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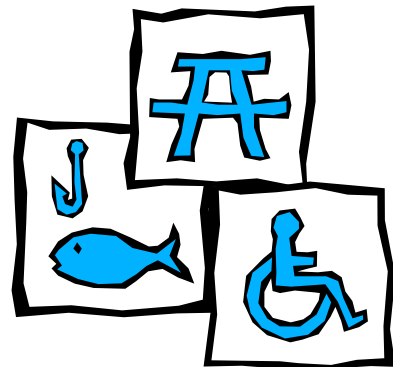
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June 2002

Environmental Assessment

Upper Arm Day-Use Development and Site Enhancement

Detroit Ranger District
Willamette National Forest



Environmental Assessment

Upper Arm Day-Use Development and Site Enhancement

Lead Agency: USDA Forest Service
Willamette National Forest
Detroit Ranger District
Marion County, Oregon

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CHAPTER 1 – PURPOSE AND NEED

Chapter 1 introduces a proposal to convert and reconstruct Upper Arm Recreation Site to a formal day-use facility, and discloses the underlying need for this action. In addition to the purpose and need for action, this chapter includes a description of the proposed action, and the scoping process used to identify concerns and significant issues.

The project record containing the complete analysis for the Upper Arm Day-Use Area Development and Site Enhancement is available for public review at the Detroit Ranger District, 44125 North Santiam Highway SE, Detroit, Oregon, 97342. For additional information about the project record, or to make appointments to review the record, please contact Dani Rosetti, Recreation Planner, at the Detroit Ranger District, HC 73 Box 320, Mill City, OR 97360 or call (503) 854-4208.

Introduction & Background

Upper Arm is a popular five-unit campground with a large adjacent undeveloped day-use area. This five acre site is located on the Breitenbush Arm of Detroit Lake, Township 9S., Range 5E., Section 36, within the Detroit Ranger District, Willamette National Forest. Upper Arm is situated on the western slopes of the Oregon Cascades, 50 miles east of the City of Salem, and 1/2-mile north of the City of Detroit off of Highway 22 on Breitenbush Road (Road 46), along the West Cascades National Scenic Byway. The North Santiam watershed (Detroit Lake) supplies drinking water to communities downstream including the City of Salem.

Highway 22 is a major transportation route that connects the Willamette Valley/Portland Metropolitan area with Central Oregon communities. Detroit Lake serves as a major “backyard destination” for many visitors from these metropolitan areas, and is within a two-hour drive of nearly 3 million people. The proximity of the site to a majority of Oregon’s population provides an opportunity for visitors to make a convenient day trip to the lake. Attesting to its popularity, Detroit Lake is the second heaviest used boating lake in Oregon according to a 1999 Oregon State Marine Board Boating Report.

Upper Arm is located at 1560 feet elevation, and is accessible most of the year except when occasionally closed by snow. The Upper Arm recreation site is approximately 900 feet long by 200-450 feet wide and has three natural flat benches with steeper slopes between benches that could be developed for barrier free recreational opportunities. Presently the site contains five campsites on the upper level that have fire rings, picnic tables and a single substandard vault toilet, and an unsurfaced area for parking. Portable toilets are used to help meet sanitation needs during the summer when use is high. The site has no potable water.

The area offers good views of the Breitenbush arm of Detroit Lake and is sheltered from the daily wind, waves and high speed boating activity. It is presently a popular swimming, fishing, picnicking, camping, and boat-in area.

Purpose and Need for Action

This section describes the existing condition and desired condition at Detroit Lake, and explains the need for the project proposal. A need for action is usually triggered when the existing conditions do not meet the desired conditions. Implementing the proposed action would resolve the discrepancies between the existing and desired condition.

Statement of Need for Action

The District Ranger of the Detroit Ranger District of the Willamette National Forest has determined there is a need for:

- Providing additional day-use areas at Detroit Lake where the topography is suitable and compatible for lakeside water activities, and is sheltered from wind, waves and high speed boating activities, and where barrier-free facilities can be developed;
- Providing additional day use areas on the north side of Detroit Lake near Highway 22 and the City of Detroit;
- Reducing road congestion and parking shortages at recreation sites around Detroit Lake;
- Providing day-use facilities at Detroit Lake that meet minimum public safety and sanitation standards, and providing barrier-free access to persons with disabilities;
- Providing facilities at Upper Arm Recreation Site to accommodate the demand for lakeside recreation day-use;
- Providing safe road, trail and shoreline access within the Upper Arm Recreation Site, including safe access to the site from the Breitenbush Road; and
- Restoring resource conditions within the Upper Arm Recreation Site, combined with new facilities, would provide for sustainable protection of the resources.

Purpose for Action

The underlying purpose for this project is to implement direction in the Forest Plan to meet day-use needs by developing a day-use facility on the north side of Detroit Lake. Current management and facilities at the Upper Arm Recreation Site do not meet Forest Plan objectives for providing a quality recreation setting.

Assessment of Need for Action

Existing Condition

Recreation Needs

In 1992 a Detroit Lake Composite Area Management Guide was prepared, which provided a framework for orderly development of Forest Service lands and water resources within the composite area. The study evaluated existing recreation and resource conditions, analyzed the suitability of the land base for various developments and included an extensive market survey.

A comprehensive market research study conducted during the Detroit Lake Recreation Area Composite planning effort revealed the following highlights:

- There is a significant shortage of developed day-use facilities in relation to existing demand at Detroit Lake.

- The most important improvements visitors want to see at Detroit Lake are more day-use areas and facilities including picnic areas, swim beaches, launch facilities, fish and swim docks, mooring docks, and additional trails. Also mentioned were opportunities for barrier-free recreation, more and improved restrooms and parking areas, and improved litter and sanitation conditions throughout the area.
- Day-use facilities should be concentrated on the north side of the reservoir adjacent Detroit and Highway 22 to reduce conflicts between residents and visitors as a result of overnight camping. Developing day-use areas not directly accessed from Highway 22 eliminates safety concerns created by frequent entries and exits onto the highway. Camping would be more suitable at areas on south side of the lake away from Highway 22 traffic and the town of Detroit.
- Developed day-use facilities near Detroit and Highway 22 should cater to lake visitors and byway travelers. There is public interest to provide day-use facilities that attract short-term users, and encourages visitor spending in local communities on a year-round basis to support a tourism-based economy. There was also an interest to develop facilities that enhance Detroit Lake's identity as a recreation destination, and promote recreational opportunities along the Breitenbush Road/Highway 22 that encourages use of this National Scenic Byway.
- Provide natural and cultural resource interpretation information for the lake.

The existing facilities at the Upper Arm Recreation Site are insufficient to accommodate current use levels, resulting in social conflicts, health and safety issues, and resource damage. The current site lacks formal organization to regulate use effectively.

Social Setting

Visitation has far exceeded the capacity of existing day-use facilities around Detroit Lake for over a decade. According to the Detroit Composite Study, day-use trends at Detroit Lake have increased at a slow rate due to full occupancy conditions at limited available sites and facilities. Three day-use areas currently exist at the lake including two Forest Service managed areas, Detroit Flats and Upper Arm, which have very limited facility development; and Mongold Day-Use Area, a fully developed site with a boat launch, and picnic and swimming area that is managed by Oregon State Parks. There is insufficient parking available at existing day-use facilities during the summer use season, which results in overflow parking along Highway 22 and major Forest roadways causing congestion. Because there are limited day-use facilities, day-use occurs within Forest Service campgrounds including Upper Arm Recreation Site, causing conflicts with campground visitors and contributing to the shortage of parking. The limited number of beach access/swimming areas around the lake crowds boaters and shoreline users in the same area, causing conflicts and safety concerns between boaters and nonboaters.

Public Safety

Safety problems at Upper Arm Recreation Site stem from congested and unorganized parking, limited site-distance at the entrance to the site, and numerous steep user created trails that access the lake along eroding banks. Limited parking controls create haphazard parking situations that are difficult to manage and hinder response by emergency vehicles.

Sanitation

The existing single vault toilet at Upper Arm does not meet current sanitation needs. It smells bad and cannot be maintained in a condition that is acceptable to the public. Lack of toilet facilities has resulted in human waste being disposed in an unsanitary and exposed manner around the site. For this reason, portable toilets are provided during peak use periods of the year, which minimally meets the public needs and is not an acceptable long-term solution. In addition, the undeveloped appearance of the area invites illegal camping in the day-use area, abandoned campfires, littering and vandalism.

Resources

Years of heavy use at Upper Arm Recreation Site have resulted in continuing compaction and displacement of soil, shoreline erosion, and damage and loss of vegetation. Current condition of the riparian area does not meet the intent of the Northwest Forest Plan Aquatic Conservation Strategy Objectives.

Desired Condition

The following desired conditions for Detroit Lake are identified in the Willamette National Forest Land and Resource Management Plan, and were further detailed in the following plans: Detroit Lake Composite Area Management Guide and West Cascades National Scenic Byway Corridor Management Plan.

Recreation Needs

Desired conditions identified specific to Detroit Lake are:

- Additional day-use facilities are provided on the north side of Detroit Lake.

Desired conditions identified specific to the Upper Arm Recreation Site include:

- Day-use recreation opportunities are enhanced, and provide for meaningful recreation experiences at the site to meet public demand, needs and expectations.
- Additional day-use recreation amenities and opportunities for barrier-free recreation, picnicking, fishing, swimming, boat-in watercraft use, hiking, and wildlife and scenery viewing are provided.
- The site provides a safe, healthful, and aesthetic environment.
- Facilities cater to lake visitors and byway tourists, and support local tourism initiatives and strategies intended to diversify the local economy.
- Facilities are subordinate to the focal attraction and appear as natural, simple, and unobtrusive as possible to harmonize with the natural environment. Human activities are obvious.
- Site improvements meet universal accessibility standards for people with disabilities.
- Facilities and improvements are designed to complement existing use and area developments, and to expand the Forest's capacity to accommodate additional use.
- Facilities and improvements are consistent with resource protection needs.
- Opportunities for natural resource education are provided through on-site interpretation and information.

Social Setting

- Minimal social conflicts caused by congestion and conflicting uses.

Public Safety

- Roads and parking areas are sufficient to meet user demands, and needs for traffic control efficiency and safety.
- Safe ingress and egress is provided between Breitenbush Road and the site.
- Trails provide safe access to the lake.

Sanitation

- Sanitation facilities provide a healthy, clean and desirable environment.

Resources

- The Upper Arm recreation site accommodates year-round day-use without resource degradation.
- Soil conditions support a diverse range of native species that would naturally occur locally.
- Shoreline and slopes are stabilized to minimize erosion and sediment entering the reservoir. Access to the shore is limited to pedestrian travel on trails.
- Riparian reserve conditions meet Aquatic Conservation Strategy Objectives.

Proposed Action

This section describes the proposed action developed by the Detroit Ranger District Interdisciplinary Team to meet the purpose and need for action. A proposed action is not a decision. It is merely a starting point for generating alternatives, which also meet the need for action. Upon completion of initial public scoping, alternatives to the proposed action were developed and analyzed. The alternatives are described in Chapter 2 of the Environmental Assessment, and will be considered in the final decision after the 30-day public comment period ending July 24, 2002. A decision is expected on this proposal by August 2002.

The USDA Forest Service proposes to convert and reconstruct the Upper Arm Recreation Site to a formal day-use site with picnic, swimming, fishing, hiking, boat-in and interpretive facilities. The five existing campsites would be eliminated. The proposed developments and enhancements would accommodate increased capacity to meet current and projected demands. These improvements would help regulate use effectively, and reduce administrative costs. Construction could begin in the fall of 2002. Elements of the proposal include:

New Recreation Facilities

- A beach and swimming area with shoreline retaining wall and steps. This area would be subject to a boating enclosure under statewide administrative rules that would require the designated swimming area be physically delineated to keep boats out of the swimming area.
- A picnic area with about 30 picnic tables, a covered group picnic shelter and barbeque grills.
- A fishing platform.
- A boat-in moorage dock. No boat launching facilities would be provided.

- An interior trail system that provides access to facilities and along the shoreline. Trails would be surfaced with a fine crushed rock material and compacted to allow for wheelchair access.
- Two new double vault toilets that would be barrier-free and include both a men's and a women's family-unit. These units would be large enough for adults to assist young children, and would also provide enough room for changing clothing and swimwear.
- Facilities would be made accessible to persons with disabilities including trails, swimming area, fishing platform, toilets and some picnic sites.
- An information kiosk near the parking area and a wildlife interpretive area adjacent the wetland. An information and interpretive plan would be developed to include onsite information needs.

Access and Parking

- A parking area with about 45 parking spaces designed for safe use for passenger cars, light trucks, and a few RV's.
- A single entrance/exit from the Breitenbush Road to the day-use area that allows adequate sight distance in both directions along the Breitenbush Road.
- A paved interior access roads and parking areas. Various road-surfacing options including permeable materials would be evaluated, and may be used if economically and environmentally feasible.
- A gated entry to secure area when closed.
- Clearing of trees to allow for construction of the new parking area, access roads, and larger structures. Maintain a forested setting throughout the picnic area and along paths/trails.

Actions to Protect and Enhance Resources

- Design site, roads and trails to meet Federal General Water Quality Best Management Practices (Implement BMP's: REC - 3, 4 and 10; W - 1,8, and 9; and VW-3 described in Appendix B).
- Establish travel routes and harden use areas surfaces to manage use patterns on the site. Plant vegetation to discourage indiscriminate foot travel. Most development would be limited to flatter areas to reduce the risk of off-site erosion and affecting water quality. Recreation use on steeper slopes would be discouraged except on properly designed trails.
- Design vehicle and pedestrian travel routes to reduce amount of compaction on the site.
- Restore and stabilize soils by cultivating, planting, providing drainage control and applying surface materials on roads and trails.
- Place drainage structures so that runoff is spread over the landscape and allows water to infiltrate through the soil. No point source discharge or runoff is allowed under the Three Basin Rule for the North Santiam; therefore, water runoff cannot be collected from road and parking surfaces and discharged directly into a stream channel.
- Subsoil impacted areas such as old campsites, and obliterate user-created trails and old roads.
- Plant landscape with native vegetation.
- Stabilize drawdown areas along shoreline with native vegetation and rock.
- Remove noxious weeds and replace with native vegetation.
- Preserve a small wetland area for wildlife interpretation.

Public Scoping Process and Issues Considered

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

Public Involvement

Public involvement in the planning process for the Upper Arm Day Use Development and Site Enhancement was accomplished through mailings. The project appeared in the July and October 2001, and January 2002 editions of the Willamette National Forest planning newsletter, *FOREST FOCUS*. This newsletter is sent quarterly to about 250 addressees. In addition, a copy of the proposal was sent to a mailing list of over 137 individuals, organizations, and agencies, who have an interest in the Detroit Lake area. Forest Service specialists were contacted to provide agency concerns and potential issues with the proposed action. A complete list of comments received and how issues were tracked through the analysis is located in Appendix A.

Information about the Upper Arm Day Use Development and Site Enhancement project proposal has been available on the Willamette National Forest web page at www.fs.fed.us/r6/willamette/mgmt/nepa/de.htm. This web page contained a copy of the scoping notice cover letter, project proposal, and comment form.

Issues

The proposed action, developed to meet the need for action, may cause effects which conflict with various public uses or other resources managed by the Forest Service. These conflicts, called issues, are typically found during the initial public scoping period. Issues were used to 1) generate alternatives to the proposed action; 2) generate mitigation that are listed in Chapter 2; and 3) help focus the effects analysis of implementing any of the alternatives considered, which are analyzed in Chapter 3.

Significant Issues

The following issues were deemed significant by the Responsible Official and used to develop the alternatives presented in Chapter 2:

Issue Statement 1: The proposal would change the present use from camping and day-use to day-use only, and would reduce the number of developed campsites available at the lake that are already in short supply.

Discussion of Public Comments: An individual stated they did not want the recreational opportunities at Upper Arm consisting of both camping and day-use to change to day-use only since there is a need for more campsites. While only one person raised this issue, it is believed that others have the same issue. They would like to see campsites developed for year-round camping opportunities in addition to day-use facilities. It was also mentioned that day-use typically occurs during good warmer weather and when the lake is at full pool. Subsequently, use of the site would be limited during the off-season. If campsites are provided, fall and winter recreationists could use the site during the off-season when lake levels are low. This issue is addressed in Alternative 3.

Units of Measure: Number of campsites available at Detroit Lake; length of season campsites are open; and level of use by type in the off-season

Issue Statement 2: Some individuals are concerned that providing boat-in moorage docks would encourage more motorized boats to Upper Arm and conflict with other recreational activities such as swimming, picnicking, walking and fishing, causing a safety hazard or increasing noise disturbance.

Discussion of Public Comments: Some individuals mentioned that the Breitenbush Arm has heavy boat use in a relatively confined and narrow area, and they have observed speeding in this no-wake zone. Individuals are concerned that boaters would be using the same area as other shoreline users, creating noise and boat wakes, causing conflict with swimming, fishing, walking and picnicking activities, and increasing potential for injury. Upper Arm was compared to other day-use areas around the lake, where conflicts between boaters and shoreline users were noted. This issue is addressed in Alternative 4.

Units of Measure: Types of conflicting shoreline activities in close proximity of one another; potential for safety hazard caused by boating traffic to the site; and frequency and level of noise created by boat traffic to the site.

Issue Statement 3: Several individuals commented on design elements of the proposal and gave support for specific elements or provided alternative suggestions for placement of sanitation facilities, picnic areas, fishing platforms, parking and roads to make the area more user-friendly and desirable.

Discussion of Public Comments: The following improvements were all viewed as desirable for this site: providing sanitation facilities, fishing platforms, a swimming area, picnic sites, wetland education/interpretation, barrier-free access, and restoring riparian conditions. Individuals gave specific suggestions for the following facility design elements to improve the recreation setting for enjoyment of the site:

- Place restrooms near entrance so they are clearly visible from vehicles.
- Need more toilets for women than men.
- Rearrange parking and picnic area so that vehicles do not surround the picnic area by placing interior roads parallel to Breitenbush Road, and park cars along downhill side of this road.
- Separate fishing from other shoreline activities by creating multiple fishing platforms and rock surface areas to disperse anglers.

This issue is addressed in Alternative 5.

Unit of Measure: Design element to enhance the site is implemented

Significant Issues Tracked Through the Analysis

These issues were identified by the Responsible Official as significant, but were not used to develop alternatives. These issues will be tracked through the analysis to describe the environmental effects; or used to develop mitigation measures.

Issue Statement 4: Some members of the public are concerned that the proposal may have detrimental effects on the riparian resources, and question whether the proposal will cause use at the site to exceed its environmental carrying capacity, resulting in further degradation of the riparian resources.

Discussion of Public Comments: Some individuals stated they would like to see developments placed in a manner to protect existing wetlands and restore site conditions. This includes minimizing the amount of new development, and locating facilities to avoid wetlands, which would also direct where and how much visitor access is allowed. A concern was raised about creating impervious surfaces near the lake for parking, and the need to reduce run-off by minimizing the amount of area devoted to roads and parking.

Unit of Measure: Level of impact to riparian resource values; and site capacity.

Issue Statement 5: Some individuals believe an increase in law enforcement patrols would be required as a result of designating the area day-use and providing new developments that would attract additional users.

Discussion of Public Comments: Development of facilities would encourage more use including boat traffic, and would require more patrols due to potential increase in conflict and injury. People would like to see the area adequately patrolled with no decrease in patrols elsewhere around the lake. An individual stated that vandalism is a problem when no one is present, and thereby extending use and allowing camping would help reduce vandalism.

Unit of Measure: Level of law enforcement patrols needed at the site

Issue Statement 6: Some members of the public are concerned about investing scarce dollars into facilities that will be used only for a few months each year and may result in higher administrative, operation and maintenance costs.

Discussion of Public Comments: There is concern about the amount of investment made on certain types of facilities (e.g. boat docks) considering the use season is dependent on water level of the lake. Day-use facilities would primarily be used from May through September when the lake is full. It was felt that it doesn't seem cost effective to spend so much money for a limited season and use. Some individuals believe increased law enforcement would be needed as a result of day use developments increasing cost of patrols.

Unit of Measure: Level of cost of operation, maintenance and administration of the site

Responsible Official and Decision to Be Made

The District Ranger of the Detroit Ranger District on the Willamette National Forest will be the responsible official and will make the decision following preparation of an environmental assessment by the USDA Forest Service for the proposal. The decision to be made is whether or not to:

- Convert the Upper Arm Recreation Site into a day-use area, and
- To construct new recreation day-use facilities and restore environmental conditions at this site.

CHAPTER 2 – ALTERNATIVE DESCRIPTION

The agency is directed to include in this chapter (1) all reasonable alternatives, and for those eliminated from detailed study, a brief discussion of the reasons for their having been eliminated, (2) a substantial discussion of the alternatives considered in detail, including the proposed action, (3) a description of the no action, and (4) appropriate mitigation measures not already included in the proposed action or alternatives (Table 2.1). Based on the information and analysis presented in the Environmental Consequences section, this chapter also presents the environmental impacts of the proposal and the alternatives in comparative form to provide a clear basis for choice among the options by the decision maker and the public. A comparison of the effects on issues by Alternatives is presented in Table 2.2 at the end of this chapter.

The Alternatives

The significant issues identified in Chapter 1 were developed into alternatives to the proposed action and are described in Alternatives 3 through 5 below.

The conceptual designs for each alternative display approximate location of facilities. Following a decision, a final design will be prepared that shows specific project details for the selected action including location of facilities and construction details. Although location of facilities may vary slightly from the conceptual design, the types of facilities would not change.

Alternative 1 – No Action: Maintain Existing Informal Day-Use Area and Five Designated Campsites *See Figure 2.1*

The No Action alternative proposes no change to the management of Upper Arm Campground and Day-Use Area. The site would continue to function as a five-unit campground containing basic facilities, fire ring and picnic tables, on the upper bench. The lower bench and shoreline would continue to be a designated day-use area with a few scattered picnic tables and garbage cans. The campground has a single substandard vault toilet, and portable toilets would continue to be used to meet sanitation needs during the summer when use is high.

Upper Arm Alternatives Conceptual Drawings

Figure 2.1 Alternative 1 – No Action

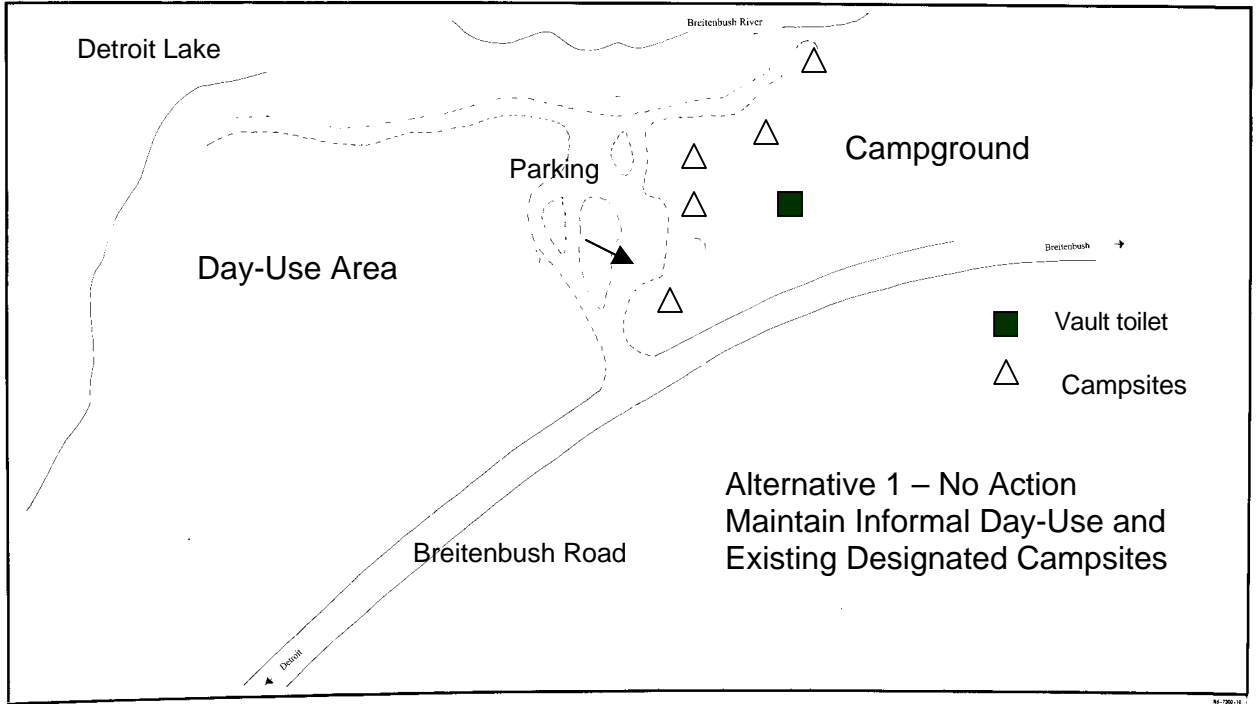
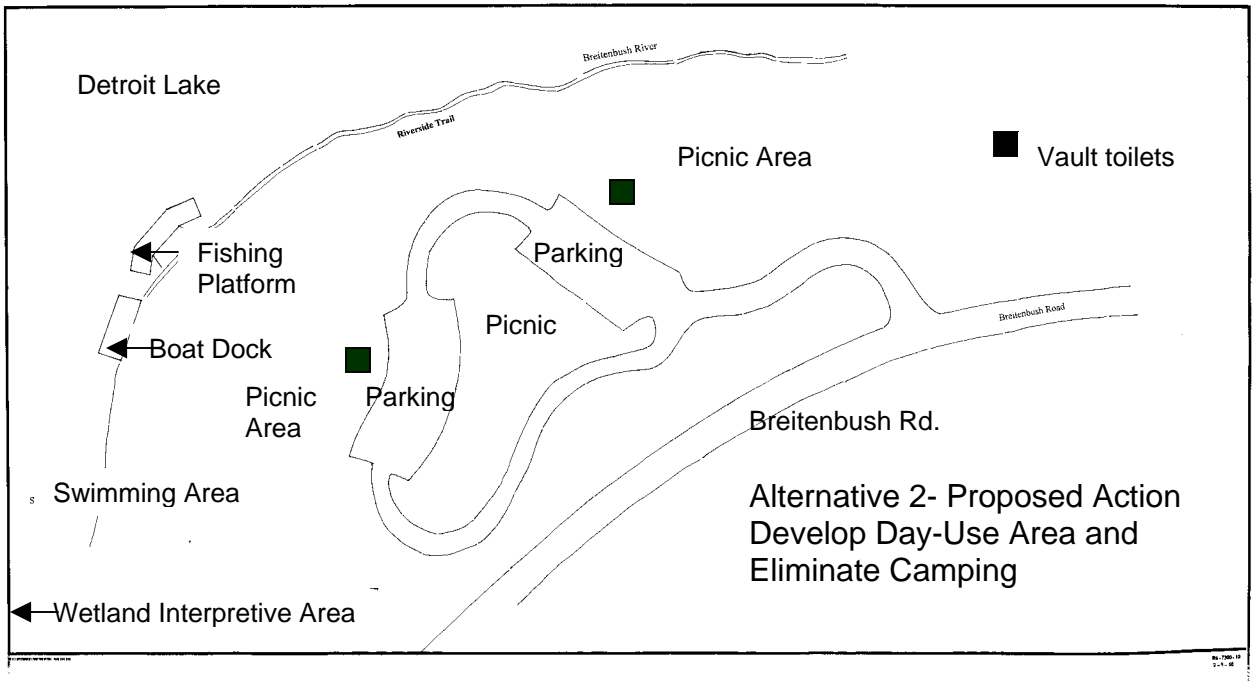


Figure 2.2 Alternative 2 – Proposed Action



Alternative 2 – The Proposed Action: Develop Day-Use Area and Eliminate Camping *See Figure 2.2*

This alternative would convert and reconstruct the existing site to a formal day-use site with picnic, swimming, fishing, hiking, boat-in and interpretive facilities. The five existing campsites would be eliminated. The proposed developments and enhancements would accommodate increased capacity to meet current and projected demands. Construction could begin in the fall of 2002. Elements of the proposal include:

New Recreation Facilities

- A beach and swimming area with shoreline retaining wall and steps. This area would be subject to a boating enclosure under statewide administrative rules that would require the designated swimming area be physically delineated to keep boats out of the swimming area.
- A picnic area with about 30 picnic tables, a covered group picnic shelter and barbeque grills.
- A fishing platform.
- A boat-in moorage dock. No boat launching facilities would be provided. Boat mooring along the general shoreline would be monitored and if conflicts or resource issues arise, it would be dealt with administratively by closing boat access along the shoreline.
- An interior trail system that provides access to facilities and along the shoreline. Trails would be surfaced with a fine crushed rock material and compacted to allow for wheelchair access.
- Two new double vault toilets that would be barrier-free and include both a men's and a women's family-unit. These units would be large enough for adults to assist young children, and would also provide enough room for changing clothing and swimwear.
- Facilities would be made accessible to persons with disabilities including trails, swimming area, fishing platform, toilets and some picnic sites.
- An information kiosk near the parking area and a wildlife interpretive area adjacent the wetland. An information and interpretive plan would be developed to include onsite information needs.

Access and Parking

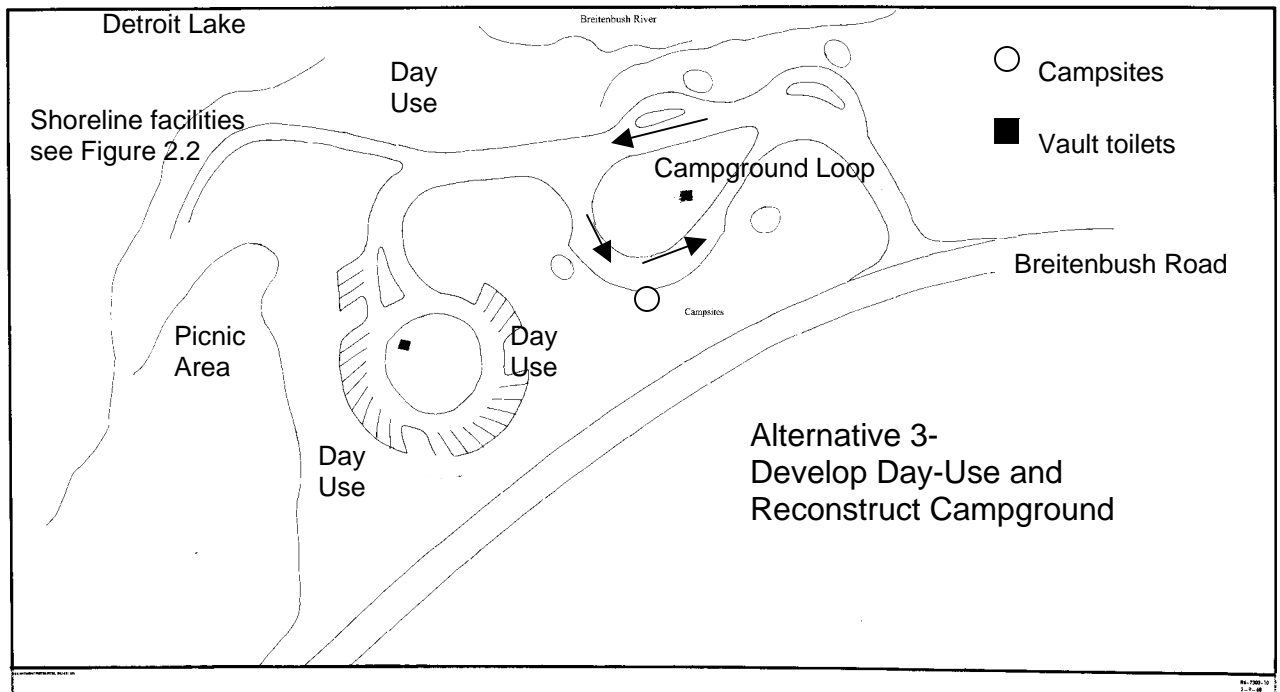
- A parking area with about 45 parking spaces designed for safe use for passenger cars, light trucks, and a few RV's.
- A single entrance/exit from the Breitenbush Road to the day-use area that allows adequate sight distance in both directions along the Breitenbush Road.
- A paved interior access roads and parking areas. Various road-surfacing options including permeable materials would be evaluated, and may be used if economically and environmentally feasible.
- A gated entry to secure area when closed.
- Clearing of trees to allow for construction of the new parking area, access roads, and larger structures. Maintain a forested setting throughout the picnic area and along paths/trails.

Actions to Protect and Enhance Resources

- Design site, roads and trails to meet Federal General Water Quality Best Management Practices (Implement BMP's: REC - 3, 4 and 10; W - 1,8, and 9; and VW-3 described in Appendix B).
- Establish travel routes and harden use areas surfaces to manage use patterns on the site. Plant vegetation to discourage indiscriminate foot travel. Most development would be limited to flatter areas to reduce the risk of off-site erosion and affecting water quality. Recreation use on steeper slopes would be discouraged except on properly designed trails.
- Design vehicle and pedestrian travel routes to reduce amount of compaction on the site.
- Restore and stabilize soils by cultivating, planting, providing drainage control and applying surface materials on roads and trails.
- Place drainage structures so that runoff is spread over the landscape and allows water to infiltrate through the soil. No point source discharge or runoff is allowed under the Three Basin Rule for the North Santiam; therefore, water runoff cannot be collected from road and parking surfaces and discharged directly into a stream channel.
- Subsoil impacted areas such as old campsites, and obliterate user-created trails and old roads.
- Plant landscape with native vegetation.
- Stabilize drawdown areas along shoreline with native vegetation and rock.
- Remove noxious weeds and replace with native vegetation.
- Preserve a small wetland area for wildlife interpretation.

Mitigations listed in Table 2.1 on page 22 would apply.

Figure 2.3 Alternative 3



Alternative 3 – Develop Day-Use Area and Reconstruct Campground *See Figure 2.3*

Alternative 3 modifies the proposed action to specifically address the issue to not convert the site to day-use only, and improve facilities to accommodate both day and overnight use. This alternative would provide:

- 5 developed campsites to the east of the site on the upper bench, and a day-use area with parking for about 25 vehicles on the lower bench.
- Day-use facilities including boat-in moorage docks, fishing pier, swimming beach and interpretive area along the shoreline as described in Alternative 2 would be maintained in this alternative.
- Barrier-free trails would be developed to access facilities and shoreline.
- Family-unit vault toilets would be constructed within both day-use and camping areas.

Mitigations listed in Table 2. 1 on page 22 would apply.

Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks *See Figure 2.4*

Alternative 4 modifies the proposed action to specifically address the issue that providing boat docks would encourage more motorized boat use to Upper Arm, potentially conflicting with other recreational activities such as swimming and fishing, creating safety hazards and increasing noise disturbance.

- This alternative includes the same improvements identified in Alternative 2, except boat-in mooring docks would be eliminated.
- Boats would not be allowed to moor along the general shoreline at the site.

Mitigations listed in Table 2. 1 on page 22 would apply.

Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action
See Figure 2.5

Alternative 5 modifies the proposed action to specifically address design changes suggested by the public. This alternative includes the same improvements identified in Alternative 2, except:

- **Toilets:** A set of restrooms would be located visible from the entrance and parking area. All restrooms would be placed in a manner to facilitate the needs of the users such as proximity to use areas, and protect resources. A sufficient number of toilets would be provided to the public. Vault toilets would meet American with Disabilities Act requirements and could include unisex family-units. These units are large enough for adults to assist young children, and would also provide enough room for changing clothing and swimwear.
- **Picnic area and parking:** The picnic area would be located adjacent the lakeside with vehicle parking next to Breitenbush Road. This would separate the day-use area from vehicular traffic, and minimize the amount of area devoted to parking and roads. Parking area would accommodate approximately 35 vehicles.
- **Fishing platform:** The proposed fishing platform would be relocated. Several smaller fishing platforms, and rocked surface areas would be constructed upstream from the proposed fishing platform. Constructing multiple platforms upstream would provide fishing opportunities away from boating dock activity, disperse anglers along the shoreline to avoid crowding, and provide facilities where fishing is already occurring. If no boat docks were provided, a smaller platform could remain at the same location.

Mitigations listed in Table 2.1 on page 22 would apply.

Upper Arm Alternatives Conceptual Drawings

Figure 2.4 Alternative 4

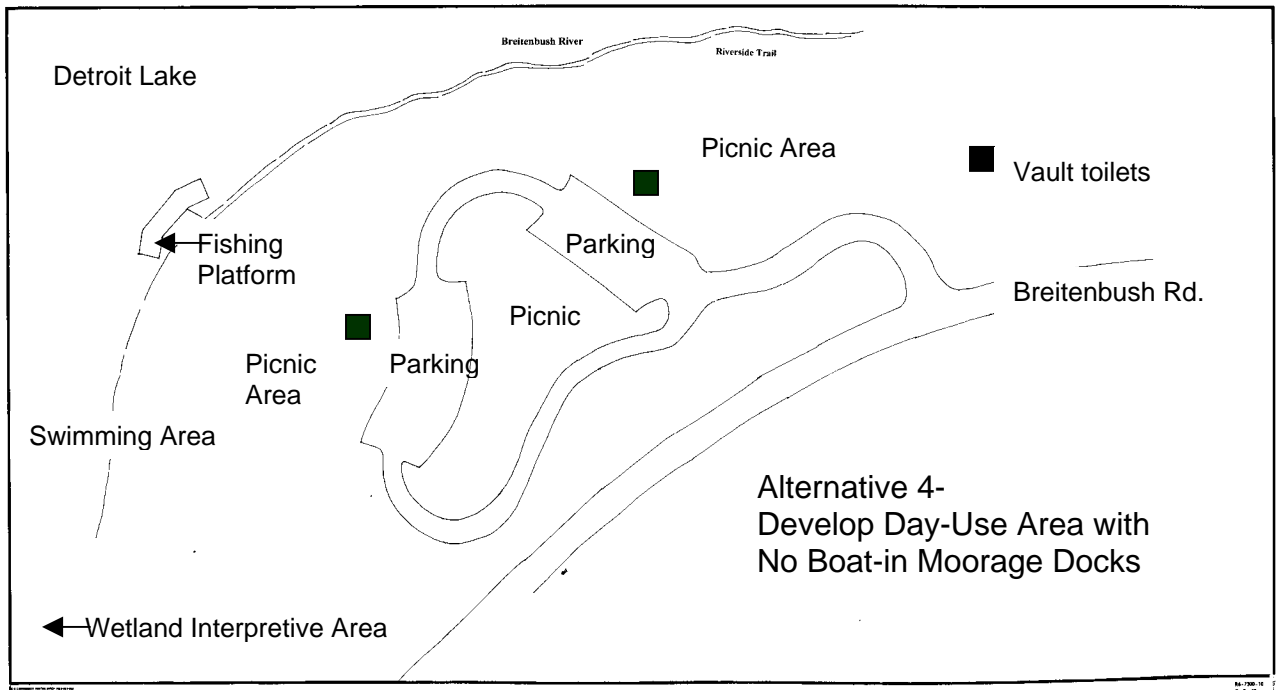
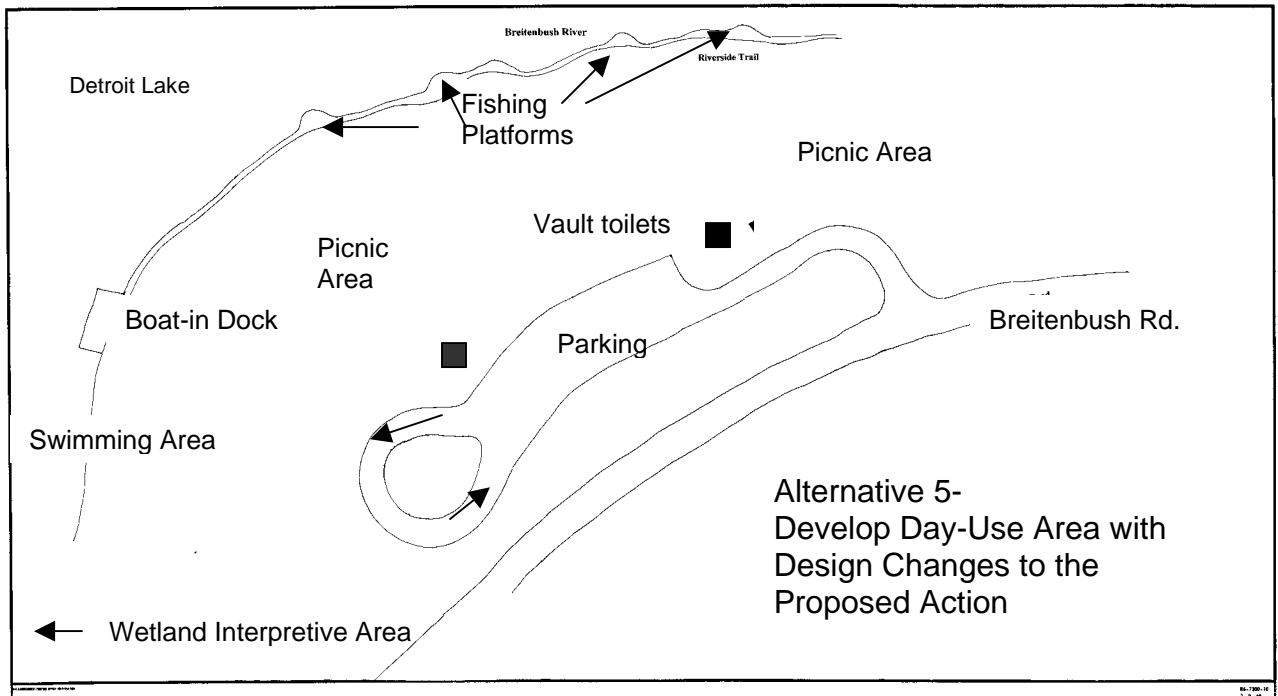


Figure 2.5 Alternative 5



Alternatives Considered but Eliminated from Detailed Study

Relocate Proposed Boat-In Mooring Docks

No alternative was developed to relocate boat-in moorage docks to the east of the proposed location away from swimming area and fishing platform. The only other option considered is to not provide docks as described in Alternative 4. The lake channel is too narrow and contains steep grades, so relocating docks upstream from the proposed project location is not feasible. The channel does not provide adequate space for docks and area for boats to maneuver. The steep bank does not provide a level place to store docks when the water level drops, and is within the flood channel where docks could be washed downstream during a winter storm.

Designate a 'No Motorboat Zone' Around Upper Arm

There was no alternative developed to designate a 'no motorboat zone' around Upper Arm. This proposal is outside the scope of the project. The Oregon State Marine Board (OSMB) is the responsible agency for regulating recreational boating on Detroit Lake. The OSMB has authority to adopt boating regulations and has specific requirements and procedures including a process that solicits and considers public comment. In consultation with the OSMB about the proposed action, the Marine Board stated they do not plan to designate a no motorboat zone within the Breitenbush arm. The Breitenbush arm is a '5-mph no-wake zone,' and OSMB does not report a problem with excessive boat speeds, or foresee conflicts with other recreational activities if boat-in moorage docks were provided.

Table 2.1 - Mitigations Common to Action Alternatives

The following mitigation measures address Forest Plan Standards and Guidelines as well as adverse effects on resources identified in the issue statements in Chapter 1.

Resource	Objective	How
Wildlife	<ul style="list-style-type: none"> Eliminate disturbance to peregrine falcon during nesting season. 	<ul style="list-style-type: none"> Restrict construction activities from January 15 to July 31
	<ul style="list-style-type: none"> Increase prey base for peregrine falcon 	<ul style="list-style-type: none"> Plant native fruit bearing shrubs and trees.
Noxious Weeds	<ul style="list-style-type: none"> Prevent the spread of noxious weeds on disturbed soils 	<ul style="list-style-type: none"> Re-vegetate all disturbed areas that are not a part of the permanent project design at the first appropriate opportunity following project work with competitive native seeding and plantings. Minimize all non-essential soil disturbance. Use weed-free rock sources for any rock or gravel used for landscaping, roads, and pathways. Use only certified weed-free seed and straw for temporary erosion control or re-vegetation purposes. All project construction equipment should be pressure washed prior to working in the project area. Prior to construction operations, locate and control noxious weed occurrences in the planning area to avoid the spread of noxious weed seeds.
	<ul style="list-style-type: none"> Ensure successful mitigation during project activities 	<ul style="list-style-type: none"> Monitor and treat infestations following construction activities.

Table 2.2 - Comparison of Effects on Issues by Alternatives

The table provides a comparative analysis of effects, which are described in more detail in Chapter 3. The No Action Alternative describes the current condition and provides a baseline to evaluate the Action Alternatives.

Issue Statement	Alternative 1 No Action (Baseline)	Alternative 2 Proposed Action Develop Day-Use Only	Alternative 3 Maintain Camping	Alternative 4 Eliminate Boat Docks	Alterative 5 Design Changes
Issue 1 Unit of Measure: Number of campsites provided at Detroit Lake					
Reduction in number of campsites available at Detroit Lake	5 sites at Upper Arm out of nearly 1000 at lake	Reduces 5 campsites available at lake; campers displaced to nearby campsites	5 sites at Upper Arm out of nearly 1000 at lake	Reduces 5 campsites available at lake; campers displaced to nearby campsites	Reduces 5 campsites available at lake; campers displaced to nearby campsites
Issue 1 Unit of Measure: Length of season campsites are open and level of use by type in the off-season					
Use of site limited in the off-season if site is designated day-use only	Open year-round	N/A - Few campers displaced to nearby year-round campgrounds/ dispersed sites	Open year-round	N/A - Few campers displaced to nearby year-round campgrounds/ dispersed sites	N/A - Few campers displaced to nearby year-round campgrounds/ dispersed sites
	Little to no camping after Labor Day; mostly day-use but low	No camping provided Day-use is low in off-season	Little to no camping after Labor Day; mostly day-use but low	No camping provided Day-use is low in off-season	No camping provided Day-use is low in off-season
Issue 2 Unit of Measure: Types of conflicting shoreline activities in close proximity of one another					
Boat docks encourages more motorized boats and increase user conflicts	Swimming/Boating Fishing/Boating	Swimming/Boating Fishing/Boating	Swimming/Boating Fishing/Boating	None	Swimming/Boating
Issue 2 Unit of Measure: Potential for safety hazard caused by boating traffic to the site					
Motorized boats cause a safety hazard to swimmers	High	Some around docks, none in swim area	Some around docks, none in swim area	None	Some around docks, none in swim area
Issue 2 Unit of Measure: Frequency (F) and level (L) of noise created by boat traffic to the site					
More boat use would increase noise disturbance	(F) Baseline (L) Low	(F) Increase (L) Low	(F) Increase (L) Low	(F) Same at Alt. 1 (L) Low	(F) Increase (L) Low

Table 2.2 - Comparison of Effects on Issues by Alternatives (continued)

Issue Statement	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Maintain Camping	Alternative 4 Eliminate Boat Docks	Alternative 5 Design Changes
Issue 3 Unit of Measure: Is design element to enhance the site implemented?					
Certain design changes would improve the recreation setting and enhance enjoyment of the site.	Does not meet concerns of the public for new facilities.	No – 2 units - men/women toilets	Potentially – 2 units or more - men/women toilets	No – 2 units – men/women toilets	Yes – 2 units or more - unisex toilets
		Potentially - Restrooms could be visible near entrance	No – Restrooms not visible near entrance	Potentially - Restrooms could be visible near entrance	Yes – Restrooms visible near entrance
		No - Parking area and roads conflict with picnic area	No - Parking area and roads conflict w/picnic area/ campground	No - Parking area and roads conflict with picnic area	Yes - Parking, roads and picnic areas do not conflict
		No - Single fishing platform crowds anglers; potential conflicts w/boaters	No - Single fishing platform crowds anglers; potential conflicts w/boaters	No - Single fishing platform crowds anglers	Yes - Multiple fishing platforms disperses anglers
Issue 4 Unit of Measure: Level of impact to riparian resource values					
Riparian resource degradation	High	Low	Moderate	Low	Low
Issue 4 Unit of Measure: Site Capacity					
Number of Vehicles	45+ vehicles (uncontrolled)	About 45 vehicles	About 35 vehicles	About 45 vehicles	About 35 vehicles
Number of Boats	5+ Uncontrolled	About 2 to 4 boats	2 to 4 boats	No boats	2 to 4 boats
Issue 5 Unit of Measure: Level of law enforcement patrols needed at the site					
Designating the area day-use and providing new developments increases need for law enforcement	Highest	Low	Medium	Lowest	Low
Issue 6 Unit of Measure: Level of cost of operation (O), maintenance (M), and administration of the site					
Feasibility to operate and maintain	High – no revenue generated to offset O&M	High – user fees could offset increased cost of O&M	High – user fees could offset some of increased cost of O&M	High – user fees could offset increased cost of O&M. No boat dock O&M	High – user fees could offset increased cost of O&M
Feasibility to Administer	Administration & law enforcement cost highest.	Administration & law enforcement cost low	Administration & law enforcement cost moderate	Administration & law enforcement cost lowest	Administration & law enforcement cost low

CHAPTER 3 – ENVIRONMENTAL CONSEQUENCES

The chapter will succinctly describe the environment of the areas to be affected or created by the alternatives under consideration. The descriptions are no longer than is necessary to understand the direct, indirect and cumulative effects of the alternatives. The environmental consequences form the scientific and analytical basis for the comparison of the alternatives. The discussion includes environmental impacts of the alternatives including the proposed action, any adverse environmental effects that cannot be avoided, and the relationship between short term uses of the human environment and the maintenance and enhancement of long term productivity, and any irreversible or irretrievable commitment of resources.

Environmental Consequences Related to the Key Issues

Issue Statement 1: The proposal would change the present use from camping and day-use to day-use only, and would reduce the number of developed campsites available at the lake that are already in short supply.

Discussion of Public Comments: An individual stated they did not want the recreational opportunities at Upper Arm consisting of both camping and day-use to change to day-use only since there is a need for more campsites. While only one person raised this issue, it is believed that others have the same issue. They would like to see campsites developed for year-round camping opportunities in addition to day-use facilities. It was also mentioned that day-use typically occurs during good warmer weather and when the lake is at full pool. Subsequently, use of the site would be limited during the off-season. If campsites are provided, fall and winter recreationists could use the site during the off-season when lake levels are low.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

The site would continue to function as a five-unit campground and undeveloped day-use area that is open all year. Overall, Upper Arm Campground provides for a very limited number of campsites available at Detroit Lake. There are just over 500 developed campsites and about another 500 dispersed (less-developed or undeveloped) campsites around the lake. The number of campsites available at the lake during the summer would continue to fall short of the demand, and demand would continue to increase as the population grows. Little to no camping occurs at Upper Arm Campground during the off-season, and most use would primarily be by day visitors using the site as a picnic area, or access to the river.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

This alternative would eliminate camping and reduce the number of non-fee campsites available at Detroit Lake by 5 units, and likely displace campers to non-fee dispersed campsites around the lake or along the Breitenbush River. The Upper Arm campground is generally full Friday through Sunday from June through Labor Day; therefore, about 30 campers (about 6 campers per campsite) would be displaced each day to other sites during peak use periods. Use within Forest Service campgrounds around the lake and

along the Breitenbush, including Upper Arm, drastically drops after the summer season, and are either closed or open with limited services. Year round camping at Upper Arm would not be available; however, this would not displace many off-season campers and there are other non-fee sites available for those individuals who might be displaced. After hunting season, very few campers currently use campgrounds along the Breitenbush including Upper Arm. Camping by hunters in the fall is commonly found further up the Breitenbush drainage closer to big game activity. The majority of winter recreationists on the Detroit District are only visiting the Forest for the day while some are staying in 'summer homes' or snow shelters. Four nearby campgrounds would continue to have campsites available to off-season recreationists, free-of-charge with no garbage services or potable water provided.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

The effects would be similar to those described in Alternative 1 and maintain the same number of campsites at the lake. The number of campsites provided is constrained by the size and topography of the site, and design standards and requirements. The space requirements reasonable for campsites would only allow about 5 units at this site. Facilities would be upgraded to meet accessibility standards to increase opportunities for persons with disabilities, and would improve the overall appearance and condition of campground facilities.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

The effects would be similar to those described in Alternative 2.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

The effects would be similar to those described in Alternative 2.

Issue Statement 2: Some individuals are concerned that providing boat-in moorage docks would encourage more motorized boats to Upper Arm and conflict with other recreational activities such as swimming, picnicking, walking and fishing, causing a safety hazard or increasing noise disturbance.

Discussion of Public Comments: Some individuals mentioned that the Breitenbush Arm has heavy boat use in a relatively confined and narrow area, and they have observed speeding in this no-wake zone. Individuals are concerned that boaters would be using the same area as other shoreline users, creating noise and boat wakes, causing conflict with swimming, fishing, walking and picnicking activities, and increasing potential for injury. Upper Arm was compared to other day-use areas around the lake, where conflicts between boaters and shoreline users were noted.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

The area does not have any shoreline facilities. Currently, either none to a couple of boats are observed either anchored near or tied up to the shoreline at the site mostly on summer weekends. Boaters are primarily at the site for day-use activities and very few Upper Arm campers bring boats. Swimming, fishing, and boating activities would continue to indiscriminately occur along the shoreline causing potential conflicts and safety concerns between boaters and non-boaters. The Forest Service hasn't documented any cases of conflicts occurring between users activities on the shoreline. However, there have been noise disturbance complaints regarding use at a dispersed site across the river that is accessed by boat only. This alternative would not likely encourage more boat use to the Breitenbush Arm, however, overall boat use is anticipated to increase as a result of population growth and demand for lake recreation.

Water level constraints, existing boat speed limits, and size of the channel within the Breitenbush Arm help moderate the types and number of boats in the area. The 5-mph speed limit is imposed by State law not only keeps the boats from creating wakes, but also keeps noise to a low level. Frequency of boat noise may increase in the future due to growing use and may disturb visitors seeking a more quiet setting. Currently, the Arm provides a relatively quiet setting compared to other parts of the lake due to the distance from the main body of the lake and highway traffic, and is away from the larger, more popular facilities.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

Boat-in moorage docks would be provided and would allow a limited number of boats – about two to four - to moor at the site. Under this alternative, the few number of boats that currently moor at the site would be managed by providing a dock that would keep them off of the shoreline. Recreational use of the site is limited by available space for boat mooring and vehicle parking; so an increase in boats moored at the site is not anticipated to grow beyond this fixed capacity.

This alternative maximizes the range of day-use recreational opportunities provided at Upper Arm. The shoreline is the primary attraction for visitors and numerous facilities would occupy much of the premium accessible water frontage. The shoreline and narrow, confined channel provides limited space for facilities that require a substantial area to meet design requirements. This would crowd a number of conflicting types of recreational activities - swimming, boating and fishing - in a relatively small area, which could affect users experience and enjoyment of the area for a quiet and relaxed setting away from other activities. Based on public comments, many visitors to Upper Arm seek areas at the lake away from heavy boat traffic, and desire a more tranquil setting. Boating activity may discourage chances for catching a fish.

The boat docks would not significantly contribute to the increased use of the Breitenbush Arm, but more boating activity within the Upper Arm vicinity would be encouraged. In the first couple of years, the new facility may attract curious visitors and the novelty would likely level off after this time. Providing boat-in moorage docks may encourage more boat use at Upper Arm, and serve beyond their intended function

increasing the number of boats or increase frequency of trips using the dock in a day. The boat dock might serve as a loading dock for use by dispersed campers on the opposite side of Breitenbush Arm or adjacent marina customers. The dock would also serve as convenient access to restrooms by boaters in the Breitenbush Arm. The 5-mph no-wake zone keeps noise to a low level. Frequency of boat noise may increase above the current level as a result of boat dock use. Boat noise may not provide a quiet setting some visitor's desire.

The swimming area would be subject to a boating enclosure under statewide administrative rules. It requires that the swimming area be physically delineated to keep boats out of the swimming area, and should not affect the safety of swimmers. The docks would be an attractive platform for people to fish, dive and swim, and sunbathe on, so some safety concerns would likely result around the docks regardless of posting regulations prohibiting these activities. These activities interfere with boat docking and boaters would become annoyed.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

The effects would be similar to those described in Alternative 2.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

There would be some effect to boaters as a result of not providing moorage docks at Upper Arm. The number of boaters that would be displaced is relatively few. Since this alternative would discourage boat use along the shoreline, potential for user conflicts would likely be reduced, and would enhance recreational experiences of non-boating recreationists at Upper Arm.

The 5-mph no-wake zone keeps noise disturbance to a low level. Frequency of boat noise may increase as a result of growing use within the arm adjacent the site and may not provide a quiet setting.

Cumulative Effects

Some of the boaters would be displaced to other dispersed areas across from the sites that provide a similar setting to Upper Arm.

Oregon State Parks operates Mongold State Park, a day-use area with a boat launch, and is proposing to expand their day-use recreation capacity to accommodate boat-in access, additional picnicking and swimming, and reduce the existing conflicts between boating and other waterfront recreational activities. The State's proposed Master Plan includes two public beaches with construction of one new swim area that would be designated a no-boat zone. The existing beach and swim area would be enhanced for use primarily by the boating public and help fulfill this demand. A significant amount of boating activity occurs at this part of the lake, and would provide adequate space and a more convenient location for enhanced boater day-use opportunities. This would serve a large number of boaters since this is the location where most boat launching is taking place, and within vicinity of most boaters routes at the lake.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

The effects would be similar to those described in Alternative 2 except that a series of fishing platforms would be relocated upstream away from the boat-in moorage docks. As the channel narrows, fewer boats are found upstream; therefore, relocating fishing platforms would separate boating and fishing activities farther apart. This could improve fishing opportunities, and provide a more tranquil setting for visitors to enjoy.

Issue Statement 3– Several individuals commented on design elements of the proposal and gave support for specific elements or provided alternative suggestions for placement of sanitation facilities, picnic areas, fishing platforms, parking and roads to make the area more user-friendly and desirable.

Discussion of Public Comments: The following improvements were all viewed as desirable for this site: providing sanitation facilities, fishing platforms, a swimming area, picnic sites, wetland education/interpretation, barrier-free access, and restoring riparian conditions. Individuals gave specific suggestions for the following facility design elements to improve the recreation setting for enjoyment of the site:

- Place restrooms near entrance so they are clearly visible from vehicles.
- Need more toilets for women than men.
- Rearrange parking and picnic area so that vehicles do not surround the picnic area by placing interior roads parallel to Breitenbush Road, and park cars along downhill side of this road.
- Separate fishing from other shoreline activities by creating multiple fishing platforms and rock surface areas to disperse anglers.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

This alternative would not meet the concerns of the public for new facilities since no improvements would be made. No shoreline facilities or formalized picnic areas exist at the site and would not be developed under this alternative. One substandard vault toilet and three unisex portable restrooms are provided at the site, and are visibly located adjacent the parking lot. They minimally meet the public needs and are not an acceptable long-term solution. The road and parking area are located above the day-use area and does not interfere with day-use activities. Both campsites and parking are tightly compacted in a small area on the upper level of the site, and would continue to affect visitor experiences at these overnight sites as a result of crowding, noise and traffic.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

Two sets of men's and women's family-unit vault toilets would be provided and accommodate both men and women equally. Site-specific location was not addressed at this phase of the design, however, they would be placed in a manner to protect resources, and facilitate the needs of the users such as proximity to user areas and

barrier-free accessible recreational facilities. Restrooms could potentially be located near the entrance but would be clearly visible to the public from the parking area.

The parking area and road would surround part of the picnic area, which is located away from lake views and activities. Currently, the sites that are away from the shoreline get no to little use and sites closer to water are more popular. Traffic congestion near and around use areas could cause safety concerns, noise and may not provide a desirable setting for picnicking that may affect visitor enjoyment of the site.

A barrier-free fishing platform would be located next to the boat-in moorage dock, which could create conflict between boaters and anglers that are in close proximity of one another. It may affect anglers enjoyment of a tranquil setting and may discourage chances for catching a fish. The fishing platform could get very crowded on busy days; therefore, anglers would likely continue to use other popular dispersed fishing spots along the bank upstream from this platform.

This alternative maximizes the range of day-use recreational opportunities provided at Upper Arm. The shoreline is the primary attraction for visitors and numerous facilities such as a swim area, boat dock, fishing platform and nearby picnic sites would occupy premium accessible water frontage. The shoreline and narrow channel provides limited space for facilities that require a substantial area to meet design requirements. This would crowd a number of conflicting types of recreational activities - swimming, boating and fishing - in a relatively small area, which could affect users experience and enjoyment of the area. Facilities would be a dominant feature on the shoreline and would not be subordinate to this focal attraction, which may diminish the visual quality of a natural recreation setting and affect visitor experiences.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

Family-unit vault toilets would be constructed within both campground and day-use areas, and would accommodate both men and women equally. Since the campground would be located closest to the site entrance, the general day-use restrooms would not be located visible from the entrance. No additional visitor parking could be provided near the campground restrooms.

A different road and parking configuration is required to build both campground and day-use facilities to meet design standards, and is constrained by the size and topography of the site. Campsites require a larger area and setback from the lake than day-use facilities limiting campground development to the upper level of the site. The day-use area would be located adjacent the shoreline since day-use is focused on lake activities. Visitors must drive through the campground to access the day-use area. The number of vehicles accessing the day-use area would be high during the summer camping season. This would cause congestion and safety concerns as a result of high traffic flow through the campground, and would not likely provide a desirable setting for camping that could affect visitor enjoyment of the site. Some vehicle traffic would be expected in the evening even when the day-use area is closed. Commonly, day-user visitors may park in camping spurs, which would displace campers.

The effects of shoreline developments would be similar to those described in Alternative 2.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

The effects would be similar to those described in Alternative 2, except the shoreline would appear less developed as a result of not constructing boat-in moorage docks and would maintain a desirable natural recreation setting.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

One set of vault toilets would be placed more visible from the entrance and parking area so people entering the site would readily find them. This could cater to scenic byway travelers where no restroom facilities are available for many miles. Toilets may be unisex and would provide for more available toilets for use by women. Unisex toilets may not be a popular option with the public because of personal preference differences, and may result in user dissatisfaction.

The picnic area would be located adjacent the lakeside with vehicle parking on the opposite side next to Breitenbush Road. This would separate the day-use area from vehicular traffic, and would provide a desirable setting with picnicking closer to lake views and activities, and provide for visitor safety.

Relocating fishing platforms would separate boating and fishing activities farther apart, which could improve fishing opportunities and visitor experiences. Multiple smaller platforms that are dispersed along the shoreline would harmonize with the natural setting and be more subtle than one large pier. Anglers would disperse among several platforms, which would lessen crowding and could provide a more tranquil setting for visitors to enjoy.

Issue Statement 4– Some members of the public are concerned that the proposal may have detrimental effects on the riparian resources, and question whether the proposal will cause use at the site to exceed its environmental carrying capacity, resulting in further degradation of the water resources.

Discussion of Public Comments: Some individuals stated they would like to see developments placed in a manner to protect existing wetlands and restore site conditions. This includes minimizing the amount of new development, and locating facilities to avoid wetlands, which would also direct where and how much visitor access is allowed. A concern was raised about creating impervious surfaces near the lake for parking, and the need to reduce run-off by minimizing the amount of area devoted to roads and parking.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

The riparian characteristics of the area are being altered with the current uncontrolled use. Under the Northwest Forest Plan, these characteristics including the flora and fauna, woody component, and structural diversity of the soil and biota, are to be maintained or improved upon, not lost. The uncontrolled nature of use at the site and

level of impact on riparian resource values (e.g. soils, vegetation, diversity, down woody material, and hydrology) is considered high, and does not meet resource objectives.

Maintaining the current conditions of the site would continue to compact soil, damage vegetation and impact riparian resources. Currently soil compaction from uncontrolled foot travel and camping is affecting the ability of the soil to infiltrate water and support the vegetation found on the site. It is expected that at the current rate of use, that trees within the area would start to lose vigor and increase mortality as a result of this compaction. Compaction also reduces permeability of the site and permits water to flow over the surface. This concentration of water on the surface and movement across the surface causes the site to lose valuable nutrients and soil through erosion. Impacts caused by gathering firewood for campfires, and cutting and damaging live vegetation would continue to deplete the site of down wood and vegetation. Boats approaching the shoreline create wave action that causes bank erosion. Boats that are indiscriminately tied up along the shoreline increase impacts to the bank caused by people accessing the site.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

Implementing this alternative would reduce the current effects as described in Alternative 1 by regulating use. It would retain and improve riparian characteristics by reducing disturbance and compaction, and promoting native vegetation. Design measures would reduce the current effects of soil erosion and riparian resource damage by more controlled use of the site through placement of pathways, planting vegetation and hardening designated sites to manage use densities. Strategic placement of facilities and pathways would help deter users from indiscriminate travel, and reduce soil compaction from user-created trails. Some indiscriminate foot travel would still likely occur but would be significantly reduced. The condition and amount of vegetation is expected to improve with controlled use and reestablishment of native vegetation. Paving roads and surfacing trails would reduce soil erosion. The placing of retaining structures and planting of native vegetation would stabilize the shoreline, and reduce bank erosion. Although discouraged by development of shoreline facilities and placement of rock, some boaters would tie their boats along the shoreline that could cause damage to the bank created by people accessing the site. The site would be monitored and if impacts become unacceptable, boat tying would be prohibited. Improved sanitation would reduce the risk of health and water quality problems. The level of impact to riparian resource values would be low due to the design requirements that would manage use.

Design and construction practices would meet Federal General Water Quality Best Management Practice's (see Appendix B) and includes implementing an erosion control plan to control sediment on-site. It is anticipated that under these standards the extent of soil compaction would be controlled; sites would be hardened to retain existing vegetation; drainage patterns would be controlled; and the timing of project implementation would reduce any off-site erosion from construction activities. Adherence to planting and maintenance schedules would assist in reestablishing riparian vegetation and is expected to increase plant diversity.

Waves created by boat wakes causes bank erosion. Boat docks may increase boating activity within the Arm, and could cause increased bank erosion along the shorelines adjacent to the site.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

The design features and mitigation measures as described for Alternative 2 would also apply to Alternative 3. Therefore, the effects of Alternative 3 on riparian resources and water quality would be similar to those described for Alternative 2. This alternative would accommodate fewer visitors than Alternative 2, but additional impacts associated with camping may balance the affect of reduced number of people occupying the area. Camping would encourage gathering of down wood for campfires that is sparsely available on the site, and the cutting and damaging of vegetation.

Approximately 65% of the project site is in a riparian area. Alternative 3, when compared to Alternative 2, poses a higher risk of possible damage to riparian resources due to activities typically associated with camping, such as gathering of down wood for campfires and cutting of vegetation. The impacts on riparian resource values would be moderate, relative to Alternative 1 (high) and Alternative 2 (low). The flora and fauna of the reserve, the woody component of the site, and the structural diversity of the soil and biota would have a higher risk of impacts as a result of camping; however, the difference in the effects between Alternative 2 and Alternative 3 would be negligible.

Water quality would not be adversely impacted due to the implementation of Best Management Practices.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

This alternative reduces the risk of shoreline erosion adjacent the site since boating would not be encouraged by providing of docks. In addition, placing of retaining structures and planting of native vegetation would stabilize the shoreline, and reduce bank erosion. Prohibiting boat tie-ups along the shoreline would reduce damage to the bank caused by people accessing the site. Some of the boaters would be displaced to other areas across from Upper Arm, and damage to the steeper banks would occur caused by people accessing the shoreline.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

The effects would be similar to those described in Alternative 2. Less area would be impacted by parking and road development than Alternative 2. This would reduce number of visitors occupying the area, which could help protect watershed and riparian resources by reducing use intensity that causes vegetation damage and soil compaction. Centralizing the parking area would disperse picnic sites more, and could cause slightly more indiscriminate foot travel than Alternative 2. Multiple smaller platforms and hardened fishing sites would be dispersed along the shoreline, which would lessen impact caused by dispersed fishing along the bank.

Issue Statement 5– Some individuals believe an increase in law enforcement patrols would be required as a result of designating the area day-use and providing new developments that would attract additional users.

Discussion of Public Comments: Development of facilities would encourage more use including boat traffic, and would require more patrols due to potential increase in conflict and injury. People would like to see the area adequately patrolled with no decrease in patrols elsewhere around the lake. An individual stated that vandalism is a problem when no one is present, and thereby extending use and allowing camping would help reduce vandalism.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

The informal day-use setting with minimal facilities would continue to cause the need for more attention by law enforcement. Current law enforcement visits to the site on summer weekends average between 4 to 8 visits a day, with weekday visits averaging 2 to 4 a day. Limited parking controls create haphazard parking situations that would be difficult to manage, and hinder response by emergency vehicles. The undeveloped appearance of the area would continue to invite some illegal camping in the day-use area, abandoned campfires, improper human waste disposal and littering. Vandalism and deviant behaviors would still occur at this site as it has in the past even with the presence of other campers. Campers themselves have been the source of vandalism, and causing other inappropriate and deviant behaviors. Incidences related to alcohol and drug use, domestic disputes, loud noise and disturbances and disagreements between users (exacerbated by alcohol) do occur at this site, and are reported to Emergency 911 during late hours. Prior to 1995, the entire site was managed as a primitive campground and had serious law enforcement issues that required remedial action. Since converting the majority of this area to day-use only, these problems have declined substantially.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

Vandalism would continue to be a concern regardless if the site is day-use or not. It is anticipated that vandalism would be reduced with site improvements. Facilities would be permanently fixed and designed as 'vandal-proof' as possible. Based on social behavior literature and validated by observation, an organized, developed facility would have the appearance of being better 'cared for' than an informal site, and encourages more appropriate behaviors. A gate would be installed to allow the site to be closed. Some of the most destructive vandalism occurs when vandals have easy access to an area by vehicle including damage inflicted by use of their vehicles. Walking into a site is a higher risk to vandals for being caught and a gate would be a deterrent. Other management options such as operating the site by a concessionaire or with the help of a site-host could be considered and would provide consistent presence to deter vandalism. As with any recreation site, some vandalism could occur but incidences would likely be reduced through good design of developments and improvements, and effective administration. Some user conflicts could be anticipated as a result of providing boat docks. Overnight vehicle parking and use of the site may occur if boat docks are provided.

An organized and properly designed facility managed for one type of use is easier to regulate, and would likely reduce the need for law enforcement response. Overall, site development encourages more appropriate behaviors, and closing the area at dusk would help reduce the frequency of law enforcement visits. Law enforcement patrols could focus their efforts in other areas around the lake. The District has recently increased law enforcement personnel, and should improve overall response, safety and order around the lake. No decrease in patrols is expected elsewhere around the lake as a result of the project.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

The effects would be similar to those described Alternatives 2, however, the frequency of visits would decrease slightly from the current condition due to more organization at the site. When both day and overnight facilities are provided at the same small site, it would likely raise administrative problems requiring more law enforcement patrols. The area could not be closed when the campground is open, and may be subject to a higher risk of vandalism especially at night. Vehicle traffic would be expected in the evening. Some illegal overnight camping or evening use would likely occur in the day-use area. Illegal campfires could result along the shoreline caused by illegal camping or by campground occupants using the site at night as it does presently. The presence of campers may deter some vandalism but many incidences have occurred in the past when others are present. Extensive vandalism has occurred at local campgrounds during the fall and winter season when campgrounds are not gated and no campers are present. With the limited number of campsites available, it would not be feasible to provide a site host, which could help deter deviant behaviors. Fees would likely be charged for the campsites, which has helped to reduce the amount of inappropriate behaviors at other District campgrounds.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

The effects would be similar to those described in Alternative 2. The site would not have a boat-in moorage dock so one less facility subject to vandalism. There would be no boat dock related issues for law enforcement to respond to, and would likely reduce the frequency of site visits.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

The effects would be similar to those described in Alternative 2. The parking area would be more visible from Breitenbush Road, which could discourage theft and vandalism.

Issue Statement 6– Some members of the public are concerned about investing scarce dollars into facilities that will be used only for a few months each year and may result in higher administrative, operation and maintenance costs.

Discussion of Public Comments: There is concern about the amount of investment made on certain types of facilities (e.g. boat docks) considering the use season is dependent on water level of the lake. Day-use facilities would primarily be used from May through September when the lake is full. It was felt that it doesn't seem cost effective to spend so much money for a

limited season and use. Some individuals believe increased law enforcement would be needed as a result of day use developments increasing cost of patrols.

Effects of Alternative 1 – No Action: Maintain Informal Day-Use Area and Existing Designated Campsites

Maintaining the site in its current condition, which is insufficient to accommodate current use levels, would likely increase social conflicts, public health and safety concerns, and resource impacts. The current site lacks formal organization to regulate use effectively. It would require the need to frequently respond to law enforcement issues including parking issues, user conflicts, illegal campfires and camping, littering, deviant and other inappropriate behaviors. It would continue to be costly to manage a high use recreation site without improvements that encourages responsible use, protects the natural resources, and maintains a desirable recreational setting. No user fees are collected to offset the cost of maintaining existing facilities and services. Deferred maintenance costs would continue to increase for existing deteriorating facilities.

Effects of Alternative 2 – Proposed Action: Develop Day-Use Area and Eliminate Camping

This alternative improves site conditions and subsequently would encourage appropriate behaviors. Restoring resource conditions within Upper Arm, combined with new facilities, would provide for sustainable protection of the resources. A properly designed facility is more efficient to manage, and would reduce administrative costs. Improvements would help regulate use effectively and likely decrease the need for law enforcement response. Constructing new facilities would increase the cost of operation and maintenance of the site. The option to charge a user fee would be available and could help off-set the cost of operation and maintenance.

Eliminating camping at Upper Arm would not contribute to a loss of investment, but improving the site to enhance day-use facilities would be more cost effective and benefits sustainability of resources and communities. All developed sites at the lake receive their primary use during the summer with most campgrounds closed after Labor Day. Upper Arm could provide year-round day-use recreation and provide for a longer season than other more expensive facilities around the lake. The construction, operation and maintenance cost of Upper Arm would be typical to other similar summer season lakeside recreation sites. Although little camping occurs at Upper Arm in the off-season, it would still be used as a picnic area, scenic byway wayside, or access to the river during this time. According to a market study, there is a significant shortage of developed day-use facilities and viewed as the most important improvement needed at the lake. Promoting shoulder season recreational opportunities, such as providing day-use areas along the National Scenic Byway, is desirable to the local communities trying to enhance their tourism-based economy.

Shoreline facilities would not be used during low lake levels in the off-season. The cost of operating docks would increase as a result of fluctuating lake levels. Although boat-in moorage docks are a nice amenity, the limited use season and for the few numbers of boats it would accommodate, they may not be cost-effective to construct, operate and maintain.

Effects of Alternative 3 – Develop Day-Use Area and Reconstruct Campground

Use at this site after Labor Day decreases. Little to no camping would likely occur during the off-season, and most use would primarily be by day visitors using the site as a picnic area, scenic byway wayside, or access to the river. The space requirements reasonable for campsites would not allow for more than 5 campsites at this site. Although fees could be charged for the campsites, the few numbers of campsites would not generate enough revenue for operation and maintenance of the campground. For the reasons described in Issues III and V, providing both day-use and camping within a very small area would be incompatible, causing user conflicts, traffic safety concerns, and would be difficult to manage and regulate, which would increase cost.

Effects of Alternative 4 – Develop Day-Use Area with No Boat-In Moorage Docks

The effects would be similar to those described in Alternative 2, except there would be no cost to construct, operate and maintain boat-in moorage docks.

Effects of Alternative 5 – Develop Day-Use Area with Design Changes to the Proposed Action

The effects would be similar to those described in Alternative 2.

Other Direct, Indirect and Cumulative Effects

Wildlife Species

Threatened and Endangered Species

The biological evaluation dated February 15, 2002 addresses the potential effects of the Upper Arm Day-Use Development and Site Enhancement project on Threatened, Endangered, or Sensitive species listed in the R-6 Sensitive Species List dated November 15, 2000. The project area does not contain nesting or roosting habitat for bald eagles and Northern spotted owls so none of the alternatives would adversely affect these species, or their habitat.

Sensitive Species

Peregrine nesting habitat is located outside of the project area so the project does not directly impact nesting habitat. Alternatives 2 through 5 would not impact nesting peregrine falcons by noise disturbance and forage habitat modification if seasonal restrictions were applied. The action alternatives would reduce the peregrine prey base by removing trees and shrubs that currently provide habitat for birds. Planting fruit bearing shrubs as mitigation to encourage bird use in the area is expected to increase prey numbers once the shrubs become established within about five to ten years. The No Action alternative would not adversely affect peregrine falcons or their habitat.

The No Action Alternative (Alternative 1) is not expected to have any effect on Pacific Shrew, Baird's Shrew and Oregon Slender Salamander individuals. The No Action alternative does not remove existing ground shrubs and mossy areas that are used by these species. Alternatives 2 through 5 may impact these species by removing existing ground shrubs and mossy areas that are used by these species. Impacts are not expected to jeopardize the species or move it toward federal listing as a threatened or endangered species.

None of the alternatives would impact the following species because their habitat does not occur in the project area: Horned grebes; buffleheads; harlequin ducks; black swifts; Canada Lynx; pacific fringe-tailed bat; wolverines; pacific fisher; Northwestern Pond turtle; cascade torrent salamander; foothill yellow-legged frog; and Oregon Spotted frog.

Survey & Manage/Protection Buffer Species

Habitat for the Canada Lynx and Great Grey Owls does not exist in the project area; therefore, there would be no effects from any of the action alternative and surveys were not required. Ranges of all amphibians listed as survey and manage species do not extend into the Detroit Ranger District; therefore, surveys were not needed. Habitat for Red Tree Voles is present within the project area. A survey was conducted for red tree voles and no nests were located. Habitat for mollusks are present within the project area, however, surveys conducted in 2001 did not locate any survey and manage mollusk so there would be no affect to these species.

Other Management Indicator Species

Habitat would not be affected by any of the alternatives for pileated woodpecker, pine marten and cavity excavator species. The existing tree diameters in the project area are too small to provide habitat for these species.

Migratory Birds

Since action alternatives would not provide a significant habitat change from existing conditions there would be only minor detrimental effects to migratory birds, but provides beneficial effects as a result of increasing fruit bearing shrubs and trees.

Migratory birds may be disturbed and nests unintentionally destroyed during proposed activities. Each type of migratory bird specializes in a habitat niche and is widely distributed within the Pacific Northwest during the summer nesting season. Altering habitat may favor one species and not favor another with the overall effect being insignificant. Generally forested habitats contain warblers, swallows, swifts and other migratory species. Riparian areas with alder and maple may contain the same species as the forest, but with higher densities of riparian specialized species of warblers, flycatchers, etc. Overall the project would not provide a significant habitat change from existing conditions. The species mix is expected to remain the same with minor variation in where open habitat specialized birds are located. Planting fruit bearing shrubs and trees would increase diversity and quality of migratory bird habitat once the vegetation becomes established, and provides a beneficial affect to migratory birds.

Big Game

The winter range surrounding Detroit Reservoir would continue to decrease in forage value due to the lack of created openings from timber harvesting. The project area is not in heavily used winter range due to proximity of the highway and amount of human use of the area so there would be no affect to big game. The action alternatives would produce more forage that is available to animals by planting ground vegetation and opening up of the forest canopy, increasing sunlight reaching the ground and enhancing vegetation growth. The area would be closed when visitor use is very low, which would encourage big game to forage in the area with little human disturbance.

Wildlife Tree (Snag Habitat – Primary Cavity Excavators) and Coarse Woody Material

Current average tree diameters in proposed project area do not meet minimum size requirements for snags and course woody material. When the trees in the project area become large enough to provide snag habitat and if one dies, it would not be allowed to remain standing and function as snag habitat in a developed recreation area for safety reasons. The area currently does not and will not in the future provide snag habitat. The area around the recreation site would continue to provide snag habitat at or above Forest Plan recommended levels and would compensate for the loss of a few acres of habitat in the recreation site.

Logs greater than or equal to 20 inches in diameter and 20 feet in length is the minimum size requirement for course woody material (Northwest Forest Plan p. C-40). The project area currently does not have coarse woody material due to campers using down wood for campfires. Average tree size in the project area does not meet

minimum size requirements for coarse woody material; therefore, no opportunity exists for natural recruitment of down woody material at the site that would meet the Forest Plan requirements. Coarse woody material could be brought to the site from another location but would not likely be retained because of campfire use in alternatives 1 and 3.

Fisheries

Threatened and Endangered Species

All alternatives would have no effect on winter steelhead, spring chinook salmon, bull trout, or Oregon Chub that are listed under the Endangered Species Act. The proposed action and the other alternatives would also not effect critical habitat under the Endangered Species Act or essential fish habitat under the Magnuson-Stevens Act. The nearest populations of listed fish species and critical/essential habitat are found below Detroit and Big Cliff Dams which are approximately fourteen miles downstream of the project area. It is not expected that implementation of any alternatives would affect listed fish or their habitat below the dams.

Non-Listed Species

Based on the project location and fluctuating water levels, there are no direct effects to fish or aquatic organisms with any of the alternatives. Game fish present in the project area are rainbow trout, cutthroat trout, whitefish and kokanee salmon. Kokanee migrate from Detroit Reservoir to spawn in the area below Wind Creek, about 1 mile upstream from the Upper Arm. At full pool Detroit Reservoir backs water upstream of Upper Arm, which keeps this section of the Breitenbush River from being usable spawning habitat for anadromous (hatchery) or resident fish. The present value of this section of the river is primarily as a migration corridor for kokanee salmon and a holding area for planted hatchery trout. If winter steelhead and spring chinook salmon are fully restored to the area above the dams, they would also use this section of river to migrate upstream to good spawning and rearing areas and then downstream on their way to the ocean.

Plants

Sensitive Plants

The biological evaluation dated June 12, 2002 addresses the potential effects of the Upper Arm Day-Use Development and Site Enhancement project on Threatened, Endangered, or Sensitive plant species listed in the R-6 Sensitive Species List. The only R-6 sensitive species identified as having possible habitat in the Upper Arm project area is Howell's montia (*Montia howellii*). This species is documented on the Willamette National Forest, but not on the Detroit Ranger District. Its habitat is characterized as vernal wet sites below 1200 feet elevation, often on compacted soil, and it flowers from March to May. On the Willamette National Forest and at other sites, it is found adjacent to reservoirs. This species was downlisted to the Watch List (species which are currently stable, but may become threatened in the foreseeable future) in the 2001 Oregon Natural Heritage Database. This change in status means that this species will come off the R-6 sensitive list during the next update.

A survey conducted on May 24, 2002 found no evidence of the occurrence of Howell's montia (*Montia howellii*). Therefore, the implementation of any of the alternatives would have no impact on this species.

Survey and Manage Plants

The pre-field review for survey and manage category A & C (pre-disturbance survey) species indicates that no suitable habitat was identified for these species within the proposed Upper Arm project area. This project area is situated in a stand too young and at an elevation too low to contain habitat for any of these species. The project area was surveyed for Survey and Manage bryophyte and lichen species concurrent with the R-6 sensitive species survey on May 24, 2002, and none of these species were found. The implementation of any of the alternatives would have no impact on Survey and Manage bryophyte and lichen species.

Noxious Weeds

All action alternatives in this project proposal should have similar beneficial effects on noxious weed control efforts if implemented. Where practical, noxious weeds would be removed from the site and replaced with native vegetation under all action alternatives. The most prevalent weed in the project area is reed canarygrass (*Phalaris arundinacea*). This grass grows as a monoculture at the margins and low water marshy areas of Detroit Lake. The development of this project would remove some of this weed population. The no action alternative would result in continued site disturbance, which in turn would lead to further noxious weed introduction and expansion. Additional weeds present on the site and along the adjacent Breitenbush Road include Scot's broom (*Cytisus scoparius*) and St. John's wort (*Hypericum perforatum*).

Heritage Resources

No heritage sites have been discovered within the Upper Arm project area, and all alternatives would have no effect on heritage resources. Although no sites were discovered during the course of the surveys, there remains the possibility that buried prehistoric or historic cultural remains are present subsurface. Monitoring of the major excavation work during the construction would be conducted in order to extend protection to cultural resources which have not yet been discovered, but which may be uncovered during the course of project activities. Activities would be suspended until evaluations are made to insure the protection of any unknown heritage resources in the area.

Wild and Scenic Rivers

The project area is not located within a Wild and Scenic River corridor so there would be no effect to rivers listed on the National Wild and Scenic River System.

Public Health & Safety

Maintaining the site in its current condition, which is insufficient to accommodate current use levels, would continue to cause social conflicts, public health and safety concerns, and resource impacts. The site lacks formal organization to regulate use effectively and would continue to cause the need for more attention by law enforcement. Limited parking controls create haphazard parking situations that would be difficult to manage, and hinder response by emergency vehicles. The undeveloped appearance of the area would continue to invite some illegal camping and campfires in the day-use area. Lack of adequate sanitation facilities would increase risk to health and water quality from improper disposal of human waste and littering. Vandalism, other deviant and inappropriate behaviors would likely continue at this site as it has in the past. Safety problems would continue to stem from congested and unorganized parking, limited site-distance at the entrance to the site, and numerous steep user-created trails that access the lake along eroding banks.

All action alternatives would improve public health and safety, and reduce social conflicts and resource impacts by developing facilities necessary to ameliorate the current problems.

Flood Plains and Wetlands

There are no meadows, and the wetlands and floodplain associated with this site are influenced by reservoir draw-down dynamics. Reservoir levels are manipulated by the Army Corps of Engineers, and are based on a complex set of meteorological, social, political and ecological criteria. This project's effect on downstream flood plains or wetlands is negligible due to the greater influence of the reservoir on these systems.

This project proposes to maximize the retention of existing species composition and structural diversity, and to reduce vegetation mortality from trampling and compaction, within the framework of the project design. The drawdown vegetation of the wetlands adjacent to the project area is dominated by reed canarygrass (*Phalaris arundinacea*), a noxious weed, which would be controlled and replaced with native vegetation to the extent practicable. Related discussion on these values can be found under ACSOs 1 and 4 (see Appendix C).

Unavoidable Adverse Environmental Affects

Hydrology and Soils

Approximately 60% of the project area lies within a riparian reserve, and the objectives surrounding the attainment of the Aquatic Conservation Strategy (ACS) for this area are discussed in Appendix C. Maintaining the uncontrolled nature of use at the site under the no action alternative would continue to compact soil and cause erosion, increase loss of vegetation, and impact riparian resources. Current condition of the riparian area does not meet the intent of the Northwest Forest Plan Aquatic Conservation Strategy Objectives. Meeting the ACS is one of several objectives that drove the need for the project.

In summary of the discussion under Issue Statement IV, all action alternatives would be implemented in a manner to comply with current standards for soil, water, and riparian management. All action alternatives proposed meet the Clean Water Act, and through design criteria that improve and protect riparian areas, would meet the Land and Resource Management Plan, as amended by the Northwest Forest Plan of 1994. Off-site erosion would remain at or below the limits set by the State of Oregon.

The differences in effect on hydrology and soils are minor between each action alternative and so are considered equal. The major measure of impact is how the various alternatives control the number of people occupying the site, and how the disturbance could be reduced by proper design of pathways, parking areas and picnic and camping sites. All of the action alternatives have similar design controls such as design of pathways, parking areas, and etc; therefore, the effects are similar. Based on the number of parking spaces, alternatives 3 and 5 would accommodate the least number of people at the site, while Alternatives 1, 2 and 4 would equally accommodate the most. Day-use (Alternatives 2, 4 & 5) activities do not have the intensity of impacts that camping does as described in Alternatives 1 & 3. Alternative 4 would eliminate boat docks while boat docks in Alternatives 2, 3 and 5, may encourage boating activity in the area, and could cause increased bank erosion along the shorelines adjacent to the site. Damage to banks, such as the eroding of the shoreline, caused by people accessing the site by boat would occur in Alternatives 1, and would be reduced in Alternatives 2, 3, and 5, and eliminated in Alternative 4.

Irreversible and Irretrievable Commitments of Resources

No irreversible and/or irretrievable use of the soils or geologic resources is anticipated beyond that which has been previously identified in the Willamette National Forest Land and Resource Management Plan, as amended by the Northwest Forest Plan of 1994. All action alternatives impact the soil resource in an approximately a similar manner. Irretrievable commitments of resources occur as a result of land management activities. Under multiple-use management some irretrievable commitments of resources are unavoidable and acceptable at developed recreation sites.

Urban Quality

In general, the area is located in a rural forest setting and no effect to urban quality would occur as a result of implementing any alternative.

Environmental Justice

The Upper Arm project area is located adjacent to the Cities of Detroit and Idanha, Oregon. These communities are not considered to be minority or low income communities, however, low income families do reside in both cities. According to information from the Oregon Economic and Community Development Department (OECDD) both cities area considered to be within a distressed area. For the City of Detroit, approximately 44% of the population is considered to be in Low to Moderate Income range: whereas for the City of Idanha, approximately 66% of the population is in this range. Both of these Cities have experienced a significant decline in timber-based

jobs over the past decade contributing to the factors that determine a distressed community. Implementation of any action alternative indirectly creates job opportunities or money spent in the communities that are diversifying their tourism economy. Options to charge a reasonable fee at the site to offset the cost of operation and maintenance could be prohibitive to some local residents who frequently use nearby free day-use sites. All alternatives fall within compliance with Executive Order 12989 "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations".

Effects on Prime Farmlands, Range Land, or Forest Lands

Department of Agriculture Land Use Policy (DR 9500-3), as discussed in FSH 1909.15-93-1, 65.21 Exhibit 01, states that "Continued conversion of the Nation's farmlands, forest lands, and rangelands may impair the ability of the United States to produce sufficient food, fiber, and wood to meet the domestic needs and the demands of export markets." The Department's responsibility is to assure that the United States retains a farm, range, and forest land base sufficient to produce adequate supplies at reasonable production costs of high quality food, fiber and wood. The Upper Arm Recreation Site has no farm land or range land and therefore would have no effect on these resources. Upper Arm is managed as a Developed Recreation Site under the Willamette National Forest Land and Resource Management Plan, as amended, in which no programmed harvest shall be scheduled. Vegetation removal is limited to the protection of area values, health and safety, and preparation of the site for rehabilitation or future development. There would be no effect to the forest land base with implementation of any of the alternatives.

CHAPTER 4 – List of Preparers

The following are the members of the interdisciplinary team (IDT) responsible for conducting the environmental assessment for the Upper Arm Day-Use Development and Site Enhancement.

Stephanie Phillips – District Ranger

- B.S. Forest Resource Management
- M.S. Silviculture
- 20 years experience Forest Service

Dani Rosetti – Team Leader / Recreation Planner

- B.S. Forest Resources & Recreation Management
- 13 years experience Forest Service

Dave Halemeier - Hydrologist

- B.S. Resource Planning and Interpretation
- M.S. Natural Resources, Watershed Management
- 28 years experience Forest Service

Mike Roantree – Botanist

- B.S. Botany
- M.A. Biology
- 16 years experience Forest Service

Doug Shank – Geologist

- B.S. Geology
- M.S. Geology
- 24 years experience Forest Service

Wayne Somes – Fish Biologist

- B.S. Fisheries
- 25 years experience Forest Service

Kelly Esterbrook – Fuels Planner, Assistant Fire Management Officer

- Technical Fire Management
- 24 years experience Forest Service

Cara Kelly – Archaeologist

- B.S. Anthropology
- M.A.I.S. Anthropology
- 13 years experience Forest Service

Daryl Whitmore – Wildlife Biologist

- A.S. Forest Industries Technology
- B.S. Natural Resource Management
- 14 years experience Forest Service
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Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Supports Proposal	Proposed action looks fine as written.	Supports the proposed action – Alternative 2
Don't allow camping; day-use only	Generally supportive of the development of this area as a day use area, and the elimination of campsites which are not an appropriate use of a riparian area.	Supports the proposed action – Alternative 2
Don't allow camping; day-use only	The proposal is excellent and much needed, too much problems with overnight camping at this site.	Supports the proposed action – Alternative 2
Allow camping	In general anything that would improve the camping picnic - and parking area would help the area very much.	Addressed in Significant Issue #1 and developed in Alternative 3
Allow camping	I think it is worthwhile to develop the site for day use and tent camping only. I don't see why some tent camping couldn't be provided since there is a need for more camping sites. This area could be used by hunters and fisherman for camping in the off day use season also. Day use typically is only during good warmer weather May-Sept. and a full lake. Some snow play people may want to camp there also during the winter. With the closeness to Detroit and the ranger station, and the road being plowed; it would be a good place for snowmobilers, cross-country skiers to camp during the winter. Vandalism is always a problem when there is no one around. Extended use and camping would help reduce vandalism.	Addressed in Significant Issue #1 and developed in Alternative 3
Facilities desired	I would like to commend the Detroit RD for developing facilities for public use. We all have a responsibility to create more public facilities for recreational purposes as the demand continues to increase.	Thank you for your comment
Facilities desired – fishing pier/ barrier-free access	The fishing pier is a good idea as it would allow those who cannot afford, or do not wish, or are unable to fish the lake by boat. I also like the handicap access aspect of your proposal.	Supports the proposed action – Alternative 2
Facilities desired – swimming	I am also highly supportive of another swimming area, since this is an underdeveloped recreation use of this lake, and I would seek if appropriately developed.	Supports the proposed action – Alternative 2

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Facilities desired – fishing/swimming	The fishing pier and swimming area are both appropriate uses of this area.	Supports the proposed action – Alternative 2
Facilities desired- fishing	Separate fishing from other shoreline activities and create multiple fishing platforms to disperse anglers.	Addressed in Significant Issue #3 and developed in Alternative 5
Facilities desired - signs	[Need] sign at entrance: "No drinking water."	Clarified in the proposed action. A sign plan will be developed and would include information about the site amenities.
Facilities desired - sanitation	Clearly sanitation facilities are not adequate at this site. Vault toilets will go a long way to correct this problem. Garbage cans should be strategically placed around the picnic areas and funding should be provided so these cans are emptied in a timely fashion.	Supports the proposed action – Alternative 2
Facilities desired - sanitation	Put restrooms near entrance so people don't drive around looking for them.	Addressed in Significant Issue #3 and developed in Alternative 5
Facilities desired - sanitation	Women need more toilets than men.	Addressed in Significant Issue #3 and developed in Alternative 5
Facilities desired – road placement	Rearrange parking and picnic areas. (Plan shows one picnic area surrounded by cars). Run interior roads parallel to Breitenbush Road. Park cars next to each other along downhill side of road.	Addressed in Significant Issue #3 and developed in Alternative 5
Facilities desired – boat docks	As for placing a mooring float in this area, I can see some advantages and disadvantages. On windy days, this area can provide a safe haven for boaters. Sheltered coves are not that plentiful at Detroit Lake. Second, there are limited developed sites where boaters can stop to picnic or rest. Providing this opportunity would be welcomed I would think.	Supports the proposed action – Alternative 2

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Facilities desired – boat docks	<p>The entire area above the highway bridge is restricted by State administrative rule to a 5 MPH slow no-wake speed limit so there should be no concern for high-speed boating in this area. In addition, if a swimming area is provided and designated, it would be subject to a boating enclosure under statewide administrative rules. The closed area could be delineated by placing a series of orange swim floats connected by rope, a regulatory buoy with boating closure symbol, or both. In terms of conflicts, I don't see any cause for real conflict. The most likely conflict would be between boaters and people using a mooring float as a fishing platform. For some reason, bank anglers like to use these floats for fishing and when a boat arrives and the angler does not allow enough room for boats to maneuver or load/unload, conflicts can arise. It doesn't make sense to not include a mooring float in this location only because of conflicts of this nature - after all, anglers should not object to boats using a float designed and placed as a mooring facility. In addition, if a handicapped fishing pier is provided, anglers should be able to use this instead of the mooring float. As for other potential conflicts, I am at a loss as to what those might be. As long as boaters obey existing laws and the swim area (if provided) is clearly marked, I find it difficult to understand why someone would object to a slow-moving boats using this portion of the lake. There are lots of places where people can go to picnic in the forest and not encounter boats if they simply object to seeing boats. Boaters are pretty much restricted to using waterways.</p>	Supports the proposed action – Alternative 2
Motorboat use conflict	<p>It [boat mooring] should not be [allowed], as this conflicts with other proposed uses such as walking, picnicking and especially swimming. I do not use Mongold beach because jet skis are all around the swimming area, creating noise, a safety hazard (boat wakes), and putting diesel fuel into the water, which made me sick the one time I swam there. This area can also have very shallow water, creating a hazard for boats as well. Boats have access to the rest of Detroit Lake. If you develop this site without boating access you will attract visitors such as myself who now avoid Detroit Lake because of the heavy boating traffic.</p>	Addressed in Significant Issue #2 and developed in Alternative 4

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Motorboat use conflict	We feel that allowing boats to dock in this area would create conflicts between boaters and swimmers and folks fishing on the shore. Already, there is often heavy boat use of this upper arm. Relative to the rest of the lake, this area is narrow. Encouraging more boat traffic to this area with the construction of an in-moorage dock, especially when encouraging other uses such as swimming and fishing, may result in conflict and injury	Addressed in Significant Issue #2 and developed in Alternative 4
Motorboat use conflict	Delete boat docks. Keep motorboats entirely away from swimmers.	Addressed in Significant Issue #2 and developed in Alternative 4
Motorboat use conflict	Providing boat docks will increase motorboat use in the Breitenbush Arm. A problem exists that motorboats are speeding through the no-wake zone above the bridge to Upper Arm. An increase of boats would increase the speeding and create noise disturbance to adjacent motel. This noise chases customers away. Speeding occurs when no law enforcement presence is around.	Addressed in Significant Issue #2 and developed in Alternative 4
Site capacity	It seems to make sense to upgrade this site to accommodate the high intensity use the site already receives. This site, as you correctly note, does have problems with sanitation, erosion, soil compaction and invasive weeds that should be addressed. The major challenge to these sorts of projects seems to be how to restore the degraded landscape and funnel use in such a way that it will not encourage so much more use than the site can accommodate.	Addressed in Significant Issue #4 and is tracked through the affects analysis.
Law enforcement	Vandalism is always a problem when there is no one around. Extended use and camping would help reduce vandalism.	Addressed in Significant Issue #5 and is tracked through the affects analysis.
Law enforcement	Encouraging more boat traffic to this area with the construction of an in-moorage dock, especially when encouraging other uses such as swimming and fishing, may result in conflict and injury. This increase of risk may result in increased costs to Marion County Marine Patrol and Oregon State Police or decreased patrols in other parts of the lake.	Addressed in Significant Issue #5 and is tracked through the affects analysis.
Wetland protection	My concern is that the developments protect existing wetlands, in terms of where facilities are placed and also where human access is allowed.	Addressed in Significant Issue #4 and is tracked through the affects analysis.

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Wetland protection	Preserving and restoring wetland areas and educating visitors about their values is an excellent idea. Wetland recovery would improve water quality and enhance habitat for shorebirds, amphibians, and other species.	Supports the proposed action – Alternative 2
Water quality	We are concerned about creating impervious surfaces near the lake for parking. However, we recognize that there is an existing lack of parking in this area. The Forest Service may want to consider the use of permeable paving surfaces and minimize the amount of area in parking as much as possible to reduce run-off. Forty-five parking spaces may not be necessary.	Addressed in Significant Issue #4 and is tracked through the affects analysis. This information was clarified in Alternative 2 to address Forest Plan Standard and Guideline (FW-088) requirements. Project activities shall comply with state and federal requirements for protection of waters through planning, application and monitoring of Best Management Practice's. Alternative 3 minimizes the amount of area devoted to parking and roads.
Funding project	Please do not develop this project unless you have the funds to maintain and patrol the site.	Addressed in Significant Issue #6 and is tracked through the affects analysis.
Funding project	It would be a shame to spend a lot of money and not have any users because the lake is low all or part of the summer, as this past summer.	Addressed in Significant Issue #6 and is tracked through the affects analysis. 2001 was an unusual year due to the drought and downstream demand for water, which affected maintaining normal lake levels. The USFS is optimistic that normal lake levels will be maintained in normal winter and spring precipitation years.
Funding project	It doesn't seem cost effective to spend so much money for such a limited season and use.	Addressed in Significant Issue #6 and is tracked through the affects analysis.

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Funding project	I've enclosed a copy of an article from a current trade magazine. Any chance of getting these funds [DOI and related agencies Appropriated Act, which includes \$4.1 billion for the USFS] for this area's projects?	Thank you for the information. We are continually looking for new sources of dollars to fund projects.
Funding project	The disadvantage [of the Boat Dock] is that because the area is located so far up the arm boats will only be able to access the area when lake levels are suitable. When lake levels drop, I assume the float will be unusable so you should consider whether the expense of placing the float can be justified by the amount of time it will be usable.	Addressed in Significant Issue #6 and is tracked through the affects analysis.
Editorial Comment	Population figures on page 1 need update.	Updated to reflect correct 2000 Census population figures.
Editorial Comment	Mention that Detroit Lake supplies drinking water to several cities including, Salem, the capital.	Comment added to background information in Chapter 1.

Appendix A - Public Comments to the Proposed Action by Theme and Response to Comments

Theme	Comment	Response
Question	Is there going to be water in the lake?	2001 was an unusual year due to the drought and downstream demand for water. It affected the lake level and didn't provide the usual water-based recreation opportunities, which significantly impacted the local economy. The US Forest Service is working together with the City of Detroit, and the Army Corps of Engineers to raise recreation as high priority for maintaining lake levels as part of the Federal Lakes Pilot Study. The USFS is optimistic that normal lake levels will be maintained in normal winter and spring precipitation years. Additionally, extending the season for holding the lake level is desired by the local communities and is
Question	Any chance of doing the same thing at Poverty Flats across from Hoover?	Santiam Flats is operated by Santiam Recreation, a concessionaire, as a campground under a special use permit until December 2005. The concessionaires have made substantial improvements to the site including installing new vault toilets. There are no plans to convert use of this area to day-use at this time. The site provides a significant number of campsites at the lake that are currently in short supply. The USFS will continue to work with the concessionaire to improve site conditions.

Appendix B - Federal Water Quality Best Management Practices

REC-3. Management of Sanitation Facilities	
Objective: To protect surface and subsurface water from bacteria, nutrients, and chemical pollutants resulting from the collection, transmission, treatment, and disposal of sewage at Forest Service Facilities.	Placement of toilet facilities on the site will consider the distance to live streams, ground water levels and runoff patterns. Vault toilets are designed to be impermeable.
REC-4. Control of Refuse Disposal	
Objective: To protect surface and subsurface soil and water resources from nutrient, bacteria, and chemicals associated with solid waste disposal.	Garbage generated from users will be collected and disposed at approved facilities. Collection areas will be designated and facilities provided to contain the refuse on site until removed.
REC-10. Sampling and Surveillance of Designated Swimming Sites.	
Objective: To ensure the health and safety of water contact recreationists at designated National Forest Swimming sites.	As part of the management and monitoring of this site sampling and testing for bacterial water quality (fecal coliform, ph, and clarity) will be done. These tests will be conducted when there is reason to believe that water quality is not satisfactory for swimming.
W-1. Watershed Restoration	
Objective: To repair degraded watershed conditions and improve water quality and soil stability.	<ul style="list-style-type: none"> • Improve ground cover • Improve infiltration • Prevent overland flow and conserve soil resource. • Stabilize stream banks and stream channels. • Improve soil productivity • Reduce flood occurrence and flood damage. • Enhance economic, social, and/or aesthetic values of the watershed.
W-8. Management by Closure to Use (Seasonal, Temporary, and Permanent)	
Objective: To exclude activities that could result in damage to either resources or improvements, such as roads, trails, resulting in impaired water quality.	Depending upon the design criteria and the materials utilized during the development of this site, seasonal restriction may be enforce to prevent resource damage. This enforcement would remain in place until such time that the site was hardened and water quality would not be affected.
W-9. Surface Erosion Control at Facility Sites	
Objective: To minimize the amount of erosion and sedimentation at developed sites.	For those areas that are cleared of vegetation, parking areas, picnic area, and trails, erosion control methods will be utilized to stabilize the soil and minimize the amount of sediment entering a stream. These requirements are for during the construction phase of the project as well as the operational phase of the project.
VM-3. Revegetation of Surface Disturbed Areas	
Objective: To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation.	Disturbed portions of the site will be revegetated to promote growth with in the riparian areas. Native vegetation will be utilized to try and control the travel routes within this area.

Appendix C - Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSO's) Analysis

The objectives surrounding the attainment of the Aquatic Conservation strategy are discussed below. Meeting ACSOs is just one of many objectives that led to project initiation. The following addresses the proposed action alternative only.

ACSO 1. Maintain and restore the distribution, diversity and complexity of watershed and landscape-scale features to insure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

Under alternative two, this project would convert and reconstruct the existing Upper Arm day use and camping area to a formal day-use site with picnic, swimming, fishing, hiking, and interpretive facilities. Years of heavy use have resulted in continuing compaction and displacement of soil, shoreline erosion, and damage and loss of vegetation. Current condition of the riparian area does not meet the intent of the Northwest Forest Plan Aquatic Conservation Strategy Objectives.

This project proposes to improve site conditions by controlling use of the site through placement of travel ways and hardening designated sites. The condition of the vegetation would improve with controlled use and reestablishment of vegetation. Paving roads and surfacing trails would reduce soil erosion. Placing retaining structures would reduce bank erosion and allow for the undisturbed reestablishment of native vegetation in some areas. Augmenting the reestablishment of terrestrial and riparian native flora by planting native vegetation where appropriate is also proposed.

ACSO 2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, up slope areas, headwater tributaries and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

The current Upper Arm recreation site is approximately 900 feet by 200 to 450 feet wide. The riparian area has been influenced by the creation of a man made artifact (the reservoir). Due to its small size, altered riparian zone, and the disturbance resulting from current use, this site does not now provide much in the way of spatial and temporal connectivity nor as habitat critical for fulfilling life history requirements of aquatic and riparian dependent species.

This project does not propose to expand development beyond the current site. It does propose to regulate use, thereby retaining and improving habitat conditions by reducing compaction and disturbance, and promoting native vegetation.

ACSO 3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Physical integrity of the aquatic system would be maintained by adherence to Best Management Practices (BMP's) through the construction phase. Specific BMP's utilized for physical integrity are

Appendix C - Aquatic Conservation Strategy Objectives

BMP W-1, W-8, W-9, and VM-3. These practices maintain the physical integrity of the aquatic system through improving ground cover, improving infiltration, conserving soils, hardening of the site and controlling foot traffic to reduce compaction. In addition, the placing of retaining structures and the planting of vegetation would reduce bank erosion along the shoreline.

ACSO 4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the systems and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Currently, soil compaction is affecting the ability of the soil to infiltrate water and support the vegetation that acts as a water filter on this site. Compaction reduces permeability of the site and permits water to flow over the surface. This concentration of water on the surface and movement across the surface causes the site to lose valuable nutrients and soil through erosion.

Design and construction practices would meet Federal General Water Quality Best Management Practices and includes implementing an erosion control plan to control sediment on-site. It is anticipated that under these standards the extent of soil compaction would be controlled, sites would be hardened to retain existing vegetation, drainage patterns would be controlled, nutrient retention would be improved, and the timing of project implementation would reduce any off-site erosion from construction activities. Improved sanitation would reduce the risk of water quality problems and impacts to aquatic and riparian communities.

ACSO 5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transportation.

The aquatic ecosystem that occurs in the proposed project area has been heavily influenced by reservoir creation and human use. The current sediment regime at this site is limited in scope, and results in a relatively minor input to the sediment bed on the reservoir bottom. The discussion under ACSO 4 points to a reduced loss of sediment from the site, and retention of site nutrients resulting from project implementation.

ACSO 6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

Streams do not occur on this small patch of land. The values stated in this ACSO would not be significantly affected by a project of this scale. At the larger scale for this portion of the Breitenbush watershed, in stream flows are addressed in the Forest Plan and the Detroit Tribs Watershed Analysis (DTWA pg. II-8). Documentation within the watershed analysis limited the discussion to Hydrology of the area and doesn't respond directly to the in-stream flow portions of this question. The Willamette National Forest Plan bridges this limitation with FW-113; FW-111; FW-093; FW-089. These forest-wide standards and guidelines are required (shall's), in the plan.

Appendix C - Aquatic Conservation Strategy Objectives

ACSO 7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

There are no meadows, and the wetlands and floodplain associated with this site are influenced by reservoir draw-down dynamics. Reservoir levels are manipulated by the Army Corps of Engineers, and are based on a complex set of meteorological, social, political and ecological criteria. This project's effect on downstream flood plains or wetlands is negligible due to the greater influence of the reservoir on these systems.

ACSO 8. Maintain and restore species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability

This project proposes to maximize the retention of existing species composition and structural diversity, and to reduce vegetation mortality from trampling and compaction, within the framework of the project design. The drawdown vegetation of the wetlands adjacent to the project area is dominated by reed canarygrass (*Phalaris arundinacea*), a noxious weed, which would be controlled and replaced with native vegetation to the extent practicable. Related discussion on these values can be found under ACSOs 1 and 4.

ACSO 9. Maintain and restore habitat to support well distributed populations of native plant, invertebrate and vertebrate riparian dependent species.

This project proposes to maintain and restore habitat of native plant, invertebrate and vertebrate riparian dependent species, to the extent practicable. Historic human use and reservoir creation has led to a degradation of habitat for these species. Within the framework of the project design, some of these habitat areas will be lost, and some will be maintained or restored. It is anticipated that with adherence to BMP's and mitigation measures designed to address wetland and riparian habitats (e.g., retaining structures, weed removal, vegetation planting, and soil protection requirements), impacts to riparian-dependent invertebrate and vertebrate species would be minimized or reversed compared to the existing condition.

Adherence to maintenance and planting schedules is expected to increase plant diversity, and the abundance of some native herbs and shrubs. Loss of epiphytic lichens and mosses would be minimized by retention of hardwoods, Pacific yew, and larger trees, and by reducing mortality of these trees through controlled use