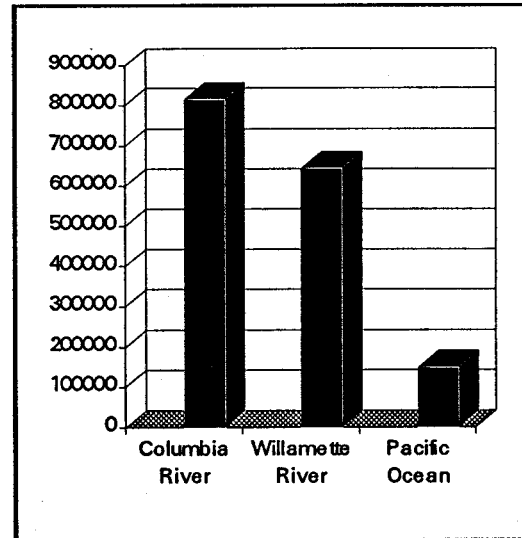


Figure 3. Number of days of use in Oregon's top three boating resources - 1990.

This study investigated the needs of recreational boaters who generally use 26-foot or longer cabin cruisers equipped with cooking and sleeping facilities, and engage in day and overnight cruising. Cruising activities generally include sightseeing, wildlife watching, social and group activities, swimming, camping, and may also include fishing and waterskiing. Overnight cruisers require transient tie-up facilities because they are usually on the river for three days or more.

In general, cruising boaters have little or no impact on the river. The primary impacts occur when mooring in natural, unprotected areas. These impacts occur by anchoring in shallow water, attaching boats to trees in the riparian zone, and from a lack of sanitation facilities on land. If the high degree of use, such as is experienced on the Columbia River, is not planned for or accommodated for, cruising boaters will significantly affect the nearshore resources. Comprehensive planning can direct use of the river by recreational boaters away from sensitive areas to those better able to withstand a high degree of use. Planning will also help alleviate conflicts between boaters and other river users by providing separate and distinct locations for each user group to pursue its interests.

B. Transient tie-up facilities

1. Definition

A public transient tie-up facility provides a safe area for boaters to escape from the winds, waves, or wakes; to spend the night; and to gain access to the shore for hiking, picnicking, or camping. This harbor of refuge may be used for a couple of hours, overnight, or for several days. Short-term public transient tie-up facilities in Oregon are open to all boaters for free or a nominal charge. They are designated "transient" tie-up facilities because the primary intent of the facility is to provide a safe temporary moorage for boaters "in transit" on the river; the length of stay is generally restricted to 72 hours or less (Obern 1992).

Transient tie-up facilities usually consist of a structure, either floating docks or mooring buoys, to which boaters can tie up. Most facilities also provide access to the shore. When selecting a facility, boaters look for sandy beaches, scenic views, opportunities for wildlife watching, shore-based activities or attractions, and upland support facilities.

Cruising boaters require a network of transient tie-up facilities for day and overnight use for several reasons. First of all, they require protection from navigational hazards such as winds, waves, and wakes. Secondly, they desire support facilities such as moorage floats, restrooms, and swimming or camping areas. Finally, some boaters require access to commercial facilities such as restaurants, fueling stations, and supply stores.

A challenge facing recreational cruising boaters on the Columbia River is the lack of tie-up facilities. This results in overcrowding of existing facilities and excessive encounters with other cruising boaters, commercial traffic, and other recreational users of the river, which increases risk and creates safety hazards. Providing increased access to the river and additional transient tie-up facilities is an effective means to reduce overcrowding in popular areas. Strategically located launching ramps and tie-up facilities will draw boaters away from crowded areas and encourage them to boat in less crowded, safer areas.

According to the 1993 Statewide Boating Survey (conducted by the Marine Board every three years), the Columbia River is notable because it is the most used waterbody of the state, with 644,412 boat use days reported for 1992. More than a quarter of the time (27%) boaters were cruising. In the Survey, it is pointed out that boaters are having a problem finding enough on-water fuel stations, this is especially critical for cruising boaters.

Providing boat ramps as a means of public access to the river is not as critical to larger boats as it is to smaller boats because many larger boats are "water bound." In most cases, boats over 26 feet are permanently moored in public and private marinas, which enable immediate access to the river. Smaller boats are usually trailered to public and private boat ramps to gain access to the river.

Transient tie-up facilities are required by larger cruising vessels for day use as well as overnight use. Boaters require tie-up facilities to escape the winds and wakes on the river and to pursue shore-based recreational activities. Sixty-five percent of the 115 boaters

surveyed in this study (Appendix D) responded that they look for safety and the presence of docks when selecting a tie-up facility. Fifty-seven percent cited that they look for wind and wake protection, and forty-nine percent said that land access is an important factor in their selection of a public transient tie-up facility.

2. Need for a network along the Columbia River

The Columbia River lacks a network of tie-up facilities in which each facility is located within cruising distance of one another (10 - 15 RM), so it is difficult for boaters to systematically cruise up or down the river. Cruising boaters require safe harbors of refuge with good water level to avoid winds, waves, and ship wakes.

Winds in the Columbia Gorge, nicknamed "the nuclear wind tunnel," can blow as strong as 70 mph (Crichton 1992), making conditions dangerous and difficult for boating. The Mid-Columbia River also has many long fetches that create extensive waves when the wind blows. In addition, commercial barges and ships, and to a lesser degree, recreational boats, create wakes that make the water choppy and make it difficult for boaters to negotiate travel on the river. Water levels fluctuate as far upriver as Bonneville Dam, due to the tides. Water levels also fluctuate during water releases from the dams along the river. Public transient tie-up facilities act as safe refuges from changing water conditions and enhance recreational opportunities for boaters.

The development of a network of public transient tie-up facilities is essential in the Mid-Columbia River for many reasons. The total number of boats registered in Columbia, Multnomah, Hood River, and Wasco counties (the four counties bordering the river in this study site) increased by twenty-five percent from 1981 to 1991. The number of cruising boats, 28 feet and longer increased twenty-two percent during these ten years (OSMB 1990). The existing public and private facilities in the metro area and the few facilities scattered along the Mid-Columbia are unable to accommodate the number of boaters today and the projected number in the future.

Additional facilities will lessen the demand placed upon existing facilities and will help ease the overcrowded conditions. Dispersement of use should help to reduce environmental impacts on sensitive riparian and upland areas that are currently receiving a greater degree of use than they are able to withstand. A network of transient tie-up facilities will encourage boaters to travel longer distances and explore other, less crowded areas of the river. This extended recreational use of the river has the potential to benefit the small communities along the river through economic growth.

3. Existing model for transient tie-up facilities

Beacon Rock State Park is a popular destination site for many boaters, Washingtonians and Oregonians alike. Beacon Rock State Park is located in an ideal setting for a transient tie-up facility. It is located in a bay, where calm waters and scenic vistas offer ideal day-time or

overnight moorage conditions. Beacon Rock State Park is often viewed as a potential model for public transient tie-up facilities in Oregon (Obern 1992).

Beacon Rock State Park is located on the Washington side of the river, just 4 RM from Bonneville Dam and 22 RM from Chinook Landing. It is used by many boaters as either a destination site for a weekend cruise or as a stopping point while waiting for passage through the Bonneville locks. The park is owned and operated by Washington State Parks Department. It is both a land-side and water-side camping facility. A \$6 fee is charged for boats less than 26 feet and \$9 for boats greater than 26 feet.

Many boaters complain about the fee because they feel they should have free access to the boating facility because they have already paid boat licensing and registration fees. As indicated by the response to the survey question asking if boaters are willing to pay a fee for services and facilities, most boaters answered that they are not willing to pay a fee for desired facilities and services. For example, seventy-five percent of the boaters responded that they would like to have restrooms offered at public tie-up facilities; however, only ten percent were willing to pay a fee for this service (Appendix D).

Despite the apparent unwillingness to pay for services at public tie-up facilities, it should be remembered that environmental resources are not unlimited and human use of them, even in a recreational capacity, is not without cost. Recreationists should be required to pay for resource depletion of the environment (Lindberg 1991). This study recommends that the fee system at Beacon Rock State Park be used as a model for Oregon public transient tie-up facilities, in an attempt to better account for the costs of use of the resources.

4. Economic benefits to river communities

In the last few decades, Columbia River communities have been impacted by economic change and population shifts. Once, these communities relied upon natural resources extraction, but now are turning towards travel and tourism as the economic base of the community (Carter, et. al. 1992). The development of public transient tie-up facilities in or near a river community will benefit the community by not only providing additional recreational opportunities to the residents but also by stimulating economic growth and boosting the tourism sector of the community.

Boaters will look to nearby communities to supply services such as food, fuel, and lodging (Obern 1992). Since boaters will be able to moor overnight at the facility, their stay in the community may be extended. A tie-up facility will also provide access to the community for tourists who might not otherwise visit the community.

5. The role of the Oregon State Marine Board (OSMB)

The OSMB is the lead agency for both planning and funding public transient tie-up facilities. ORS 830.110(6) provides the OSMB with the power and duty to:

[s]tudy, plan, and recommend the development of boating facilities throughout the state, which will promote the safety and pleasure of the public through boating.

To accomplish this, the OSMB has developed a marine facility grant program. Cities, counties, park and recreation districts, state agencies, and port districts develop boating facilities statewide. Public transient tie-up facilities developed by these agencies are eligible for OSMB funds. The funds for the grants are derived from marine fuel taxes and boat license fees paid by recreational boaters. These grants give boaters direct benefit from their fees and taxes through the construction of recreational boating facilities.

Another key component to the OSMB facility program is the Maintenance Assistance Program or MAP. The MAP program was created to provide eligible participants with a funding source to maintain boating facilities. Eligible participants, including local, county, state governments and port and park/rec districts, are encouraged to enhance their existing level of maintenance with the MAP funds provided by the Board. These MAP funds are to be used for routine and ordinary maintenance, including cleaning boat ramps, docks, parking areas, restrooms, garbage and litter pickup, groundskeeping, and minor repairs to facilities.

6. Public vs. Private transient tie-up facilities.

Private ownership and property stewardship are two additional options for development of transient tie-up facilities in the Mid-Columbia River. In some areas, a private facility may be able to provide more services than a public facility could and in other areas, community-stewarded property may bring more benefits to the local community than would a public facility. These two options must be considered for all sites along the Columbia River, especially in places where agencies are reluctant to become involved in the planning process and where facilities and services are needed that would be unable to be provided by a public agency.

Private ownership of transient tie-up facilities should be considered when the land is privately owned or when a public agency is unable to offer support or provide the services necessary for a public tie-up facility. Community stewardship, including fee simple and less than fee simple ownership, is an option to be considered when a tie-up facility would benefit the local community, but a public agency is unable to develop or support the facility (Lopez 1981). The OSMB should work with private and community groups to explore the options for the development of sites to be included in the network of transient tie-up facilities.

III. DESCRIPTION OF GEOGRAPHIC AREAS OF THIS STUDY

A. Sauvie Island

Sauvie Island extends along the Columbia River from just beyond St. Helens (RM 87) to the mouth of the Willamette River (RM 100). Sauvie Island is contained in Columbia and Multnomah Counties. Both Columbia and Multnomah counties are experiencing population growth trend with rapid population growth in Multnomah County (U.S. Bureau of Census). (Figure 4 and 5). These population trends indicate that Sauvie Island is likely to continue to receive a large degree of recreational use, which must be accommodated for in the future.

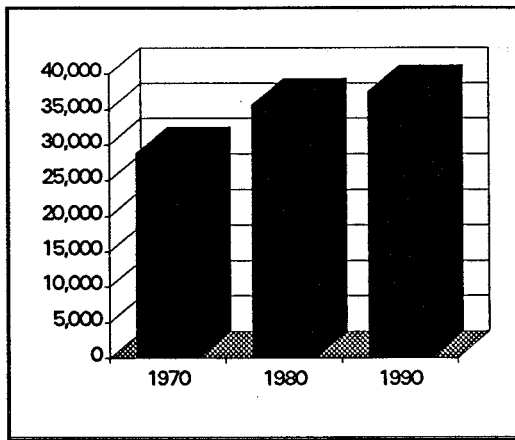


Figure 4. Population trend of Columbia County from 1970-1990.

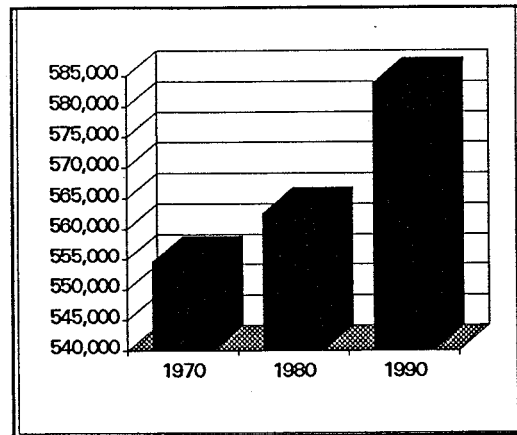


Figure 5. Population trend of Multnomah County from 1970-1990.

About one-half of Sauvie Island is a Wildlife Area, managed to protect waterfowl. The other half of the island is residential and agricultural land. About three-quarters of a million recreationists, primarily from Portland, visit the island each year (Leonard 1992). They come to bicycle, hike, swim, bird-watch, fish, and boat.

Multnomah Channel provides a calm passage around Sauvie Island from the Willamette River to the Columbia River. A system of public boating facilities is in place on the Multnomah Channel side of Sauvie Island. Bayport Marina, Hadley's Landing, and the Gilbert River facility provide launching ramps and transient tie-up facilities for recreational boaters. Coon Island has two tie-up facilities, one on each side of the island, and acts as a popular destination site or midway point for boaters out of either Portland or St. Helens.

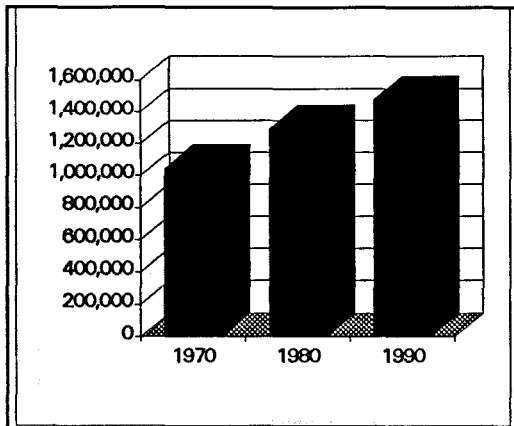


Figure 6. Population trend of Portland-Vancouver, OR-WA SMSA from 1970-1990.

B. Portland Metropolitan area

The Mid-Columbia River is the most important stretch of the Columbia to many user groups, recreational and non-recreational groups alike. Portland, located at the confluence of the Columbia and Willamette Rivers, is the largest population center in the state of Oregon. The population of the Portland standard metropolitan statistical area (smsa) has steadily been increasing over the last 20 years (US Bureau of Census). (Figure 6). This trend is likely to continue and will place an increasing demand on the Columbia River.

The commerce and industry of this metropolitan area depend greatly on the river systems. Industries located in Portland and the surrounding metropolitan area rely heavily upon the Columbia River for both transportation and effluent discharge.

In addition to industry needs, the large population mass in the Portland metropolitan area relies upon the natural resources of the Columbia River. The dams along the river provide both hydroelectric power and flood control. Fishing is important to Mid-Columbia residents for cultural, sustenance, and recreational reasons, as it plays a large role in the heritage of the Pacific Northwest. Residents also pursue a variety of recreational activities on the Mid-Columbia River, such as water skiing, personal watercraft use, sail boarding, and boating. In 1989, one in every 16.8 Oregon citizens owned a registered boat; 26,379 boats were registered in Multnomah County alone (OSMB 1990).

The public transient tie-up facilities in the metropolitan area are unable to accommodate this large and increasing population of recreational boaters. The three tie-up facilities on Government Island, as well as the surrounding islands that do not have facilities on them, receive a high degree of use each summer because of their proximity to public launching ramps and private moorages in the Portland metro area. Often these facilities are overcrowded, but boaters use them anyway and cite the lack of tie-up facilities elsewhere as their primary reason for not traveling out of the metro area.

C. The Columbia River Gorge National Scenic Area

The rest of the study site, including parts of Multnomah, Hood River, and Wasco counties, is encompassed in the Columbia River Gorge National Scenic Area. Hood River and Wasco counties differ from the other counties in the Mid-Columbia area because they are not experiencing rapid growth (US Bureau of Census 1991). (Figure 7 and 8). In the past, these counties have depended on the extraction of natural resources (timber, agriculture, and

fisheries), but have recently found natural resource extraction to be an unreliable source of income and growth. Currently, Hood River and Wasco counties are looking for other means, such as tourism and outdoor recreation, to sustain their economies.

The Columbia River Gorge is a recreationally important area to the entire state of Oregon. Multnomah Falls, the number one tourist attraction in Oregon, is located in the Gorge (Columbia River Gorge Commission 1992). The Gorge is also popular for boating, canoeing and kayaking, hiking, camping, bicycling, and picnicking (Jones 1992). The Gorge is also known to have the best sail boarding conditions in North America (Crichton 1992).

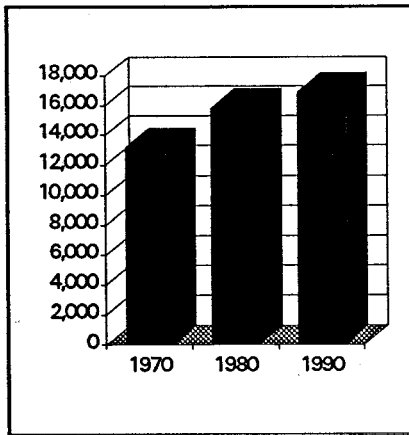


Figure 7. Population trend of Hood River County from 1970-1990.

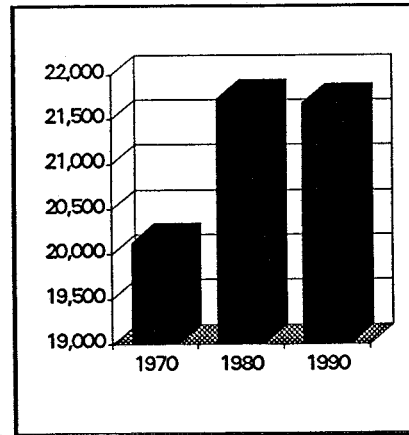


Figure 8. Population trend of Wasco County from 1970-1990.

In 1986, Congress recognized the importance of the Columbia River Gorge by designating it the Columbia River Gorge National Scenic Area (Columbia River Gorge Commission 1992). The scenic area stretches 83 RM, from the mouth of the Sandy River on the west to the Deschutes River on the east (Columbia River Gorge Commission 1992). The area was designated as a National Scenic Area to accomplish two goals:

- (1) To establish a national scenic area to protect and provide for the enhancement of the scenic, cultural, recreational, and natural resources of the Columbia River Gorge.
- (2) To protect and support the economy of the Columbia River Gorge area by encouraging growth to occur in existing urban areas and by allowing future economic development in a manner that is consistent with paragraph 1 (Columbia River Gorge Commission 1992).

To accomplish these goals, Congress designated two types of land use: general management areas (GMA), and special management areas (SMA) (Nabeta 1993). The provisions for the GMA in the Management Plan were developed by the Gorge Commission, while the SMA provisions in the Management Plan were developed by the Forest Service Scenic Area Office (Doherty 1993). The commission also developed resource protection and enhancement measures for sensitive areas, created a recreation development plan, and designated recreation areas. The recreation plan considers the presence, significance, and sensitivity of the natural, cultural, and scenic resources of the Gorge and determines the degree of compatibility between recreation and the resources (Columbia River Gorge Commission 1992).

One goal of the Columbia River Gorge National Scenic Area is to provide additional recreational opportunities in the Gorge. The Columbia River Gorge Commission (1992) incorporated this goal into the management plan by proposing additional recreational facilities, including some boating facilities, to be built in the Gorge. All public recreation areas are assigned an intensity class from one to four, with four being the most suitable for a high level of development (Columbia River Gorge Commission 1992). Proposed recreation facilities are to be located in these assigned recreational areas. The proposals for the facilities include specific recommendations for development, identification of potential user groups, identification of environmental and cultural aspects of the site, and potential management and funding sources.

The commission strongly recommends that these proposed sites "be given priority consideration for receipt of the public funds authorized in the Act [\$10,000,000], as well as consideration for funding from other public sources in federal, state or local programs" (Columbia River Gorge Commission 1992). This \$10,000,000 provides a great incentive for involved agencies to comply with the Gorge Commission's recommendations stated in their development plan.

The Gorge Management Plan strongly promotes additional boating facilities along the Columbia. This is reflected through policies and objectives in the plan to "promote the Columbia River as a scenic waterway trail and support dispersed boat moorages and other low-intensity boating facilities" (Doherty 1993).

The Gorge plan focuses primarily on land-based activities and generally overlooks the need for transient tie-up facilities. A system of tie-up facilities was not recommended, even though the commission identified water-based activities as a high priority in the Columbia River Gorge. The commission proposed only three recreational boating facilities to be located on the Oregon side of the Columbia River, however there are a number of boating facility proposals on the Washington side of the Columbia River (Table 2).

Table 2. List of proposed boating sites, RM, and development by the Columbia River Gorge Commission and the Forest Service Scenic Area Office (Columbia River Gorge Commission 1992).

Proposed Site	RM	Proposed Development
Corbett Landing	126.5	Parking area, revampment of ramp, courtesy dock, breakwater, interpretive facilities, tour boat deck
Viento Waterfront	160.5	Day-use facilities for sail boarding, boat launching, parking, and picnicking
Mayer West State Park	181.5	Enhance launching facilities; provide swimming, picnicking, interpretation, day-use, and scenic appreciation facilities

The locations of the facilities and the suggestions for development proposed by the commission were taken into consideration for inclusion in the network of public transient tie-up facilities proposed in this study; however, the commission's suggestions were not the only criteria used to make the final recommendations for development. Also, the sites examined in this study are in no way limited only to the commission's recommended sites.

To accomplish the successful development of a network of transient tie-up facilities within the Gorge, better coordination is needed with the Gorge Commission and the OSMB to incorporate the findings from this study with the Gorge plan. In addition, the coordination and cooperation of other state, federal, and local agencies with the Gorge Commission and the OSMB are needed to assist in the development of tie-up facilities and to make boating in the Columbia River Gorge National Scenic Area a safer and more enjoyable experience.

IV. USERS AND USER-CONFLICTS IN THE MID-COLUMBIA RIVER

Many physical barriers and multiple-use conflicts between industry, the environment, and commercial and recreational traffic occur on the Columbia River within the study area because the many users are concentrated on a very limited, narrow, and linear waterway. Bonneville Dam, located in the Mid-Columbia River, provides 40 percent of all electrical energy requirements in the Pacific Northwest (U.S. Army Corps of Engineers 1987). Many industries, in Portland and up and downstream, are dependent on the river as a transportation corridor and as a carrier of effluent. The river provides habitat for a variety of fish and wildlife, including threatened and endangered species. Both commercial and recreational users rely upon the resources of the river. In the summer, hundreds of people flock to the river to pursue a variety of recreational activities. Native Americans have relied upon the Columbia River for their culture and livelihood from ancient times to the present (Cohen 1986).

A. Hydroelectric Dams

In the early 1900's, it was realized that an additional form of power generation would be needed to accommodate the growing population of the Northwest. Bonneville Dam was built by the U.S. Army Corps of Engineers (COE) in 1937 to supply energy to the Northwest and to act as a method of flood control. As the population and energy demand continued to increase, seven more federal dam projects were undertaken along the Columbia and Snake Rivers (U.S. Army Corps of Engineers 1987).

The dams have inundated several thousand acres of land and have changed the river ecosystem from a cold, rapidly flowing stream, to a cool, slow flowing series of impoundments (Becker and Neitzel 1992). This has improved the ability for commercial and recreational boats to navigate in certain areas of the river, but it has limited the river's ability to act as suitable habitat for fish and other wildlife. The dams and other environmentally degrading land practices of the Pacific Northwest are responsible for the near-extinction of several anadromous fish species because the dams block the passageway of the fish to and from the ocean (Ocean and Coastal Law Center 1980).

The dams also create physical barriers for the recreational boating community. The fluctuation of water levels in the Columbia River caused by the dams creates navigational hazards as well as hazards when launching or while mooring. But, the primary impediment that the dams place on boating in the Columbia is that they are physical obstacles that restrict easy passage along the length of the river. Often, recreational boaters limit their cruising area to either above or below the dams to avoid having to navigate through the locks.

The customary law of navigational servitude requires the dams to offer free, unrestricted passage through the locks, but many recreational boaters view the dams as impassable because of the difficulty of or their inability to navigate through the locks. Conflicts between recreational and commercial vessels occur near the locks, due to the lack of safe tie-up space for recreational boaters. Smaller recreational vessels are often required to wait, sometimes for

several hours, until either the barges have passed through the lock or space is available in the lock with the tug and its barges. Many smaller boats are required to lock through with tugs and barges, which often creates hazardous wake conditions within the lock as the water level is raised and lowered. Due to the strong currents, winds, and increased traffic, waiting for passage through the locks can be quite hazardous.

Several actions can be taken to help ease the difficulty of passage through the locks. Recreational tie-up facilities above and below the locks will allow boaters to safely wait for passage. A means of communication with the lock master will assist boaters who do not have access to a marine radio. Written instructions on how to safely pass through the locks should be provided for boaters. In addition, the OSMB and the COE should work together to educate recreational boaters about how to lock through the dams.

Bonneville Dam is the only dam located within the Mid-Columbia River study area. The existing navigation lock (in the summer of 1992) is the smallest in the system of locks along the Columbia and Snake Rivers, but it handles more commercial shipping than any of the other locks. The navigation lock provides passage for barges transporting petroleum products, grains, and rafted logs along the Columbia River (U.S. Army Corps of Engineers 1987). The existing Bonneville lock is 76 feet wide by 500 feet long. The small size of the lock requires multiple barge tows to break down and be taken through the lock singly (Portside 1992).

A new navigation lock and tie-up facility, completed in May 1993, increased the size of the lock to 86 feet x 675 feet and provides downstream moorage for recreational cruising boaters. The new lock will help ease the congestion by decreasing the average lockage time for barges from nearly 13 hours to two hours (Portside 1992). The tie-up facility will provide a safe "waiting point" for recreational boaters. However, many conflicts still will occur. The Bonneville Power Administration and COE have not proposed to provide a tie-up facility on the upstream side of the locks, so boaters must still wait in unprotected waters for downstream passage. Many recreational boaters are still often unaware of the correct procedures to follow when "locking through" and do not have the necessary equipment or knowledge to communicate with the lock master. Informational signs must be provided on both sides of the lock and educational programs must be undertaken to continue to make the experience less intimidating and safer.

B. Commercial Traffic

Commercial vessels along the Mid-Columbia River face some of the same problems as recreational boaters face, but more often than not, the two user groups have conflicting interests. The project depth of the channel from Astoria to Portland is 40 feet, from Portland to Bonneville the depth is 27 feet, and from Bonneville to The Dalles the depth is 15 feet (NOAA Charts 18521 and 18531). These depths, maintained by the COE, allow ocean-going container ships passageway to the Port of Portland and passageway for barges from upriver to Portland. The project depth makes navigation easier for container ships, barges, and large cruising vessels to navigate along the Mid-Columbia River.

In the Portland metro area, recreational boaters are confronted not only with a high volume of other recreational traffic but also with the necessity to negotiate their travel around larger container ships, tugs, and barges. Large commercial vessels are constrained to a narrow channel and recreational boats must give way to the constrained vessel when passing one another (OSMB n.d.). The presence of commercial vessels requires recreational boaters to slow their speed of travel to 5 - 15 knots (Obern 1992). Commercial vessels also create hazardous wakes, surge, and suction on the beaches.

Many recreational boaters traveling from the metro area to St. Helens avoid commercial traffic by traveling along Multnomah Channel, which flows around Sauvie Island and into the Columbia River. Often, boaters will travel down the Columbia in the morning and return to the metro area via Multnomah Channel to escape the high afternoon winds and commercial traffic (Obern 1992). Other areas of the river are not so fortunate as to have separate passageways so the two user groups must deal directly with each other and their ensuing conflicts.

C. Native American Treaty Fishing Rights

The Native Americans of the Columbia River region have always relied upon fishing in the river for their livelihood and sustenance. When the Pacific Northwest was settled in the 1800's, the Native Americans were moved away from the river and onto reservations. As a means of compensation, the treaties of 1855 were enacted. These treaties, between the United States and the Walla-Walla, Cayuses, Umatilla Tribes, the Yakima Nation, and the Nez Perce' Indians (now the Confederated Tribes of the Warm Springs), gave Native Americans continued fishing rights to the Columbia River (Treaty with the Walla-Walla, Cayuses, and Umatilla Tribes, 12 Stat. 945 (1855); Treaty with the Yakima Nation, 12 Stat. 951 (1855); Treaty with the Nez Perce, 12 Stat. 957 (1855)).

The treaties provide that

the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations in common with citizens of the United States, and of erecting suitable buildings for curing the same ... is secured to them (Treaty with the Walla-Walla, Cayuses, and Umatilla Tribes, 12 Stat. 945 (1855), pg. 946).

However, since the time the treaties were enacted, the fish stock in the river has diminished to unprecedented low levels, possibly as a result of the hydroelectric dams and poor land-use practices (Ocean and Coastal Law Center 1980). In addition, the fishing rights of Native Americans have been a subject of controversy with almost every other user group of the Columbia River. These controversies have escalated recently, due to diminishing resources of the river.

The U.S. government, under Public Laws 14 and 100-581, requires recompensation to the Native American tribes through the designation of in-lieu fishing sites. An in-lieu fishing site is a site along the Columbia River to be used exclusively by Native Americans for fishing. Some land has been acquired and some is yet to be selected by the COE within the Bonneville Pool for the benefit of the tribes. In-lieu fishing sites are administered by the Secretary of Interior under the provisions of Section 401(b)(1). These sites cannot be acquired or developed by any other agency (Columbia River Gorge Commission 1992).

Several fishing platforms are also located between Bonneville Dam and The Dalles Dam. These platforms do not cause a navigational hazard to recreational boaters; however, the buoys and drift nets set from these platforms often cause significant concern to boaters navigating in these waters. The nets are required to be "manned" at all times during the limited fishing season and the buoys are supposed to be visible. However, this is not always the case and 40 percent of the boaters surveyed cite "net fouling" as one of their greatest concerns on the Mid-Columbia River.

D. Effect of this study on user conflicts

This study, and the eventual development of a network of transient tie-up facilities along the Columbia River, will help mitigate many of the user conflicts on the Mid-Columbia River. A network of transient tie-up facilities will enable boaters to safely cruise the entire Mid-Columbia River from St. Helens to The Dalles. The placement of tie-up facilities above and below the dams will provide recreational boaters with a safe place to wait before they lock through and will enable them to utilize the facilities on both sides of the dam. Additional tie-up facilities will also ease the conflicts experienced by recreational and commercial boaters. The facilities will be strategically located to draw boaters out of areas primarily used by commercial vessels.

The greatest concern with respect to conflicts between Native American fishing rights and public transient tie-up facilities is that a potential site may be located in the same area as an accustomed fishing site or a designated in-lieu site. Locations for boating facilities are not proposed to be located in known traditional fishing sites. The OSMB should work with the Confederated Tribes of the Warm Springs in future planning efforts and development of public transient tie-up facilities along the Mid-Columbia River.

Additional tie-up facilities will help draw boaters away from environmentally sensitive areas and concentrate recreational activity in selected areas, better able to withstand a high degree of recreational use. Educational materials targeted at boaters, who utilize transient tie-up facilities, will stress the importance of using established areas and the need to stay out of protected and sensitive areas.

Another valid concern is that boating facilities may be used by other people as fishing or swimming platforms. Although this concern of boating versus non-boating use is widespread, especially near population centers, it usually creates only minimal conflict between the two user groups.

V. ENVIRONMENTAL ISSUES AND CONFLICTS

Many individuals, agencies, and communities are opposed to the development of additional public transient tie-up facilities along the Columbia River because of the perceived and real environmental impacts of increased development. Many fear development will destroy riparian, wetland, and upland areas and the sensitive ecosystems that these habitats support. Many developments along the Columbia River require dredging, which destroys bottom habitats, decreases water quality, and requires safe locations to dump the dredge spoils. These fears are not unfounded; many examples of poor development can be seen along the entire stretch of the river.

This study is an attempt to eliminate poor development practices for recreational facilities, by coordinating the planning efforts of involved agencies and by proposing a network of facilities to be built, rather than developing each facility on a site-by-site basis. The rate of increase of recreational boaters cruising the Columbia River has far surpassed the rate of increase of new public transient tie-up facilities. This overload of boaters has exceeded the carrying capacity of existing facilities and has forced boaters to look at undeveloped areas for moorage and access to land.

Use of undeveloped areas has several adverse environmental impacts. Anchoring in unprotected areas may cause the river bottom to become unstable and may destroy sensitive riparian areas. Boaters also often choose to moor in wetland habitats because they have shallow and protected waters. If public restrooms are not provided in heavily used areas, the upland area may become littered with toilet paper and river water, and ground water may become contaminated. Coon Island experienced this problem before self-composting restrooms were built on the island in 1989. An example of an island currently experiencing this problem is Lemon Island. Because it does not have restroom facilities, after a long summer weekend, a tuft of toilet paper may be seen behind nearly every bush. The lack of accessible pump-out stations is a matter of concern for those boaters with marine heads onboard. The Mid-Columbia River is also lacking in suitable fish cleaning stations.

Additional public transient tie-up facilities will not eliminate every impact recreational boaters have on the river, but they will serve to decrease the degree of impact on sensitive areas. It is better to plan for increased levels of use now rather than mitigate for destroyed habitats in the future.

VL. TRANSIENT TIE-UP FACILITY STUDY

A. Methods

Three distinct methods were used to determine sites to be recommended in a network of public transient tie-up facilities along the Mid-Columbia River.

- (1) Site appraisal of potential locations;
- (2) Recreational boater survey; and
- (3) Direct consultation with agencies knowledgeable of and directly involved with the resources of the Mid-Columbia River.

1. Physical survey

The purpose of the on-site appraisal was to examine potential locations for public transient tie-up facilities and to determine if additional services or improvements were needed at existing facilities. (Table 3). Also, an on-the-water examination gave a better perspective of sites than chart or land viewing. Water depth was more accurately measured, shoals and sandbars were located, travel through channels was negotiated, and the degree of protection offered from winds and wakes was evaluated.

Table 3. List of existing public transient tie-up facilities and existing services. (OSMB Oregon Boating Facilities Guide 1989).

Name of Facility	RM	Facilities and Services
Bayport Marina	Multnomah Channel	Fuel, launch ramp, water, ice, electricity, repair shop, fishing supplies, camping, picnicking
Gilbert River Ramp	Multnomah Channel	Parking, launch ramp, restroom
Gilbert River Dock	Multnomah Channel	None
Coon Island (J.J. Collins Marine Park)	Multnomah Channel	Restrooms, picnicking, camping
Hadley's Landing	Multnomah Channel	Picnicking
West Dock Government Island	115.5	Restrooms, picnicking, camping
Bartlett's Landing	116.5	Restrooms, picnicking, camping

Name of Facility	RM	Facilities and Services
Chinook Landing	119	Launch ramp, restrooms, picnicking, pump out station, swim areas, parking
Gary & Flag Island Moorage	124.5	None
Dodson	140	Parking, restrooms, launch ramp
Port of Cascade Locks	149	Parking, restrooms, picnicking, camping
Hood River Marina	169	Parking, restrooms, fuel, restaurant
Mayer West State Park	181.5	Parking, restrooms, picnicking, camping, swim areas
Port of The Dalles	190	Parking, restrooms, picnicking (private fuel facility)
The Dalles Riverfront Park	190.5	Parking, restrooms, picnicking, camping, swim area

Locations for tie-up facilities were also determined by examining potential sites from the landward side. A better perspective was gained on the wind conditions at many of the sites, even though the wind was unusually low when most of the on-the-water surveys were conducted. Obstacles to river access, such as Interstate-84 and the railroad, were determined and the potential for development of upland access and facilities was evaluated.

2. River user surveys

All public agencies require public input and participation to assess current and future needs of their constituents. A personal questionnaire survey (Appendix A) was created, similar to Cassells' survey for the Lower Columbia study (1992), so that the results of the two studies could be compared. The purpose of the survey is to document existing use of public transient tie-up facilities; to determine perceived conflicts encountered while boating on the Mid-Columbia River; and to determine additional needs of the boaters, including suggestions for locations of additional facilities.

Most surveys were administered by the author in person with boaters at the two public tie-up facilities on Government Island. Additional surveys were administered with boaters on Sauvie Island, Multnomah Channel facilities, Beacon Rock, Hood River, and The Dalles. Surveys were also mailed directly to private boat owners in Cascade Locks, Hood River, and

The Dalles (Appendix B). An abbreviated written survey was published in *The Freshwater News*, a monthly newspaper for recreational boaters (Freshwater News August 1992) (Appendix C). All three methods were successful and a broad range (though not randomly selected) of boaters was surveyed. (Table 4).

Table 4. Survey method and number of responses.

Type of Survey	Number of completed surveys
On-river	57
Freshwater News	40
Mail-out/mail-in	18

Interviews of recreational boaters on the Mid-Columbia River were perhaps the most valuable aspect of this study. Results of the surveys are discussed in Appendix D. Equally important to the statistical information derived from the surveys was information gained through general conversations with the boaters. Many recreational boaters are very knowledgeable about the physical aspects of the river and are eager and willing to share their knowledge. Recreational boaters are one of the few constituent groups that offer full support to their lead agency, because they are able to see direct benefit from their taxes and fees in the form of public boating facilities, law enforcement, and other boating services. Consequently, the surveyed boaters were almost always willing to discuss their ideas and often exposed many additional important elements to be considered in this study.

3. Agency interviews and consultations

An extensive literature review of various agency reports and documents was conducted, including previous studies, reports, and plans for the Columbia River. These reports encompassed information on commercial and recreational use of the river, economic development, and resource management plans. Information was gained about previous planning efforts, existing facilities, and future plans for the river.

The author attended several meetings of specific groups involving the Columbia River during the months of July and August 1992. These included: Water Safety Council meetings, a Columbia River Gorge National Scenic Area Commission meeting, and meetings discussing the use of Ed-Net and low-power radio.

Personal and telephone interviews were conducted with personnel of several governmental and non-governmental agencies directly involved with the Columbia River. (Table 5). These

interviews provided valuable information about the river and its resources. The agency personnel discussed the projects their agencies were involved in and their plans for the future. The interviews also provided insight to the degree of support the agency is likely to provide in the planning and maintenance steps required for the successful development of a network of public transient tie-up facilities along the Mid-Columbia River. The need for and reasoning behind selecting specific sites were discussed with the different agencies, and preliminary planning was done to incorporate the development of a public transient tie-up facility in the agencies plans for the location.

Table 5. List of agencies consulted, contact person, and potential sites.

Agency	Contact person	Potential site(s) discussed
Oregon State Marine Board	Dave Obern	-----
OSMB and US Army Corps of Engineers	Randy Cummings	-----
Oregon State University OSU Extension Service	Gib Carter Bruce de Young	-----
Multnomah Parks Services Division	Dan Kromer	Portland metro area sites
Port of Portland	Bill Bach	Government Island
Oregon Federation of Boaters	Irv House	-----
University of Oregon Community Planning Department	Dick Povey	Hood River
Multnomah County Sheriff's River Patrol	Curtis Hansen	Portland metro area sites
Audubon Society	Paul Ketchum	Gary and Flag Island
U.S. Army Corps of Engineers	Bob Rose	-----
U.S. Army Corps of Engineers	Brian McCavitt Greg Webb	Bonneville Dam
Wasco County Sheriff's River Patrol	Clay Piper	Wasco County sites

Agency	Contact person	Potential site(s) discussed
Oregon Department of Transportation	Staff	Multnomah Falls Other rest stops
Oregon State Parks and Recreation Department	Mark Stenberg	Campgrounds and rest stops
Division of State Lands	Perry Lumley	Lemon Island McGuire Island Tri-Club Island
Wasco County Planning Department	Kim Jacobsen	Wasco County sites
Oregon Department of Fish and Wildlife	Ray Johnson	Sauvie Island
Oregon Department of Fish and Wildlife Columbia Region	Jim Newton	-----
Port of Cascade Locks	Bob Montgomery	Bonneville Dam Cascade Locks Government Cove
National Scenic Area US Forest Service	Sandy Medonca	Crate's Point
Hood River County Planning	Brian Connors Mike Nagler	Hood River County sites
Port of Hood River	Jim O'Banyon	Hood River
Washington State Parks	Staff	Beacon Rock
Columbia River Gorge Commission	Brian Litt	Several sites

The ownership of selected locations was determined by examining tax lot information from county courthouses. Because most of the sites are in public ownership, tax lot information is not provided in the evaluation section.

B. Criteria for site recommendations

The primary consideration for the location of a proposed public transient tie-up facility to be included in the network is distance between sites. The facilities should be located within a day's cruising distance of each other so, theoretically, boaters could traverse the entire stretch of the river without the worry of not being able to find a safe place to tie up for the night or afternoon. However, distance was not the primary consideration for two special attraction sites, Bradford Island (above Bonneville Dam) and Crate's Point (future site of The Gorge Discovery Center). These sites were given special consideration because they are attractive destination sites and require a tie-up facility for reasons other than simply for day or overnight moorage.

Surveyed boaters were asked the duration of their trips and the distance usually traveled. The average duration reported was 1.5 days and the average distance was 14.6 RM. From this information, it was determined that the average cruising distance per day on the Mid-Columbia River is 10 RM/day. Boaters on the Lower Columbia River reported that they travel between 16 and 20 RM a given day (Cassell 1992), which is much further than the average travelling distance of boaters on the Mid-Columbia River.

There are several possible reasons for this reduction in distance and duration of cruises in the Mid-Columbia River as compared to the Lower Columbia River. First, the winds on the Mid-Columbia River can pick up quickly in the afternoon, especially in the Gorge. The winds limit most of the boating activity to the morning hours and the late afternoon and evening. Secondly, many boaters will not travel far from home unless they know of a safe tie-up facility at which they can stop. There are not many tie-up facilities located in the Mid-Columbia River, so most boaters limit their trips to destinations close to their point of departure. Surveyed boaters also reported that they limit the distance and duration of their trips because they do not want to lock through Bonneville Dam. Seventeen percent reported that Bonneville Dam makes the duration of their trips longer and 16 percent said that the dam limits the distance of their trips.

The River Cruising Atlas: Columbia, Snake and Willamette (1992) was consulted to determine potential locations of transient tie-up facilities, based upon the distances reported in the survey. Boaters were also asked to identify potential locations on a map included in the survey. These reported locations were considered, in addition to locations determined by the distance. Several sites in each area were selected, including sites on the Washington side of the river.

Finally, potential sites were selected from the on-river survey. Sites were selected based upon physical characteristics of the area such as natural wind and wake protection, water depth, and upland characteristics, including sandy beaches. The distance from other facilities and

physical characteristics of the site were given consideration as well as the reports and information gained from agencies involved with the selected locations. Potential conflicts at the sites were identified as well as the degree of support likely to be offered by the agency in the development of a public transient tie-up facility at each location.

C. Priority ranking of sites

Table 6 presents the sites of the Mid-Columbia River, ranked as to suitability for transient tie-up facilities. The selected sites were ranked using the above criteria. In accordance with the study on the Lower Columbia River, sites were given a letter ranking of A, B, C, or D (Cassell 1992). Sites ranked A are highest priority for development and should be given immediate consideration for the location of a public transient tie-up facility. Sites ranked B and C are lower in preference, respectively, but should still be taken into consideration if priority A sites cannot be developed. D sites are lowest priority for development; these sites will not make good locations for public transient tie-up facilities.

Additional sites in the metro area were given a designation of small boat. Small boat sites are not suitable for the development of transient tie-up facilities for large cruising vessels; however, they all receive a high degree of day and some overnight use by boaters with smaller boats. The primary need of these sites is for sanitation facilities and other upland developments. Appendix E discusses development for these sites separately. Bradford Island and Crate's Point were given a Priority A' ranking because of their status as special destination sites.

Table 6. List of sites evaluated and ranked for public transient tie-up facilities in the Mid-Columbia River.

RM	Site Number	Site Name	Priority Ranking
91	1	Nudie Beach	B
94	2	Walton Beach	C
94.5	3	The Cove Marina	A
96.5	4	Willow Bar	B
112		West Lemon Island (South Channel)	Small boat
112.5	5	North Lemon Island	D

RM	Site Number	Site Name	Priority Ranking
113		East Lemon Island (South Channel)	Small boat
113	6	Commodore's Cove	C
114	7	Cow Landing	B
115		Red Marker #14 (South Channel)	Small boat
115.5	8	West Dock Government Island	C
116.5	9	Bartlett's Landing Government Island	A
116.5		East Government Island (South Channel)	Small boat
117		West McGuire Island	Small boat
117.5		East McGuire Island	Small boat
124.5	10	Lewis and Clark Marine Park (Gary and Flag Islands)	A
126.5	11	Corbett Ramp	C
128.5	12	Rooster Rock State Park	A
136	13	Multnomah Falls	B
147	14	Bradford Island	A
148	15	Eagle Creek	D
149	16	Cascade Locks Boat Basin	A
152	17	Government Cove	A
160	18	Wyeth Waterfront	A
160.5	19	Viento State Park	D
166	20	Ruthton Point	C
169	21	Hood River Boat Basin	C
171	22	Stanley Rock (Koberg Beach)	B
174.5	23	Mosier	D

RM	Site Number	Site Name	Priority Ranking
178	24	Memaloose Park	C
181.5	25	Mayer West State Park	A
184.5	26	Squally Point	D
186	27	Crate's Point	A
186.5	28	The Cove Anchorage	B
190	29	The Dalles Boat Basin	B

D. Site descriptions and analysis

1. Sauvie Island sites

Sauvie Island is a 24,000 acre island located east of Portland and between the Columbia River and Multnomah Channel (a tributary of the Columbia River). It is the largest of the Columbia River Islands and is a popular recreation area for city dwellers to come to escape the hustle and bustle of the metro area (Law 1992). Oregon Department of Fish and Wildlife (ODFW) owns 12,000 acres of Sauvie Island and manages the land under special wildlife regulations. The majority of the remainder of the island is agricultural land and is owned by the 1,000 or so residents of the island (Johnson 1992). In 1991, 775,000 visitors came to the island to fish, birdwatch, bicycle, hunt, canoe, and swim or lie on the sandy beaches (Leonard 1992). Recreational boaters visit the island via Multnomah Channel or the Columbia River.

Sauvie Island residents are not to likely support the construction of additional boating facilities on the island. Most residents do not want to encourage increased visitation to the island; they dislike the resulting increase in traffic. Planners must first gain the approval of residents through local meetings before any decisions concerning the location of public transient tie-up facilities are made (Johnson 1992).

The Sauvie Island Conservancy expressed several concerns to development of public transient tie-up facilities on this particular stretch of river. Among these concerns is that the overcrowding on the Columbia River will continue to increase, as well as noise pollution and conflicting uses.

Boaters with small craft often fish and water ski on Multnomah Channel. Larger cruising boaters use the channel as a passageway from Portland to St. Helens. Even though Multnomah Channel covers a greater distance than the main channel, travel is often easier. Multnomah Channel offers smoother transit to recreational boaters because most of the commercial traffic uses the main channel. Also, Multnomah Channel offers protection from wakes and winds.

Four public transient tie-up facilities are located on the Multnomah Channel side of Sauvie Island: Free Bayport Marina, Gilbert River, Coon Island, and Hadley's Landing. (See Table 3). Recommendations for improvements of the Multnomah Channel facilities include repair and continued maintenance of the moorage floats and the construction of a self-composting restroom at Hadley's Landing.

The Columbia River side of Sauvie Island must be considered for the location of public transient tie-up facilities because many of the larger vessels prefer to cruise the main channel instead of Multnomah Channel; also, many boaters prefer the sandy beaches on this side.

Priority: B

Water Depth: Medium

Wind/Wake Protection: None

OBSERVATIONS

This site is heavily used by day-use beach-goers. It is one of two "clothing optional" beaches on the Columbia River and attracts large crowds on sunny summer days. The site consists of a long stretch of sandy beach and an upland area with trees and bushes in front of the road. There are no signs on land or water directing the public to Nudie Beach. The area lacks restrooms and a parking lot; however, parking is available along the side of the road.

Nudie Beach is also visited by recreational boaters. Boating activities include water skiing, fishing, swimming, nature viewing, and beach activities. Boaters either beach their boat on the sand or anchor out in the water. The water is shallow approximately 12 yards out from the beach.

This site offers no natural protection to boaters from wind or wakes. Because the shipping channel is nearby, large ships and barges create large wakes up onto the beach when they pass. Water skiers and other recreational boats also create considerable wakes. A wave attenuation structure or increased protection from the floats would be needed to protect a public transient tie-up facility at Nudie Beach from the winds and wakes. This requirement prompted the priority B rating so attention was focused on Sauvie Island sites with natural protection.

Potential Conflicts

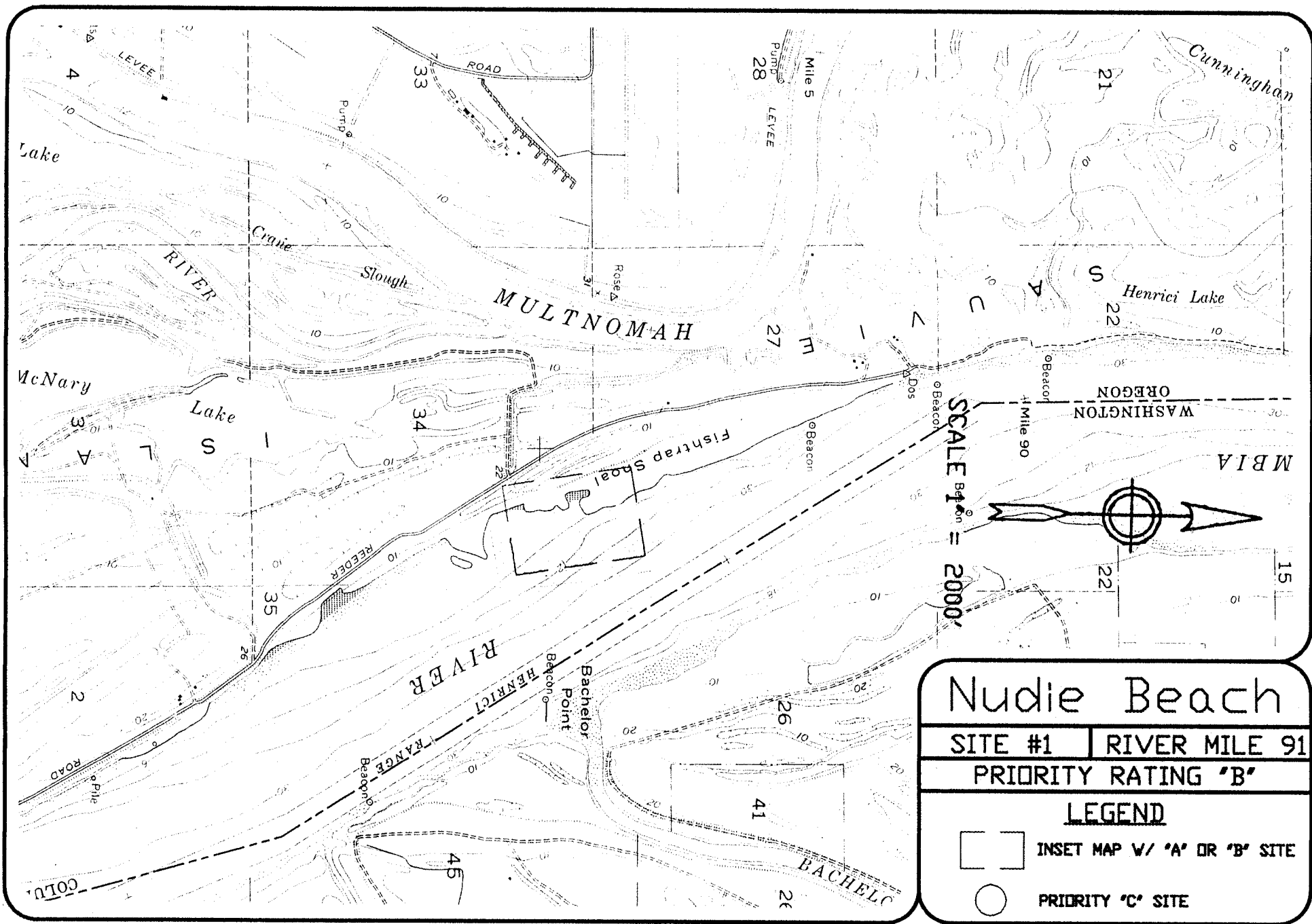
Several conflicts would exist if a boating facility were to be built here. A floating dock might be used by swimmers and fishermen rather than as a tie-up float for boaters. Conflicts may occur between the nude bathers and the boaters. Conflicts may also occur within the main shipping channel, due to an increase in use of the area by recreational boaters. The beach would experience an increased level of use, and sanitation would become a bigger problem.

Proposed Developments

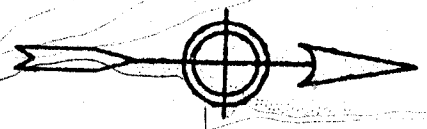
- (1) Provide either a 300' floating dock with access to land or three to four mooring buoys.
- (2) Provide two self-composting restrooms, trash cans, and picnic tables.
- (3) Mark the location of the facility and the channel with signs and/or buoys.

Ownership

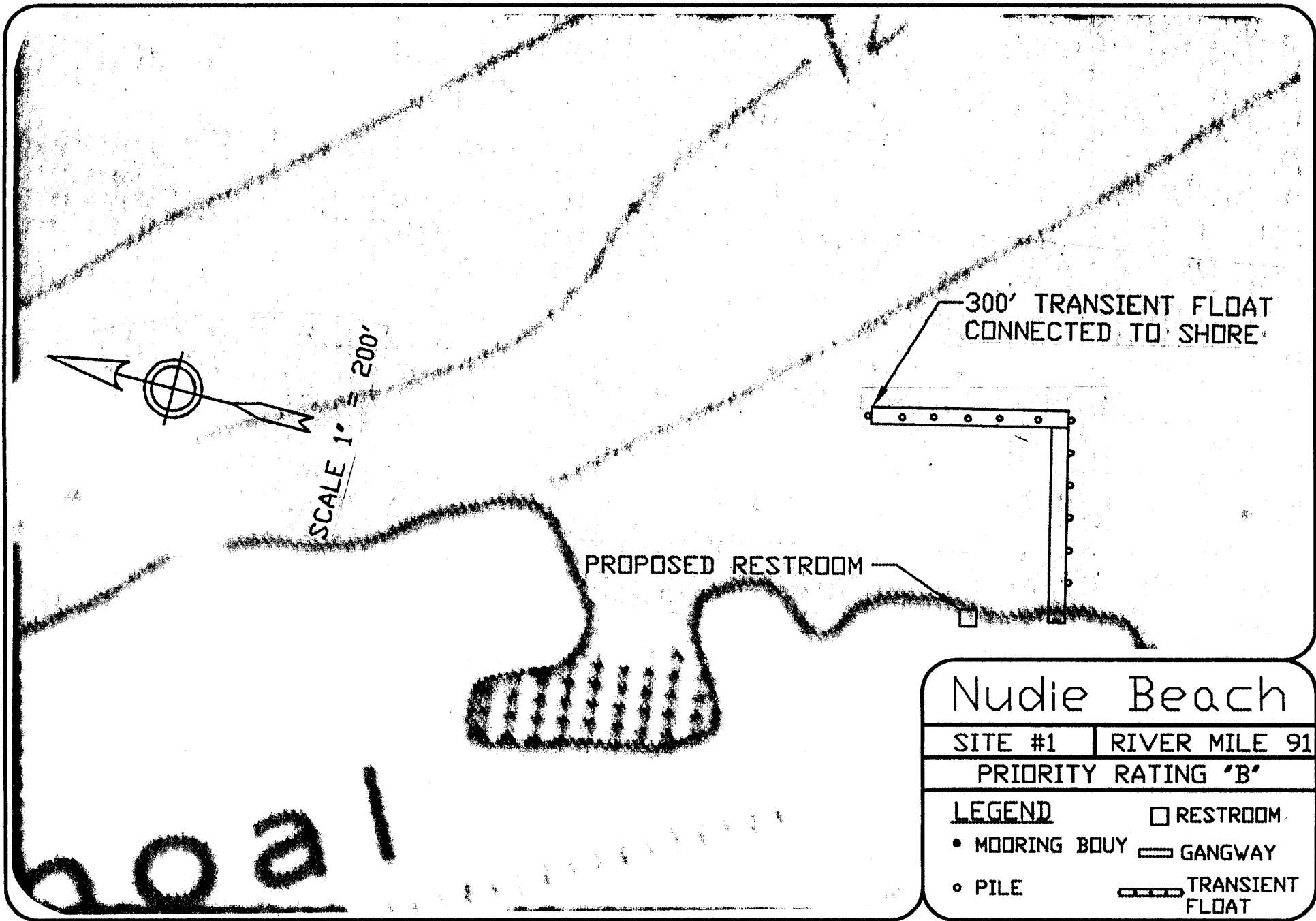
ODFW



SCALE 1" = 2000'



<h1>Nudie Beach</h1>	
SITE #1	RIVER MILE 91
PRIORITY RATING 'B'	
LEGEND	
□	INSET MAP W/ 'A' OR 'B' SITE
○	PRIORITY 'C' SITE



Priority: C

Water Depth: Medium

Wind/Wake Protection: None

Observations

This site is similar to Nudie Beach; however, it is not a "clothing optional" beach. Smaller boats frequent this beach more often than Nudie Beach, probably because it is a more family oriented beach. Several portable toilets and trash cans are located near the road. Once again, this site offers no protection from winds or wakes, so other sites on Sauvie Island should be considered for development first.

Potential Conflicts

A floating dock might be used by both swimmers and fishermen. Increased recreational traffic near the shipping channel may be hazardous. Additional sanitation facilities would be necessary to accommodate the increased level of use of this area by recreational boaters. The riparian area is sensitive and would be affected if a boating facility and/or additional parking are constructed here (Johnson 1992).

Proposed Developments

- (1) Place mooring buoys here if a tie-up float is constructed in another location on Sauvie Island or a tie-up float here if mooring buoys are placed at another site.
- (2) Provide additional sanitation facilities and a picnic area.
- (3) Provide interpretive material about the sensitive riparian habitat and wildlife.

Ownership

ODFW

Priority: A

Water Depth: Shallow

Wind/Wake Protection: Inlet lagoon offers protection from both winds and wakes.

Observations

The Cove Marina, a permanent moorage facility, is located in the only protected lagoon on the Columbia side of Sauvie Island. The floats and ramps at the marina are in poor condition, as are all of the marina's facilities. The entrance channel is very shallow (less than 8 inches in some areas) and is poorly marked. A makeshift wind/wake break is located at the mouth of the channel. A convenience store and an RV trailer park are located on the island, across the street from the marina.

The Cove Marina has the potential for expansion and improvement but improvements will be costly. However, the expense of renovating an existing facility with natural protection is likely to be less than the expense of constructing a new facility, which would require artificial wind and wake protection. It is also probably easier to obtain the necessary permits for dredging and disposal in an existing facility than it would be to get the permits required to construct a new facility.

Forty percent of the surveyed boaters indicated that they would like to have additional fueling stations at public transient tie-up facilities. Two boaters indicated that they specifically want a fueling station located between St. Helens and the Portland metro area. The Cove Marina would be an ideal location for a filling station. The OSMB and the owner of the private facility could make a cooperative agreement, such that OSMB would pay for initial improvements and the owner would finance the continued maintenance costs of the facility. Such arrangements between public and private parties are not usually sought after by state agencies, but this arrangement would benefit not only the recreational boaters, but also might help the economic development of Sauvie Island, thereby improving the economic status of island residents (Carter 1992).

Potential Conflicts

The Cove Marina has many potential conflicts that must be worked out before a public transient tie-up facility could be located here. First of all, it is not likely that the owner of the marina will willingly give his lease to the OSMB. The boat owners who permanently moor their boat in the marina might also oppose the transformation of the marina into a public transient tie-up facility.

This site is also severely limited by environmental constraints and development may be limited by the presence of wetlands. Most of the existing materials and buildings in the

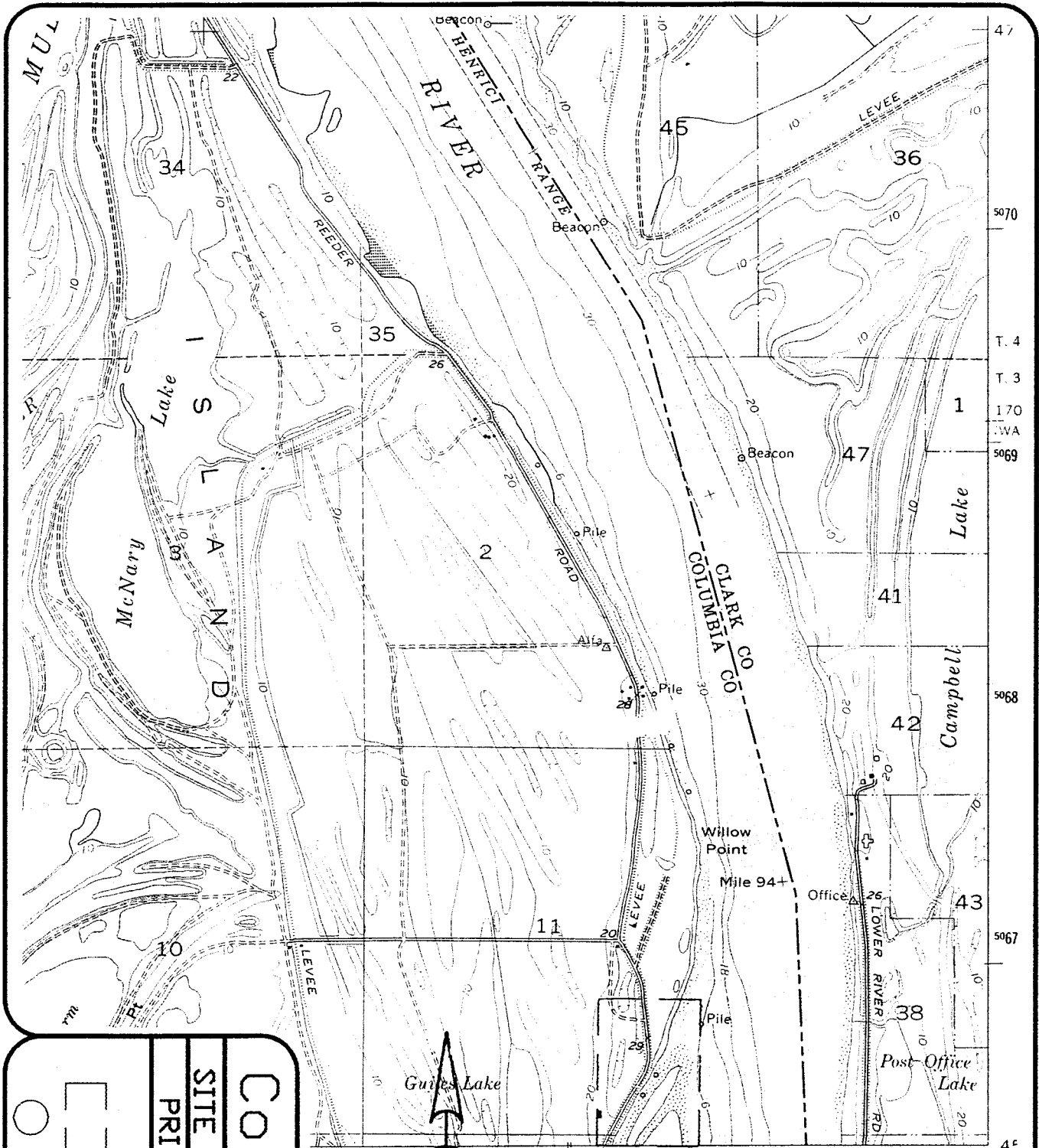
marina will need to be removed and a new facility must be built. Permits will be needed if it is necessary to dredge the channel and lagoon. Environmentally safe locations for the dumping of dredge spoils will also need to be located.

Proposed Developments

- (1) Dredge and mark the entrance channel.
- (2) Construct a permanent wind break.
- (3) Build a 200 foot float and 50 foot gangway.
- (4) Construct a fuel and pumpout station.

Ownership

ODFW



Cove Marina

SITE #3 River Mile 94.5

PRIORITY RATING 'A'

LEGEND

INSET MAP V/ 'A' OR 'B' SITE
 PRIORITY 'C' SITE

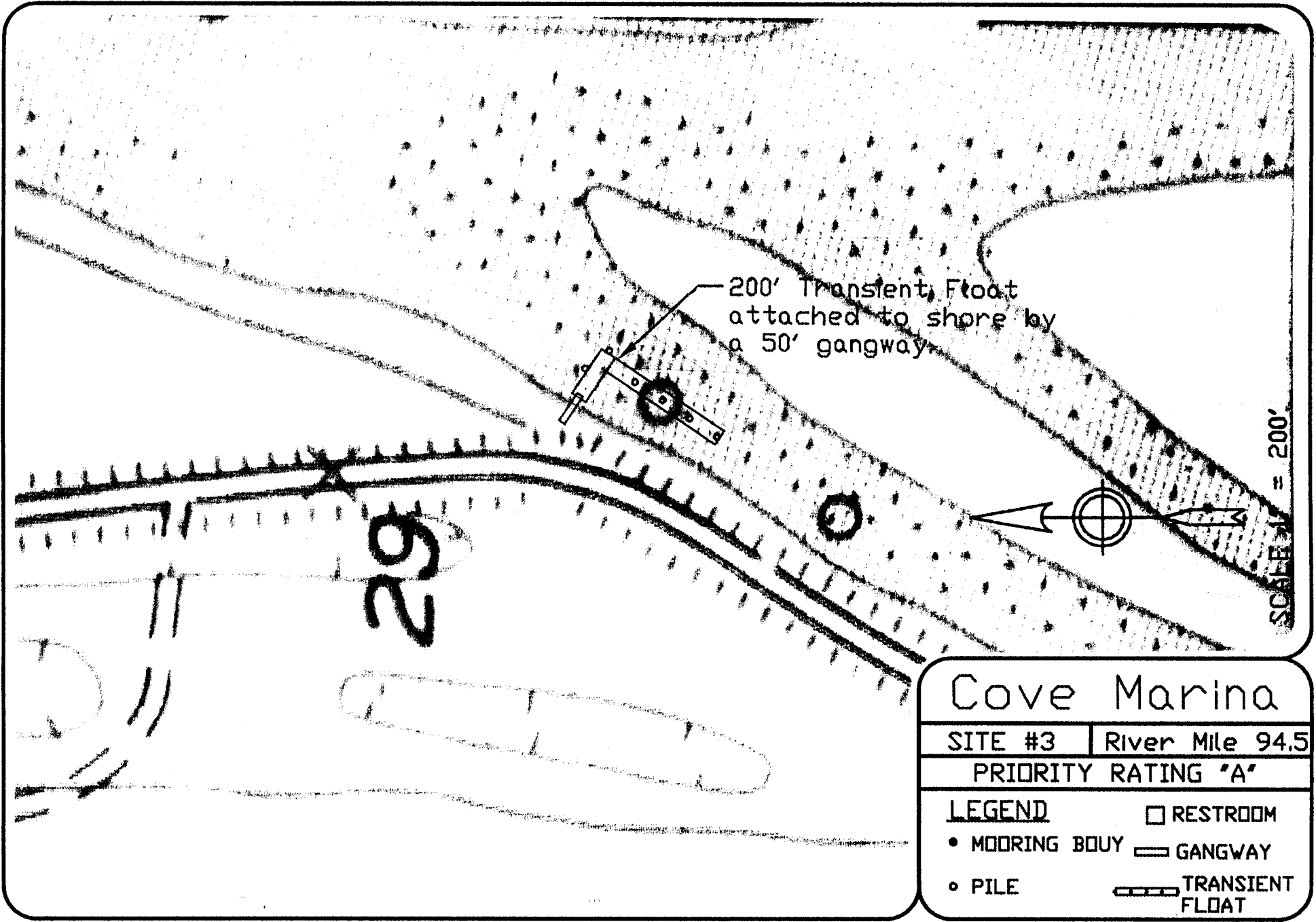
ECOLOGICAL SURVEY 51 VIRGINIA—1979 1:420 000 FEET (WASH.) 519000m E. 122° 45'

MI. TO U.S. 30

ROAD CLASSIFICATION
 Heavy-duty ——— Light-duty ———
 Medium-duty ——— Unimproved dirt - - - - -
 U. S. Route

OREGON
SCALE 1" = 2000'
 RANGLE LOCATION

ST. HELENS, OREG.—WASH.
 SE/4 ST. HELENS 15' QUADRANGLE
 N4545—W12245/7.5
 PHOTOINSPECTED 1975



<h1>Cove Marina</h1>	
SITE #3	River Mile 94.5
PRIORITY RATING "A"	
LEGEND	
• MOORING BOUY	◻ RESTROOM
◦ PILE	▬ GANGWAY
	▬▬▬ TRANSIENT FLOAT

Priority: B

Water Depth: Medium

Wind/Wake Protection: None

Observations

The same type of beach and boating activities occur here as do on Walton and Nudie Beach. A dirt road leads from the main road to a parking lot near the beach. The road often becomes flooded and washed out during hard rains. ODFW built a gate at the entrance to the dirt road and one at the entrance to the beach. The main road gate closes at 10 p.m. to keep teenage partiers off the beach after dark. The beach gate is closed from May to February to prevent vehicle access onto the beach. It is open during the months of March and April to allow fishers to gain access to the beach to fish for salmon (Johnson 1992).

Willow Bar is the only site on the Columbia River side of Sauvie Island that offers direct access from the main road to the river, making this site ideal for the construction of a full-scale boating facility. Launching ramps and transient tie-up floats (similar to Chinook Landing) should be considered for this location.

A full-scale launching ramp and transient moorage facility are needed near the Portland metro area to help ease the congestion of existing facilities and to disperse boat use away from the crowded area. Chinook Landing, located just east of Portland, opened in October 1991 and already exceeds capacity several days each summer (Obern 1992). A facility built to the west of Portland will help draw boaters to the Lower Columbia River and will help ease the congestion occurring in the Mid-Columbia River.

However, the construction of a facility of this magnitude is expensive and complicated. It must be ensured that recreational boaters will use this facility to its full capacity. Boaters will have to be actively lured away from their accustomed east Portland launching ramps. Initially, a tie-up facility without a launching ramp could be built here, and, after the facility becomes well-known and demand continues to increase, a launching ramp could be constructed.

Willow Bar does not offer any natural protection from wind or wakes. A permanent breakwater structure will be necessary to provide protection to both moorage floats and the launching ramp. Adequate water depth is another problem that will limit the development of this site. If initial dredging is necessary, continuous siltation will probably occur, thus making periodic dredging necessary.

Potential Conflicts

Conflicts between beach parties, salmon fishing, and recreational boating are likely to occur if a public transient tie-up facility is built here. Access from the road should remain prohibited after 10 p.m., and fishers should be given continued access to the beach during the spring salmon season. Conflicts may also occur between traditional beach day-use goers and boaters. Problems may also be encountered between commercial and recreational vessels due to the close proximity of Willow Bar to the main shipping channel.

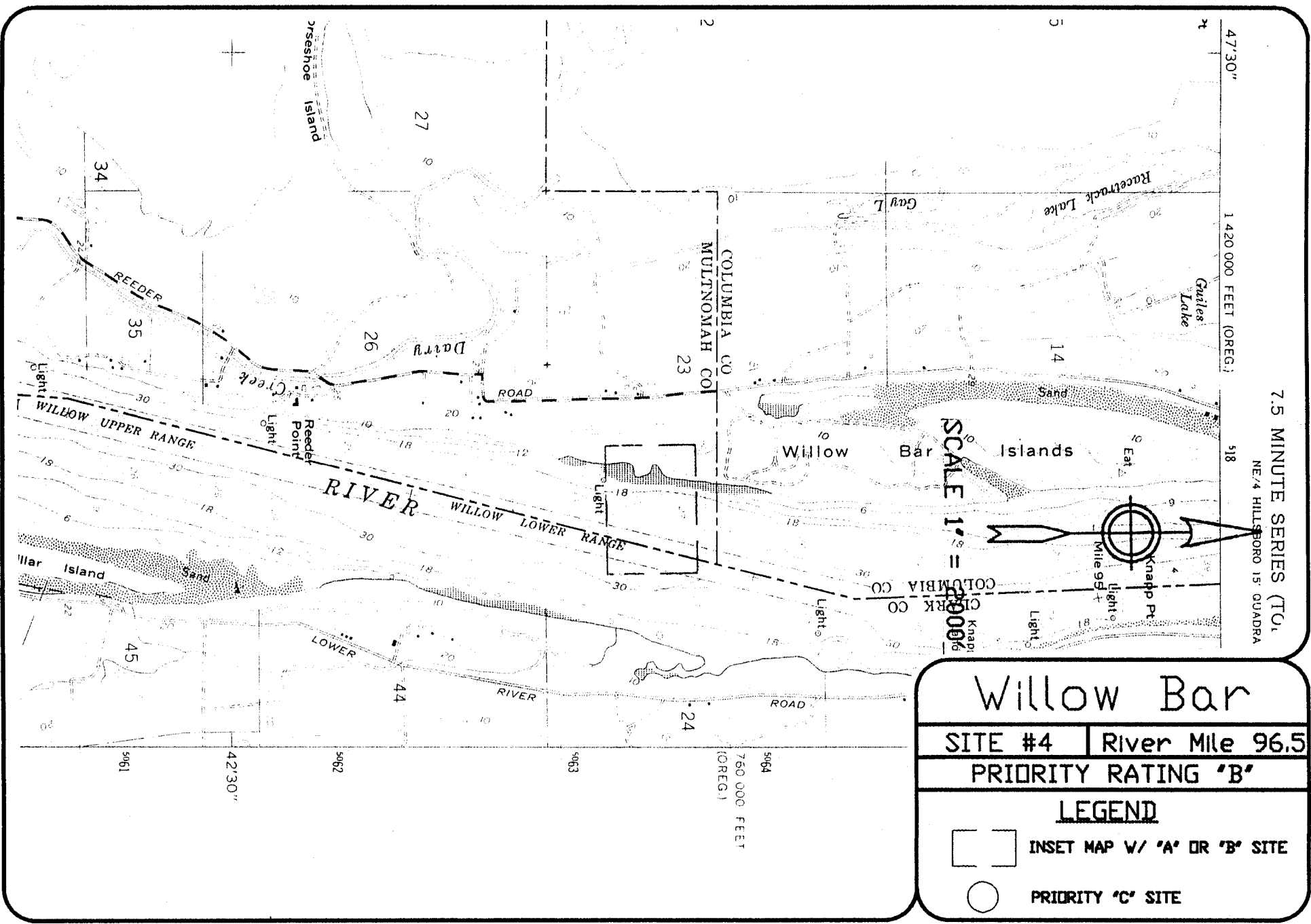
Congestion on the one road leading to Willow Bar will need to be considered before any expansion or improvements are made. The Sauvie Island Bridge and the roads on the Island are narrow and are heavily used, especially during summer weekends, by bicyclists, boaters going to the existing Multnomah Channel ramp, and tourists visiting the island. (Hanson 1993).

Proposed Developments

- (1) Expand and improve the parking lot and the road leading to the lot.
- (2) Construct sanitation facilities, including permanent restrooms and trash cans.
- (3) Build a permanent breakwater structure.
- (4) Construct a three-lane launching ramp with three courtesy tie-up floats.
- (5) Dredging may be necessary.

Ownership

ODFW



SCALE 1" = 2000'



7.5 MINUTE SERIES (TQ)
NE 1/4 HILLSBORO 15' QUADRA

<h1>Willow Bar</h1>	
SITE #4	River Mile 96.5
PRIORITY RATING 'B'	
LEGEND	
	INSET MAP W/ 'A' OR 'B' SITE
	PRIORITY 'C' SITE

300' Transient Float attached to shore.



SCALE 1" = 200'

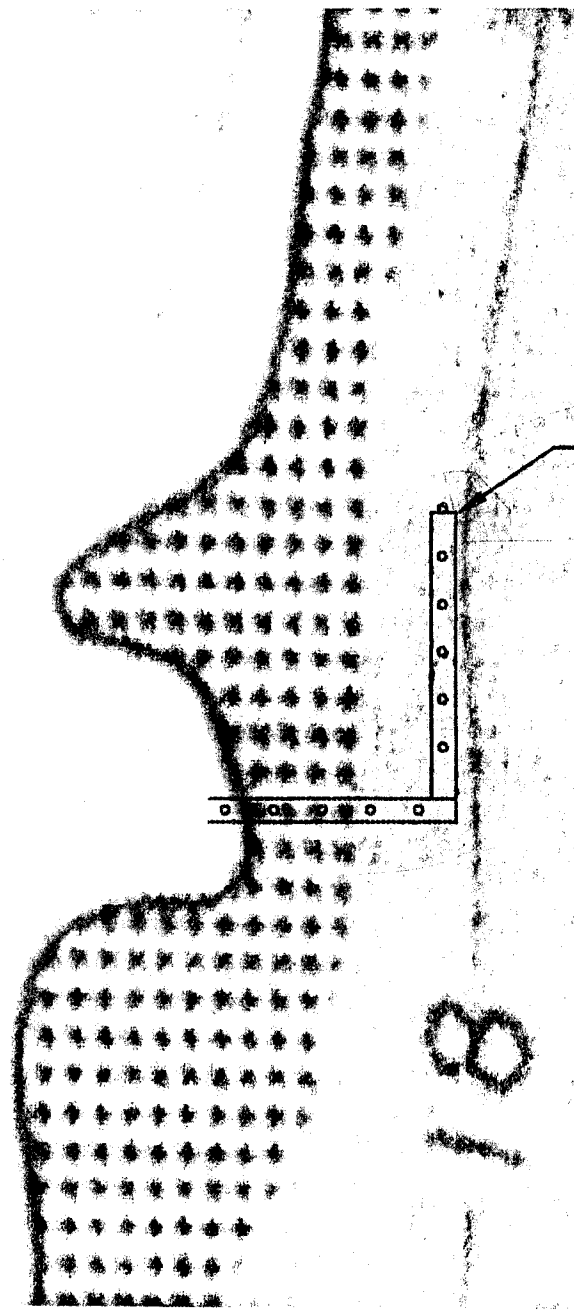
Willow Bar

SITE #4 | River Mile 96.5

PRIORITY RATING "B"

LEGEND

- ◻ RESTROOM
- MOORING BOUY
- ◻ GANGWAY
- PILE
- ▬ TRANSIENT FLOAT



2. Metro area islands

The islands within the Portland city limits (Lemon, Tri-Club, Government, and McGuire) are popular cruising destinations for recreational boaters in small and large vessels alike. Of the 58 boaters that were asked, 45 percent responded that the metro islands are their favorite destination site. Boaters are primarily attracted to the sandy beaches of the islands. The islands also give boaters the feeling of having "gotten away from it all" without requiring them to travel long distances. The islands are accessible only by boat and the only connection to city life is the noise above the islands from airplanes taking off and landing.

The Port of Portland owns Government Island and wants it to remain undeveloped so they can continue to use it as a flight path for airplanes arriving and departing from Portland International Airport (Bach 1992). The Division of State Lands owns 70 percent of McGuire and Tri-Club Islands because they are submerged and submersible lands. Lemon Island is half privately owned and half state owned and is used by the state to dump dredge spoils (Lumley 1992).

The South Channel side of Government Island (Lemon, Tri-Club, and McGuire Islands) is used primarily for both day-use and overnight camping by recreational boaters with small craft. Recommendations for facilities on these islands are discussed in Appendix E.

Site #5

NORTH LEMON ISLAND

RM 112.5

Priority: D

Water Depth: Shallow

Wind/Wake Protection: None

Observations

North Lemon Island is used both by boaters with larger vessels and boaters with smaller vessels. The smaller vessels usually run their boat up on the south beach and secure it to a large log or a stake. Larger vessels usually anchor out in a semi-protected area on the north side of the island and then use their dinghies to reach shore.

Recommendations

Because the water depth is not very good on either side of the island and wind and wake protection is minimal, it is recommended not to build a public transient tie-up facility on Lemon Island.

Ownership

Division of State Lands and privately owned

Priority: C**Water Depth: Shallow to medium****Wind/Wake Protection: Good****Observations**

Commodore's Cove is a popular, scenic secluded destination for cruising boaters from the Portland metro area. It is popular for yacht club outings, as well as a tie-up site for individual large cruising vessels. Commodore's Cove was created, in part, by the construction of the I-205 bridge, which crosses above the west end of Government Island. The cove offers protection from winds and wakes and does not receive too much noise pollution from the Interstate, despite its proximity.

In 1987, the CRYA placed a 50-foot floating dock near the center of the cove. The float was not connected to land because the water in the cove is too shallow. The water depth is tidally influenced and even at mean high water (MHW) is quite shallow near the shoreline. In addition, the small islands in the cove have neither sandy beaches nor trees to attract people.

On weekends with good weather and weekends selected for yacht club cruises, the cove may be packed with as many as 50 boats, tied-up to the floating dock and rafted to one another. Several boats also drop anchor in the center of the cove. A tie-up facility should not attempt to accommodate the maximum capacity of the cove, as many larger boats appear to be satisfied with the existing moorage float and are willing to continue to anchor and raft to one another in the cove. However, additional facilities would accommodate those boaters not comfortable with rafting to other boats.

Potential Conflicts

When the cove is not filled with cruising vessels, it is often used by water skiers (despite the limited number of signs declaring it a 5 m.p.h. "no wake" zone), because it offers calm, shallow waters in a protected setting. Conflicts may therefore arise between cruising boaters moored in the cove and water skiers.

Proposed Facilities

- (1) Place two or three mooring buoys in the cove. Mooring buoys will limit the available maneuvering space in the cove and therefore should be placed as to allow other boats to continue to raft to one other in the cove.
- (2) Expand the existing floating dock to 200 feet.

Ownership

Port of Portland

Priority: B**Water Depth: Deep****Wind/Wake Protection: None****Observations**

The proposed facility at Cow Landing is similar to the two existing public transient tie-up facilities on Government Island, Bartlett's Landing, and West Dock. Cow Landing has a sandy beach and a relatively high upland on which sanitation and picnic facilities may be built. Government Island is a proven popular destination site. Ten percent of the surveyed boaters suggested that an additional facility be built on the island. Constructing an additional facility instead of expanding the existing facilities will help alleviate congestion by preventing overuse of the other two facilities.

The Port of Portland leases space on Government Island to a rancher who grazes cattle on the land. A cattle loading dock is located on Government Island at approximately RM 114.3. This dock is occasionally used to load cattle on and off the island.

It is possible to locate the public transient tie-up facility at one of two sites, either RM 114 or RM 114.5. Both locations have sandy beaches and upland areas with clearings and trees and shrubs. The water depth is also adequate at both locations.

The negative aspect of both these areas is that neither of them offer much natural protection to boaters from winds or wakes. The exact location of the facility should be determined by weighing all of the above factors, including water depth, existing wind and wake protection, the beach, and available upland area. In addition, the facility should be located where the least conflict will occur between boaters and the users of the cattle loading dock.

Potential Conflicts

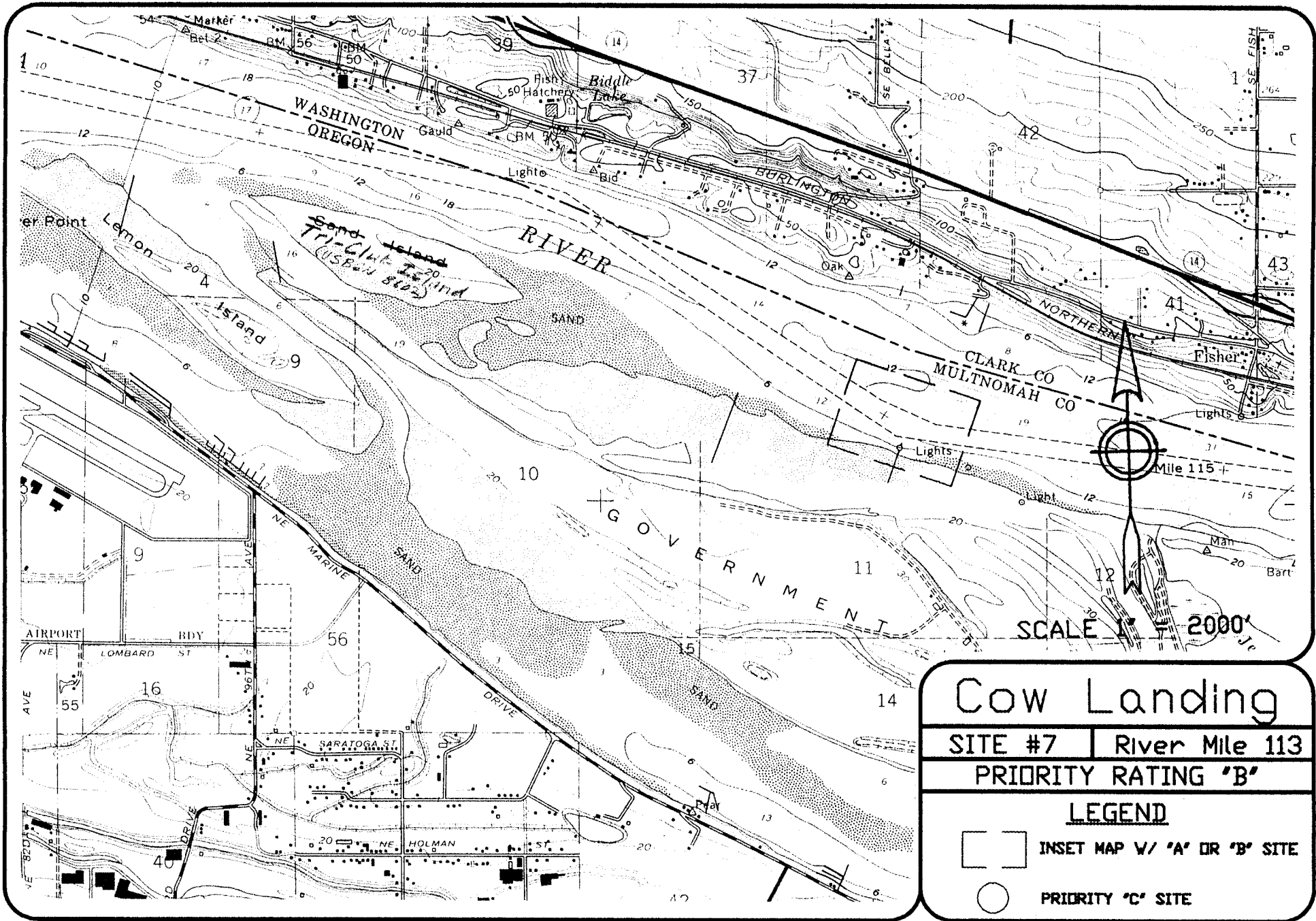
Conflicts may occur between recreational boaters and the owner/operator of the cattle loading dock. Vandalism and use of the dock for fishing may occur.

Proposed Developments

- (1) Build two tiers of tie-up floats (similar to St. Helens Courthouse Dock); the outer float will act as a breakwater for the inner floats.
- (2) Provide picnic tables and a self-composting restroom.
- (3) Mark the location of the facility and the main channel with signs and/or buoys.

Ownership

Port of Portland

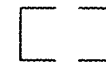


Cow Landing

SITE #7 | River Mile 113

PRIORITY RATING 'B'

LEGEND

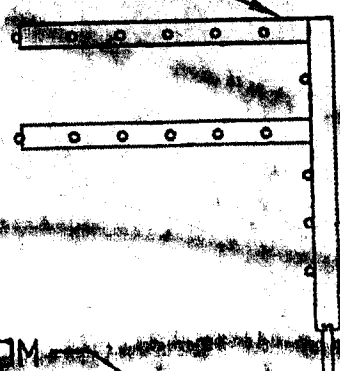
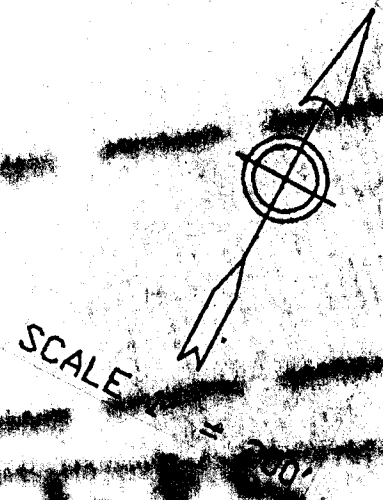


INSET MAP W/ 'A' OR 'B' SITE



PRIORITY 'C' SITE

Two 300' Transient Floats connected to shore by a 50' gangway.



PROPOSED RESTROOM



Cow Landing

SITE #7 | River Mile 113

PRIORITY RATING 'B'

LEGEND

- MOORING BOUY
- ◻ RESTROOM
- ◯ PILE
- GANGWAY
- ▬ TRANSIENT FLOAT

Priority: C (Restroom upgrade: Priority A)

Water Depth: Deep

Wind/Wake Protection: Log booms

Observations

West Dock is the second most used public transient tie-up facility in the Portland metro area, next to Bartlett's Landing. It is not as popular a site as Bartlett's Landing because it does not have a sandy beach and the moorage float is not as long. However, when Bartlett's Landing is full, boaters look to tie-up at West Dock. The West Dock facility consists of a 300-foot moorage float, gangway access to shore, picnic tables, and a portable restroom.

The Port of Portland leases space to shipping companies just off the island as a place to store log booms (Bach 1992). Log booms are in place most of the summer; however, the shipping companies occasionally do not store logs here. When in place, the log booms protect recreational boats tied up at the moorage facility from winds and wakes. Without the log booms, the wakes from the shipping channel cause the conditions to be too rough for boats to remain at the facility.

Potential Conflicts

None.

Proposed Developments

- (1) Upgrade the existing portable restroom to a self-composting restroom.
- (2) Improve the current level of wake protection by constructing a more sturdy yet still not permanent breakwater structure.
- (3) Expand the existing float to 500 feet.
- (4) Provide additional picnic tables and a picnic shelter.
- (5) Make a hiking trail, which provides a variety of nature and interpretive material to recreational boaters and connects West Dock to Bartlett's Landing. The trail could inform boaters about the history of the island from Lewis and Clark days to the present; provide information about the riparian habitat, waterfowl, and wildlife that use the islands; and provide information about the Columbia River itself, including information about fishing, the dams, commercial and industrial use, and recreational use. A map could show the locations of and provide information about other transient tie-up facilities located in the area. This map should be posted near either West Dock or Bartlett's Landing. This map would encourage boaters to use other facilities when the facilities on Government Island become overcrowded.

Ownership

Port of Portland

Priority: A

Water Depth: Deep

Wind/Wake Protection: Log booms

Observations

Bartlett's Landing is the most popular destination site for Portland metro area day and overnight cruisers and is filled to capacity most summer weekends. A 500 foot float is available and is connected to shore by a gangway. A portable restroom, picnic tables, and a picnic shelter are located on shore. The shoreline consists of a sandy beach; the upland area contains both trees and cleared areas. Log booms protect the facility from wakes; however, this protection is not always present because....

Bartlett's Landing is a popular destination site for several reasons. It is close to Chinook Landing and 42nd Street launching facilities and also to the numerous permanent moorages in the Portland metro area. Boaters appreciate the protection offered from the log booms (in fact, they will not moor here unless the logs are present), and they like the onshore facilities. However, many boaters complain that the facility is too crowded and seek out other tie-up facilities for the weekends and holidays.

Bartlett's Landing must be expanded to accommodate the high levels of use of this and the other Portland metro area public transient tie-up facilities. The number of recreational cruising boaters in the Portland metro area is likely to continue to increase, so facilities should be able to accommodate these boaters in the future.

Potential Conflicts

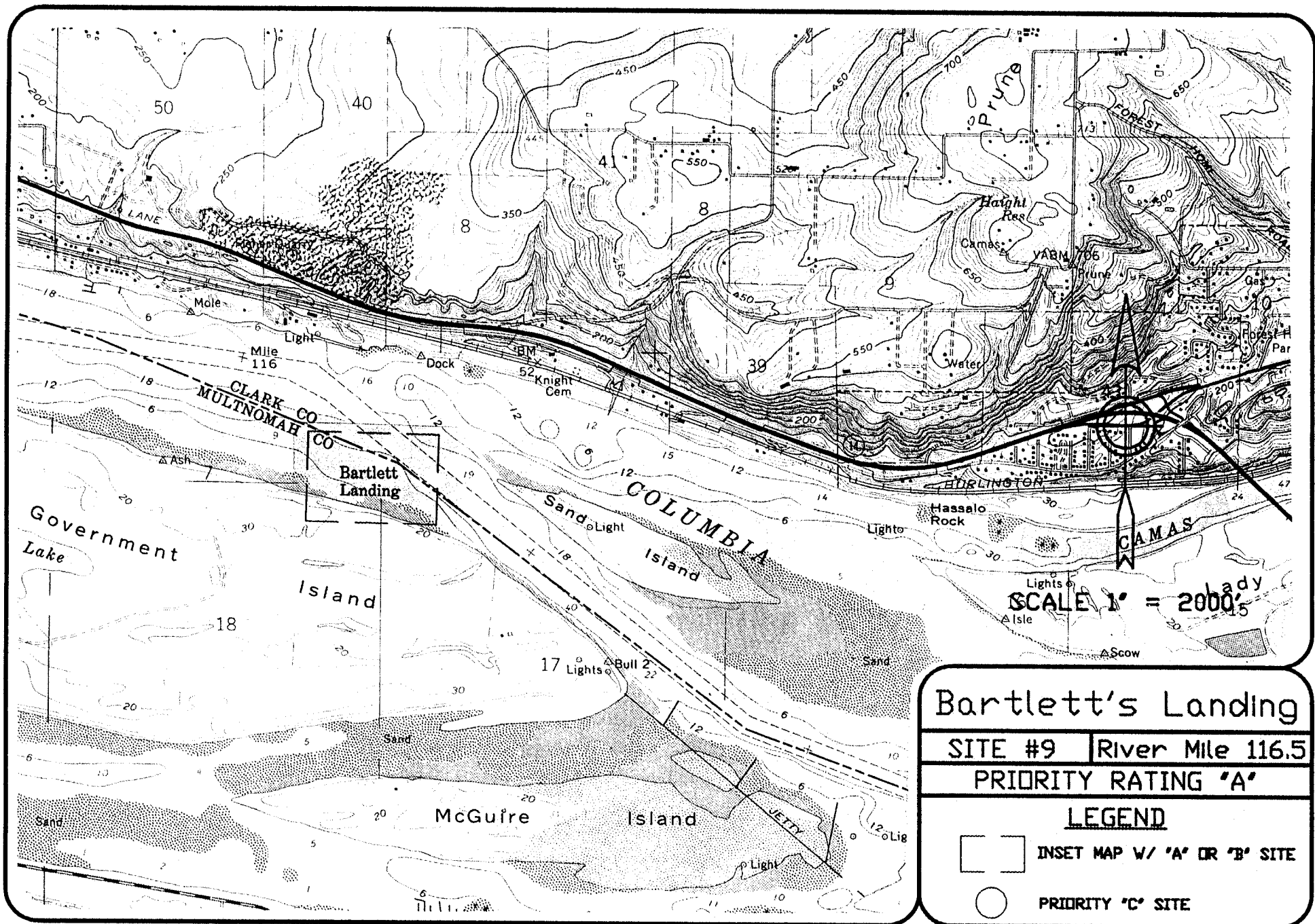
None.

Proposed Developments

- (1) Provide a permanent floating breakwater structure.
- (2) Expand the existing dock to provide additional tie-up spaces. A second tier of tie-up floats (similar to St. Helens Courthouse Dock) could double the moorage space and act as a breakwater for the inner floats.
- (3) Upgrade the portable restroom to a self-composting restroom.
- (4) Build nature trails that connect to the West Dock facility.

Ownership

Port of Portland



Bartlett's Landing

SITE #9 | River Mile 116.5

PRIORITY RATING 'A'

LEGEND

- INSET MAP W/ 'A' OR 'B' SITE
- PRIORITY 'C' SITE

500' Transient Float
attached to existing
floats.

Bartlett Landing

500' Existing Transient Float
attached to shore by
existing 50' gangway.



SCALE 1" = 200'

Bartlett's Landing

SITE #9 | River Mile 116.5

PRIORITY RATING "A"

LEGEND

- MOORING BOUY
- ◻ RESTROOM
- ◯ PILE
- ▬ GANGWAY
- ▬▬▬ TRANSIENT FLOAT

3. Columbia River Gorge National Scenic Area: Below Bonneville Dam

The Columbia River Gorge National Scenic Area, below Bonneville Dam, is popular with recreational boaters. It receives a high degree of boat use, although considerably less than the metro area and west of the metro area. This is because fewer boating facilities are located along this stretch of the river. This is an important section of the river to be considered for development of public transient tie-up facilities because it is a scenic section of the river, it has several protected areas ideal for tie-up facilities, and it is close to the metro area. With additional public transient tie-up facilities, this area may draw boaters away from the more congested sites in the metro area. One goal of the National Scenic Area Act is to increase recreational opportunities in the gorge, including boating opportunities (Columbia River Gorge Commission 1992). Construction of a network of public transient tie-up facilities in the Mid-Columbia River will help to achieve this goal.

Priority: A**Water Depth:** Shallow**Wind/Wake Protection:** Good**Observations**

Gary and Flag Islands were purchased by the OSMB and given to Multnomah County to be used for recreational boating activities. Gary and Flag Islands create a semi-enclosed cove that is protected from winds and wakes. A rocky and shoaling-in entrance channel provides limited access for larger boats to the protected waters of this cove. An unconnected 160-foot floating transient dock is located off Flag Island. Duck hunters have constructed a "shack" on the float.

The cove is popular with water skiers and day-users because of the numerous sandy beaches. The cove is quite shallow, but it is well protected from winds and wakes. This cove is mostly used by smaller recreational boaters who are able to beach their boats on the sand to access the islands. The mainland beach is accessible through trails from Lewis and Clark State Park and is popular for picnicking and camping. The islands are "boat-in" only and are popular for camping, picnicking, and water ski launching.

The mainland or Sandy River Delta area is federal land, managed by the Forest Service. The Forest Service is presently working on completing a Master Plan for the area, and Gary and Flag Islands are included in the Plan.

The Management Plan for the National Scenic Area would only allow a small-scale boating facility at this location due to the land-use designation of Open Space (Hess 1993). A Recreation Intensity Class (RIC) 1 has been designated to Gary and Flag Islands, a large portion of the mainland site, and the channel between the mainland and the Islands. Trails, trailheads, dispersed campsites, viewpoints and overlooks, picnic areas, signs, interpretive displays and restrooms are the types of facilities allowed to be developed in a RIC 1 area.

Existing uses are permitted to continue within the RIC 1 class set in the Management Plan.

The transient float is rarely used because it is not connected to land. The shallow entrance channel prevents larger boats from entering the cove and using the transient float because they have too deep a draft. Several surveyed boaters have suggested that if the channel were dredged and marked, this would become a popular destination site for cruising boaters. Any associated costs with the opening of a channel would have to be carefully weighed, including maintenance dredging.

Potential Conflicts

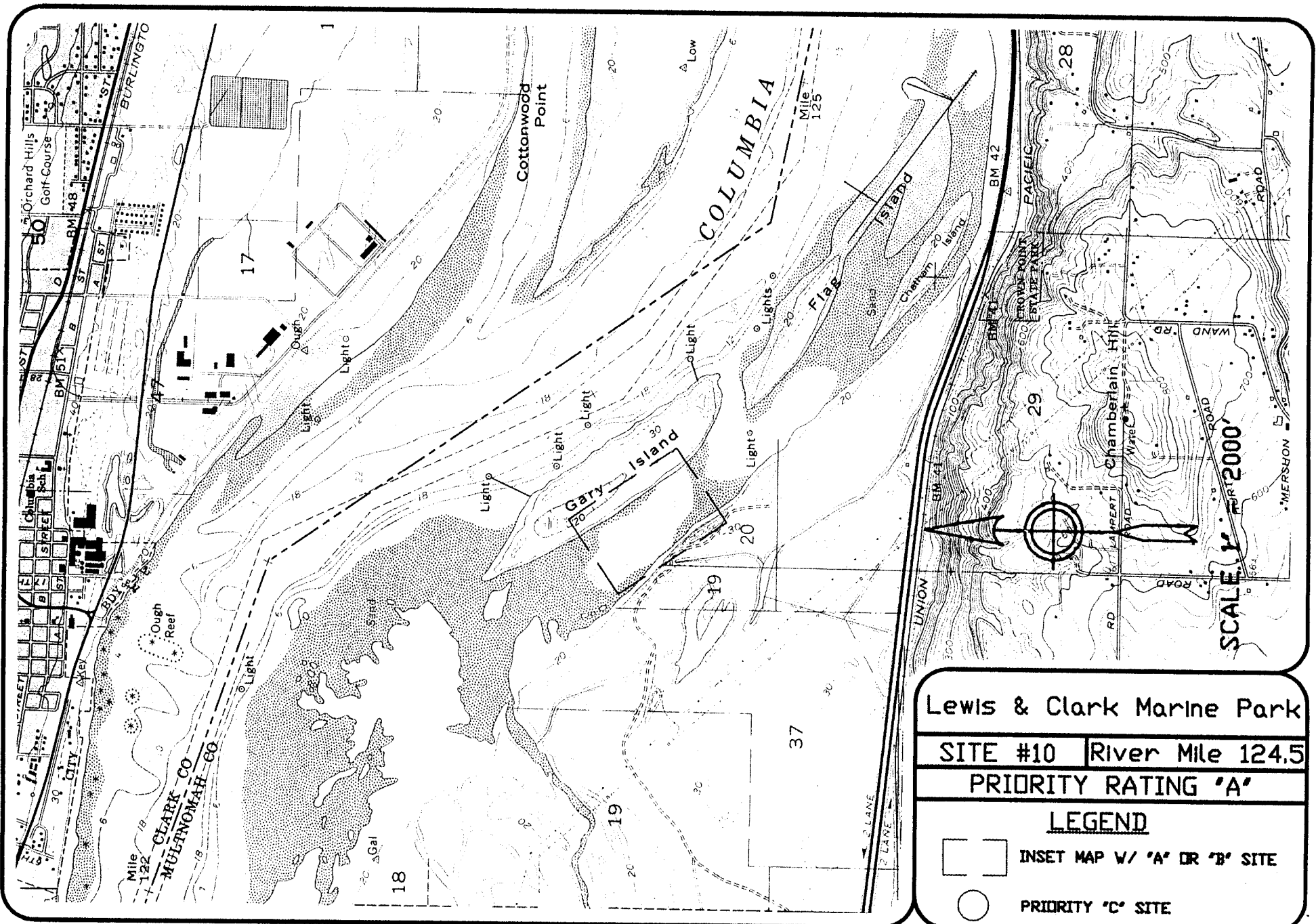
Flag Island is the home for a pair of nesting bald eagles (Hoy 1993). Recreational boaters may disturb their habitat, so additional research must be done to determine the potential impacts. Conflicts may also occur between recreational cruising boaters and boaters with smaller craft who use the cove for water skiing. The Multnomah County Sheriff's Office notes the "channel is extremely hazardous at best".

Proposed Developments

- (1) Coordinate future planning with the Forest Service to incorporate a small boating facility in the plans for the interpretive center.
- (2) Remove and replace the existing floating dock with a new dock from the sensitive habitat area on Flag Island to a sandy beach on Gary Island or on the mainland. Provide a gangway access to the shore. If the islands continue to receive a high degree of use, an additional floating dock or mooring buoys should be constructed.
- (3) Build self-composting restrooms on Gary Island and the mainland.
- (4) Provide picnic tables and shelters on Gary Island and the mainland.
- (5) Discuss the possibility of opening up a direct channel to the cove with the COE. Initial and continued dredging will probably be necessary. Rocks should be removed from the middle of the channel. Deadheads and any pilings that are not currently used to "train" the main channel must also be removed. This proposal may be cost prohibited. Further study will need to be completed to determine its applicability.

Ownership

Multnomah County



Orchard Hills Golf Course
 Clark Co Multnomah Co
 Chamberlain Hill
 Cottonwood Point
 Gary Island
 Flag Island
 Chamberlain Hill
 Wagon Road
 Union Road
 Chamberlain Hill
 Wagon Road
 Chamberlain Hill
 Wagon Road

Mile 122
 Clark Co
 Multnomah Co
 60

COLUMBIA

37

29

.28

SCALE 1" = 2000'

Lewis & Clark Marine Park
SITE #10 | River Mile 124.5
PRIORITY RATING 'A'

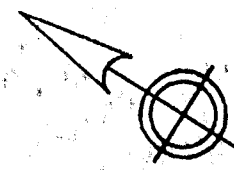
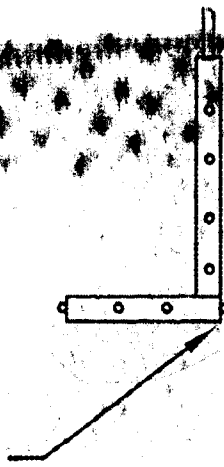
LEGEND
 □ INSET MAP W/ 'A' OR 'B' SITE
 ○ PRIORITY 'C' SITE

20

PROPOSED RESTROOM



160' Existing Transient Float with 50' Gangway access to the mainland or Gary Island.



SCALE 1" = 500'

Lewis & Clark Marine Park

SITE #10 | River Mile 124.5

PRIORITY RATING 'A'

- LEGEND
- MOORING BOUY
 - ◻ RESTROOM
 - ◯ GANGWAY
 - ◻ TRANSIENT FLOAT
 - ◯ PILE

Priority: C

Water Depth: Deep

Wind/Wake Protection: None

Observations

The existing Corbett Ramp facility consists of a one-lane launching ramp in poor condition and a limited parking area. The site has deficiencies on the landward side that must be remedied before attempting to improve the water side. Safety, useability, circulation, and parking capacity are priorities for improvement (Columbia River Gorge Commission 1992). Once these problems are solved, the site should then be considered for further expansion and development into a public transient tie-up facility.

The launching ramp is quite short; it drops off rapidly into the river and does not provide a sufficient turning radius at the top of the ramp. Parking is available on the shoulder of the access road, although it often spills onto the frontage road near Interstate-84. During peak-use periods, the on and off freeway ramps are crowded, making it difficult to negotiate travel with boats and boat trailers. The Oregon Department of Transportation considers Corbett Ramp, "a poor location for an expanded facility due to the existing design of the highway and interchange. The boat ramp is proposed for removal due to inadequacy of available space." (Clark 1993)

The river-side of Corbett Ramp does not offer much for the development of a public transient moorage facility. Several pilings, floating docks, and boat houses are located just west of the ramp. The site is not protected from the gorge winds or from wakes from the nearby channel, so the costs to develop this site as a tie-up facility would be very high.

However, the Columbia River Gorge Commission promotes the development of a public transient tie-up facility at Corbett Ramp. The Commission states that "[t]he western portions of the gorge have the highest levels of pleasure boating, waterskiing, and related recreational uses in the entire Scenic Area. Given the current demand and use levels of tie-up facilities in the gorge, the presence of sensitive natural resources in other undeveloped stretches of shoreline, and the presence of the existing Corbett Ramp facility and freeway access, renovation and enhancement of Corbett Ramp is strongly recommended" (Columbia River Gorge Commission 1992).

This study recommends that the safety issues of Corbett Ramp be addressed first. If demand and support for a public transient tie-up facility continue, Corbett Ramp should be further investigated for development.

Potential Conflicts

The boat houses and the residents within the area might prove to have conflicting interests with recreational boaters if the use of Corbett Ramp by recreational boaters continues to increase. The freeway on and off ramp is quite short; unless improved, increased use of Corbett Ramp may create additional traffic hazards.

Proposed Developments

In general, the recommendations for this site are similar to the recommendations proposed by the Columbia Gorge Commission (1992). The safety issues are of highest priority and the development of the site as a public transient tie-up is of lowest priority in this project.

- (1) Provide parking in the abandoned rock quarry south (if the property is not sold) of the boat ramp on the south side of the freeway. Build an overpass to provide pedestrian access to the launching ramp.
- (2) Repave the ramp with consideration for adequate slope, dimensions, and material.
- (3) Build a courtesy dock for transient tie-up near the ramp.
- (4) Construct a breakwater.

Ownership

Oregon Department of Transportation

Priority: A

Water Depth: Shallow

Wind/Wake Protection: Good

Observations

Rooster Rock State Park is a large state park, popular for picnicking, beach-use, sail boarding, personal watercraft use, and recreational boating. The existing boating facilities include a two-lane launching ramp, courtesy floats, restrooms, and a 100 car and trailer parking lot.

Rooster Rock is an ideal facility for cruising boaters because of the existing facilities and services and the great location (mid-way between Portland and Bonneville Dam). However, the transient floats are often empty and the launching ramp is rarely used. The primary reason for this discontent is the shallow lagoon entrance channel. While the channel is approximately five feet deep, the entrance is often shoaled-in by an encroaching sand bar. This entrance has been dredged and marked in the past, but it appears that it will continue to shoal-in and prevent boaters from using this facility to its full capacity.

This site is important and, consequently, a Priority A site for several reasons: prime location, thousands of dollars have already been spent on this facility, less money will be required to improve this facility than would be required to build a new one, (it is one of the few well-protected coves in the gorge that may be used by recreational boaters), and extensive upland facilities are already in place.

Potential Conflicts

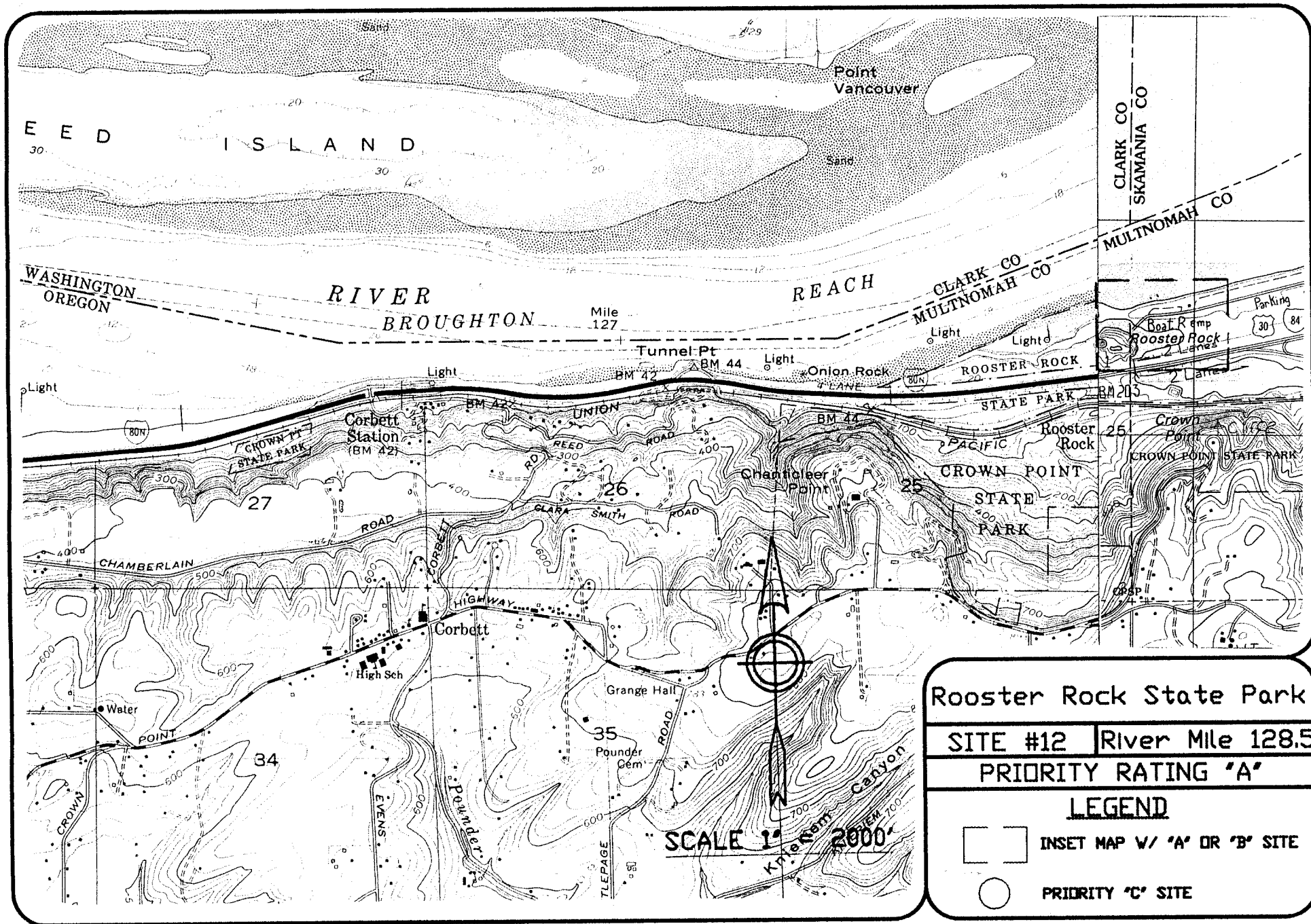
Conflicts are likely to be minimal because this site was developed for a high level of use by recreational boaters.

Proposed Developments

- (1) Relocate the entrance channel into the lagoon by breaching the existing protective rockwall breakwater. This includes evaluating the feasibility and cost of providing this new direct access to the Columbia River from the launch ramp. Use of a model will help provide information on the best way to provide required protection of a rock jetty and alignment that avoids shoaling at the entrance.
- (2) Make additional improvements to the boating facility (resurface the launch ramp and replace the courtesy floats) only after the initial improvements to the entrance channel have been made and it has been determined that this facility will receive substantial use.

Ownership

Oregon State Parks and Recreation Department



Rooster Rock State Park

SITE #12 | River Mile 128.5

PRIORITY RATING "A"

LEGEND

- INSET MAP W/ "A" OR "B" SITE
- PRIORITY "C" SITE

RELOCATE ENTRANCE CHANNEL

EXISTING FLOATS

Boat Ramp

Rooster

Rock

SCALE 1" = 200'



Rooster Rock State Park

SITE #12 | River Mile 128.5

PRIORITY RATING 'A'

LEGEND

- | | |
|---|-----------------|
| ◻ | RESTROOM |
| • | MOORING BOUY |
| — | GANGWAY |
| ○ | PILE |
| ▬ | TRANSIENT FLOAT |

Priority: B

Water Depth: Medium

Wind/Wake Protection: None

Observations

The Multnomah Falls visitor area, located off I-84, is the most popular day-use recreation site in Oregon (Columbia River Gorge Commission 1992). The recreation site is known worldwide for the spectacular beauty of its two falls. The falls can also be seen from the river; but there is no facility from which boaters can tie-up and view the falls. No natural protection (only a slight cove) from the winds is offered, and the currents can be quite strong. Consequently, cruising boaters often do not stop at Multnomah Falls, so they miss the spectacular view.

The recommendation for this site is not to build a full-scale public transient tie-up facility with upland support facilities, but rather to build a short-term tie-up float from which boaters can view the falls. Boaters should be discouraged from going onshore unless a pedestrian crossing for the freeway is proposed and built. There is a proposed study for an interchange, as part of the Oregon Department of Transportation's Six Year Plan, but the study is currently inactive and unfunded (Clark 1993). The study was proposed because the exits off the freeway use the fast lanes in both directions. Use of the fast (left) lane may be confusing and less safe than traditional right lane exits. The proposed interchange would be located at Wakeema Lake.

Access to the slight cove is tricky because the water is shallow and several sand bars are present. The water depth ranges from 8 to 26 feet near the shore and is as shallow as 2 feet above the sand bars. The river near the pile dike is almost completely shoaled-in. The trees to the west provide some protection from the stronger westerly winds; however, there is no protection from easterly winds.

Potential Conflicts

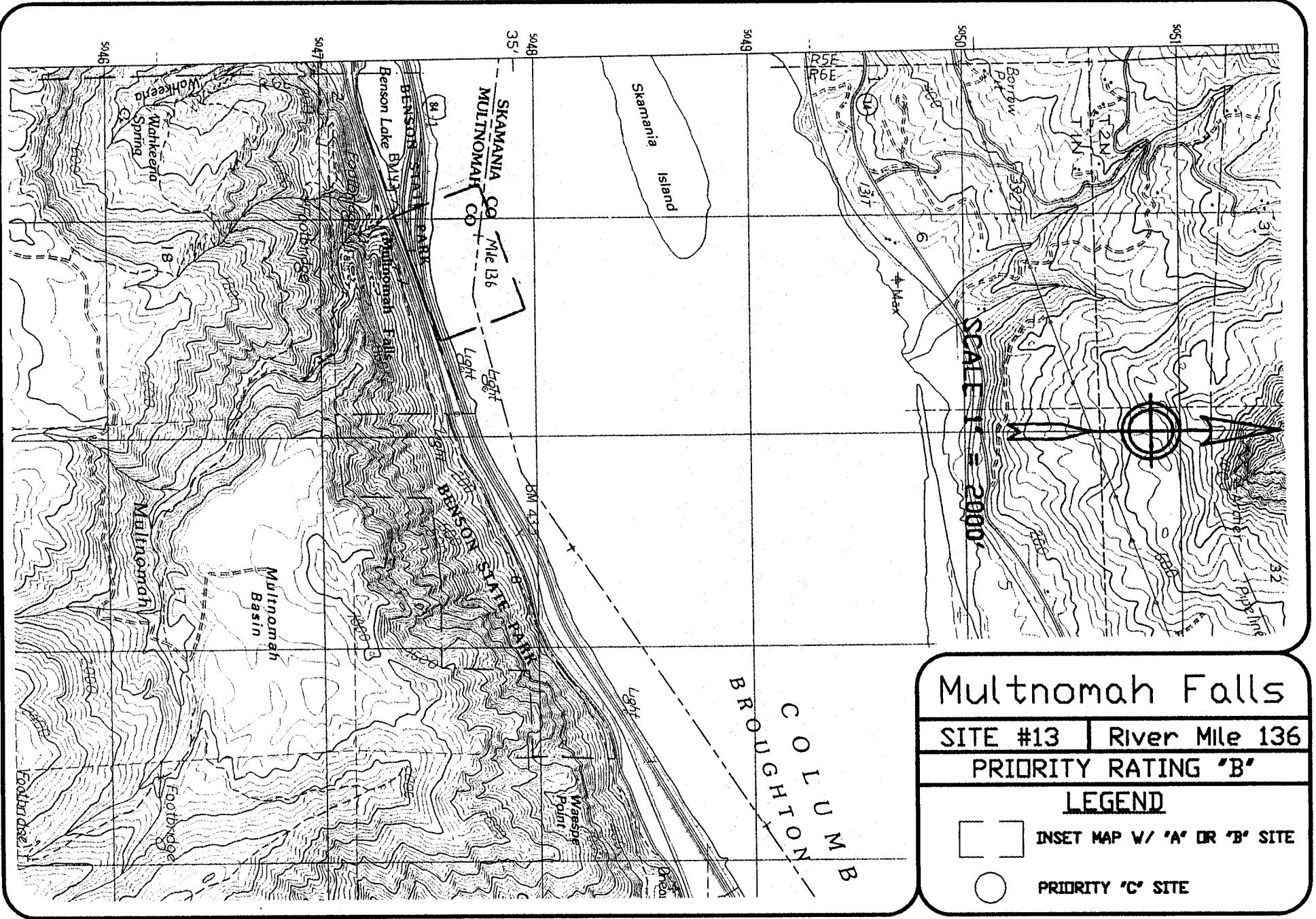
Dangerous traffic conditions may exist, if boaters attempt to access the visitor area by crossing the freeway without a safe pedestrian overpass or under-crossing.

Proposed Developments

- (1) Build a 200-foot day-use transient tie-up float, not connected to land.
- (2) Post an informational sign about the falls and provide a brief history of Multnomah Falls on the float. Also, post signs that discourage pedestrian freeway crossing.

Ownership

U.S. Forest Service and State of Oregon



Multnomah Falls

SITE #13	River Mile 136
PRIORITY RATING "B"	
LEGEND	
□	INSET MAP W/ 'A' OR 'B' SITE
○	PRIORITY 'C' SITE

Coot + Mile 136

200' TRANSIENT FLOAT

SCALE 1" = 200'

PARK

Multnomah Falls

SITE #13 | River Mile 136

PRIORITY RATING 'B'

- LEGEND
- MOORING BOUY
 - PILE
 - ◻ RESTROOM
 - ▬ GANGWAY
 - ▬▬ TRANSIENT FLOAT

4. Bonneville Dam

Twenty-seven percent of the recreational boaters surveyed perceive Bonneville Dam to be one of the major impediments to cruising along the Mid-Columbia River. Most boaters limit their cruising activities to one side of the dam or the other. They prefer not to go through the locks, even if the boating activities and facilities are more desirable on the other side. Often boaters will trailer their boat around the dam and launch on the other side of the dam.

Surveyed boaters cite various reasons for not locking through; the number one reason, reported by 27 percent of the surveyed boaters, is that there is no safe place to wait near the locks before locking through. Other reasons include: not knowing how to lock through (21 percent), not knowing how to communicate with the lock master (15 percent), and not knowing how to interact with commercial traffic while locking through (9 percent).

The COE, Bonneville Power Administration, and the OSMB should work together to alleviate the perceived and real problems faced by recreational boaters. These agencies must work together to provide a temporary tie-up area near the locks, to educate boaters about locking through, and to make the overall experience of locking through less intimidating.

As described earlier, the COE is attempting to make passage through the dams for recreational boaters easier with the construction of the new navigation locks. The COE is planning to locate a transient moorage float below the locks. Neither access to the viewing platform above the locks nor to the Visitor's Center will be provided, but boaters will be able to communicate with the lock master (McCavitt and Webb 1992).

Plans for a transient tie-up facility above Bonneville Dam were not included in the plans for the new navigation lock. A tie-up facility is needed above the locks because boaters lock through the dam from both sides. In addition, the Visitor's Center, located upriver from the dam, is an attraction that would be popular with recreational boaters.

Proposed improvements at Bonneville navigation locks include providing a transient dock above and below the lock, exclusively for use by recreational boaters. General information about locking through should be provided at the tie-up areas; also boaters should be given a direct means of communication with the lock master. For example, boaters could communicate with the lock master either through Channel 14 on a marine radio or through low-power radio provided at the tie-up facility.

Priority: A'

Water Depth: Deep

Wind/Wake Protection: Fair

Observations

Bradford Island is an ideal location for a public transient tie-up facility because it is within viewing distance of the navigation lock; and access to Bonneville Visitor's Center is possible. A direct means of communication with the lock master will be necessary. The island is somewhat sheltered from the winds and is out of the main channel that leads to the navigation locks.

Potential Conflicts

Currently, a 50-foot dock provides moorage for the sternwheeler "Columbia Gorge" and the Corps of Engineers boat; a gangway connects the float to Bradford Island. Operated by the Port of Cascade Locks, the sternwheeler is a commercial boat that offers scenic tours of the river from Cascade Locks to Bonneville Dam from June to September. The proposed public transient tie-up facility must be located well away from the sternwheeler dock to avoid interfering with its normal operations.

Bob Montgomery (1992), the port manager for Cascade Locks, suggested that the commercial tug and barge operators might be opposed to the location of a tie-up facility here. In addition, because of problems in the past, vandalism is a concern that must be considered with the construction of any recreational facility on Bradford Island.

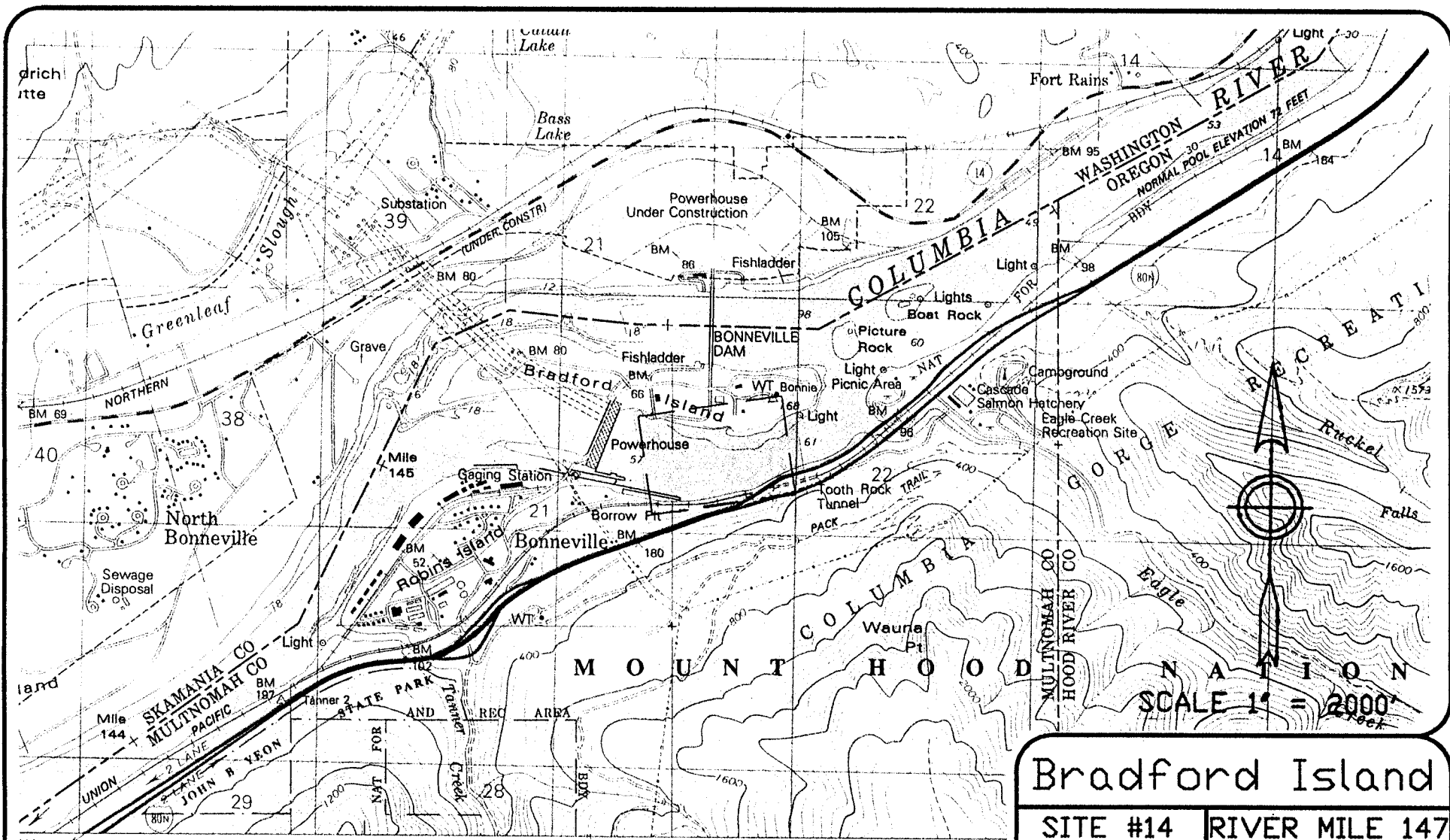
Additional signs must be posted to ensure that recreational boaters stay away from the functioning part of the hydroelectric dam.

Proposed Developments

- (1) Build a 300-foot floating dock with gangway access to land.
- (2) Provide a direct means of communication with the lock master.

Ownership

U.S. Army Corps of Engineers



Bradford Island

SITE #14 | RIVER MILE 147

PRIORITY RATING ' A ' '

LEGEND

INSET MAP W/ 'A' OR 'B' SITE
 PRIORITY 'C' SITE

H.) PORTLAND 37 MI. 51° 57' 30" 52°

(TANNER BUTTE) 1675 III SW

Scale 1:24 000

0 1000 2000 3000 4000 5000 6000

1 5 0 1 KI

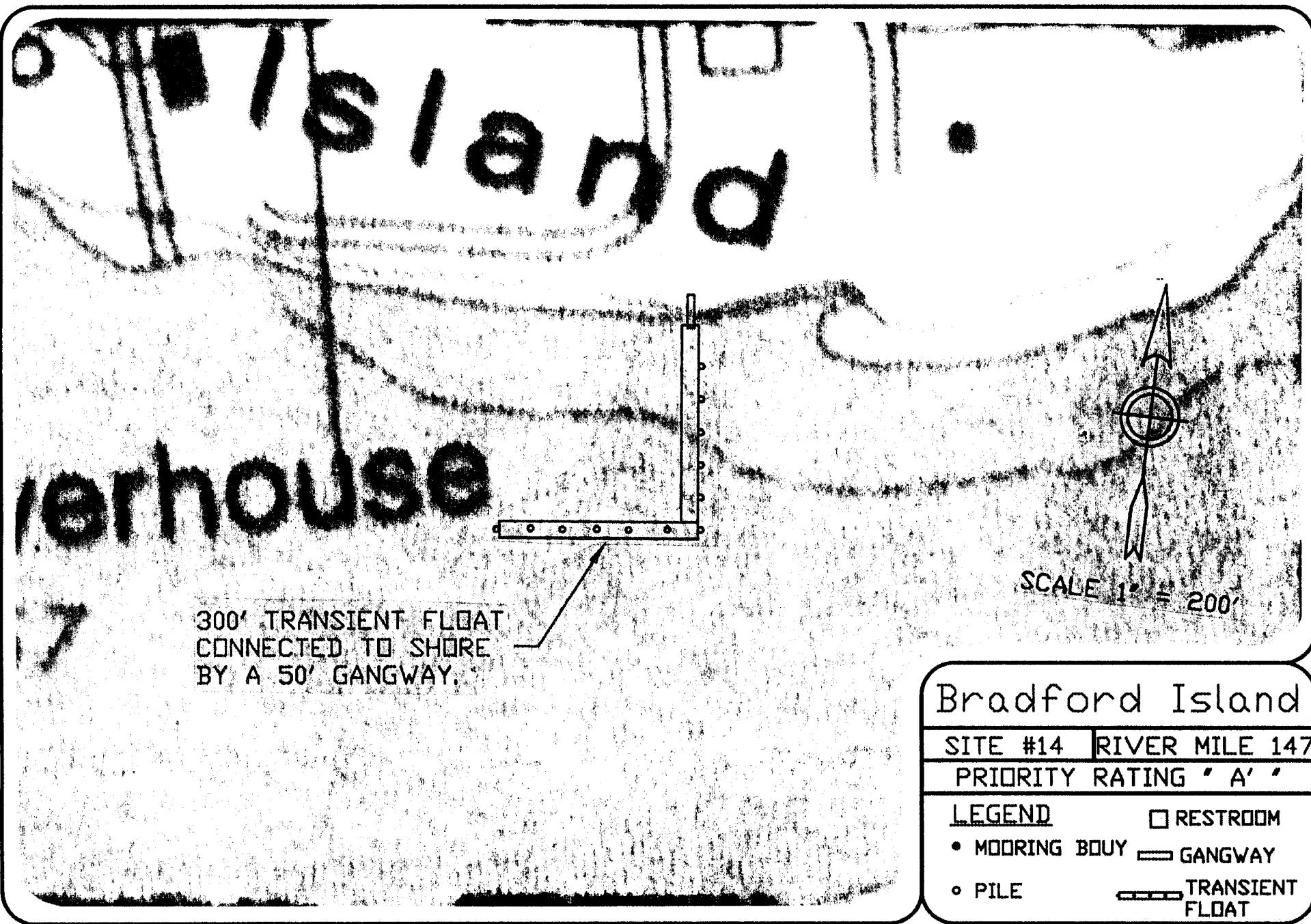
CONTOUR INTERVAL 20 FEET

GN
 MN
 0° 46' 20 1/2°
 364 MILES

al Survey

ad 1979

irt 18531 (1977)



Bradford Island

SITE #14	RIVER MILE 147
PRIORITY RATING ' A '	
LEGEND	
• MOORING BOUY	◻ RESTROOM
◌ PILE	▬ GANGWAY
	▬▬▬ TRANSIENT FLOAT

Priority: D**Water Depth:** Shallow**Wind/Wake Protection:** Fair**Observations**

Eagle Creek has many advantages for the location of a public transient tie-up facility; however, the environmental disadvantages far outweigh the advantages. Consequently, it receives a Priority D rating. The advantages include: (1) Eagle Creek is located just upstream of Bonneville Dam and may be used as a staging area for recreational boaters waiting for passage through the locks; (2) the area is scenic and offers exceptional views of the Gorge and Bonneville Dam; (3) Eagle Creek Rest Area is just above the site and could be accessed from the river; and (4) the site is located well away from the main shipping channel and is semi-protected from the winds and wakes.

The disadvantages to this site include: (1) Eagle Creek is used as a spawning ground for fish from Bonneville hatchery and, consequently, the surrounding area is "sensitive habitat" (McCavitt and Webb 1992); (2) the water is shallow and would require initial dredging; (3) siltation from the creek would require continuous dredging; and, (4) the site is not within viewing distance from the navigation locks, so direct contact with the lock master would be possible only by radio.

Proposed Developments

None.

Ownership

Oregon State Parks and Recreation Department

5. Hood River County

The Columbia River in Hood River County, located in the heart of the National Scenic Area, is an untapped, under-utilized area by recreational boaters. Several features of this stretch of the river make it attractive to recreational boaters. The river is easily accessible by several main population centers, including Portland, Hood River, and The Dalles. A variety of recreational opportunities including, cruising, fishing, swimming, and sail boarding is available for boaters in the gorge.

However, the lack of safe overnight tie-up facilities in this area prevents boaters from taking full advantage of the cruising opportunities. Surveyed boaters say they do not like to boat in the Gorge because if the winds pick up when they are out cruising, there are not enough safe places to duck into and tie their boat up to wait for the waters to calm. The existing public moorage facilities (Cascade Locks and Hood River boat basins) are too few and too far apart.

Two types of moorage facilities should be built along this stretch of the river: (1) a facility used as a temporary place for boaters to tie-up and wait out the winds, and (2) a facility that offers full-scale moorage and additional recreational opportunities that attract boaters to stay overnight.

Priority: A

Water Depth: Shallow

Wind/Wake Protection: Good

Observations

Cascade Locks boat basin has classic problems that many riverfront communities are faced with today. The Port of Cascade Locks owns the boat basin and the surrounding land. The Port has developed the area into a riverfront park that includes a large picnic and camping area, restrooms and showers, a gift shop, a historical museum, the headquarters for the sternwheeler, a fishing area, a launching ramp, and a permanent moorage facility and transient tie-up float. The riverfront park provides many recreational opportunities for the surrounding community and also contributes to the economic growth of the city by attracting tourists and fishers.

The downside to the development of the riverfront park is that the Port of Cascade Locks, an agency mainly responsible for industrial development of the city, must now be responsible for the maintenance and upkeep of the park. The Port must also maintain the permanent and temporary moorage facility located in the boat basin. The Port charges a reasonable fee to boaters for permanent moorage in the basin. However, the Port is not in the marina basin and does not gross enough income for the continued upkeep of the basin. The water is quite shallow in some places; the floats and gangways are dilapidated, the fuel dock was recently removed; and, in general, it is not a safe facility. Several of the boaters have complained about the moorage facility, and the Port has responded by saying that they will gladly refund their money, but they are unable to spend the time or money to repair the facility (Montgomery 1992).

The existing transient float should be expanded in the boat basin for several reasons. Boaters have direct access to the riverfront park and its facilities and to the amenities of the city of Cascade Locks from the boat basin. The boat basin is well protected from winds and wakes and offers a safe overnight moorage. A fuel and marine pumpout station should be made available in the boat basin, because these types of facilities are not available for another 20 RM upriver at Hood River Boat Basin or 44 RM downriver in Portland.

There is possibly another site near the Port of Cascade Locks Industrial Park (Montgomery 1993). The site is referred to locally as Herman Creek Cove. Any opportunities at this site will be pursued at a future date.

Potential Conflicts

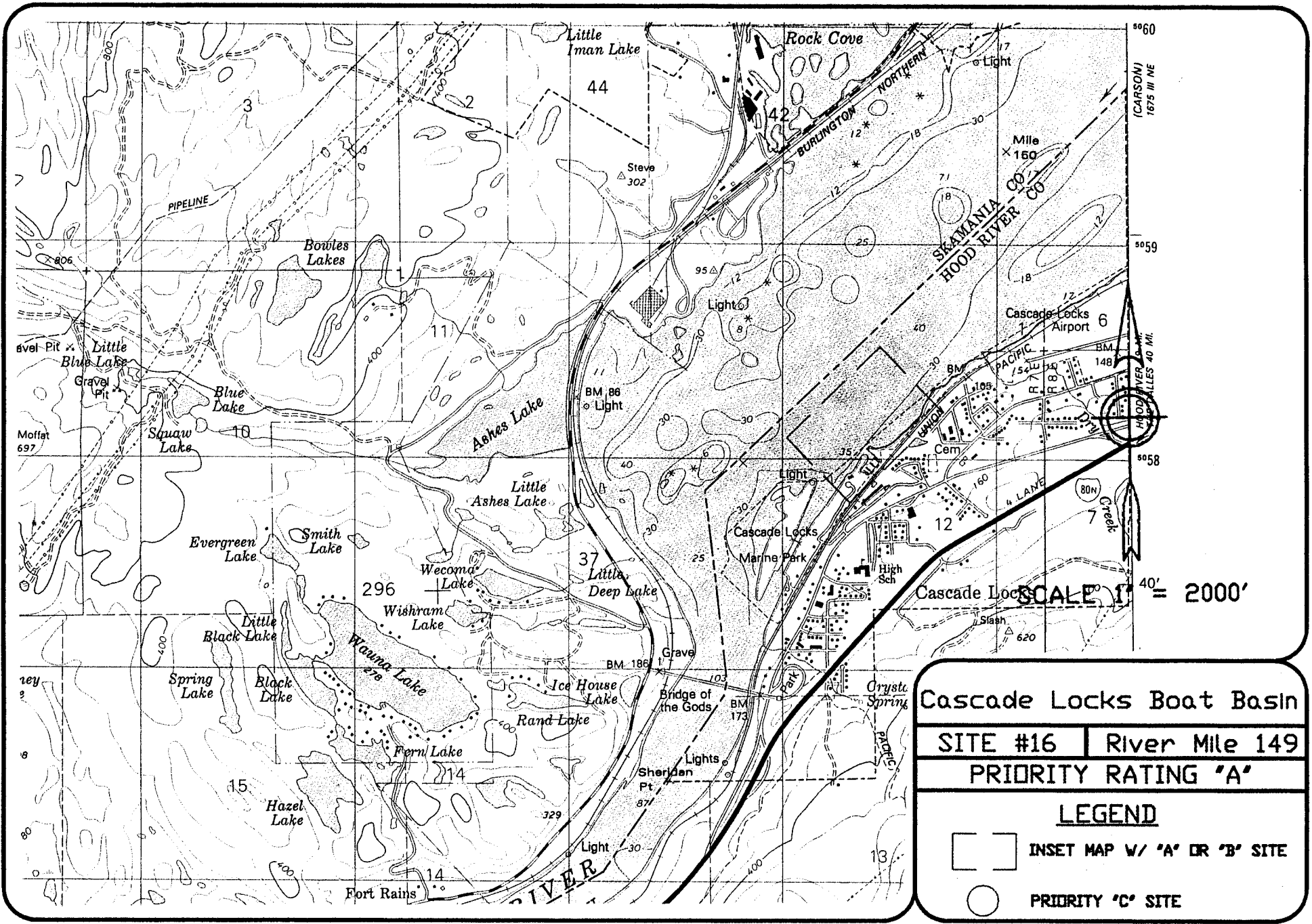
Conflicts may occur between the permanently moored boats and the transient boats. The basin is not large enough to provide distinct locations for the two user groups.

Proposed Developments

- (1) Build a 160-foot transient float.
- (2) Reinstall the fuel dock.
- (3) Install a pumpout station.
- (4) Improve and repair the floats and docks.
- (5) Dredge the entrance channel.

Ownership

Port of Cascade Locks



Cascade Locks Boat Basin

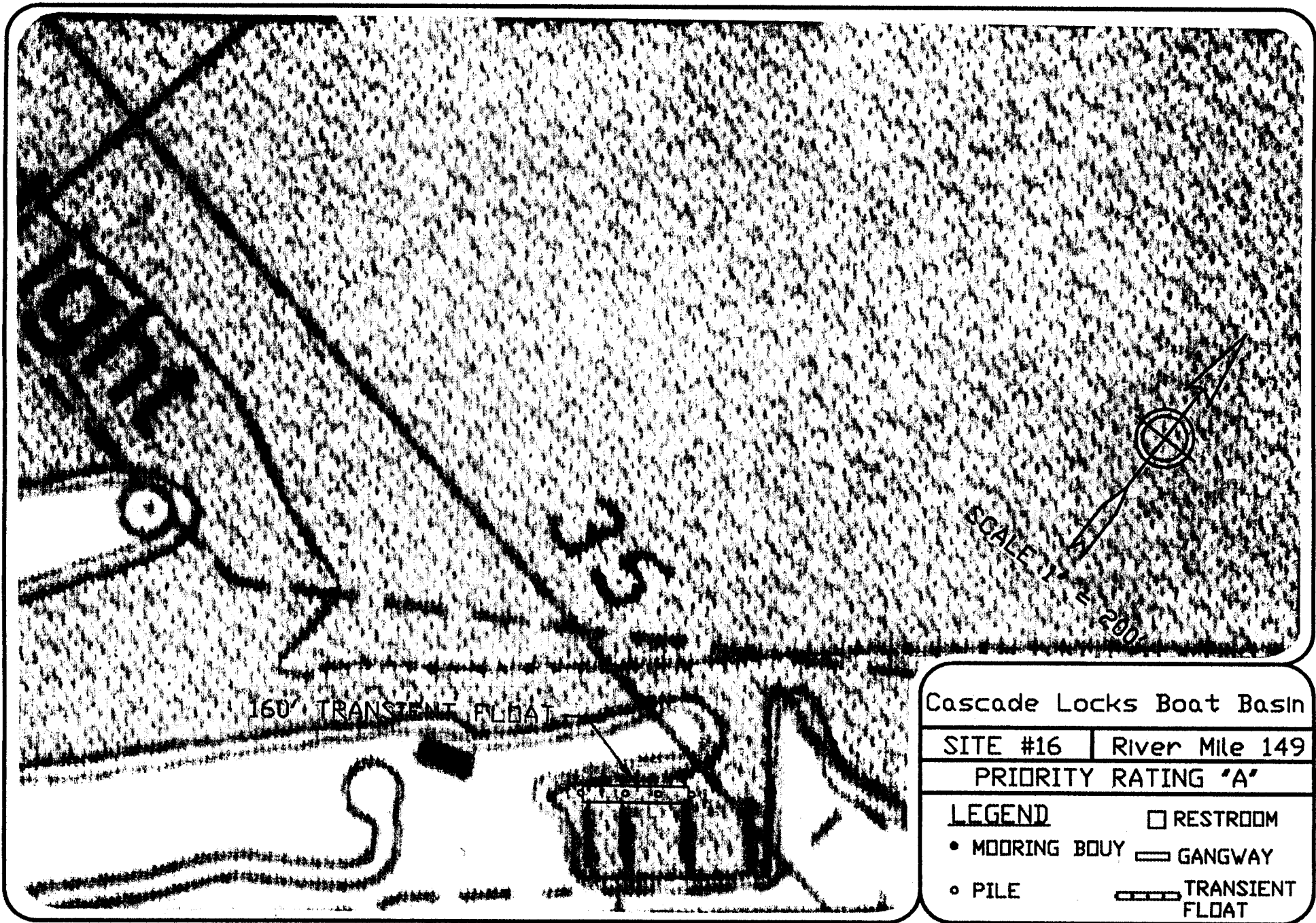
SITE #16 | River Mile 149

PRIORITY RATING "A"

LEGEND

□ INSET MAP W/ "A" OR "B" SITE

○ PRIORITY "C" SITE



Cascade Locks Boat Basin

SITE #16 | River Mile 149

PRIORITY RATING 'A'

LEGEND	
◻	RESTROOM
•	MOORING BOUY
◻	GANGWAY
○	PILE
▬	TRANSIENT FLOAT

Priority: A

Water Depth: Deep

Wind/Wake Protection: Good

Observations

Even though Government Cove is only 3 RM from the last proposed Priority A site, Cascade Locks Boat Basin, it too is a Priority A site because of its ideal features and attributes. Government Cove is the most protected natural cove on the Oregon side of the Columbia Gorge and is also one of the most scenic locations. The water is deep throughout most of the cove and there is plenty of suitable upland area for development of a marine park. In addition, the mainland and cove are easily accessible by land.

Government Cove is one of the most popular destinations for cruising boaters from the area; it was recommended by three percent of the surveyed boaters as a site where a public transient tie-up facility should be located. In addition, Bob Montgomery (1992), port manager of Cascade Locks said the Port (owner of the property) would be interested in and willing to help develop a public transient tie-up facility at Government Cove.

The entrance to the cove is 9 - 12 feet deep; inside the cove the water depth is 20 - 25 feet. The cove was recently dredged; it is likely that continuous dredging will be necessary to maintain the current water depth (Montgomery 1992). The cove offers a scenic view of both the mountains to the south and the river to the north. The west end of the cove is marshy and is home to waterfowl such as Canada geese and great blue herons. At the east end of the cove is Government Rock, a peninsula with great potential for upland development.

The Port of Cascade Locks signed a contract with the COE to allow them to dump dredge spoils from the new navigation lock onto the peninsula until April 1992. Because the natural landscape and topography have already been destroyed, the peninsula is an ideal upland area to develop. The natural landscape can be restored, while creating a niche for low impact human recreation.

Potential Conflicts

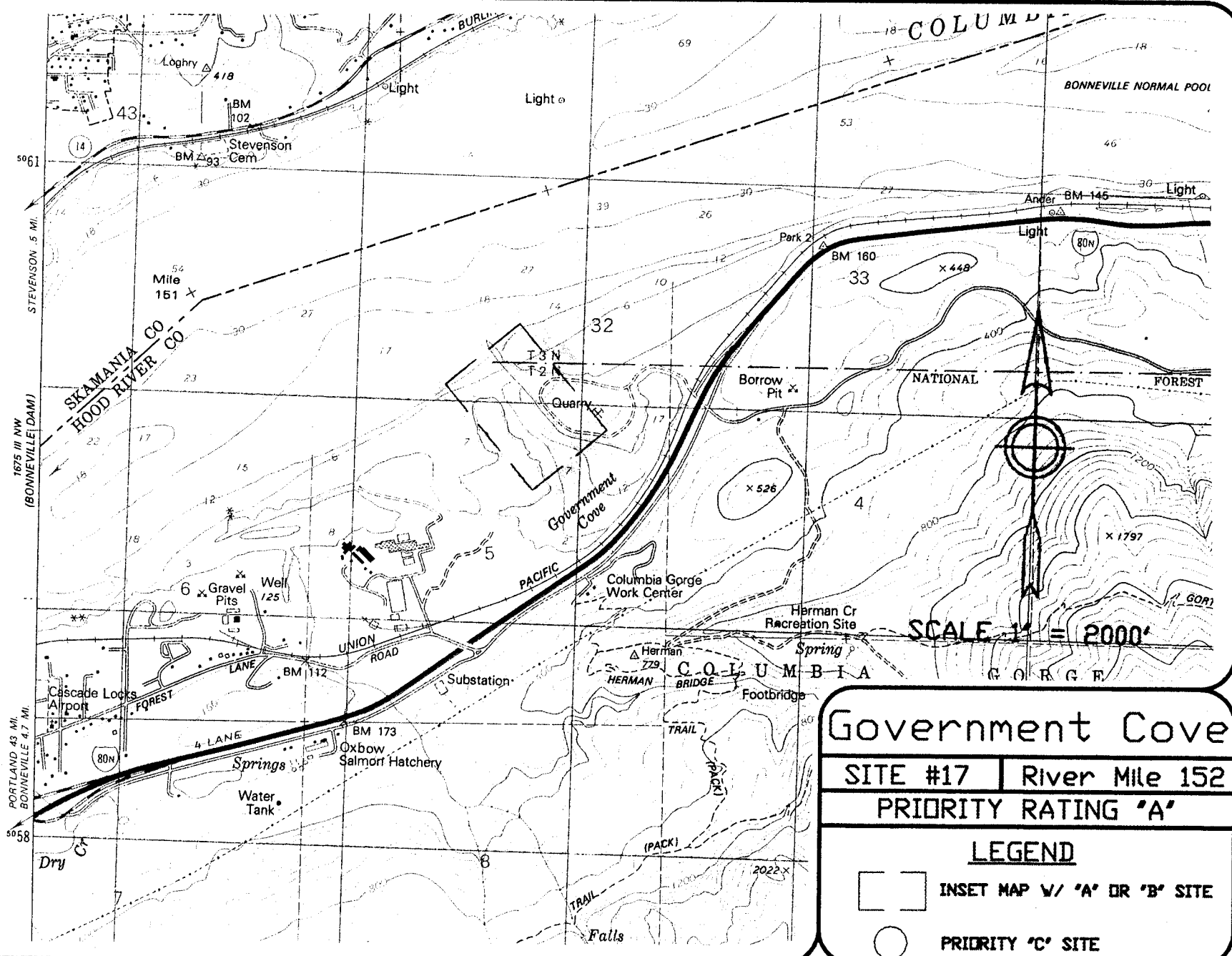
None.

Proposed Developments

- (1) Build a 300-foot floating tie-up dock with gangway access to land.
- (2) Put in additional mooring buoys further into the cove, depending upon water depth and boater demand.
- (3) Build a self-composting restroom and put in a picnic area with several picnic tables and a shelter.
- (4) Provide interpretive material. This could include material about the wildlife and waterfowl in the cove, general Gorge information, and a map locating the other boating facilities in the area.
- (5) Build a hiking trail.

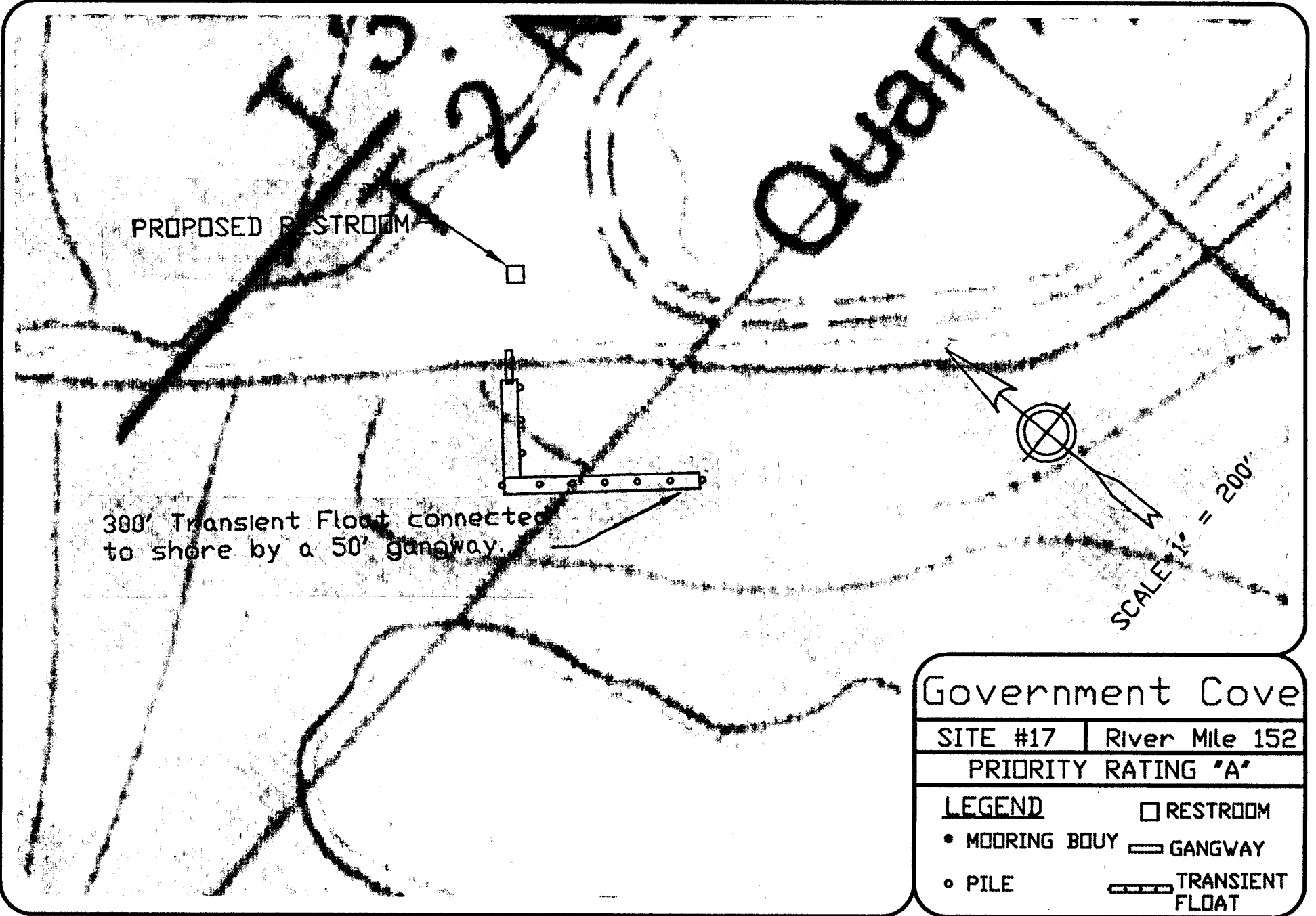
Ownership

Port of Cascade Locks



SCALE 1" = 2000'

<h1>Government Cove</h1>	
SITE #17	River Mile 152
PRIORITY RATING 'A'	
LEGEND	
◻	INSET MAP W/ 'A' OR 'B' SITE
○	PRIORITY 'C' SITE



Government Cove	
SITE #17	River Mile 152
PRIORITY RATING "A"	
<u>LEGEND</u>	
◻ RESTROOM	
• MOORING BOUY	≡ GANGWAY
◦ PILE	▬ TRANSIENT FLOAT

Priority: A

Water Depth: Shallow

Wind/Wake Protection: Good

Observations

Wyeth Waterfront has the typical limitations of potential sites for public transient tie-up facilities in the Gorge. Because the water in the entrance channel into the cove is shallow, a height constraint is placed upon passageway through the channel due to the freeway and railroad tracks passing above. Development of a moorage facility would not be possible outside of the cove because the shoreline is not protected from either easterly or westerly winds. Also, traffic at the existing interchange is low and would be an adequate area for a facility. A transportation study may be required (Clark 1993).

The Gorge Commission has cited this location as "one of the best sites for a major river recreation facility in the Scenic Area" (Columbia River Gorge Commission 1992). Another positive quality of Wyeth Waterfront is that it is located halfway between Cascade Locks and Hood River boat basins. The primary consideration for public transient tie-up facilities is the distance from existing and proposed facilities, making this site an ideal location.

The Forest Service has proposed to develop a large day-use facility, capable of handling 1,000 people at one time. Facilities would be developed for sail boarding, boat launching, picnicking, and interpretation (Columbia River Gorge Commission 1992).

Potential Conflicts

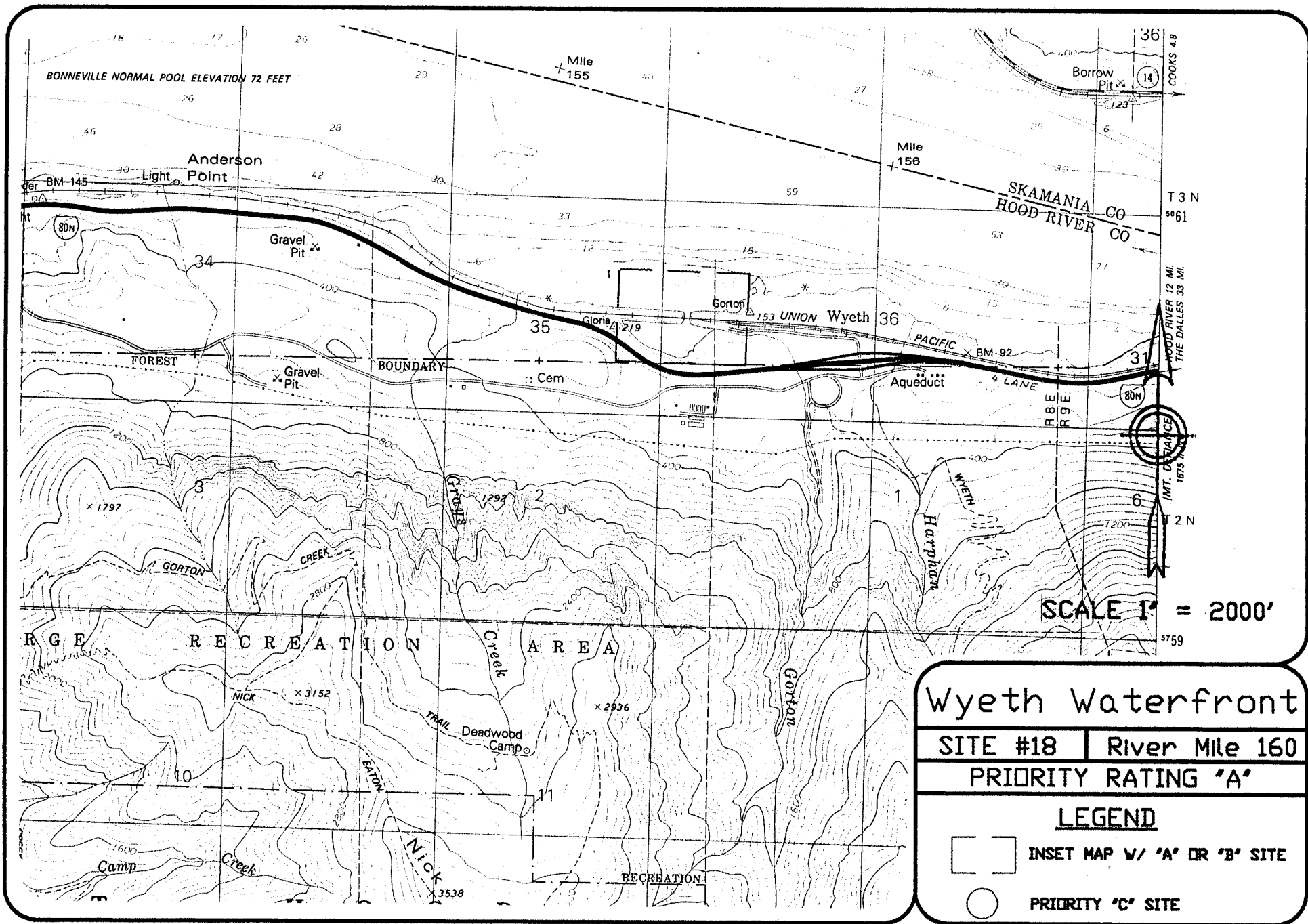
Conflicts may occur between the multiple user groups of the proposed facility, including sail boarders, personal watercraft users, fishers, and recreational boaters. Hazardous materials may be present and the site may also be a potential in-lieu Indian fishing site (Columbia River Gorge Commission 1992). Water depth is the primary constraint to development for this area. Before further planning at this site occurs, the need for initial dredging and the extent and frequency of continued dredging must be assessed.

Proposed Developments

- (1) Construct a launching ramp and courtesy floats.
- (2) Put in additional transient tie-up floats.
- (3) Build joint facilities for the day-use recreational area and the public transient tie-up facility.

Ownership

Union Pacific Railroad



Wyeth Waterfront

SITE #18	River Mile 160
PRIORITY RATING 'A'	

LEGEND

- INSET MAP W/ 'A' OR 'B' SITE
- PRIORITY 'C' SITE

Gortc



SCALE 1" = 200'

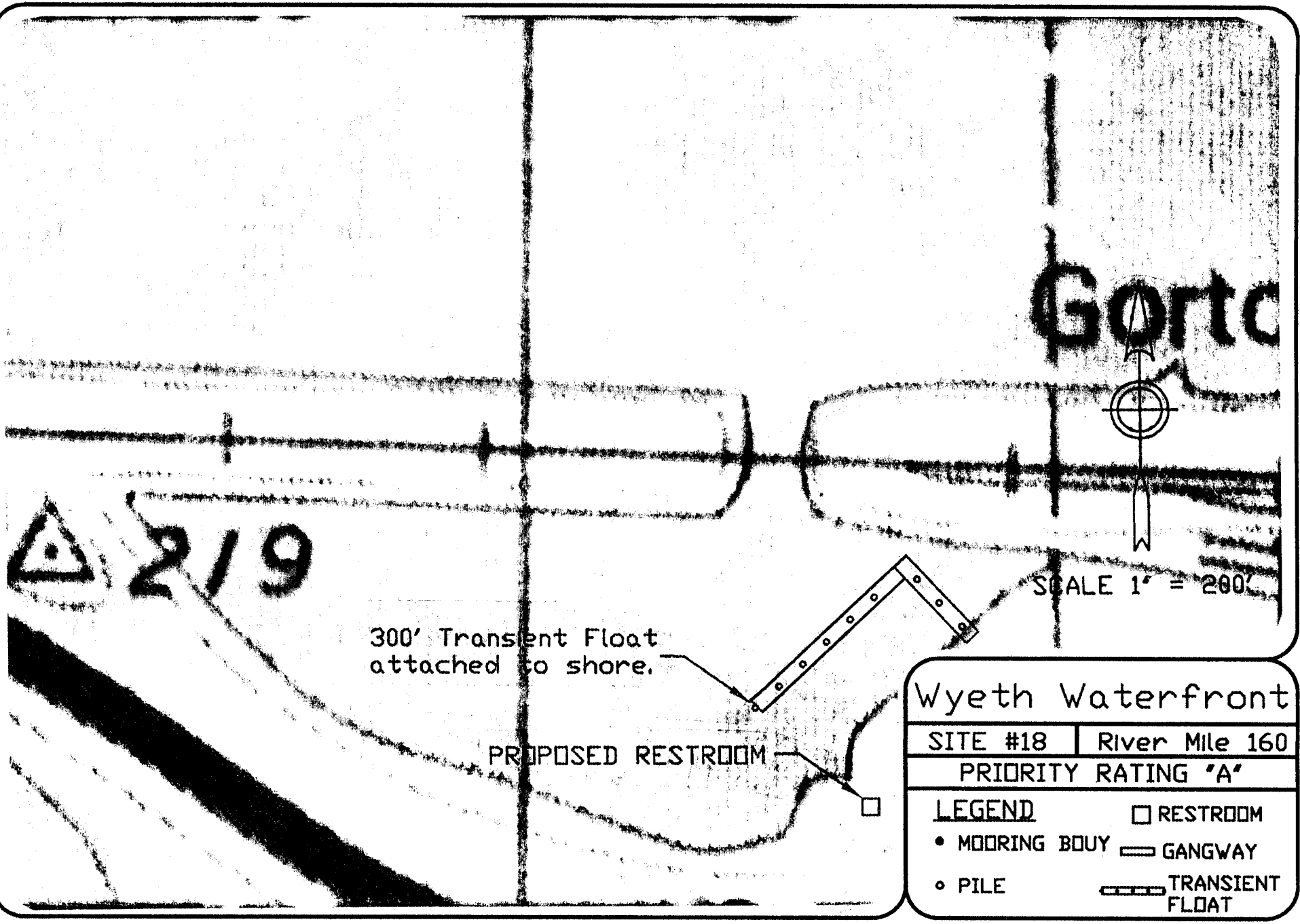
219

300' Transient Float attached to shore.

PROPOSED RESTROOM

Wyeth Waterfront

SITE #18	River Mile 160
PRIORITY RATING "A"	
LEGEND	
• MOORING BOUY	□ RESTROOM
○ PILE	≡ GANGWAY
	▬ TRANSIENT FLOAT



Priority: D**Water Depth:** Shallow**Wind/Wake Protection:** Protection from easterly winds, but no protection from westerly winds.**Observations**

Viento State Park is a popular recreation site with campers and sail boarders. The state park's campground is often filled to capacity during the summer. Several unofficial trails that lead to the beach from the campground are used by sail boarders, but their use is discouraged by the Union Pacific Railroad because the railroad tracks must be traversed to reach the beach.

Viento is a popular sail boarding site because it has a nice beach and a grassy area to prepare sails. Viento is also a potential area for a boating facility because the upland area is already developed, is very scenic, and is mid-way between Cascade Locks and Hood River. The Oregon State Park and Recreation Department believes Viento would be appropriate for addition of moorages, if tribal concerns were resolved (Nabeta 1993).

However, the waterside conditions are not amenable to the siting of a boating facility. A small area of the beach is protected from winds and wakes by an island in the river, but the water is quite shallow and the entrance to the small cove is shoaled-in. The shoreline does not provide any additional protection because it runs fairly straight east to west.

Potential Conflicts

Viento State Park is already established as a popular sailboarding site. Multiple-use conflicts are likely to occur if recreational boaters are encouraged to use the already crowded area. In addition, cultural resources and Indian fishing rights are a primary concern. Wildlife, fisheries, and botanical resources must also be considered before this site is developed any more (Columbia River Gorge Commission 1992).

Proposed Developments

None.

Ownership

Privately owned, Union Pacific Railroad, and OSPRD

Priority: C**Water Depth:** Medium**Wind/Wake Protection:** The east side of the peninsula is protected from westerly winds and the west side is protected from easterly winds.**Observations**

Ruthton Point is a scenic peninsula, zoned for private farmland. The residents appear to be unreceptive to the idea of attracting people onto their land from either the highway or the river. Signs along the road state that the land is privately owned, and signs on the rocks in the river prohibit trespassing and suggest that they are privately owned. (The rocks are most likely not privately owned, as they commonly referred to as submerged and submersible land and, therefore, owned by the Division of State Lands).

The disadvantages to the location of a public transient tie-up facility at Ruthton Point outweigh the advantages, thus resulting in the Priority C ranking. The advantages are: (1) Ruthton Point is located in a scenic area of the Gorge and might provide a nice view of the reconstructed scenic highway; (2) there are several sandy beaches on the mainland and trees on the peninsula block noise from the freeway; and (3) depending upon which side of the peninsula the facility is located, boaters will be protected from either east or west winds. The disadvantages are: (1) Ruthton Point is only three RM west of Hood River Boat Basin; (2) the water depth is very shallow near the shore; (3) the peninsula offers protection from winds only in one direction; and (4) the residents of the island are not enthusiastic about encouraging additional recreation on their land.

Potential Conflicts

Conflicts may occur with the residents of the peninsula.

Proposed Developments

- (1) Place mooring buoys on the eastern side of the peninsula so they will be protected from the stronger westerly winds. Mooring buoys will hopefully discourage (or at least not encourage) boaters from gaining access to the land.

Ownership

Privately owned

Priority: B**Water Depth: Deep****Wind/Wake Protection: Good****Observations**

Hood River Boat Basin and waterfront park were developed and are managed with a progressive outlook on recreational opportunities. This outlook has allowed the Hood River community to benefit from the boom in popularity of sailboarding (Povey 1992).

The waterfront park attracts visitors who wish to sail board, take lessons, or swim. The boat basin offers permanent moorage for boaters, a transient tie-up for cruising boaters, a boat ramp, moorage for sea planes, a fuel dock, and personal watercraft rentals. A portable restroom is located at the top of the boat ramp. A restaurant, marina, and parking lot are located near the boat basin. The transient dock is 300 feet long. It offers tie-up space on both sides of the float; a windscreen provides added protection to boats moored on the inside of the float.

In general, boaters appear satisfied with the transient tie-up facilities at Hood River Boat Basin. However, several improvements could be undertaken to make this facility more enjoyable and safer for recreational boaters.

Potential Conflicts

Conflicts may occur because of the multiple user groups within the basin, including boaters sail boarders, and personal watercraft users. If all of these activities are properly planned for, the basin should be large enough to accommodate everyone.

Proposed Facilities

- (1) Expand and relocate the transient moorage to the west side of the basin to provide better protection from the winds.
- (2) Construct a permanent public restroom near the launching ramp and transient float.

Ownership

Port of Hood River

Priority: B**Water Depth:** Deep**Wind/Wake Protection:** Protection from west winds.**Observations**

Stanley Rock is a rest area that is accessible from the west-bound freeway. The rest area receives its use primarily from day-use recreators from the area, rather than tourists sight seeing in the Gorge as one might suspect (Litt 1992). Stanley Rock is also a popular sail boarding site. It is in a scenic area which offers great views of the Gorge, but it is only three RM away from Hood River, and therefore, probably does not stand on its own as a tourist attraction. Oregon State Parks and Recreation Department and Oregon Department of Transportation have discussed plans to shut down the rest area because they feel the on/off ramp from the freeway is unsafe (Stenberg 1992).

The west side of the rock is not a good location for a public transient tie-up facility because it is not protected from the stronger westerly winds, and the water is too shallow. The water depth is good on the east side of the rock and the area is protected from westerly winds. The existing upland facilities include a restroom and picnic tables.

Potential Conflicts

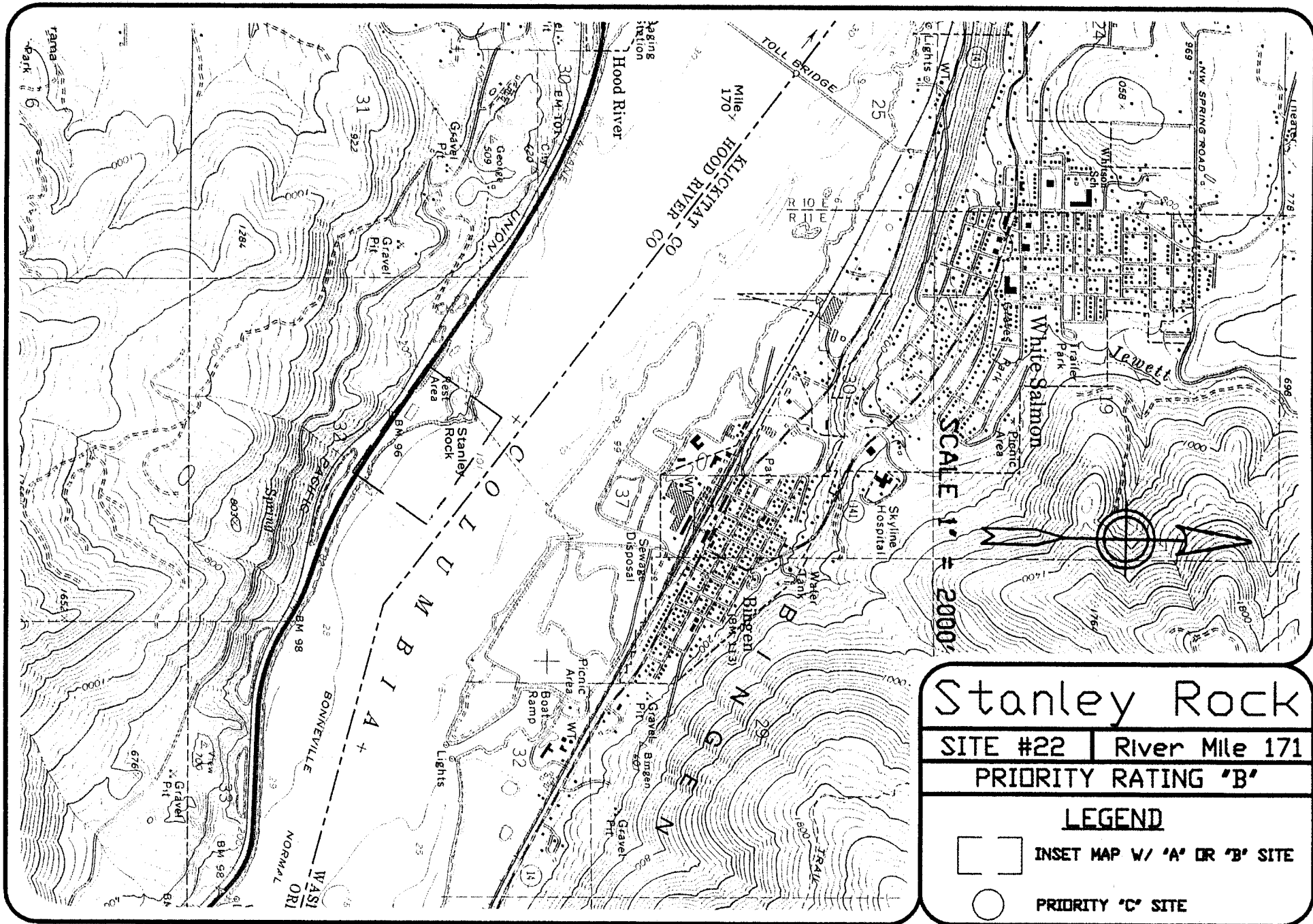
The potential conflicts and proximity to Hood River Boat Basin prompted the Priority B ranking for this site. Stanley Rock is a popular fishing site for Native Americans (in-lieu tribal fishing site), and Oregon State Parks and Recreation Department is looking into the possibility of giving control of this site to the COE to be used as a Native American in-lieu fishing site (Stenberg 1992). If this occurs, the OSMB should look elsewhere to build a public transient tie-up facility.

Proposed Facilities

- (1) Build a 200-foot transient float or 3 to 4 mooring buoys.
- (2) Improve the trail from the rest area to the beach and provide interpretive material.

Ownership

Oregon State Parks and Recreation Department



Stanley Rock

SITE #22 | River Mile 171

PRIORITY RATING "B"

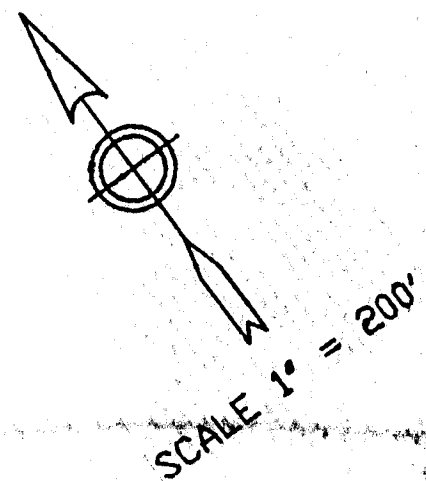
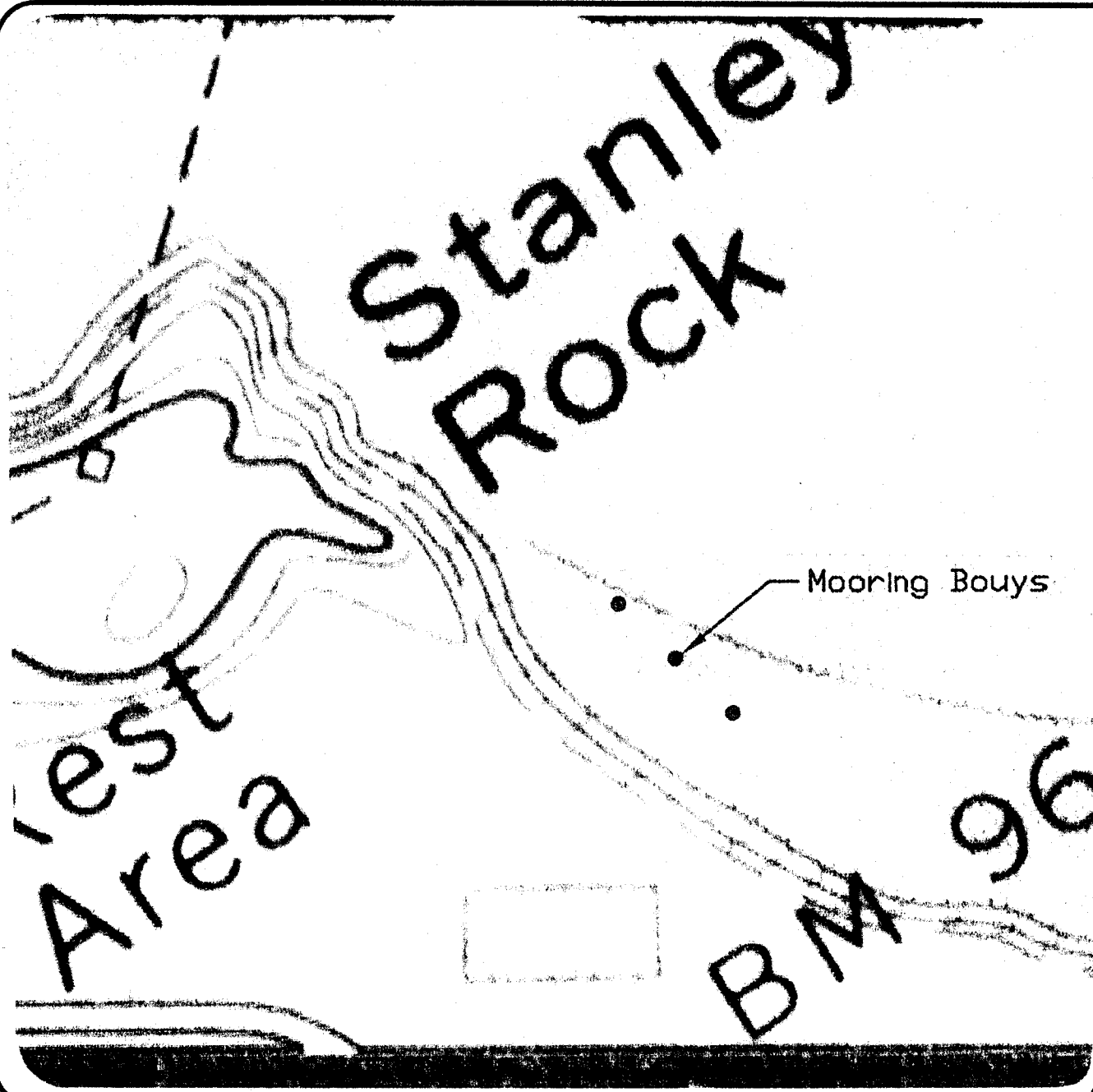
LEGEND



INSET MAP W/ 'A' OR 'B' SITE



PRIORITY "C" SITE



Stanley Rock	
SITE #22	River Mile 171
PRIORITY RATING 'B'	
LEGEND	
• MOORING BOUY	□ RESTROOM
◦ PILE	▬ GANGWAY
	▬ TRANSIENT FLOAT

6. Wasco County

Opportunities for recreational boating in Wasco County are similar to those in Hood River County. Boating activities include sail boarding, fishing, sailing, and day and overnight cruising. Wasco County contains a beautiful section of the river, which is entirely within the boundaries of the Columbia River Gorge National Scenic Area. The only city of considerable size in the area is The Dalles, and consequently, there are considerably fewer boaters on this section of the river.

The problems and conflicts with this stretch of the river are similar to those in Hood River County. The winds are often unpredictable and strong, and, while that makes for great sail boarding conditions, it often makes cruising conditions unpleasant. Recreational boating is difficult because there are not many safe tie-up facilities for boaters to duck into and escape the winds. Other problems boaters face are conflicts with sail boarders, net fouling; tribal fishing treaty rights, and locking through The Dalles Dam. Several improvements and developments, including additional public transient tie-up facilities, will help reduce these conflicts and make it a safer and more enjoyable area for cruising boaters.

Priority: D**Water Depth: Shallow****Wind/Wake Protection: Good****Observations**

The community of Mosier and Wasco County have been pursuing a waterfront park proposal at this site for the last several years and have considered constructing a public transient tie-up facility (Columbia River Gorge Commission 1992). The site is a good sail boarding area which offers beautiful scenic vistas. A waterfront park would provide a much-needed city park for Mosier.

However, the area is plagued with several environmental constraints that would prevent the construction of a public transient tie-up facility. The shallows are valuable habitat for fish and wildlife. Initial and continuous dredging would be necessary to create and maintain an entrance channel into the bay. Dredging would destroy the sensitive habitat and the wildlife within.

The City of Mosier should continue to pursue their proposal for a low-impact waterfront park, but, due to the environmental constraints, a public transient tie-up facility should not be located here.

Potential Conflicts

Environmental conflicts exist because of the presence of valuable shallow water habitat, perching sites for bald eagles, and the need for continuous dredging. Multiple use conflicts may occur between sail boarders and recreational boaters.

Proposed Facilities

None, for a public transient tie-up facility.

Ownership

City of Mosier.

Priority: C**Water Depth:** Deep**Wind/Wake Protection:** Some protection from westerly winds on the east side and some protection from easterly winds on the west side.**Observations**

Memaloose Park, a freeway rest stop and campground, is a site similar to Stanley Rock in Hood River County; it also has the same advantages and disadvantages. Existing facilities include campsites, restrooms, picnic tables, and a historic and interpretive sign about Memaloose Island. Memaloose Park receives a greater degree of use than does Stanley Rock because the land-side facilities are more extensive.

The water depth is very good (60 - 70 feet) near the shore and the rocks jutting out into the river provide some protection from westerly winds. Additional wake and wind protection is offered by Memaloose Island, located offshore of this site. Even though the west side has a sandy beach that attracts both beach-goers and recreational boaters who currently beach their boats up on the sand, it does not offer any protection from westerly winds. The water depth is best on the east side and, while not protected from easterly winds, a facility located here would be protected from the strong westerly winds.

Potential Conflicts

Much of the surrounding area to Memaloose Park is a traditional Native American fishing site; a boating facility located here would likely create conflicts between boaters and Native American fishers. Nets and buoys are often located between the island and the sandy beach; net fouling would likely occur. In addition, Memaloose Island is a sacred Native American burial ground and should be left undisturbed. The location of a public transient tie-up facility nearby might create temptation for boaters to access the island.

Proposed Facilities

(1) Locate three to four mooring buoys on the east side.

Ownership

Oregon State Parks and Recreation Department

Priority: A**Water Depth: Deep****Wind/Wake Protection: Good****Observations**

Mayer West State Park is one of the premier recreation areas in the Columbia Gorge. The state park has camping facilities on the south side of the freeway, and there are restrooms, showers, picnic tables, shelters, and a boat launching ramp on the river side of the park. A large swimming area with a sandy beach is located just before the entrance into the bay. Two mooring buoys have been placed in the perimeter of the bay.

The bay is popular with day-use beach-goers, fishers, personal watercraft users, and sail boarders. The bay is not used heavily by larger cruising boaters because, even though the entrance channel into the bay has been dredged in the past, it is not marked. It is extremely shallow in some places.

The surrounding islands in the park contain bird foraging and nesting habitat for perigrine falcons and bald eagles, so the park is closed in the winter (Newton 1992). This should not promote conflicts with recreational cruising boaters because their use of the park primarily occurs in the summer.

The Forest Service concurs with the Priority A rating "due to the site's roughly equal distance from Hood River and The Dalles." (Hess 1993)

Potential Conflicts

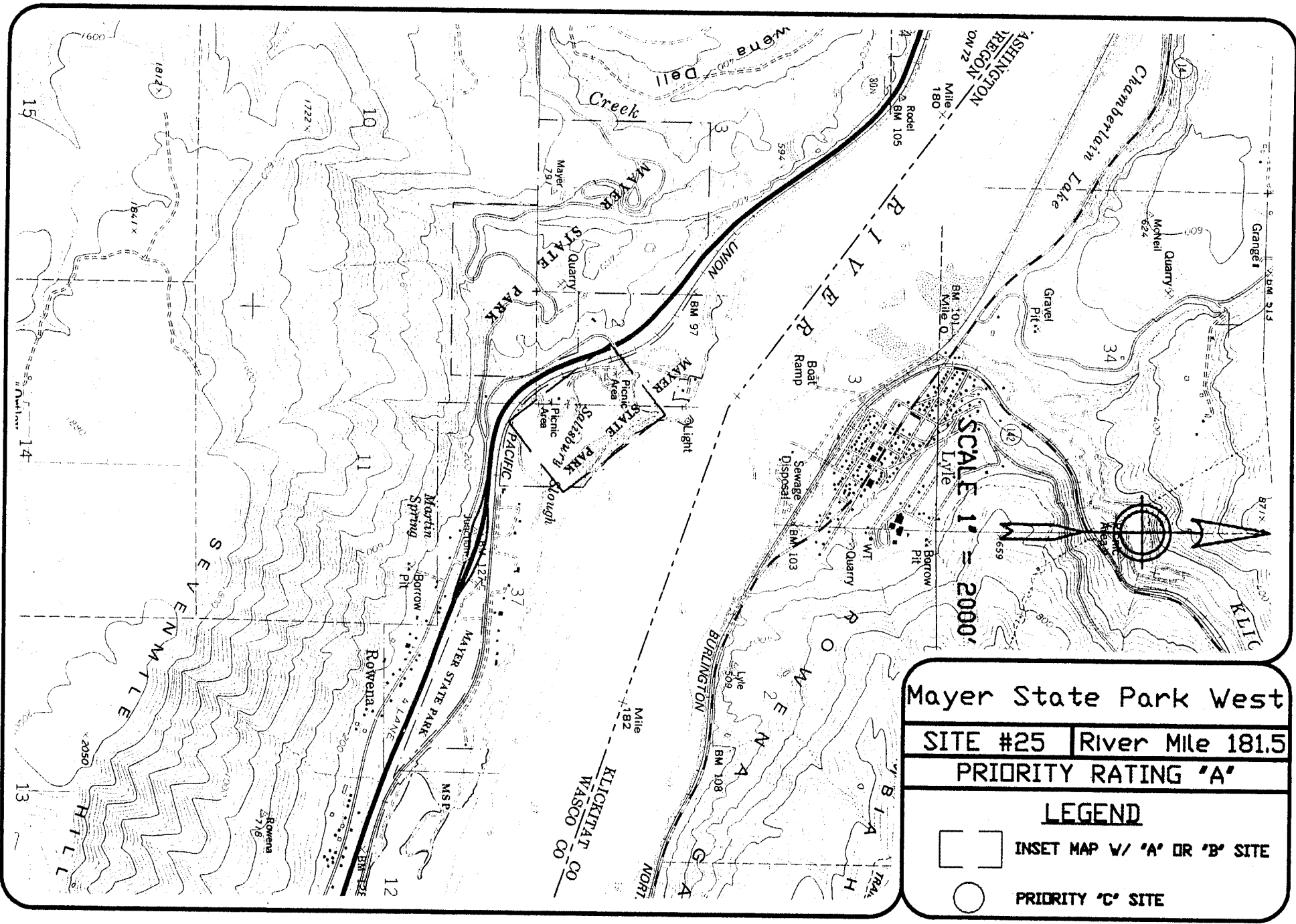
Continuous dredging may be necessary to maintain the depth of the entrance channel into the bay.

Proposed Facilities

- (1) Mark the entrance channel and dredge as necessary.
- (2) Remove some of the old pilings near the mooring buoys.
- (3) Build a 300-foot transient float with gangway access to the swimming beach.

Ownership

Oregon State Parks and Recreation Department



Mayer State Park West

SITE #25	River Mile 181.5
PRIORITY RATING 'A'	

LEGEND

- INSET MAP W/ 'A' OR 'B' SITE
- PRIORITY 'C' SITE

STATE PARK

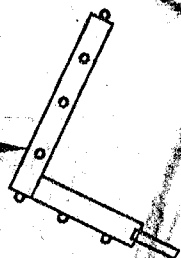
Picnic Area

Salisbury

Picnic

SCALE 1" = 200'

200' TRANSIENT FLOAT
CONNECTED TO SHORE
BY A 50' GANGWAY.



Mayer State Park West

SITE #25 | River Mile 181.5

PRIORITY RATING "A"

- LEGEND**
- MOORING BOUY
 - ◻ RESTROOM
 - ◯ PILE
 - GANGWAY
 - ▬ TRANSIENT FLOAT

Priority: D

Water Depth: Deep

Wind/Wake Protection: Good

Observations

This site is owned by OSPRD, but it is not developed as a state park because of the environmental constraints. The primary concern is the presence of sensitive wetland habitat. The sail boarding community recently tried to initiate the development of a sail boarding beach here, but the environmental constraints prevented further development.

Wasco County has pointed out that they believe this site is a strong contender for facility development due to the sandy beaches. Even though there are environmental constraints, the County believes they are not beyond mitigation (Jacobsen 1993). The County favors a moderate mitigated development of the center portion of the sandy beach.

Even though Squally Point is undeveloped, it is used heavily by a variety of user groups, including swimmers, campers, picnickers, sail boarders, and boaters. Consequently, despite the lack of facilities, the habitat is being destroyed because people are using the area. The best way to prevent further environmental degradation is to provide other safe areas designated for recreation to draw people away from Squally Point and concentrate use in developed areas. Because both Mayer West State Park and Crate's Point are recommended as Priority A sites, it is recommended that Squally Point remain undeveloped.

Potential Conflicts

A boating facility should not be built at Squally Point because of the sensitive riparian and wetland habitat. Several Native American fishing platforms are located near Squally Point. Increasing the boating traffic in this area would conflict with treaty fishing rights.

Proposed Facilities

None.

Ownership

Oregon State Parks and Recreation Department

CRATE'S POINT
THE GORGE DISCOVERY CENTER

Priority: A'

Water Depth: Shallow

Wind/Wake Protection: Moderate

Observations

Crate's Point does not fit the usual requirements outlined in this study for a Priority A tie-up facility. It is not located 10 RM away from a proposed or existing facility and the land-side and water-side aspects of this site are not ideal for a public transient tie-up facility. However, despite these constraints, Crate's Point is recommended as a Priority A' site because it is the location selected for the proposed Gorge Discovery Center.

The National Scenic Area Act authorizes partial funding for two centers, one on each side of the Columbia River. The two proposed facilities are Skamania Lodge Center in Stevenson, Washington and The Gorge Discovery Center at Crate's Point (Columbia River Gorge Commission 1992). The plans for the Discovery Center are still being developed; however, as of yet, neither a boating facility nor boating access have been included in the plans. Both the Gorge Commission and the US Forest Service are willing to allow boating access to the facility, but neither agency is able to offer immediate funding for the construction of a boating facility (Litt 1992 and Medonca 1992). Because this site may be used as a commercial boat landing in the future, the revenues from this venture might help finance the cost of a public transient tie-up facility.

Forty percent of the total number of boaters surveyed said they wanted boating access to the Discovery Center. Many of the boaters in the Portland area had not heard of the proposed Discovery Center and/or did not plan on ever boating in this area of the river. Consequently, they did not want boating access. However, 100 percent of the boaters surveyed east of Bonneville Dam indicated that they want a public transient tie-up facility to be built at Crate's Point.

A boating facility at Crate's Point will be an expensive project which will be faced with many environmental constraints. However, the facility will directly benefit the boating community and will increase the accessibility of The Gorge Discovery Center. The facility should be located in the small cove, which at present is shallow (1-2 feet) and weedy. The entrance channel to the cove is littered with stumps and several fishing buoys, which have obviously been neglected for a long time. The shoreline is a rocky and grassy cliff. The railroad tracks are located between the shore and the proposed location of The Dalles Riverfront Trail.

Potential Conflicts

Initial and continuous dredging will be necessary to maintain adequate water depth in the cove. A boating facility may conflict with Native American fishing rights. Access to the Discovery Center from the shoreline will be difficult, due to the presence of the railroad tracks.

Possible over-development of the area. The Forest Service suggests that a feasibility study be conducted to determine if the site is acceptable for a boating facility. Also, any conflicts due to natural and cultural resources, and tribal fishing rights will have to be addressed.

Proposed Facilities

- (1) Construct a 200-foot transient tie-up float with a gangway access to the shore.
- (2) Provide restrooms, picnic tables, and a picnic shelter. Shared use of this facility should be encouraged with boaters and riverfront trail users, so the main upland facility should be built mid-way between the river front trail and the tie-up facility.

Ownership

Wasco County

Priority: B**Water Depth: Deep****Wind/Wake Protection: Good****Observations**

The Cove Anchorage is located on the east end of a small channel and is protected from winds and wakes by Rock Island. The cove is a very scenic area and offers views of the river and the mountains. The shoreline consists of a small sandy beach, rocks, and rocky cliffs. A grassy upland surrounded by trees would be a suitable location for upland facilities. The water depth is good (10 - 20 feet); however, the cove may not be wide enough for easy maneuvering of boats if moorage floats are placed in the cove. The Cove Anchorage is accessible by land and is a popular area for swimming and diving off the rocks.

Access to the Discovery Center may be possible from The Cove Anchorage, depending upon the location of The Dalles Riverfront Trail.

Potential Conflicts

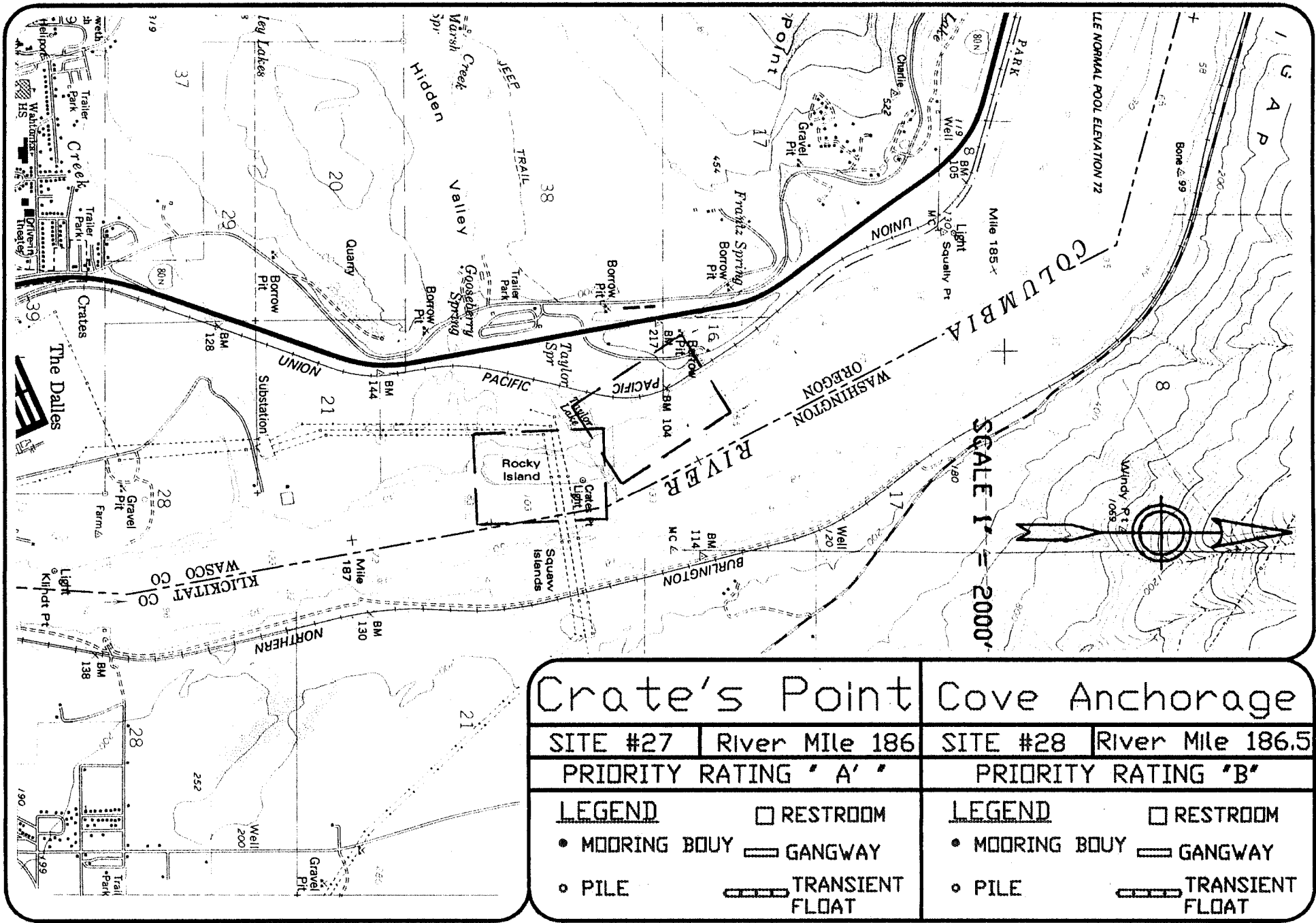
Conflicts may occur because swimmers may use the floating dock to dive from.

Proposed Facilities

- (1) Build 200 foot transient tie-up.
- (2) If possible, construct a trail which would connect this facility to The Dalles Riverfront Trail.

Ownership

U.S. Army Corps of Engineers



Crate's Point Cove Anchorage	
SITE #27	River Mile 186
SITE #28	River Mile 186.5
PRIORITY RATING "A"	
LEGEND • MOORING BOUY ○ PILE	
□ RESTROOM — GANGWAY — TRANSIENT FLOAT	

Crate's Point Cove Anchorage

SITE #27 River Mile 186

SITE #28 River Mile 186.5

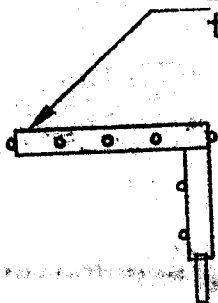
PRIORITY RATING "A"

PRIORITY RATING "B"

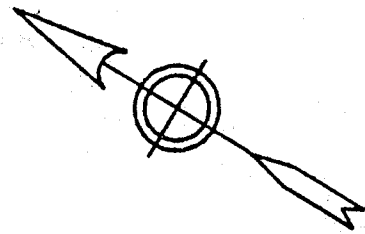
LEGEND
 • MOORING BOUY
 ○ PILE

LEGEND
 □ RESTROOM
 — GANGWAY
 — TRANSIENT FLOAT

200' Transient Float connected to shore by a 50' gangway.



PROPOSED RESTROOM



SCALE 1" = 200'

Crate's Point

SITE #27 | River Mile 186

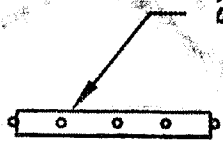
PRIORITY RATING 'A'

LEGEND

• MOORING BOUY □ RESTROOM

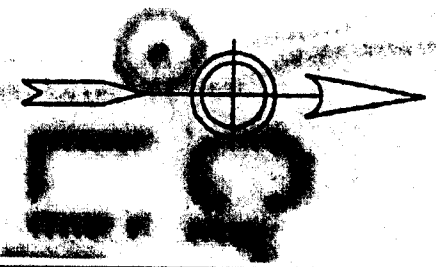
○ PILE — GANGWAY
— TRANSIENT FLOAT

200' TRANSIENT FLOAT



Rocky Island

SCALE 1" = 200'



Cove Anchorage	
SITE #28	River Mile 186.5
PRIORITY RATING 'B'	
<u>LEGEND</u>	
• MOORING BUOY	□ RESTROOM
○ PILE	▬ GANGWAY
	▬▬▬ TRANSIENT FLOAT

Priority: B

Water Depth: Good

Wind/Wake Protection: Good

Observations

A public transient tie-up facility is presently located in The Dalles Boat Basin, which also provides permanent moorages. The transient tie-up facility includes a fuel dock operated by The Dalles Yacht Club, a pump-out station, and a two stall floating portable restroom. A \$5/night fee is charged for overnight moorage.

Similar to Cascade Locks and Hood River, The Port of The Dalles has created a riverfront park with restrooms, picnic facilities, sailboarding areas, and parking.

Potential Conflicts

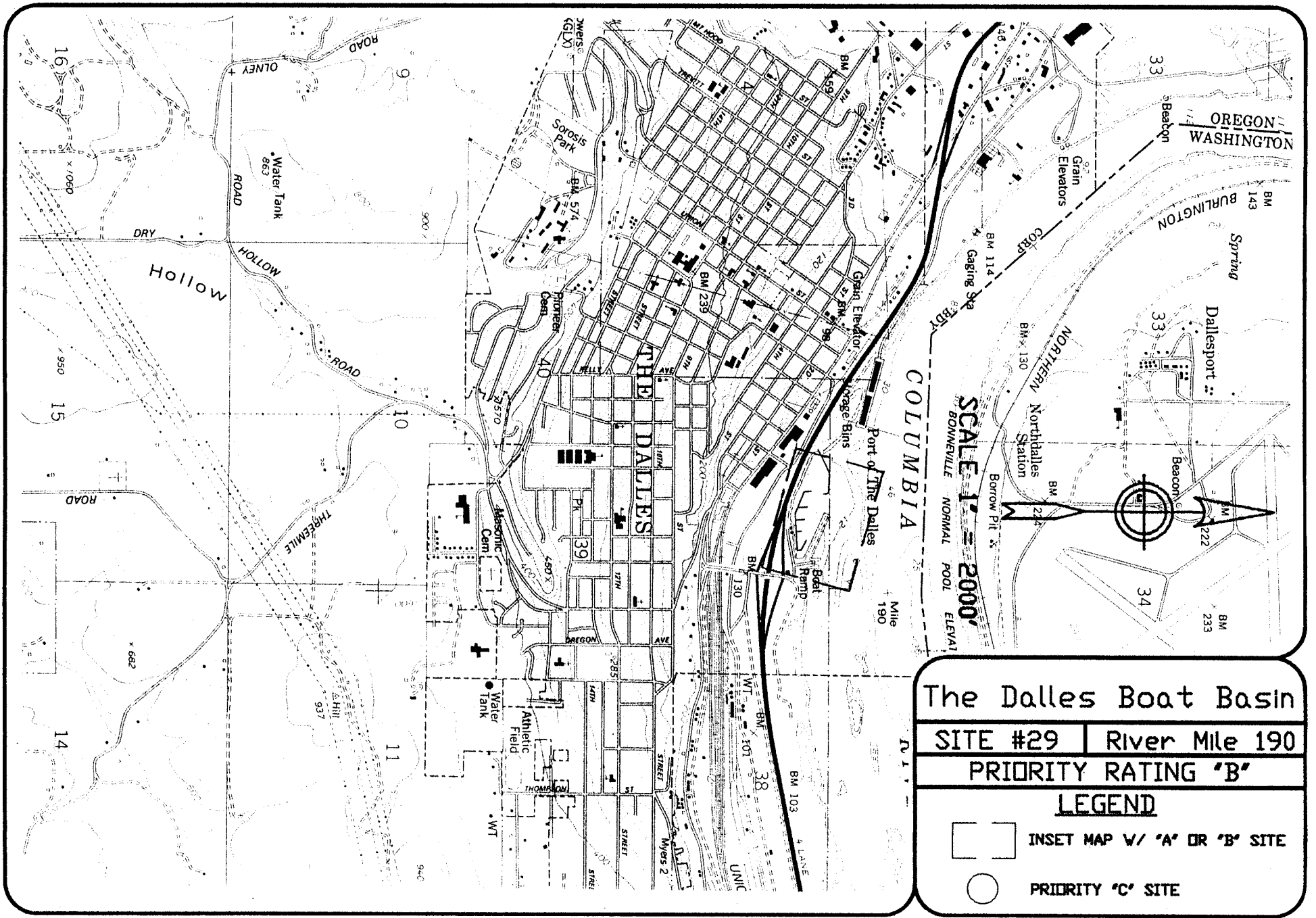
None.

Proposed Facilities

- (1) Upgrade and expand existing transient tie-up facility.
- (2) Provide restrooms and showers in the parking area.

Ownership

Port of The Dalles

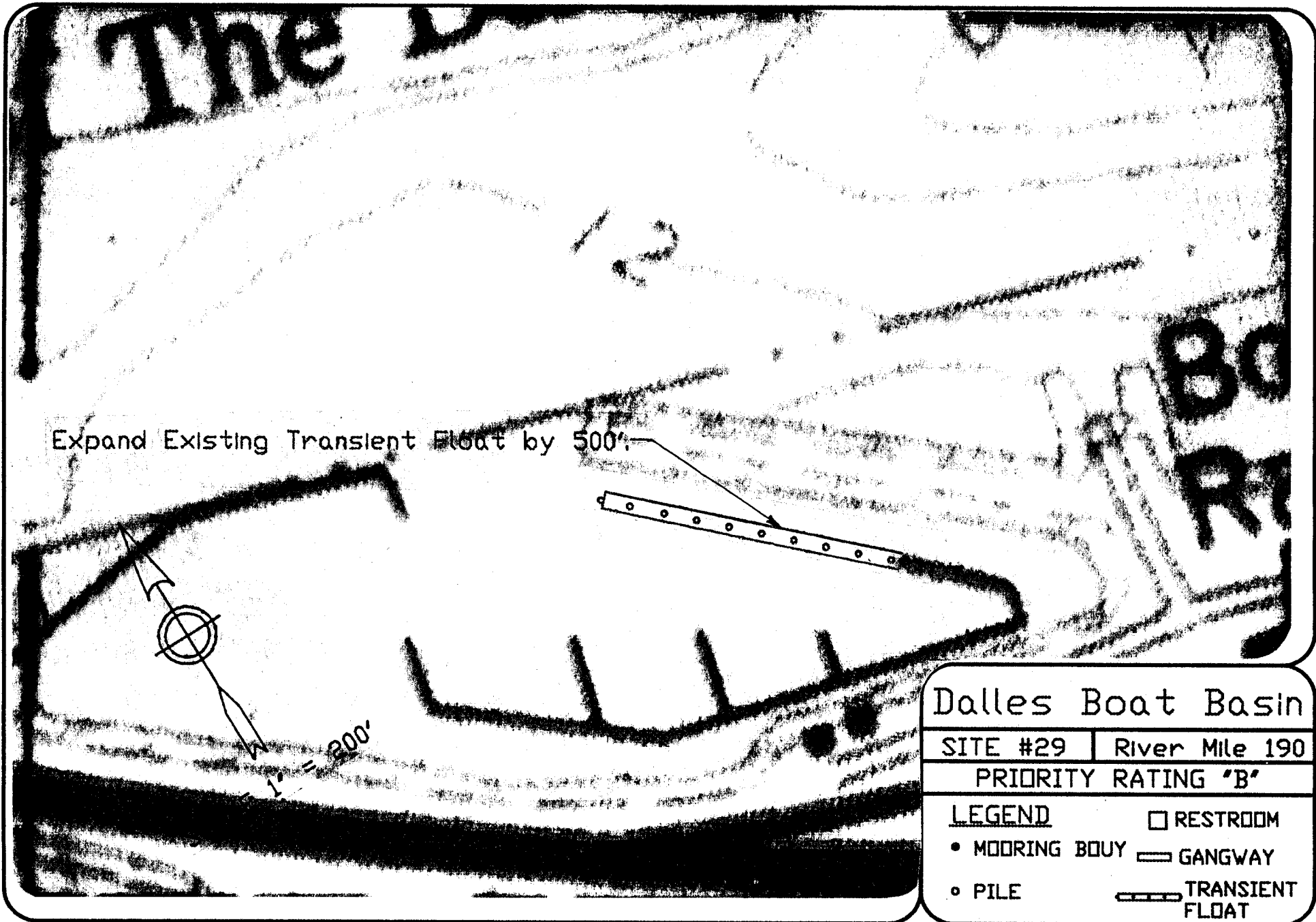


The Dalles Boat Basin

SITE #29	River Mile 190
PRIORITY RATING "B"	

LEGEND

- INSET MAP W/ "A" OR "B" SITE
- PRIORITY "C" SITE



Dalles Boat Basin

SITE #29 | River Mile 190

PRIORITY RATING 'B'

LEGEND

- MOORING BOUY
- ◻ RESTROOM
- ◻ PILE
- GANGWAY
- ▬ TRANSIENT FLOAT

VII. SUMMARY OF FINDINGS AND RECOMMENDATIONS

Findings

- Limited public transient tie-up facilities exist along the Mid-Columbia River. The existing facilities are either too crowded (i.e., Bartlett's Landing) or are unusable by cruising vessels (i.e., Gary and Flag Island Moorage).
- Portland metro area waterways are congested with commercial traffic, recreational boating traffic, and other recreational users. Additional tie-up facilities should be built in the area to accommodate the high levels of boaters; facilities should be built further up the river to draw boaters out of crowded areas.
- Additional transient tie-up facilities are needed in the Gorge to provide a safe place for boaters to escape the winds and to enable them to cruise the entire stretch of the Mid-Columbia River.
- The survey found that recreational boaters want additional tie-up facilities. Consultations with agency personnel found that agencies are supportive of increasing coordination for the construction of a network of public transient tie-up facilities along the Mid-Columbia River.

Recommendations

- A network of public transient tie-up facilities should be built along the entire stretch of the Columbia River to enhance opportunities for cruising boaters and to provide safe places for moorage.
- The OSMB must work with the identified agencies to develop and to improve the proposed Priority A sites.
- The identified Priority A' sites (Bradford Island and Crate's Point) should be given the highest priority for development because they have the greatest potential to enhance cruising opportunities along the Mid-Columbia River.
- Several user-conflicts may exist at identified Priority A sites. These user groups include commercial vessels, Native American fishers, sail boarders, and personal watercraft users. These sites must be developed with consideration for these user groups. Ways must be found to eliminate any conflicts that may arise from the development of a public transient tie-up facility.

- Priority B sites must be kept under consideration if a Priority A site is not feasible for development or if the need for additional public transient tie-up facilities continues to increase.
- Facilities for small boats should be built in the Portland metro area to accommodate the large and increasing population of day-cruising small boats.
- Environmental constraints that were not initially identified such as the presence of wetlands, sensitive habitat, or threatened or endangered species may limit development of proposed sites. If these constraints exist, agencies should look at Priority B sites for development.
- Special efforts must be undertaken to contact Washington agencies and work with them to develop an integrated network of public transient tie-up facilities along the entire stretch of the Columbia River.
- A coordinated planning and management effort of all agencies involved with the natural resources of the Columbia River is called for to make the goals of this study and the development of a network of public transient tie-up facilities successful.

VIII. FUTURE RESEARCH NEEDS

While this study was successful in planning for additional recreational boating facilities along the Mid-Columbia River, it identified several issues and concerns that must be further researched to successfully accommodate the multiple user-groups of the Mid-Columbia River. The primary research need, as identified earlier, is to determine the best method to coordinate planning efforts between Oregon and Washington agencies. The line in the middle of the river dividing the two states is arbitrary and does not mean that the river, the people, or the resources are inherently different. Planners should recognize this fact and work together to build a network of transient tie-up facilities that does not limit boaters to one side of the river or the other.

Another research need is to find a better way to help alleviate and to prevent many of the user-group conflicts along the Mid-Columbia River. Additional public transient tie-up facilities will help alleviate some of the conflicts for recreational boaters, but they will not eliminate them all. Research must be done to find ways to educate recreational boaters about commercial traffic and to teach them the rules of the road. An educational campaign must be undertaken to teach boaters how to lock through the navigational locks to make it a safer and more enjoyable experience for recreational boaters. Further research must also be done to determine how to ease some of the conflicts experienced between all recreational user groups of the river, including personal watercraft users, sail boarders, and fishers.

Follow-up research for this study should be done to determine how successful this planning effort was. It should be determined how many of the Priority A sites are developed and why the site was or was not selected to make the planning process more effective in the future. Research should also be done to determine how successful this project was in eliminating user-conflicts and protecting the river's resources.

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**Appendix A:
RIVER SURVEY**

Date _____

Location _____

Hi! My name is Susan Burr and I am a graduate student in Marine Resource Management at Oregon State University. I am conducting a study this summer for the Oregon State Marine Board (OSMB) with the goal of developing a network of potential sites for temporary moorage facilities along the Mid-Columbia River. To determine the demand for these sites and possible locations, I need input from boaters like yourself. The results of this survey will be instrumental in aiding the OSMB in prioritizing sites for future development and will insure the most efficient use of your money from boater registration fees. Your answers will be kept confidential and will be aggregated to determine the final results. Happy boating!

Please answer the following questions to the best of your ability.

Boat/Boat Use Characteristics

- (1) What is your state of residence?

OR _____

WA _____

other _____

- (2) In what state is your boat registered?

OR _____

WA _____

other _____

- (3) What is the length of your boat?

less than 16 ft _____

16 ft to less than 26 ft _____

26 ft to less than 40 ft _____

40 ft to 65 ft _____

- (4) What is the draft required by your boat? _____ ft.

- (5) How is your boat powered?

gasoline _____

diesel _____

sail _____

- (6) Does your boat have on board

sewage _____

cooking _____

sleeping facilities _____

- (7) Where do you normally store your boat?
 on land ___ location (city) _____
 in water ___ location (city/moorage facility) _____
- (8) How many days per year do you spend on your boat?
 less than 10 ___
 10-20 ___
 21-30 ___
 31-40 ___
 more than 40 ___
- (9) Estimate the number of days per year you spend on your boat in the following areas of the Mid Columbia River:
 St. Helens to Willamette River _____
 Portland metro area (Willamette River to Sandy River) _____
 Sandy River to Bonneville _____
 Bonneville to The Dalles _____

Cruising information/Current trip

- (10) What was the departure point of your current trip?

 Ultimate destination? _____
 Duration? _____ (days)
 Distance? _____ (RM)
- (11) How many people are traveling on your boat? _____
- (12) Are you traveling with a group?
 yes ___ no ___
 Name of group _____
 Number of boats in group _____
- (13) What activities will you pursue on this trip?
 fishing ___ cruising (overnight trip) ___
 cruising (day trip) ___
 sailing ___ nature viewing ___ jet skiing ___
 beach ___ sail boarding ___ water skiing ___
 other (*please specify*) _____

Facility information

- (14) Why are you traveling to your specified destination today?
safe tie-up____ only facility available____
wind/wake protection____ land access____
group meeting____ recreational opportunities____
nature or scenic viewing____ close to home____
other (please specify)_____
- (15) How many times in the last year have you used this mooring facility before?

- (16) What do you like about this facility?
wind/wake protection____ convenience____ quiet____ docks____
other (please specify)_____
- (17) Would you like to see this facility
more developed____ less developed____ no change____
- (18) On a scale of 1 to 9, 1 being "not at all satisfied" and 9 being "very satisfied," how satisfied are you with your boating experiences in this area? _____
- (19) If there were additional moorage facilities within a 15-mile radius, would you use them instead of this one?
yes____ no____
- (20) Would you allow other boats to raft to your boat at a public moorage facility?
yes____ no____
Would you raft to another boat at a public moorage facility?
yes____ no____
- (21) Do you believe access to public mooring facilities should be on a first come, first serve basis or through reservations?
first come, first serve____ reservations____

Additional facilities in the Mid-Columbia area

(22) What services or facilities would you like to see offered at public moorage facilities?
(X the first line if you would like to see the service offered, X the second line if you would be willing to pay a nominal fee for the service)

- | | | |
|-------------------------------|---------------------|-------------------|
| restrooms_____ | launching ramp_____ | parking_____ |
| swim areas_____ | fuel_____ | water_____ |
| showers_____ | electric power_____ | picnic areas_____ |
| groceries_____ | nature viewing_____ | laundry_____ |
| overnight accommodations_____ | | ice_____ |
| fish cleaning stations_____ | | |
| fishing supplies_____ | | |
| other (please specify)_____ | | |

(23) Would you use a moorage facility that is not connected to land?

- For overnight use? yes____ no____
For day use? yes____ no____

(24) Should there be more mooring facilities located along the mid-Columbia River?

- yes____ no____

If new mooring facilities were to be built on the mid-Columbia River, where would you locate them?

(Please indicate on map provided)

How far apart would you located them (RM)?_____

How many additional facilities should be built?_____

(25) Do you think that these additional facilities would make the area too crowded?

- yes____ no____

Additional concerns of the Mid-Columbia River

(26) Conflicts commonly occur between recreational cruising boaters and other river users. Check true or false beside the following statements.

I don't like to boat in the Portland metro area because of the commercial traffic.

- true____ false____

I don't like to boat beyond Bonneville because of the dams.

- true____ false____

I don't like to boat in the Gorge because of the strong winds.

true____ false____

I don't like to boat in the Gorge because of sail boarders.

true____ false____

I don't like to boat in the Gorge because of the possibility of net fouling.

true____ false____

other (*please specify*)_____

- (27) How do the dams along the Mid-Columbia affect your cruising activities? (*check all that apply*)

I don't know how to communicate with the lock master____

I don't know how to "lock through"____

no safe place to wait before "locking through"____

I don't know how to interact with commercial traffic____

limit distance of trips____

make trips longer in duration____

other (*please specify*)_____

- (28) Would you be willing to pay a fee to lock through the dams?

yes____ no____

- (29) If there were additional mooring facilities within the National Scenic Area of the Gorge, would this encourage you to visit the Gorge more often?

yes____ no____ don't know____

- (30) Would you like to be able to access the proposed interpretive center at Crate's point by boat if there were a mooring facility built there?

yes____ no____ don't know____

Thank you for participating in this survey.

Please feel free to make any additional comments or suggestions:

Appendix B:
MAIL-OUT/MAIL-IN SURVEY

Please mail to:
Susan Burr
OSU Extension Office
211 SE 80th Ave.
Portland, OR 97215

Boat/Boat Use Characteristics

- (1) What is your state of residence?
OR _____
WA _____
other _____
- (2) In what state is your boat registered?
OR _____
WA _____
other _____
- (3) What is the length of your boat?
less than 16 ft _____
16 ft to less than 26 ft _____
26 ft to less than 40 ft _____
40 ft to 65 ft _____
- (4) What is the draft required by your boat? _____ ft.
- (5) How is your boat powered?
gasoline _____
diesel _____
sail _____
- (6) Does your boat have on board
sewage _____
cooking _____
sleeping facilities _____
- (7) Where do you normally store your boat?
on land _____ location (city) _____ in
water _____ location (city/moorage facility) _____

- (8) How many days per year do you spend on your boat?
 less than 10____
 10-20____
 21-30____
 31-40____
 more than 40____
- (9) How many days per year you spend on your boat in the following areas
 St. Helens to Willamette River____
 Portland metro area (Willamette River to Sandy River)____
 Sandy River to Bonneville____
 Bonneville to The Dalles____

Cruising information

- (10) What is your most common departure/launch point? _____
 What is your most common destination point? _____
 What is your average length of trip? _____ (days)
 What is your average distance of trip? _____ (RM)
- (11) How many people usually travel on your boat? _____
- (12) Do you usually travel with a group? yes _____ no _____
 Name of group _____
- (13) What activities do you usually pursue while boating?
 fishing____ cruising (overnight trip)____ cruising (day trip)____
 sailing____ nature viewing____ jet skiing____
 beach____ sail boarding____ water skiing____
 other (*please specify*) _____

Facility information

- (14) Have you ever moored at a public facility in the Mid-Columbia River?
 yes _____ no _____
 If yes, where? _____
- (15) Which facility do you use most often? _____
 How many days have you used this facility in the last year? _____

- (16) What do you like about this facility?
 safe tie-up____ only facility available____
 close to home____ wind/wake protection____
 land access____ group meeting____
 recreational opportunities____ docks____
 nature or scenic viewing____ quiet____
 other (please specify)_____
- (17) What do you dislike about this facility?
 crowdedness____ wind/wake____
 noise____ length of travel to reach facility____
 other (please specify)_____
- (18) On a scale of 1 to 9, 1 being "not at all satisfied" and 9 being "very satisfied", how satisfied are you with your boating experiences in this area?_____
- (19) If there were additional moorage facilities within a 15-mile radius, would you use them instead of this one?
 yes____ no____
- (20) Would you allow other boats to raft to your boat at a public moorage facility?
 yes____ no____
 Would you raft to another boat at a public moorage facility?
 yes____ no____
- (21) Do you believe access to public mooring facilities should be on a first come, first serve basis or through reservations?
 first come, first serve____ reservations____

Additional facilities in the Mid-Columbia area

- (22) Should there be more moorage facilities located along the Mid-Columbia River?
 yes____ no____
 How far apart should the public moorage facilities be located?_____(RM)
 How many additional facilities should be built in the Mid-Columbia region?_____
- (23) What services or facilities would you like to see offered at public moorage facilities?
 (Check the first box if you would like to see the service offered, check the second box if you would be willing to pay a nominal fee for it)
 restrooms____ launching ramp____ parking____
 swim areas____ fuel____ water____

showers____ electric power____ picnic areas____
 groceries____ ice____ fishing supplies____
 overnight accommodations____ nature interpretation____
 fish cleaning stations____

other (please specify)_____

- (24) Do you think additional facilities would make the Mid-Columbia River too crowded?
 yes____ no____
- (25) Would you use a moorage facility that is not connected to land?
 For overnight use? yes____ no____
 For day use? yes____ no____
- (26) Indicate where you would locate additional facilities. *(If you have further comments regarding sites you have suggested, please add them below).*

Additional concerns of the Mid-Columbia River

- (27) Check the conditions that affect your boating use.
 Commercial traffic____
 Dams____
 Winds____
 Sail boarders____
 Net fouling____
 Other (please specify)_____
- (28) Do the dams along the Mid-Columbia River affect your cruising activities?
 yes____ no____
 If yes, check the following statements that apply to you.
 I don't know how to communicate with the lock master____
 I don't know how to lock through____
 No safe place to wait before locking through____
 I don't know how to interact with commercial traffic____
 The dams limit distance of trips____
 The dams make trips longer in duration____
 other (please specify)_____
- (29) Would you be willing to pay a fee to lock through the dams?
 yes____ no____

- (30) Would you like to be able to access the proposed Gorge Discovery Center at Crate's Point if there were a moorage facility located there?
yes _____ no _____ don't know _____

- (31) If there were additional mooring facilities within the National Scenic Area of the Gorge, would this encourage you to visit the Gorge more often?
yes _____ no _____ don't know _____

Thank you for your participation in this survey.

Please feel free to make any additional comments or suggestions:

Appendix C:
FRESHWATER NEWS SURVEY

1. Your state of residence?
 OR _____
 WA _____
 other _____

2. In what state is your boat registered?
 OR _____
 WA _____
 other _____

3. Length:
 less than 16'
 16' to less than 26' _____
 26' to less than 40' _____
 40' to less than 65' _____

4. How many days per year do you spend on your boat?
 less than 10 _____
 10-20 _____
 21-30 _____
 31-40 _____

5. How days per year you spend on your boat in the following areas?
 St. Helens to Willamette River _____
 Portland metro area (Willamette River to Sandy River) _____
 Sandy River to Bonneville _____
 Bonneville to The Dalles _____

Cruising Information

6. What is your most common departure/launch point?

7. What is your most common destination point?

8. How many people usually travel on your boat? _____

9. What activities do you usually pursue while boating?
 fishing _____ cruising (overnight trip) _____
 cruising (day trip) _____ water skiing _____

sailing____ jet skiing____
 beach____ sail boarding____
 nature viewing____
 other (please specify)_____

Facility information

10. Have you ever moored at a public facility in the Mid-Columbia (St. Helens to The Dalles)?
 yes____ no____
 If yes, where?_____
11. Which facility do you use most often?_____
 How many days have you used this facility in the last year? _____
12. What do you like about this facility?
 safe tie-up_____
 only facility available_____
 close to home_____
 wind/wake protection_____
 land access_____
 group meeting_____
 recreational opportunities_____
 nature or scenic viewing_____
 quiet_____
 docks_____
 other (please specify)_____
13. What do you dislike about this facility?
 crowdedness_____
 wind/wake_____
 length of travel to reach facility_____
 facility_____
 noise_____
 other (please specify)_____
14. On a scale of 1 to 9, 1 being "not at all satisfied" and 9 being "very satisfied") how satisfied are you with your boating experiences in this area?_____

15. If there were additional moorage facilities within a 15 mile radius of this facility, would you use them instead of this one?
 yes___ no___
 In addition to this one? _____
16. Would you allow other boats to raft to you at public moorage facilities?
 yes___ no___
17. What services or facilities would you like to see offered at public moorage facilities? (Check the first box if you would like the service provided, check the second box if you would be willing to pay a nominal fee for the it)
- | | |
|-----------------------------|-------------------|
| restrooms___ | launching ramp___ |
| parking___ | swim areas___ |
| fuel___ | water___ |
| showers___ | electric power___ |
| picnic areas___ | groceries___ |
| ice___ | |
| overnight accommodations___ | |
| nature interpretation___ | |
| fish cleaning stations___ | |
| fishing supplies___ | |
| other (please specify)_____ | |
18. Would you use a moorage facility that is not connected to land?
 Overnight use? yes___ no___
 For day use? yes___ no___
 Floating docks? yes___ no___
19. Where would you locate additional facilities along this stretch of the river? (If you have further comments regarding sites you have marked, please make them).
20. Check the conditions that affect your boating use in this area.
 Commercial traffic _____
 Bonneville Dam _____
 Winds _____
 Sail boarders _____
 Net fouling _____
 Other (please specify) _____

21. Do the dams along the Mid-Columbia River affect your cruising activities?

yes _____ no _____

If yes, check the following statements that apply to you.

I don't know how to communicate with the lock master _____

I don't know how to lock through _____

No safe place to wait before locking through _____

I don't know how to interact with commercial traffic _____

The dams limit distance of trips _____

The dams make trips longer in duration _____

Other (*please specify*) _____

22. Would you be willing to pay a fee to lock through the dams?

yes _____ no _____

Thank you for participating in this survey.

Please feel free to make any additional comments or suggestions on a separate sheet of paper.

**Appendix D:
SURVEY RESULTS**

Total number of surveys		115
Type	On-river	57
	Mail-out/mail-in	18
	Freshwater News	40
State of residence	OR	89
	WA	24
	other	2
Boat registration	OR	97
	WA	17
	WA residents with boats registered in OR	6
Location of on-river survey	Bartlett's Landing	31
	West Government Island	14
	Government Island	3
	Nudie Beach	2
	Beacon Rock	2
	Hood River	3
	The Dalles	2
Boat length	≤ 16	5
	$16 < x \leq 26$	31
	$26 < x \leq 40$	64
	$40 < x \leq 65$	12
Boat draft	≤ 3	81
	$3 < x \leq 4$	22
	$4 < x \leq 5$	9
	$5 < x \leq 6$	3
	$6 < x \leq 7$	1
Boat power	Gasoline	58
	Diesel	8
	Sail	8

Average number of people on boat

3

Facilities on board

All	59
None	7
Sleeping	4
Cooking	4
Sewage	0

Boat days per year

≤ 10	5
$10 < x \leq 20$	15
$20 < x \leq 30$	30
$30 < x \leq 40$	21
$x > 40$	55

Average number of boat days per year in specified area

St Helens	7
Metro	18
Sandy	5
Bonneville	8

Average duration of trip

1.5 days

Average distance of trips

14.6 RM

Usually travel with a group

Yes	23
No	93

Activities pursued while boating

Overnight cruising	88
Day trip	42
Nature viewing	38
Fishing	28
Sailing	22
Jet skiing	3
Sail boarding	0

Most common or current departure point

Portland private marina	51
Portland public launch	20
Hood River	8
Steamboat Landing, WA	8
WA public launch	4
Portland (unspec.)	3
The Dalles	1
Cascade Locks	1
Kennewick, WA	1
Willamette Park	1
Longview, WA	1

Most common or current destination point

Bartlett's Landing	23
West Dock Government Island	16
Government Island (unspec.)	16
Beacon Rock	16
Hood River	7
The Dalles	5
St. Helens	5
Bingen, WA	5
Coon Island	2
Cascade Locks	2
Riverplace, Willamette	2
Portland private marina	2
Rooster Rock	2
Coverts	1
Sauvie Island	1
La Page Park	1
Hadley's Landing	1
Chinook Landing	1
Port of Washougal	1
Commodore's Cove	1
John Day	1

Average rating of facility on a 1 to 9 scale

7

Average ranking for sites

Cascade Locks	9
Beacon Rock	8
Coon Island	8
Bartlett's Landing	7
West Dock Government Island	7
Government Island (unspec.)	7
The Dalles	7
Bingen, WA	7
Riverplace, Willamette	7
Rooster Rock	7
Sauvie Island	7
Hood River	6
St. Helens	6
Commodore's Cove	6
La Page Park	6
Hadley's Landing	6
Chinook Landing	5
John Day	4

What do you like about the chosen facility? Why did you choose it?

Safe tie-up	75
Docks	75
Land access	66
Wind/wake protection	56
Nature viewing	36
Recreational opportunities	31
Quiet	26
Only facility available	22
Group meeting	5

What do you dislike about the facility?

Crowdedness	49
Wakes/winds	16
Noise	16
Length of travel required	3

Do you allow other boats raft to you?

Yes 66
No 50

Would you raft to another boat?

Yes 47
No 69

Do you believe access to public moorage facilities should be first come/first serve or reservations?

First come/first serve 69
Reservations 12

What services/facilities would you like at moorage facilities? Which would you be willing to pay for?

<u>Facility</u>	<u>Like</u>	<u>Pay</u>
Restrooms	86	12
Launch ramp	31	12
Parking	29	7
Swim areas	50	1
Fuel	46	23
Water	68	13
Showers	67	38
Electricity	67	40
Picnic	48	5
Fish supplies	17	17
Fish cleaning stations	15	7
Groceries	39	24
Ice	48	32
Nature interpretation	12	1
Overnight accommodations	42	23

Would you use a facility not connected to land for

Overnight use 99
Day use 98

Would you use a
 (for *Freshwater News* surveys only) (40 total)

Floating dock	32
Buoys	28

**Should there be more facilities on the
 Mid Columbia?**

Yes	96
No	20

Would additional facilities make the Mid Columbia too crowded

Yes	4
-----	---

How far apart should facilities be located

10.5	RM
------	----

How many additional facilities should be built

5

Perceived conflicts

Winds	48
Net fouling	46
Sailboarders	37
Dams	31
Commercial traffic	28

How do the dams affect your boating activities

No safe place to wait	31
Don't know how to lock through	24
Makes trips longer in duration	20
Limits distance of trips	19
Don't know how to communicate with lock master	17
Don't know how to interact with commercial traffic	11

Would you be willing to pay a fee to lock through? Yes 37

Would more moorage facilities encourage you to visit the Gorge more often? Yes 56

Do you want boating access to Crates Point? Yes 46
 (40% of total number of boaters surveyed)
 (100% of boaters surveyed east of Bonneville Dam)

Where would you locate public transient moorage facilities?

Corbett	10
Reed Island	10
Multnomah Falls	7
Gary and Flag Island	5
Cascade Locks	5
Mayer West State Park	5
Crates Point	5
The Cove Marina, Sauvie Island	4
Columbia side of Sauvie Island	4
Commodores Cove	4
Bonneville Dam	4
Government Cove	4
Wyeth Cove	4
Viento State Park	4
Hood River	4
Nudie Beach, Sauvie Island	3
Lady Island, WA	3
Drano Lake, WA	3
Willow Bar, Sauvie Island	3
South Hayden Island	2
Tomahawk Island	2
Downtown Portland	2
42 nd Street Ramp	2
Cow Landing, Government Island	2

Bartletts Landing, Government Island	2
East Government Island	2
Ackerman Island, Government Island	2
Rooster Rock State Park	2
Sand Island	2
The Cove Anchorage	2
The Dalles	2
Martin Slough	1
Coon Island	1
East tip of Sauvie Island	1
Red Lion Inn, WA	1
Ellsworth, WA	1
West Government Island	1
Red Marker #14, Government Island	1
Across from Government Island, WA	1
South Government Island	1
McGuire Island	1
Chinook Landing	1
Prindle, WA	1
Skamania, WA	1
Dalton Point	1
Beacon Rock	1
Hamilton Island	1
Starvation Creek	1
Mosier	1
Memaloose	1
The Dalles Riverfront Park	1
Arthur Lake	1

Appendix E:
RECOMMENDATIONS FOR SMALL BOAT FACILITIES

Development of a small boat facility should be considered for East and West Government Island (South Channel), Government Island near Red Marker #14 and East Government Island (South Channel), and on East and West McGuire Island. Some of these sites may be combined and a facility built to accommodate one or more sites.

Because these islands have a low elevation and are often submerged, especially in the winter, a permanent facility would likely be lost during the season of high waters and floods. Therefore, any structures placed on the islands should be removable in the winter.

The primary concern with respect to these islands is sanitation. Many small boats do not need a full-scale tie-up facility like is needed for larger cruising vessels; however, sanitation facilities are necessary because these islands receive high levels of use in the winter. Therefore, portable restrooms should be placed at these sites.

**Appendix F:
PHOTOGRAPHS OF PRIORITY A SITES**



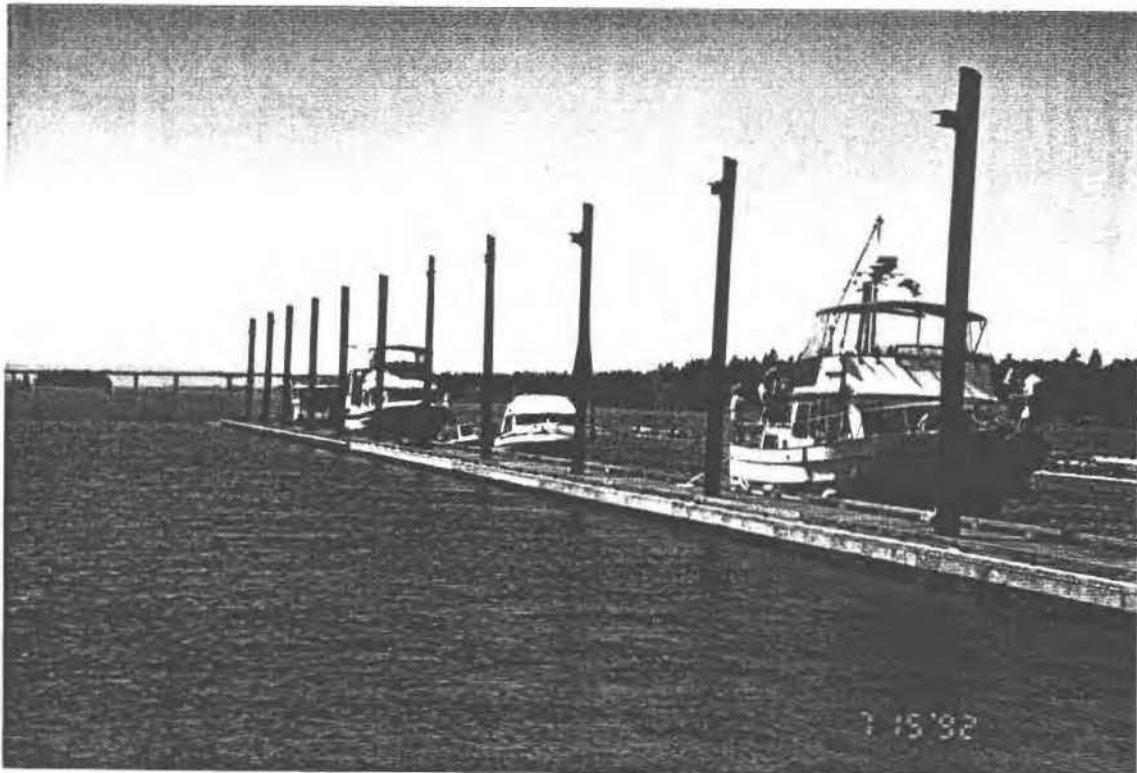
TYPICAL TRANSIENT FLOAT



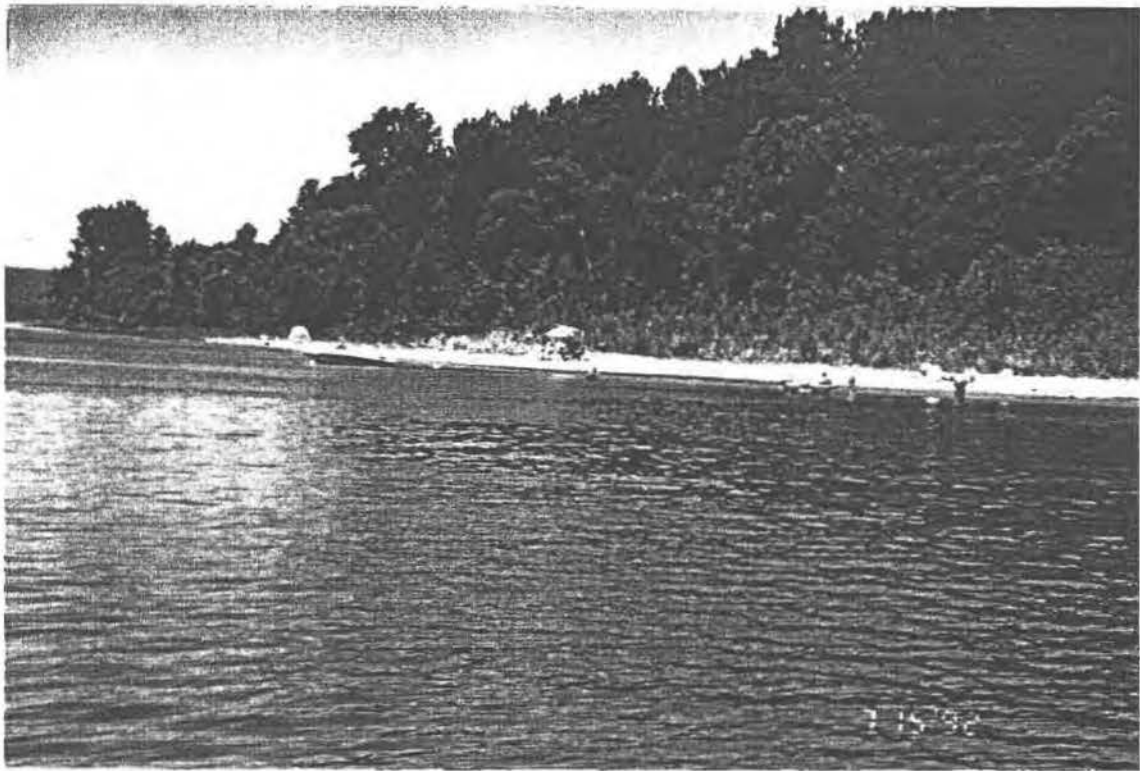
TYPICAL TRANSIENT FLOAT



THE COVE MARINA
River Mile 94.5



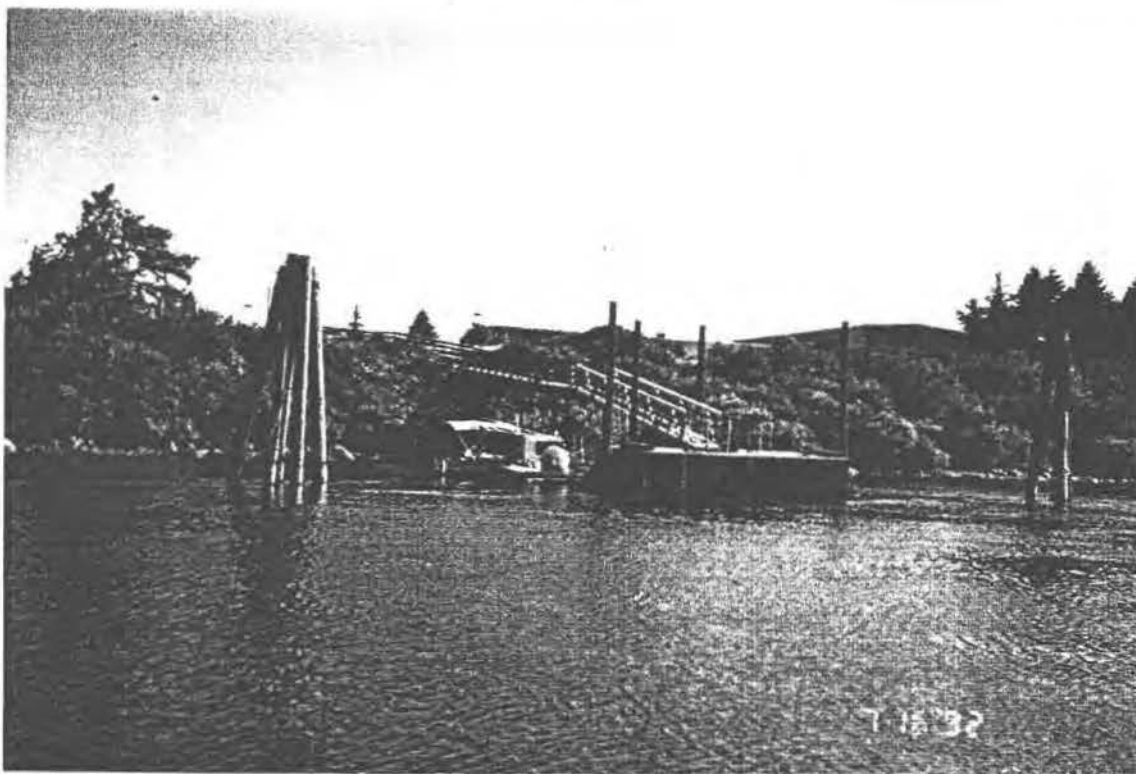
BARTLETT'S LANDING - GOVERNMENT ISLAND
River Mile 116.5



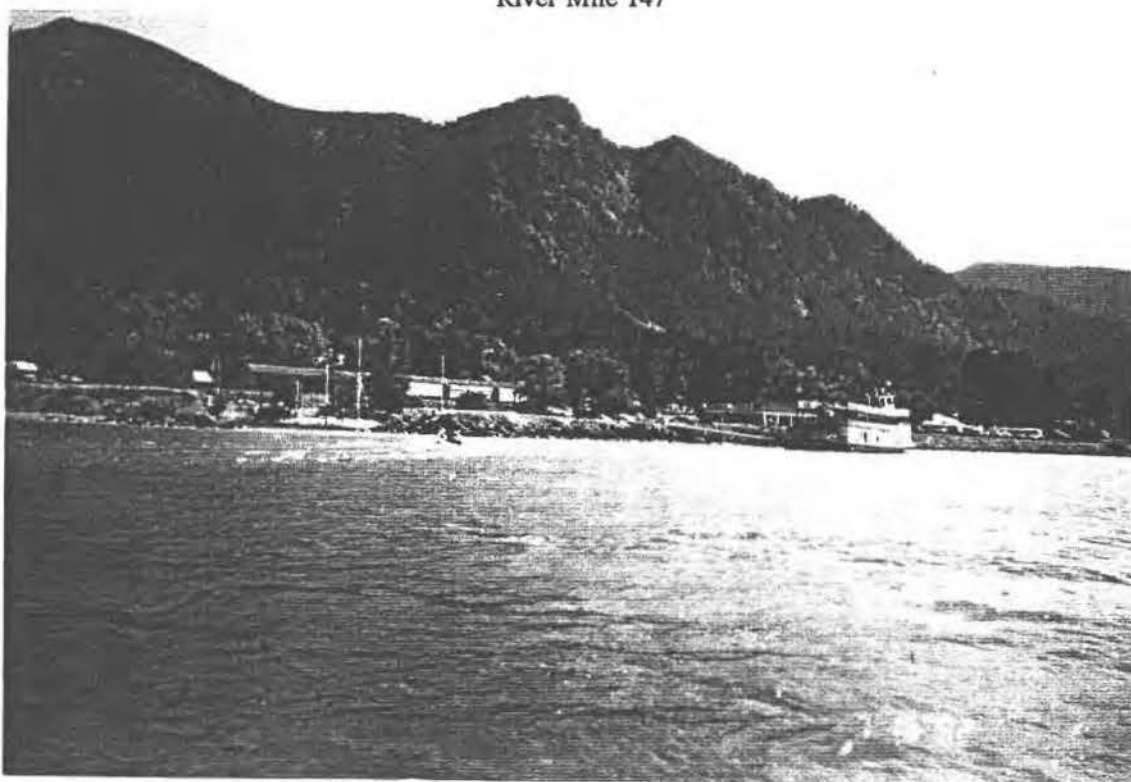
GARY AND FLAG ISLANDS
River Mile 124.5



ROOSTER ROCK STATE PARK
River Mile 128.5



BRADFORD ISLAND
River Mile 147



CASCADE LOCKS BOAT BASIN
River Mile 149



GOVERNMENT COVE
River Mile 152



WYETH WATERFRONT
River Mile 160



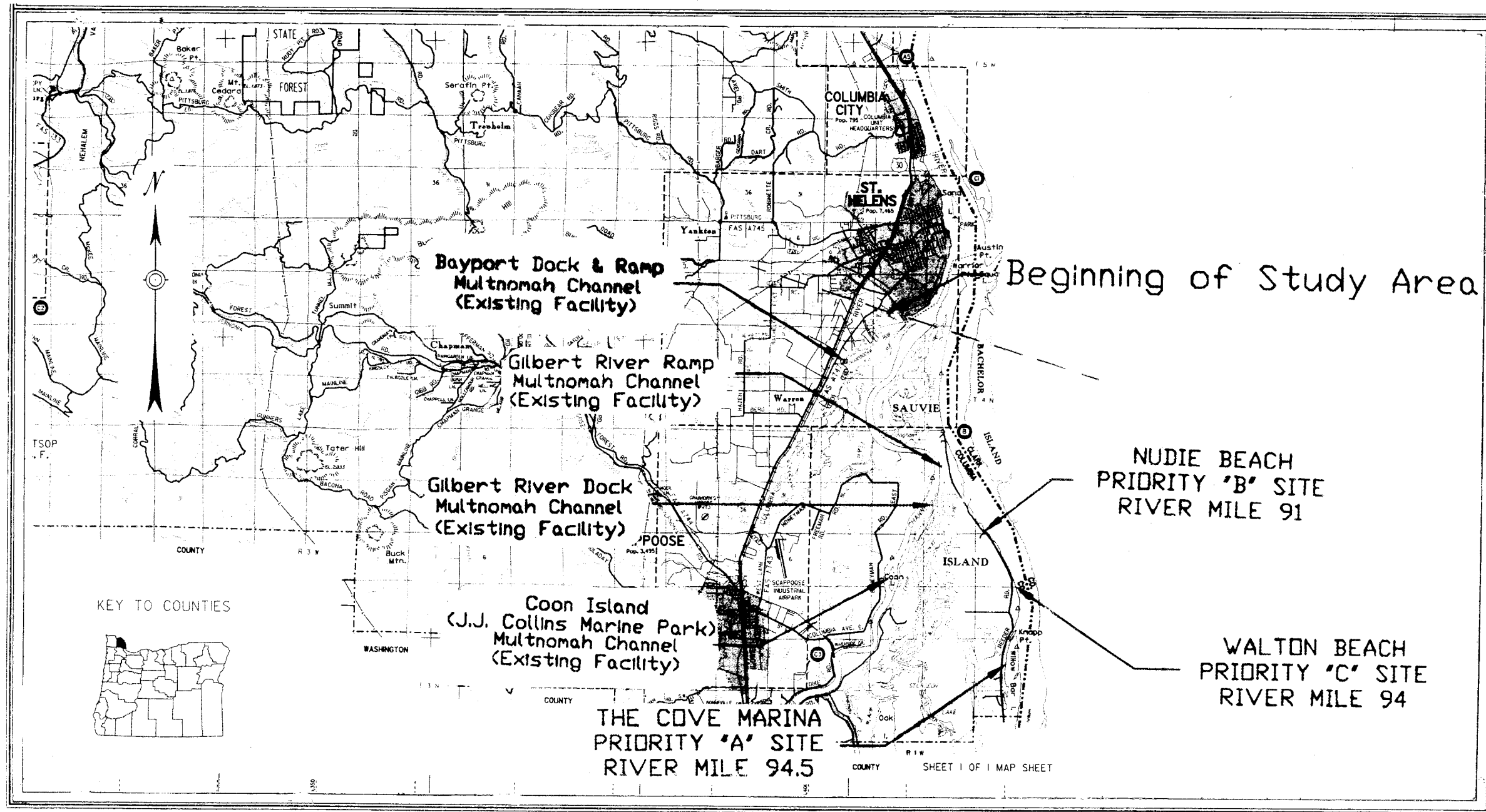
MAYER WEST STATE PARK
River Mile 181.5



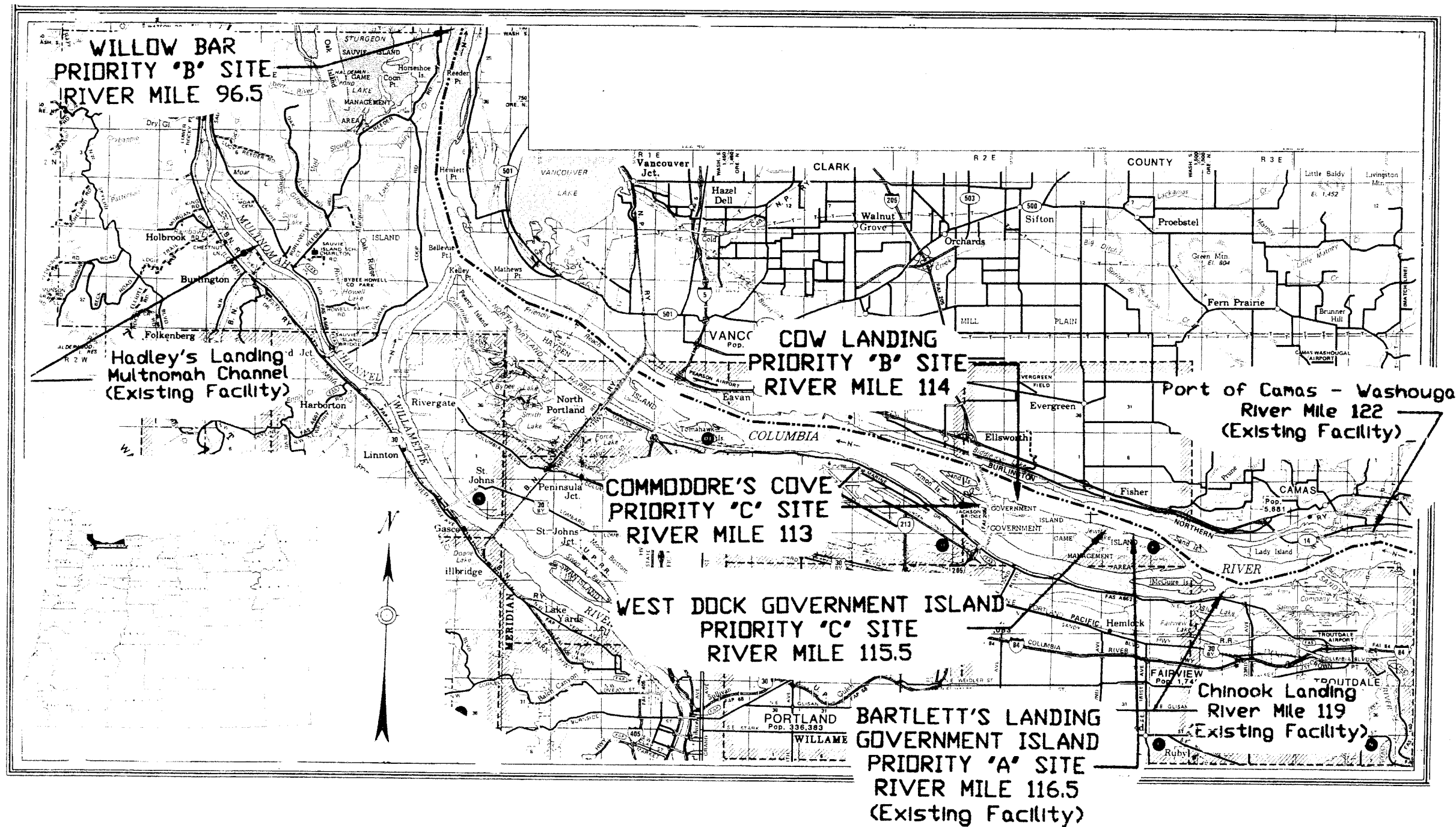
CRATE'S POINT
River Mile 186

**Appendix G:
RIVER MAPS**

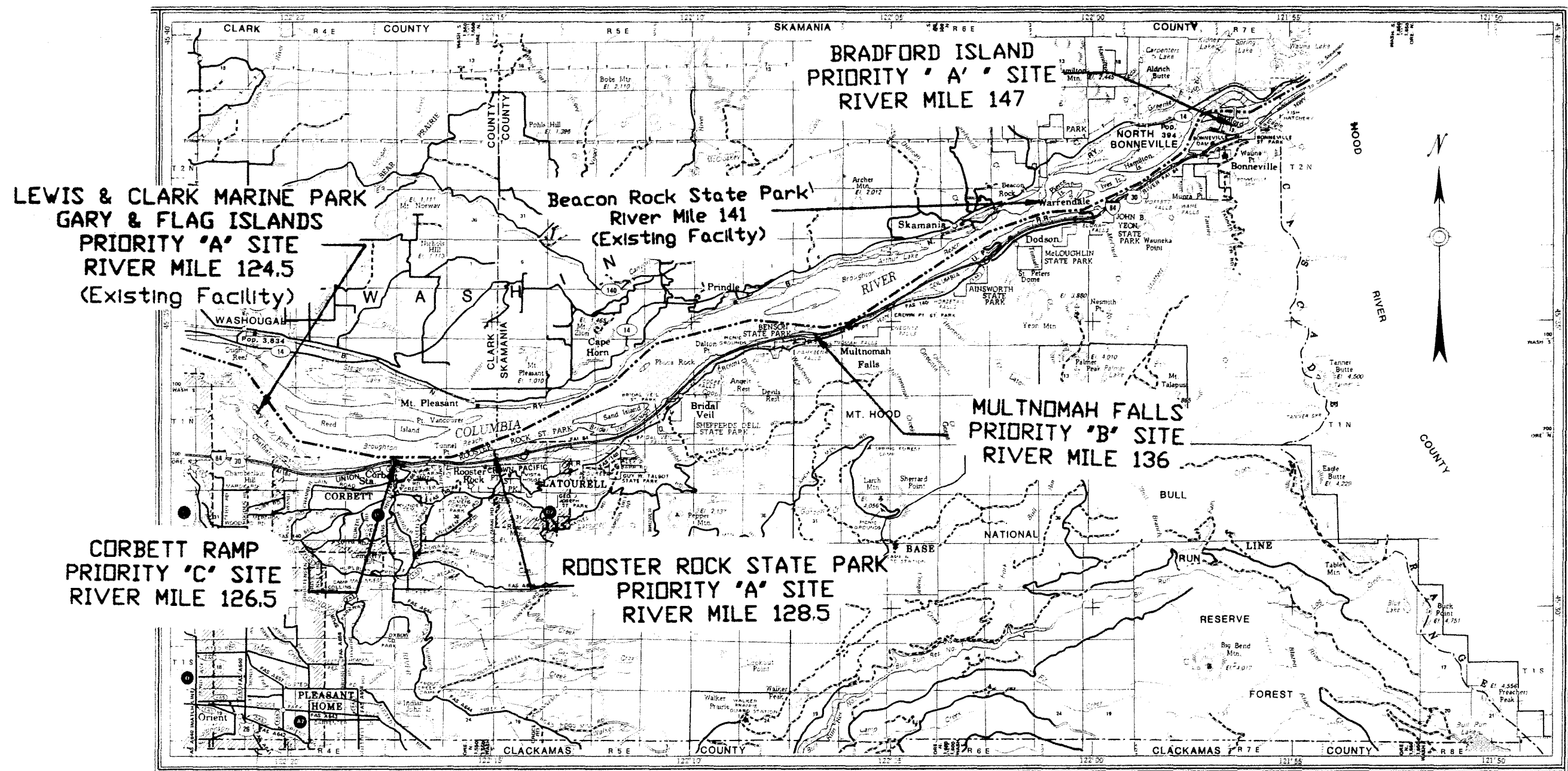
Maps for Mid-Columbia transient tie up study.



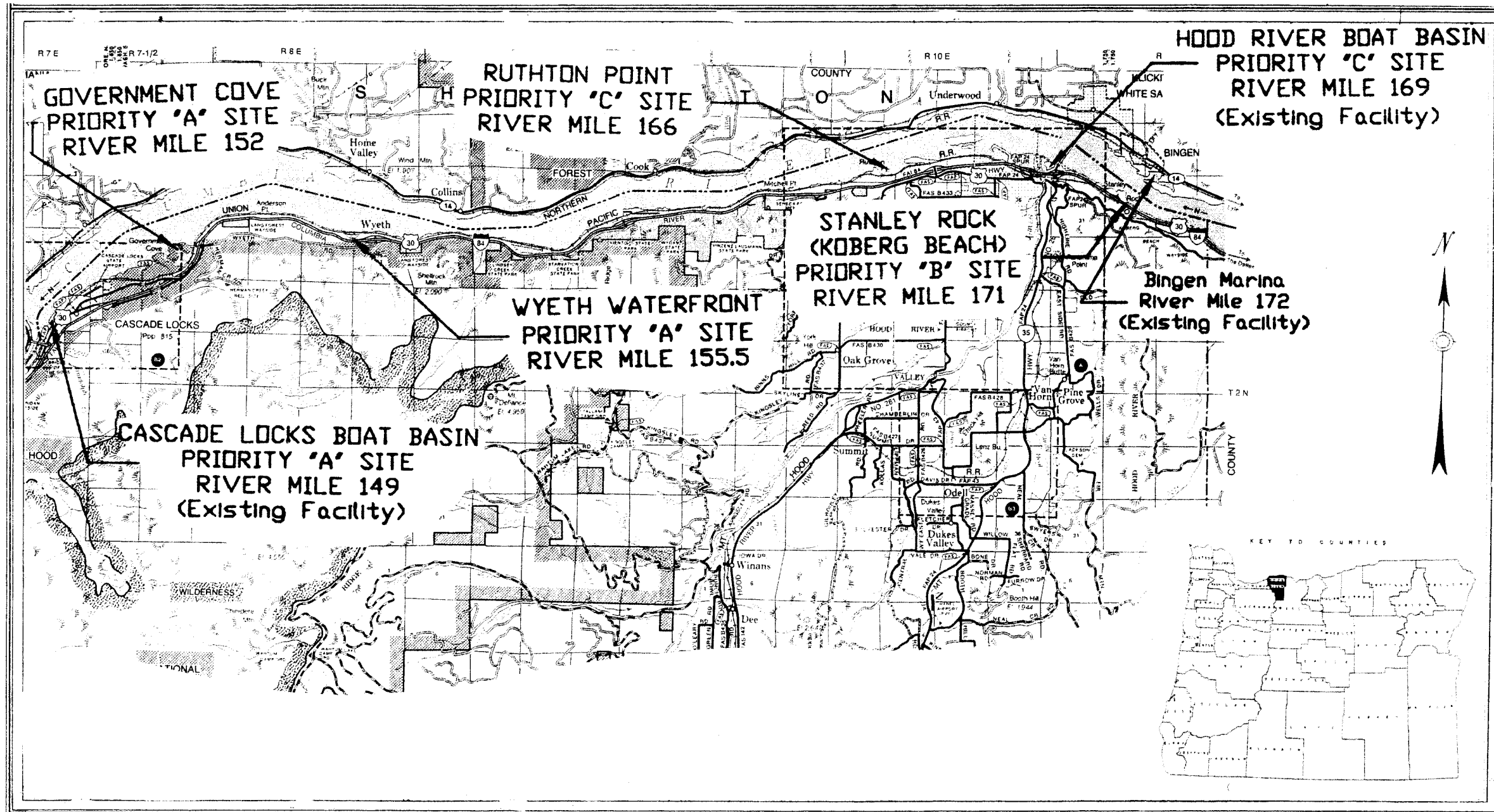
GENERAL HIGHWAY MAP
COLUMBIA COUNTY
 OREGON



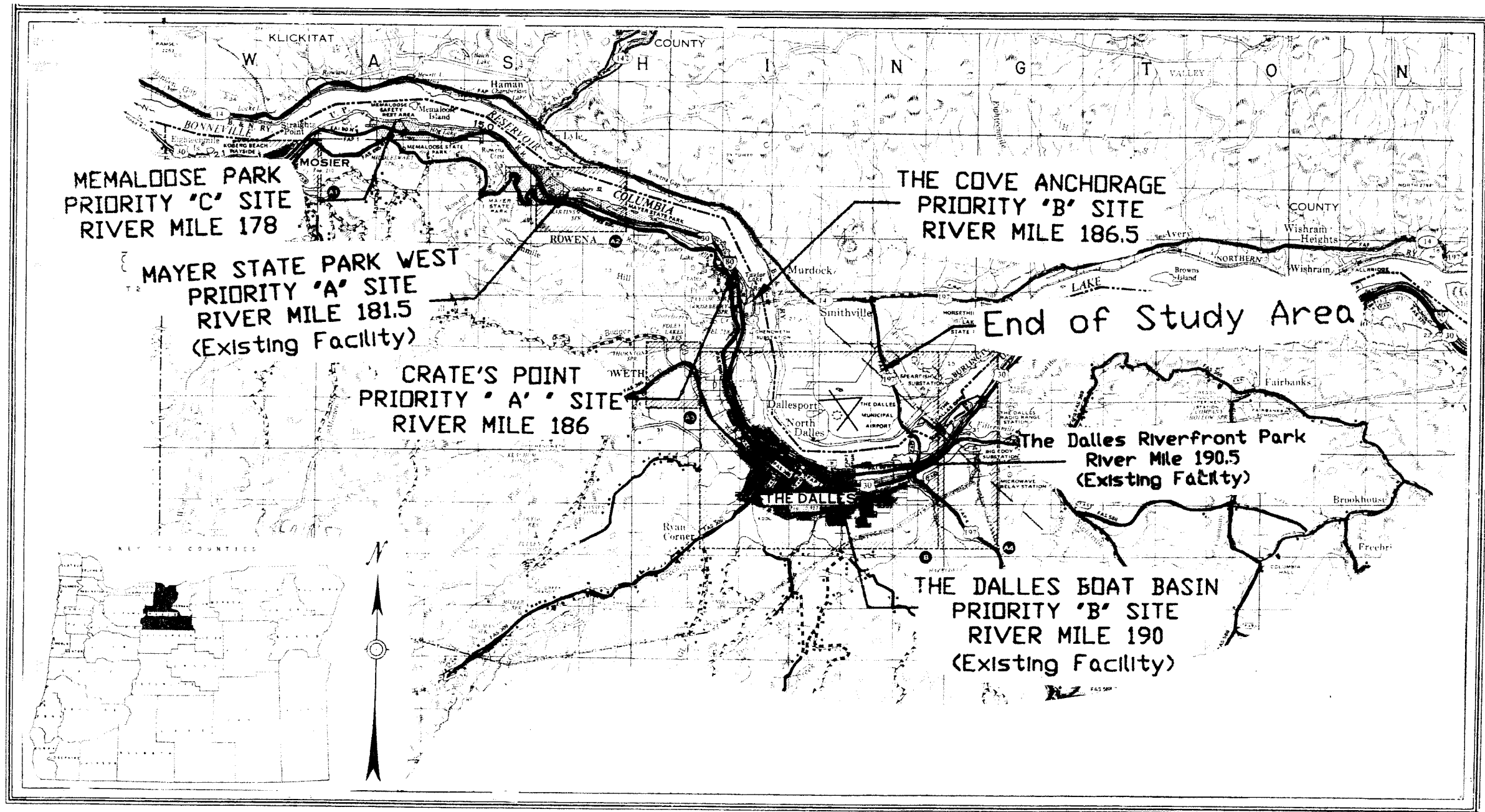
GENERAL HIGHWAY MAP
MULTNOMAH COUNTY
OREGON



GENERAL HIGHWAY MAP
MULTNOMAH COUNTY
 OREGON



GENERAL HIGHWAY MAP
HOOD RIVER COUNTY
OREGON



GENERAL HIGHWAY MAP
WASCO COUNTY
OREGON