

Matanuska-Susitna Borough

Shoreland Setbacks

Analysis and Recommendation



Prepared by:

Land Design North
510 L Street, Suite 101
Anchorage, Alaska 99501



Table of Contents

<i>Introduction</i>	<i>3</i>
<i>Setback History</i>	<i>4</i>
<i>Function of BufferZones (Setbacks)</i>	<i>6</i>
<i>Recommended Setback</i>	<i>12</i>
<i>Recommended Minimum Performance Standards</i>	<i>12</i>
<i>Conclusion</i>	<i>14</i>
<i>References</i>	<i>16</i>

Appendix A: Matanuska Susitna Borough Literature Review

Introduction

Since 1973, the Matanuska Susitna Borough has been struggling with the designation and implementation of an appropriate waterbody setback distance from area lakes, streams, and wetlands to protect water quality and fish and wildlife habitat. From 1973 to the present, structural setbacks from waterbodies have ranged from 45 to 75 feet and have allowed accessory uses such as piers, marinas, boathouses and docks over the water. The setbacks to date have only regulated structure placement and have not regulated uses or activities within the setback zone. For example, there are currently no requirements to maintain natural vegetation or limit the amount of impervious surfaces.

The inherent challenge of the project is that people have varying goals and values relative to the use of water resources and lands. Over the years, arguments have been presented to maintain, increase, and decrease the setback distance. Arguments in favor of a lesser setback generally cite private property rights, undue hardships on developing land, increased views and access to waterbodies. Those in favor of greater setbacks cite improved water quality, enhanced fish and wildlife habitat, noise reduction, and improved aesthetic values.

In 1998, a Shorelands Steering Committee was formed to recommend goals and strategies to analyze and improve the management of shorelands and develop a Shorelands Management Plan. The results of their work can be found in Appendix A. In summary, the long-term goal of the Matanuska-Susitna Borough Shorelands Management Plan is to determine how inland lake basins, streams and wetlands function as ecosystems within the watershed and **how** to manage the many resources and values present in these systems in a sustainable manner. While this is an admirable goal, this long-term goal can be reached only through a comprehensive watershed study and the long-term investment of dollars, expertise and collaborative effort by government, universities and the private sector.

This report is intended to meet the more immediate need of resolving the shoreland setback issue and to establish effective performance standards for uses within the setback zone to minimize future requirements for mitigation or restoration of disturbed areas and degraded water quality. As the Mat-Su Borough continues to grow in population and becomes one of the most popular recreational destinations in Alaska, the threat of degradation to its waterbodies increases. An altered water system is not only difficult to restore, it is expensive and may never fully recover. This can mean declining property values, **loss** of recreational activities, **loss** of water-dependent businesses, and a decline in fish and wildlife populations. Simply put, no one wants to live, recreate or conduct business on a polluted waterbody.

This purpose of this report is to review and incorporate by reference the work done to date on the Shoreland Management Plan and recommend a setback distance that will protect water quality in the Mat-Su Borough. This interim report also seeks to:

- Understand the intent and history of structural setback regulations in the Mat-Su Borough
- Define and understand the function of the relatively narrow strip of land (the riparian zone) surrounding a waterbody
- Review the role of setbacks as a management tool to enhance and protect water quality from residential, commercial and industrial development based on the literature review conducted by the Mat-Su Borough and supplemented by work done as part of the Big Lake, Lake Management Plan.
- Recommend a structural setback and performance standards

Finally, to help provide information of similar efforts in other jurisdictions, a literature review done by the Mat-Su Borough as part of the Shoreland Management Plan is provided in Appendix A. It briefly describes available literature on how other jurisdictions establish setbacks and manage shorelands, the use of buffer zones, the role of riparian vegetation, and the balancing of private property rights, public access and safety, and environmental issues. It should be noted that this review only provided a brief summary of the literature and did not analyze or document the different setbacks studied. For this reason, an analysis of setbacks done as part of the Big Lake, Lake Management Plan is being used for this report.

Setback History

An important aspect of evaluating regulations is to clearly understand their intent and historical context to determine if the existing regulation has been effective. Presented below is a brief synopsis of the Matanuska-Susitna Borough (MSB) setback ordinances and the Mat-Su Borough Coastal Management Program policy regarding setbacks to date.

- 1973. Borough adopts a 75-foot Setback (MSB ordinance 73-6). "Structures shall not be closer than 75 feet from the normal high water mark of a water course or body of water in a shoreland. The Commission may require a greater setback if it finds that a specific body of water possesses unique characteristics such as outstanding fish and aquatic life, shore cover, natural beauty or other ecological attribute. Boat houses may be located over the water provided they are not used for habitation and do not contain sanitary facilities." In subsequent years the ordinance was amended to legalize docks, piers and marinas over the water and require that they conform to state and federal regulations.

- **1984.** The Mat-Su Borough Coastal Management Program (MSBCMP) goes into effect which, as outlined in Coastal Habitats Policy 2, upholds the 75 foot setback but eliminates all provisions to allow the Platting Board to reduce setback distances if certain conditions are met. Approved by the Coastal Policy Council (CPC) in 1983, this policy raised issues of compliance with MSB ordinances and eliminated flexibility in the existing regulations.
- **1986.** Borough adopts a 45-foot setback (MSB ordinance **86-101**). "No structure or footing shall be located closer than 45 feet from the high water mark of a watercourse or body of water, except docks, piers, marinas, and boathouses may be located closer than 45 feet and over the water provided they are not used for habitation and do not contain sanitary facilities." "Exception: Does not apply to structures where construction was completed prior to January 1, 1987 if the present owner or owners of the property had no personal knowledge of any violation of the setback requirements prior to substantial completion of the structure."
- **1987.** The MSB submits revisions to the MSBCMP Coastal Habitats Policy 2 in order to create a more flexible policy. The Division of Governmental Coordination (DGC), staff to the CPC, determines that the proposed policy lacks enforceable language, and in cooperation with the MSB and the state, develops alternative policy language consistent with the Alaska Coastal Management Program. The revised policy is adopted by the CPC in March of 1988, with provisions that the proposed uses and activities within 75 feet of the high water line "must be reviewed to ensure protection of water quality and fish and wildlife habitat." Additionally, water-dependent structures (including docks, piers, marinas, boathouses and floatplane hangars) are allowable within 75 feet provided "they are constructed and used in a way that minimizes adverse impacts to water quality and fish and wildlife habitat." Finally, the policy states that other uses and activities within 75 feet are also allowable if the proposed development "will have no significant adverse impacts on water quality and fish and wildlife habitat, and complies with other applicable federal, state, and local requirements."
- **1987.** Borough reinstates a 75-foot setback (MSB ordinance **87-59**). The setback is changed to 75 feet with the provision that water dependent structures such as docks, piers and marinas are allowable within 75 feet if they conform to all applicable state and federal statutes and regulations, and so long as they "are not used for habitation and do not contain sanitary or petroleum fuel storage facilities."
- **1988.** Clarification and amendments (MSB ordinance **88-190**). The term "Shorelands" is defined, and the setback remains at 75 feet with the provision that "the Director of the Planning Department or the designee of the director shall upon application **by** a property owner, determine whether a property qualifies for an exception." There is also a subsection allowing the Planning Commission **to** increase the distance of a subsurface sewage disposal system from any body of water beyond the 100-foot zone "where necessary to protect waters within the Borough."

Based on a review of above history, the two critical flaws in the current setback have been identified:

- (1) The intended purpose of the waterbody setback appears to be to protect water quality and in turn fish and aquatic habitat; however, it is not clearly defined. It is recommended that the intent of the waterbody setback be clearly stated up front in future ordinances to facilitate enforcement and compliance. A property owner is more willing to comply with a regulation if they clearly understand its purpose and believe that the regulation is effective at achieving its purpose. To evaluate the effectiveness of a setback, it is critical to understand what is trying to be accomplished with the regulation. An example purpose statement might read as follows:

"The intent of the waterbody setback is to preserve the integrity of the Borough's lakes, streams, rivers, and wetlands by maintaining and improving water quality, shore cover, fish and wildlife habitat, and aesthetic values."

- (2) The setback only addresses the placement of structures. It does not address what can and cannot be done within the 75-foot setback area. The flaw with this approach is that locating buildings back from the waterbody may or may not meet the intent of the regulation. One of the greatest threats to water quality is Non Point Source (NPS) pollution. NPS pollution is defined as pollutants carried in runoff originating from various sources; precipitation moves over and through the ground and picks up pollutants from these sources and carries them into rivers, lakes, and groundwater. Some of the major sources and causes of NPS pollution adjacent to waterbodies are erosion and sedimentation (from cleared lots), septic systems, and runoff (carrying oils, chemicals, fertilizers and pesticides). A structure that is placed 75 feet back with vegetation cleared to the edge of the shoreline may increase the threat to water quality and in turn harm fish and wildlife habitat and the aesthetic qualities of the site by increasing the amount of NPS running into the waterbody. Whereas a structure setback of only 45 feet with vegetation retained between the structure and the shoreline may do more to protect water quality. The vegetation can slow runoff, trap sediment, and act as a natural filter to remove pollutants.

Another challenge with the history of setbacks in the Borough is the fluctuating distances and general lack of compliance by property owners. The low compliance is at least partially symptomatic of the lack of understanding of the ordinance's purpose. This has resulted in inconsistent development around waterbodies and in turn has made enforcement very difficult.

Function of Buffer Zones (Setbacks)

Literature associated with the protection of water quality defines buffer zones or setbacks as corridors of undisturbed natural vegetation or, where this is not present, grass or other erosion resistant vegetation, between a waterbody or wetland and an area of more intensive land use such as residential development. The use of natural buffer zones to protect water resources from pollution is attracting considerable attention within the United States and globally. Early research in this area stemmed from adverse impacts associated with timber and agriculture industries and has since evolved to consider the impacts of urban development including residential, commercial and industrial uses.

To understand the impacts from development, it is important to understand the watershed concept. A watershed includes the entire land form drained by streams and rivers and is the ultimate water source for a lake. The visible area of a watershed is the surface on which rain and snow fall. The larger, invisible portion of the watershed lies beneath the surface where water seeps into the ground. A raindrop travels from a mountain top to a lake in three ways: (1) some is absorbed by the soil; (2) some collects on the ground in depressions; and (3) some flows overland. It is the overland flow or runoff that poses the greatest threat to water quality. With the overland flow, the raindrop forms rivulets, which in turn join to form streams, and the streams join to form rivers, and so on. Whatever that raindrop picks up from the land along its journey ends up in the water. The greater the amount and speed of runoff the greater the potential impacts. The primary benefits of a waterbody setback are:

- **Maintain and Protect Water Quality** – Improve the quality of water passing through the buffer zone by trapping suspended sediments and removal of toxic substances, nutrients and pathogens carried in the surface water runoff.
- **Anchor Shoreline and Stream Banks and Control Erosion** – The shallow water table in the riparian zone makes water available during the growing season, creating a healthy terrestrial plant habitat for both soil and woody-debris-rooted plants. These in turn reduce erosion by anchoring the soil and trapping suspended sediments.
- **Provide Flood Control** – During periods of high runoff riparian and upland wetlands store and convey flood water. This storage function has the dual effect of moderating peak flows during high runoff events and augmenting ground and surface water flows during low runoff periods.
- **Protect Fish and Wildlife Habitat** - Riparian zones typically support greater numbers and diversity of fish and wildlife. Many terrestrial and aquatic animals use this area for foraging and feeding, breeding and rearing their young, and taking protective cover during 1 or more life stage.
- **Promote Scenic, Recreational, and Quality of Life Values** – The setback serves as a physical buffer between human activities on land and on the water. Scenic, recreation and wildlife assets are enhanced by buffer zones and can increase property values. Setbacks around busy recreational lakes and rivers can also help to reduce noise impacts on surrounding land uses.

While most people can agree on the function of a buffer zone, research reveals that the width of setbacks varies greatly. It is generally accepted that the use of buffers is most effective when the setback criteria reflect:

- Site-specific characteristics of the development area (slope, topography, vegetation, vulnerability to soil erosion, surface and groundwater hydrology)
- Type of proposed disturbance or land use
- Existing land uses around streams and lakes within the watershed

- Function of the buffer zone (sediment filtering, shading, shoreline stabilization by vegetation root systems, food and cover for fish and other wildlife)
- Resource aspects of greatest sensitivity and vulnerability to disturbance
- Flexibility in implementation

Unfortunately, this site-specific approach to defining setback distances requires significant resources to inventory all lands, develop a fair implementation process to avoid arbitrary and capricious decisions, and to enforce. For this reason, most governing bodies designate a set distance from a waterbody for structures and include minimum performance standards regulating the use of the buffer zone.

A number of studies have been conducted to understand the relationship of buffer strips of various distances to fish populations and aquatic habitat productivity in affected streams and the effects of development activities on lake water quality. Studies have also examined the effects of development activities which occur adjacent to or in proximity to lakes and streams to determine the actual effects of the disturbance and demonstrable reductions in impact with varying levels of separations (setbacks) between the development and the waterbody. Environmental parameters studied have included changes to:

- Stream flows
- Light intensity
- Water temperature
- Concentrations of suspended and settled sediments
- Presence of large woody debris
- Nutrient loads in surface runoff and groundwater
- Water-transported contaminants such as pesticides, herbicides, and fungicides

Below is a summary of some of the studies reviewed and the buffer widths that are recommended for the resource protection and the protection of fish and aquatic populations:

- **Stream Temperature:** For development or resource extraction activities which entail the removal of overstory vegetation along streams, buffer strips are one of the most effective means for maintaining water temperature in a range and seasonal pattern most beneficial to fish. Buffers greater than **100 feet** have been found to provide as much shade as old growth undisturbed forest. Undisturbed buffer strips from **50 to 100 feet** in width were found to maintain water temperatures with a normal range under some circumstances, partially dependent on stream course orientation and the buffer placement.

- **Erosion and Sedimentation:** In the Pacific Northwest, buffer strips **50 to 100** feet wide reduced stream sedimentation from adjacent patch-timber harvest activities; however, the sediment levels in the stream using the 50 to **100** foot buffer were **still** 50 percent greater than an undisturbed portion of the watershed. A more sensitive indicator of the effects of introduced sediments on streams is the measurement of changes to the permeability of streambed gravels. Streambed permeability has a more direct bearing on the success of survival for developing eggs and egg sac fry present in the gravels of the stream. Logging activities conducted with an adequate stream setback buffer have shown minimal changes to stream gravel permeability. Logging activities that did not incorporate setback buffers were found to decrease stream gravel permeability more than **50** percent for at least **6** years following logging.
- **Large Woody Debris:** Removal of nearly all riparian trees along streams can eliminate the source of large woody debris in second growth forests and old growth forests for a period of **40 to 100** years after disturbance. Associated effects on fish habitat can include changes to riffle and pool frequency and loss of overhanging and undercut banks important to juvenile fish and changes in availability of critical overwintering habitat. For logging activities and similar clearing disturbances, studies have shown that buffer strips of **50 to 425** feet (British Columbia) and **15 to 130** feet (Southeast Alaska) produced more juvenile salmon in the summer and sheltered more juvenile salmon during the winter than areas without buffers.
- **Water Quality:** Buffer strips have been shown to improve or avoid declines in dissolved oxygen concentrations in streams primarily by keeping clearing debris and sediments out of streams and providing shade conditions that maintain natural water temperatures (cooler water contains higher levels of dissolved oxygen). Buffers of **20 to 130** feet have been shown to be effective in preventing logging slash from entering streams in the Pacific Northwest.

Cities and Boroughs throughout the United States and Canada use also setback criteria to protect development structures from the potential effects of flooding, stream bank migration, winter icing and to protect water quality and fish and wildlife habitat. Typically the setbacks are included as part of a more extensive zoning ordinance or Shoreland Protection Ordinance and detailed minimum development standards are used in conjunction with structural setbacks. Development standards typically regulate the type of uses, amount of impervious surfaces, and restrict tree cutting and the clearing of vegetation within the setback zones. Presented below is a summary of representative setbacks/buffer strips used by local governments including the key conditions that must be met as part of the setback.

<i>Location</i>	<i>Setback (from ordinary high water mark)</i>
Municipality of Anchorage Title 21- Stream Protection	<ul style="list-style-type: none"> • A minimum of 25 feet wide on either side of the stream • No vegetation may be cleared or disturbed, no grading or excavation may be done, and no structures, fill or paving may occur within 15 feet of the stream. • Within the stream protection setback, located between 15 and 25 feet from the stream, landscaping is permitted.
Anchorage Wetlands Management Plan 1995 Setbacks from Wetlands	<ul style="list-style-type: none"> • Minimum setback is 25 feet. • 100 feet from anadromous fish streams • 85 feet from certain headwaters and tributaries • 65 feet from all other water bodies. • Allows for customized setback as part of the permitting process • Requires undisturbed buffers between 15 and 25 feet depending on wetland types and interactions • Setbacks and buffers shall remain undisturbed to the maximum extent
Willow Sub-Basin Area Plan Logging Buffer (Undisturbed Vegetation) Strips	<ul style="list-style-type: none"> • Minimum 50-foot buffer, larger setbacks to be determined on a site-specific basis
Susitna Area Plan - Logging Buffer (Undisturbed Vegetation) Strips	<ul style="list-style-type: none"> • Minimum 100 feet from anadromous fish streams or other acceptable measures • 100 feet to ¼ mile (greater than 300 feet for visual quality, recreation, and wildlife habitats) • 100 foot buffer for wetlands greater than 100 acres with a locatable stream outlet • 60 foot buffer for wetlands 40 to 100 acres with no locatable stream outlet
Hatcher Pass Management Plan - Logging Buffer (Undisturbed Vegetation) strips	<ul style="list-style-type: none"> • 200 foot buffers on specific streams • 100 feet on all other perennial streams to include all riparian vegetation (but not less than 50 feet)
Alaska Department of Fish and Game - Timber Harvest Activity Buffer (Undisturbed Vegetation) Strips	<ul style="list-style-type: none"> • 100 foot setback buffer from stream or lake shoreline, the upland edge of all stream/lake contiguous wetlands, all fish streams, and all lakes connected by surface drainage to fish streams
Pacific Northwest - Logging Buffer (Undisturbed Vegetation) Strips	<ul style="list-style-type: none"> • Recommended 50 to 100 feet
Southeast Alaska - Logging Buffer (Undisturbed Vegetation) Strips	<ul style="list-style-type: none"> • Recommended 15 to 130 feet
Department of Environmental Programs, Metropolitan Washington Council of Governments	<ul style="list-style-type: none"> • A minimum setback buffer of 20 feet is recommended • 100 to 300 feet for adequate removal of the smaller sized sediment particles found in urban runoff
Bellevue, Washington Shoreline Overlay District	<ul style="list-style-type: none"> • No clearing, grading, excavating, or fill within 25 feet • No commercial parking facilities within 25 feet, • 25 foot setback for structures except docks, piers, and boathouses • Requires plan indicating methods for preserving shoreline vegetation and control of erosion

Location	Setback (from ordinary high water mark)
York, Virginia Watershed Overlay District	<ul style="list-style-type: none"> 200 foot buffer strip from tributary streams and public water supply reservoirs, maintained in natural state or planted with erosion resistant vegetation
Lake Tahoe Shorezone Tolerance Districts	<p>Explicit development standards are based on physical characteristics for 8 shorezone districts. Three districts are summarized:</p> <ul style="list-style-type: none"> Backshore (defined as the area of wave run-up or instability plus 10 feet – whichever is greater) - Allowable base land coverage in this zone is 1%. Naturally occurring vegetation shall not be removed or damaged unless otherwise authorized under a permit. District 1 (generally the beach area that separates lakes from marshes and wetlands) – Access to the shoreline shall be restricted to planned footpaths which minimize the impact to the backshore. Vegetation shall not be manipulated or otherwise disturbed except when permitted. Districts 2 and 3 – Permitted development may be conditioned upon installation and maintenance of vegetation to stabilize backshore areas and protect eroding areas from further destruction.
Douglas County, Wisconsin Shoreland Protection	<ul style="list-style-type: none"> 75 feet for all buildings except piers, marinas, boathouses Boathouses must be set back 2 feet. Tree cutting – No more than 30 percent of the length shall be clear cut to the depth of the strip. Cutting of the strip shall not create a clear cut opening in the strip greater than 30 feet wide for every 100 feet of shoreline. In the remaining 70% length of the strip, cutting shall leave sufficient cover to screen cars, dwellings, accessory structures (except boathouses) from the water.
Douglas County, Wisconsin	<ul style="list-style-type: none"> Minimum protection zone - 75 feet Moderate protection zone - 100 feet Maximum protection zone - 125 feet
Minnesota Department of Natural Resources	<ul style="list-style-type: none"> Recommends shoreline vegetative buffers of a minimum of 15 to 25 feet 30 feet setbacks will accommodate the needs of most shoreline wildlife
Statewide Standards for Management of Shoreland Areas - Minnesota	<ul style="list-style-type: none"> Setbacks based on density and lot size. Setbacks range from 75 to 265 feet. 40,000 square foot lot with single family home requires 150 foot setback At least 10 feet for accessory structures. Limited clearing of trees and shrubs and cutting and pruning, and trimming of trees to accommodate the placement of stairways and landings, picnic areas, access paths, beach and watercraft access areas, and permitted water-oriented accessory structures as well as providing a view to the water from the principal dwelling site in shore and bluff impact zones is allowed provided that: <ul style="list-style-type: none"> The screening of structures, vehicles, or other facilities as viewed from the water, assuming summer leaf on conditions, is not substantially reduced. Along rivers, existing shading of water surfaces is preserved. Impervious surface coverage of lots must not exceed 25 % of the lot area.
Landscape Planning Environmental Applications William Marsh, 1991.	<p>Buffers widths generally greater than 50 to 100 feet in urban areas have been shown to be extremely efficient in sediment removal (up to 90 percent or more) if they meet the following design criteria:</p> <ul style="list-style-type: none"> Continuous grass/turf cover Gentle gradients, generally less than 10 percent Shallow runoff depth, generally not exceeding the height of the grass. In hilly terrain, buffers should be located on upland surfaces and integrated with depression storage and soil filtration measures

Recommended Setback

Properly incorporated into planning, design, permitting, and construction criteria, **setback** buffers are an invaluable tool for minimizing future requirements for mitigation or restoration of disturbed areas. It is recommended that the Borough retain the 75-foot setback and regulate the activities within the setback using performance standards to ensure that the intent of the setback is met. A 75-foot setback is justified for the following reasons:

- A comprehensive scientific evaluation of effective shoreline setback distances in the Borough has not been completed. Due to the magnitude of such a project and limited resources, it is unlikely it will be completed in the near future. In addition, the literature reveals that the widths of setbacks vary significantly even when based on sound scientific research. Literature generally supports site-specific setbacks; however, this is an unrealistic approach with the Borough's limited resources.
- Lacking scientific data gathered along the shorelands of the Mat-Su Borough, a change in the setback is politically unpopular and is a highly charged issue. Those in compliance with the 75-foot setback do not want to see a lesser setback and are concerned about view obstructions and other impacts to the waterbody environment. Regulating agencies and environmental groups would also resist a lesser setback because of adverse impacts and would like to see at least a 100-foot setback. A larger setback could result in more variances being required, increased non-compliance, and lengthy challenges.
- A process still exists to apply for a variance to reduce the setback if it presents the property owner with an undue hardship.
- Literature supports a setback of between 50 and 100 feet with the inclusion of minimum development standards. This indicates that **75** feet is a reasonable distance to offer at least some protection to natural resources under a variety of development scenarios.

Recommended Minimum Performance Standards

Effective performance standards **or** Best Management Practices are enforceable and can be consistently applied to all property owners. This will add increased protection to the Borough's waterbodies as they become more popular and more heavily populated, and it **will** help to bring **Mat-Su** Borough ordinances on shoreline development into compliance with the provision of the Mat-Su Borough Coastal Management Program (MSBCMP) that "proposed uses and activities within 75 feet of the high water line must be reviewed to ensure protection of water quality and fish and wildlife habitat."

Regulation of activities within the 75-foot setback must focus on the following **two** concerns which can have a significant impact on water quality, fish and wildlife habitat, and the aesthetics of shorelands and waterbodies:

- **Loss of riparian vegetation:** Removal of existing vegetative cover in the riparian zone to provide shoreline access for boats, create lawn, or for other activities is likely to lead to erosion and sediment transport in runoff waters into the waterbody. Vegetation in this zone helps to filter sediment, nutrients, and pollutants out of surface runoff, while stabilizing banks, controlling erosion, and dissipating floodwaters. Additionally, many terrestrial and aquatic animals use this area for foraging, breeding and rearing their young, and taking protective cover.
- **Use of impervious surfaces:** An impervious, or nonporous surface is one that will not allow water infiltration such as blacktop, concrete and rooftops. Runoff water from these surfaces increases the rate at which pollutants and excess nutrients are carried the water. Impervious surfaces also interrupt natural drainage patterns and can cause shore degradation through concentration of runoff and erosion.

Uniform application and consistent enforcement of specific performance standards can effectively address the above concerns before development starts, at a point when such measures are both inexpensive to the property owner and easy to implement. Moreover, the following measures will also address visual impacts and can serve to buffer and reduce noise generated on the waterbodies.

1. Preserve a minimum 25-foot wide buffer of undisturbed native vegetation across a total of 30 percent of the parcel's shoreline. **This** zone is a permanent planting and should be left untouched, except for the removal of select or fallen trees. In the remaining 70 percent of the buffer zone, limited clearing of trees and shrubs and cutting and pruning of trees is permitted to accommodate the placement of stairways and landings, picnic areas, access paths, beach and watercraft access areas, and permitted water-oriented accessory structures as well as providing a view to the water from the principal dwelling site is allowed provided that:
 - The screening of structures, vehicles, or other facilities as viewed from the water, assuming summer leaf on conditions, is not substantially reduced.
 - Along rivers, existing shading of water surfaces is preserved.

These provisions shall not apply to the removal of dead, diseased or dying trees.

2. In cases where the following land uses are present within the 75-foot buffer zone, an additional **15-foot** wide vegetative buffer, the same length as the use, must be in place between the use and the shoreline to intercept runoff. Non-native vegetation can be used in this zone.
 - Driveway
 - Parking lot
 - Road
 - Car wash
 - Dog kennels
 - Boat Maintenance and Other Repair Activities
3. Any paved, impermeable, or roofed surfaces within the 75-foot buffer zone must have an infiltration bed of sufficient size to control the velocity and volume of runoff.
4. Impervious surface coverage of lots must not exceed **25** percent of the lot area.
5. Boathouses must be set back 2 feet from the water's edge, and are of a height and color so as not to detract from the natural beauty of the shoreline and shall not be used for human habitation.
6. Development shall be accompanied by a site plan indicating methods of preserving shoreline vegetation and for control of erosion during and following construction.
7. **All** structures, accessory buildings and ancillary facilities, other than those related to water use such as **docks**, piers, and boat houses shall be set back a minimum of 30 feet from the ordinary high water mark.
8. Parking shall not be permitted over water or within 30 feet of the shoreline.

In cases where a property owner seeks a variance from the 75-foot buffer, it is recommended that the above performance standards still apply.

Conclusion

Some regulation is necessary to preserve the value and enjoyment of the Borough's waterways, especially as they grow in popularity for residential and recreational use. A recommended **75-foot** setback with minimum performance standards begins to address the protection of water quality and fish and wildlife habitat. In addition, the vegetated setback also serves an important function in the protection of values associated with quality of life to include noise reduction and aesthetics.

However, because water quality is intrinsically linked to the day to day activities of residents and users on and surrounding the waterbody, education is also critical to preserving the resource. Therefore, it is also recommended that in addition to the Matanuska-Susitna Borough's Property Owner's Guide to Shoreline Landscaping, a booklet containing Best Management Practices for waterfront property owners be developed promoting responsible development. Example Best Management Practices might include the following.

- Protect bare soil surfaces. Vegetation **is** the best protection because it both absorbs and uses water. Seed and mulch exposed soil within the watershed as soon as possible after disturbance (gardens, construction sites, etc.).
- Use fertilizer sparingly. **All** fertilizers are carried in runoff and dissolve into the groundwater. Use non-phosphate varieties.
- Do not concentrate or channelize water flow unless absolutely necessary. On undisturbed slopes, water percolates through soil slowly. When all runoff is focused on one spot, such as a culvert or roof gutter, the natural protection of the ground surface is often not sufficient to prevent this extra **flow** from breaking through to bare soil. If runoff must be directed, protect the outflow area with an energy dissipator, such as rock or securely anchored brush, that will withstand storm flows.
- Prevent water from running off roads, driveways, roofs or lawns directly into lakes and streams. Direct surface runoffs into natural depressions, or flat, wooded areas, where the water can seep into the ground slowly.
- Keep septic tanks maintained. Pump every 2-3 years for year-round homes: every 5-6 years for seasonal cottages. This expense is well worth every penny. Pumping is the key to keeping your septic system working. It *is* far less expensive to pump than to have a new leaching field installed.
- Avoid the use of phosphate containing detergents.
- Don't wash vehicles near the waterbodies.
- Use lawn clippings and leaves as mulch for shrubs and gardens. Pile these where they will not be washed into the waterbodies by heavy rains.
- Don't provide feed for wild ducks and geese. **As** pretty as these may be, large numbers **of** Canada Geese have become major problems and polluters (fecal coliform) of lakes elsewhere in the state.
- Place manure and composting piles as far as you can from the waterbodies or from drains or ditches which lead directly to lakes or streams.
- Limit human use or animal use of vulnerable areas. Trails can channel the **flow**.
- Establish temporary berms during construction to contain runoff overflow.

References

- Alaska Department of Environmental Conservation. July **1996**. Sediment, total suspended solids, and water quality standards: a review. Division of Air and Water Quality, Water Quality Protection Section. Juneau, AK.
- _____. **1996**. Alaska Water Quality Standards **18 ACC 70**, Amended to March **16, 1996**. Water Quality Technical Standards.
- Alaska Department of ADF&G. Feb. **1996**. Letter from G. Seaman, Habitat and Restoration Division, ADF&G, to P. Hendrickson, Aleutians West Coastal Resource Service Area (with attachments).
- _____. June **1994**. Letter from F. Rue, Director, Habitat and Restoration Division, to P. Rusanowski, Alaska Coastal Policy Council (see p. **10** commentary concerning setbacks in draft Municipality of Anchorage Wetlands Management Plan).
- _____. **1985**. Alaska habitat management guide Southcentral Region map atlas. Division of Habitat. Juneau, AK.
- _____. **1985** Alaska habitat management guide (reference maps), southcentral Region. Volume II: distribution and human use of birds and fish. Habitat Division. Anchorage, AK.
- _____. **1985** Alaska habitat management guide (reference maps), southcentral Region. Volume II: distribution and human use of mammals. Habitat Division. Anchorage, AK.
- _____ and Environmental Protection Agency. **1996**. Revegetation Techniques and Elevated Walkways.
- Alaska Department of Natural Resources (ADNR). July **1984**. Susitna Area Plan: Recreation - recommendations for management of recreation lands in the Susitna area. Division of Parks and Outdoor Recreation, and Division of Land and Water Management with assistance from the U.S. Department of Agriculture. Anchorage, AK.
- _____. June **1985**. Susitna Area Plan. Prepared by ADNR, ADF&G, and Matanuska-Susitna Borough in cooperation with U.S. Department of Agriculture. Anchorage, AK.
- Belt, G.H., J. O'Laughlin, and T. Merrill. 1992. Design of forest riparian buffer strips for the protection of water quality: analysis of scientific literature. Report #8, Idaho Forest, Wildlife and Range Policy Analysis Group. University of Idaho. Moscow, ID.
- Bellevue, Washington. Shoreline Overlay District. Land Use Code.
- Budd, W.W., P.L. Cohen, P.R. Saunders, and F.R. Steiner. 1987. Stream corridor management in the Pacific Northwest: I. Determination of stream-corridor widths, and II. Management strategies. Environmental Management, Vol. **11**, No. **5**, pp. **587-597** and pp. **595-605**.
- Bulmer, Susan K., Virginia Garrison. Statewide Lakes and Ponds Recreation Management in Vermont. Vermont Department of Forests, Parks and Recreation and Vermont Department of Environmental Conservation.

Castelle, A.J., Conolly, C., Emers, M., Metz, E.D., Meyer, S., Witter, M., Mauermann, S., Erickson, T., and S.S. Cooke. **1992.** Wetland buffers: use and effectiveness. Prepared by Adolfson Assoc., Inc., W & H Pacific, Inc., Washington State Department of Ecology, and Pentec Environmental for Washington State Department of Ecology, Shorelands and Coastal Zone Management Program. Olympia, WA.

City of Spokane. **1992.** Spokane Wetlands Protection Program, Phase 1 Report.

Community and Environmental Defense Associates. **1991.** Protecting the Environment and Waterfront Residents from the Effects of Boating Facilities.

Desbonnet, A., P. Pogue, V. Lee, and N. Wolff. **1994.** Vegetated buffers in the coastal zone: a summary review and bibliography. Coastal Resources Center, Rhode Island Sea Grant, University of Rhode Island. **ISBN 0-938-412-37-x.**

Freethy, G.W., and Scully, D.R., **1980,** Water Resources of the Cook Inlet Basin: **U.S. Geological Survey Hydrologic Investigations Atlas HA-620, 4 sheets, scale 1:1,000,000.**

Hogan, Eppie, V., **1995,** Overview of Environmental and Hydrogeologic Conditions Near Big Lake, Alaska, **U.S. Geological Survey Open-File Report 95-403.**

Jackivicz, T.P. and L.N. Kuzminski. **1973.** A review of outboard motor effects on the aquatic environment. *J. Wat. Pollut. Contr. Fed.* **45: 1759-1770.**

Koski, K.V., J. Heifetz, S. Johnson, M. Murphy, and J. Thedinga. **1984.** Evaluation of buffer strips for protection of salmonid rearing habitat and implications for enhancement. Pp. **138-155** In: *Proceedings: Pacific Northwest stream habitat management workshop*, T.J. Hassler (ed.). American Fisheries Society, Western Division. Humbolt State University. Arcata, CA.

Lower Colorado River Authority. **1996.** Lake Travis Recreation Management Plan.

Marsh, William M. **1991.** Landscape Planning Environmental Applications Second Edition. John Wiley & Sons, Inc. New York.

Matanuska-Susitna Borough. **1987**. Matanuska-Susitna Borough Coastal Management Plan. (original plan August **1983**).

Matanuska-Susitna Borough. September **1995**. Big Lake Community Comprehensive Plan (Draft).

Mecklenburg County, North Carolina. Special Requirements for Facilities Located on or Adjacent to Lake Norman.

Metropolitan Washington Council of Governments (MWCG). July **1987**. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs.

Michael, Holly J., Kevin Boyle, and Roy Bouchard. **1996**. Water Quality Affects Property Prices: A case study of selected Maine Lakes. Maine Agricultural and Forest Experiment Station. University of Maine.

Minnesota Department of Natural Resources, Division of Waters. **1989**. Statewide Standards for Management of Shoreland Areas.

Municipality of Anchorage, Department of Economic Development and Planning. **1988**. Revegetation Guide.

_____. Department of Community Planning and Development. **1995**. Anchorage Wetlands Management Plan.

Ozaukee County, Wisconsin. Zoning Ordinance, Shoreland Protection.

Sargent, Frederic; Lusk, Paul; Rivera, Jose; Varela, Maria. **1991**. Rural Environmental Planning For Sustainable Communities. Island Press, Washington D.C.

Schwab, Jim. March **1991**. Regulating Development on Inland Lakes. Zoning News, American Planning Association.

Selkregg, Lydia, **1976**, Alaska Regional Profiles - Southwest Region; University of Alaska, Arctic Environmental Information and Data Center.

Shoephorster, D.B., **1968**, Soil Survey of Matanuska Valley Area, Alaska, U.S. Soil Conservation Service.

Sinnott, R. **1989**. Unpublished draft file report - Buffer strips: their physical, biological, and regulatory roles in maintaining fish habitat. Alaska Department of ADF&G, Division of Habitat. Anchorage, AK

Sowman, Merle R. **1987**. A procedure for assessing recreational carrying capacity for coastal resort areas. Landscape and Urban Planning **14**: 331-344.

Spokane County, Washington State. Regulations for Shoreline Protection Structures.

Stinchfield, Joseph, Jeffery Stitt, and Glen Radde. November **1984**. Minnesota's Shorelands. CURA Reporter.

U.S. Department of Agriculture, Soil Conservation Service. **1992**. Kenai River Landowner's Guide. Prepared for the Kenai Soil and Water Conservation District.

U.S. Department of the Interior, Bureau of Land Management. June **1988**. Draft Recreation Management Plan for the Yakima River Canyon Recreation Area Washington.

U.S. Environmental Protection Agency, **1990**, Monitoring Lake and Reservoir Restoration, Technical Supplement to the Lake and Reservoir Restoration Manual. Office of Water. EPA 440/4-90-007.

Vermont Department of Environmental Conservation, Lake Protection Program. May **1990**. Shoreland Zoning Options for Towns.

_____. Lake Protection through Town Planning. A Suggested Process.

Vermont Use of Public Waters Rules, Adopted October **5, 1994**. As Amended Effective January **2, 1996**.

Wagner, Kenneth J. **1990**. Assessing the Impacts of Motorized Watercraft on Lakes: Issues and Perceptions. In: Proc. Natl. Conf. Enhancing States Lake Management Programs, May **1990**. Northern Illinois Planning Commission, Chicago, IL.

_____. June **1994**. Of Hammocks and Horsepower: The Noise Issue at Lakes. Lakeline.

West Bloomfield Township, Minnesota. Land Use Ordinance, Waterfront Property.

Wisconsin Department of Natural Resources, Bureau of Law Enforcement, **1992**. Guidelines for Ordinance Writing And Buoy Placement in Wisconsin Waters.

Wycoff, Mark A. March **1985**. Inland Lake Keyhole Development: An Analysis of Local Zoning Approaches. Land Use Law.

Yates, Steve. **1991**. Adopting a Stream, A Northwest Handbook. University of Washington Press. Seattle.

York, Virginia. Watershed Protection Overlay District.

Yousef, Y.A., W.M. McLellon, and H.H. Zebuth. **1980**. Mixing effects due to boating activities in shallow lakes. Draft Report to OWRT, U.S. Dep. Inter. Tech. Rep. ESEI **78-10**, Washington, D.C.

Zwick Associates; Vaske, Donnelly, and Associates; and Baystate Environmental Consultants. **1991**. Vermont Lakes and Ponds Recreation Management Study. Prepared for State of Vermont Agency of Natural Resources, Recreation Division.

DRAFT

October 28, 1998



MATANUSKA-SUSITNA BOROUGH

350 East Dahlia Avenue, Palmer, Alaska 99645-6488

Planning and Land Use Department, Code Compliance Division

(907)745-9853 FAX:(907) 745-9876 E-mail: ccb@msb.co.mat-su.ak.us

SHORELANDS MANAGEMENT STUDY QUESTIONNAIRE

The Planning Department of the Matanuska-Susitna Borough has an FY99 **309** Enhancement Grant from the Alaska Coastal Management Program (ACMP) to study how people want the *shorelands* to be managed. As the communities of the Borough, especially their outdoor activities and amenities, continue to attract new residents, businesses, and visitors, how much value will people place on integrating the natural framework of creeks, rivers, lakes, and drainage basins with the life-styles and economic opportunities of the Borough?

The Planning Department is asking for help from a broad spectrum of interests. Whatever your background, the Borough is interested in your local knowledge, phrasing of problems, and ideas for managing the *shorelands*. How can the *shorelands* be integrated into a community that places great value on private market activities and community organizations, and has a strong dislike for government regulation?

1. What are **your current activities** and **uses** of the *shorelands*?

- | | | | |
|--------------------------|--------------------------------------|--------------------------|--|
| <input type="checkbox"/> | residence
or
second
home | <input type="checkbox"/> | walking, bicycling, skiing , or other non -
motorized recreation |
| <input type="checkbox"/> | camping or temporary residential use | <input type="checkbox"/> | boating, flying, snow machining, or other
motorized recreation |
| <input type="checkbox"/> | commercial or industrial business | <input type="checkbox"/> | access to waterways |
| <input type="checkbox"/> | fishing or hunting | <input type="checkbox"/> | sightseeing or traveling through Borough |
| <input type="checkbox"/> | guiding or tourism | | |
| <input type="checkbox"/> | job or work | | |

What are your **other activities or uses**?:

2. Does anything **displease, disturb, or threaten** you about uses and activities on the *shorelands*?

- | | | | |
|--------------------------|--|--------------------------|---|
| <input type="checkbox"/> | Disruption from motorized vehicles, boats
and airplanes | <input type="checkbox"/> | Fragmented habitat and wildlife systems |
| <input type="checkbox"/> | Rudeness among residents, visitors, and
neighbors | <input type="checkbox"/> | Flood damage from bluff failure and
changing stream patterns |
| <input type="checkbox"/> | Infringement of privacy and property
rights | <input type="checkbox"/> | Declining environmental quality |
| <input type="checkbox"/> | Declining fishing and hunting
opportunities | <input type="checkbox"/> | Crowded recreation and tourism
destinations |
| <input type="checkbox"/> | Interference with private market | <input type="checkbox"/> | Limited public access to public lands and
waters |
| <input type="checkbox"/> | Shrinking of job opportunities | <input type="checkbox"/> | Loss of heritage and damage to artifacts |

DRAFT

September 29, 1998

Can you identify other **problems** and **threats** regarding *shorelands*?:

What do you **want to see happen** on the *shorelines*?

- | | |
|--|--|
| <input type="checkbox"/> A linked and adequate system of habitat for small and large wildlife | <input type="checkbox"/> Encouragement of commercial and industrial patterns that incorporate the values of <i>shorelands</i> |
| <input type="checkbox"/> Positive protections of anadromous streams in development projects | <input type="checkbox"/> Identification of access and other needs of resource based industries |
| <input type="checkbox"/> Encouragement of existing riparian vegetation and protection of natural systems in developing areas | <input type="checkbox"/> Preservation of quality recreational and tourism opportunities |
| <input type="checkbox"/> Protection of the native vegetation, soils, and waterways in large natural areas | <input type="checkbox"/> Friendliness and cooperation among neighbors, visitors, and residents |
| <input type="checkbox"/> An overall system to avoid the dangers to life and property from flooding | <input type="checkbox"/> Identification and integration of heritage resources in <i>shorelands</i> activities and uses |
| <input type="checkbox"/> Identification of development opportunities and incentives that are consistent with <i>shorelands</i> | <input type="checkbox"/> Public procedures that encourage partnerships and a cooperative spirit to protect and develop <i>shorelands</i> |
| <input type="checkbox"/> Integration of <i>shorelands</i> with fire safety | |

What else would you **like to happen** in the *shorelands*?

4. What can be done to better manage the *shorelands*?

- | | |
|--|--|
| <input type="checkbox"/> Maintain existing rules regarding the 75 feet setback | <input type="checkbox"/> Protection of valuable existing uses and activities from more intense development |
| <input type="checkbox"/> Easier methods for the public to follow | <input type="checkbox"/> Significant incentives to encourage appropriate development in <i>shorelands</i> |
| <input type="checkbox"/> Graphic examples of riparian vegetation and improvements | <input type="checkbox"/> Nurturing of partnerships and resource sharing arrangements among organizations |
| <input type="checkbox"/> Funding for pilot projects that others may follow | <input type="checkbox"/> Outreach and public information programs to encourage and motivate private businesses |
| <input type="checkbox"/> Mapping of potential development and significant preservation areas | |
| <input type="checkbox"/> Improvements and vegetation in accord with a plan that will protect the <i>shorelands</i> | |
| <input type="checkbox"/> Discouragement of patterns that result in cumulative impacts | |

What other **methods or tools** could be used to manage the *shorelands*?

FURTHER COMMENTS:

If you are interested in providing additional information, specialized knowledge, or insight, or participating in the Advisory Committee or the other *shorelands* activities please indicate your **name, phone number, fax, e-mail, and/or mailing address**:

**PLEASE FOLD AND MAIL
THIS SELF-ADDRESSED AND STAMPED QUESTIONNAIRE**

DRAFT

October 28, 1998



MATANUSKA-SUSITNA BOROUGH

350 East Dahlia Avenue, Palmer, Alaska 99645-6488

Planning and Land Use Department, Code Compliance Division

(907)745-9853 FAX:(907) 745-9876 E-mail: ccb@msb.co.mat-su.ak.us

SHORELANDS MANAGEMENT STUDY SHORELANDS STEERING COMMITTEE (INTERIM)

AGENDA

(anticipation of public process and study)

INTRODUCTIONS

APPROVAL OF AGENDA

HANDY MEETING RULES

(consensus of people at meeting)

- | | |
|--|---|
| • One person speaks at a time | e Share your background and information openly |
| e Briefly Identify yourself, interests, and background | e Defer to the meeting coordinator |
| e Practice good listening skills | • Seek consensus and avoid group voting and decision-making |
| e Do not repeat comments of others | e Place objectives of study and borough above special interests |
| • Keep comments brief and on the subject | |
| e Avoid being judgmental of others | |

PURPOSE OF PROJECT

Review of staff information and background

Background, input, and questions from others

IDENTIFICATION OF PEOPLE AND INTERESTS TO HELP WITH STUDY

*(This is the **focus** and most important activity of the meeting-see attached memo*

The remainder of the agenda is for your information and comment)

Interests

Groups

People

PUBLIC PROCESS AND INFORMATION

DRAFT

October 28, 1998

Schedule
Questionnaires
Interim Steering Committee
Public Forum
Workshops
Announcements and newsletters

SHORELANDS MANAGEMENT STUDY

Background and literature review
Issues and problems
Goals and objectives
Management Policies and Strategies