

Recommended Land Protection Strategies for the Dungeness Riparian Area

June 2003

Prepared for the Dungeness River Management Team
by Hansi Hals, Jamestown S'Klallam Tribe with direction from the River
Restoration Work Group.

Dungeness River Restoration Work Group

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This report should be cited as:

Hansi Hals and Dungeness River Restoration Work Group. 2003. Recommended Land Protection Strategies for the Dungeness Riparian Area. Contributors include: Jamestown S'Klallam Tribe, Washington Department of Fish and Wildlife, Clallam County, Natural Resources Conservation Service, Clallam Conservation District, Private Landowners). Jamestown S'Klallam Tribe, Blyn, Washington.

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Summary

In 2000, the Dungeness River Management Team (DRMT) requested that a work group of fisheries biologists and planners (River Restoration Work Group) undertake a land protection study as a component of both salmon recovery and flood protection efforts. This document was developed as a land protection strategy for the Dungeness River Riparian area. Its purpose is to detail the biological value of lands along the river for maintaining and improving salmonid habitat. The strategy recommends methods to protect high quality river habitat, as well as allowing for needed restoration on others.

The Dungeness River Restoration Work Group (RRWG) provided technical information for each land parcel within the Dungeness River Riparian Area as a basis for this long term planning strategy. A parcel boundary map was overlaid upon aerial images and the RRWG proceeded, parcel by parcel, from the river mouth to the hatchery at river mile 11, to describe: fish use, habitat value, bank stability, current land use, development potential, and restoration needs. Properties that are in public ownership or have private conservation ownership were identified. Further, with the long term objective of optimizing salmonid habitat value in the Dungeness Corridor, the RRWG prescribed a recommended action for remaining parcels (those not in public or private conservation).

The recommended actions in this report are purchase, conservation easement, or stewardship with the following definition for each:

Purchase in this report means the fee simple purchase of property at fair market value from a willing seller. Approximately 600 acres are identified in this report for high priority purchase. Of these 600 acres, committed funding exists for approximately 450 acres and negotiations are underway for purchase.

A ***conservation easement*** is a legal mechanism to conserve the natural resource values of a land parcel in perpetuity. The landowner retains title to the land, and an easement is recorded with the deed stating the conservation use and specifying allowable and prohibited activities. Currently, the North Olympic Land Trust holds title to conservation easements for more than 100 acres of riparian land along the Dungeness River and the RRWG recommended this type of protection as a high priority for over 250 additional acres.

Stewardship in this report is continued management of the property by the owner, with an opportunity to have a biologist/educator visit with the landowner to discuss issues pertaining to the specific parcel of land.

This strategy is from the biological perspective. A landowner's willingness to proceed and available funding will determine whether or how this strategy is implemented. An underlying assumption within this strategy is that regulatory programs cannot be relied upon to provide long term biological values protection.

I. Introduction

This document was developed as a land protection strategy for the Dungeness River Riparian area. Its purpose is to detail the biological value of lands along the river for maintaining and improving salmonid habitat. The strategy recommends methods to protect high quality river habitat, as well as allowing for needed restoration on others. This strategy works in tandem with the *Recommended Restoration Projects for the Dungeness River* (Dungeness River Restoration Work Group, July 1997) and the *Salmon and Steelhead Habitat Limiting Factors for Water Resource Inventory Area 18* (Donald Haring, Washington State Conservation Commission, December 1999) which describe the biological condition of the lower river in regard to salmonid populations and set forth recommended restoration efforts. In essence, the land protection strategy has been drafted to assist with the implementation of restoration projects which have already been identified. Further, it has been drafted so that another round of restoration projects will not be needed in the future --- a no net loss of functioning salmonid habitat. This document is a “recommended strategy” to support the biological integrity of the river system; the extent to which it is implemented depends upon the cooperation and support of the riverside landowners and funding.

In 2000, the Dungeness River Management Team (DRMT) requested that a work group of fisheries biologists and planners (River Restoration Work Group) undertake a land protection study as a component of both salmon recovery and flood protection efforts. At that time, funding was available for purchase of critical salmonids habitat as well as for protection of riparian resources through conservation easements. It was apparent that a broad study of the riparian corridor to identify priorities and map vulnerabilities, flood risks, and high habitat values was needed. This report performed the needed analysis of the riparian corridor and provides recommendations for long term protection of each vulnerable or high habitat value area. The lower 10.8 miles of the river are the focus of the protection strategy because of the human made disturbances that have occurred in the lower river and the lower river’s high habitat value is vulnerable to further disturbance (Orsborn and Ralph 1994).

The Dungeness River Restoration Work Group (RRWG), guided by reports and studies such as Recommended Restoration Projects for the Dungeness River, WRIA 18 Limiting Factors Analysis, and Physical Processes, Human Impacts, and Restoration Issues of the Lower Dungeness River as well as current landowner concerns, identified land areas of high quality riparian habitat; high priority restoration projects; and human welfare and property at risk. The Dungeness River Corridor 2003: High Priority Areas Map is a compilation of aerial photographs taken in the spring of 2003 showing the designated land areas.

River Restoration Work Group core group members which participated from project conception through completion are Ann Seiter, Natural Resources Director, Jamestown S’Klallam Tribe; Randy Johnson, Fisheries Biologist, Washington

Department of Fish and Wildlife; Byron Rot, Senior Habitat Biologist, Jamestown S’Klallam Tribe; Cathy Lear, Salmon Recovery Planner, Clallam County. Pat Crain, Habitat Biologist, Clallam County participated in the parcel descriptions and recommendations for the final reaches of the river, and the writing of this report. Hansi Hals, Watershed Restoration Planner with the Jamestown S’Klallam Tribe provided staff support to this group’s ongoing effort and Pam Edens, GIS / Data Management Specialist, Jamestown S’Klallam Tribe produced the parcel prescription and priority maps which accompany this report. Other River Restoration Work Group Members, or former members, which made contributions and comments to this report are Al Moore, watershed resident and Dungeness River landowner, Kerry Perkins in the capacity of District Conservationist for NRCS and Joel Freudenthal, in the capacity of Habitat Biologist for Clallam County. Dungeness River Management Team members and alternates were also invited to review and comment upon the working draft. Joe Holtrop, District Manager for the Clallam Conservation District provided substantial comments.

The Dungeness River Restoration Work Group (RRWG) provided technical information for each land parcel within the Dungeness River Riparian Area as a basis for this long term planning strategy. A parcel boundary map was overlaid upon aerial images and the RRWG proceeded, parcel by parcel, from the river mouth to the hatchery at river mile 11, to describe: fish use, habitat value, bank stability, current land use, development potential, and restoration needs. Properties that are in public ownership or have private conservation ownership were identified. Further, with the long term objective of optimizing salmonid habitat value in the Dungeness Corridor, the RRWG prescribed a recommended action for remaining parcels (those not in public or private conservation).

Work group members were asked to look at biological value and development status but did not consider availability for purchase or cost. It was assumed that socio-economic factors associated with the strategy would be addressed later by the DRMT or other public process. The recommended actions in this report are purchase, conservation easement, or stewardship with the following definition for each:

Purchase in this report means the fee simple purchase of property at fair market value from a willing seller. Fair market is determined at the time of purchase through an appraisal. If improvements are located on the property it includes the improvements; though the expectation is that the structures would be removed. The purchaser would be a public agency, Tribe or private owner dedicated to long term conservation of the property.

A ***conservation easement*** is a legal mechanism to conserve the natural resource values of a land parcel in perpetuity. The landowner retains title to the land, and an easement is recorded with the deed stating the conservation use and specifying allowable and prohibited activities. Conservation easements along the Dungeness River are generally held by the North Olympic Land Trust who then has the responsibility to monitor easements and pursue enforcement actions if needed.

Easements are highly variable because they are tailored to suit individual landowners. Easements do not allow public access to the property, unless an owner requests such access be granted. In its recommendations, the RRWG assumed that conservation easements will maintain a high degree of conservation. Although each easement deed is unique and they are structured in various ways, they typically contain these elements:

1. a statement of the property's conservation values;
2. legal description and baseline documentation;
3. a statement of the purpose of the easement;
4. a description of the rights granted the land trust;
5. a list of permitted land uses (rights retained by the landowner);
6. a list of prohibited land uses;
7. miscellaneous provisions including enforcement remedies, liability disclaimers, procedural directions, and amendment and extinguishment clauses.

Stewardship in this report is continued management of the property by the owner, with an opportunity to have a biologist/educator visit with the landowner to discuss issues pertaining to the specific parcel of land. The purpose of the visits would be to suggest good stewardship practices to improve conditions of the river. Pertinent issues would include siting and maintenance of septic, well and structures; vegetation; erosion; flood risks; and habitat values. In general, stewardship refers to residential or recreational use that maintains or enhances biological values.

This strategy is from the biological perspective. The recommendations of this group are made to support the biological integrity of the river system and do not presume future funding or landowner willingness. A landowner's willingness to proceed and available funding will determine whether or how this strategy is implemented. In many cases, an alternative to the recommendation provided may be suitable. For instance, a fee simple purchase may be preferable to a conservation easement encumbrance on their property for some landowners. Likewise, for properties that are recommended as a fee simple purchase – a conservation easement may work. In general, fee simple purchase was considered by the RRWG to have fewer risks than a conservation easement. For example, a conservation easement may be crafted such that some activities are not restricted that do impact biological values. Further, properties with conservation easements are still privately owned and vulnerable to violations of the easement – particularly after the property has been sold or otherwise changed hands. Therefore, fee simple acquisition was recommended for properties with exceptional biological values because it is the most predictable tool for long term conservation. Conservation easements provide more flexibility. Conservation easements are generally recommended if it is a portion of the property with important biological values. The criteria employed for each parcel recommendation are described in the methodology section.

Landowners may discover other permanent options for conserving the natural resource values on their property. An underlying assumption within this strategy is that regulatory programs cannot be relied upon to provide long term biological values

protection. Regulatory programs, such as the Critical Areas Code, may provide variances and be rewritten and therefore are not a viable means of *long term* biological values protection. The regulatory programs that describe allowable and prohibited activities with the Dungeness Riparian Area were reviewed and are described in the Dungeness Corridor Regulatory Programs.

[Map Link 8a: Dungeness Corridor Mouth to Ward Bridge - 2003](#)

[Map Link 8b: Dungeness Corridor Ward Bridge to Hwy 101 – 2003](#)

[Map Link 8c: Dungeness Corridor Hwy 101 to Hatchery - 2003](#)

II. Methodology

The River Restoration Work Group provided technical information for each land parcel within the Dungeness River Riparian Area. A parcel boundary map was overlaid upon aerial images and the RRWG proceeded, parcel by parcel, from the river mouth to the hatchery at river mile 11, to describe: fish use, habitat value, bank stability, current use, likelihood of development and restoration needs. Properties that are in public ownership or have private conservation ownership were identified. Results of this analysis are compiled in Appendix B. Further, with the objective of long term high quality and abundant salmonid habitat of the Dungeness Corridor, the RRWG prescribed a recommended action for remaining parcels (those not in public or private conservation). Maps depicting the prescribed recommendations are located in Section III following a description of each reach. An assumption of the RRWG is that regulatory programs are not a viable means of long term conservation of biological values. Further, it is understood by this group that these recommendations do not imply landowner willingness or intent. The group also understands that funding for this strategy is likely to be sporadic and fall short of implementing the entire strategy.

There are eight categories that appear on each map: 1. High priority purchase, 2. High priority purchase with boundary determination to be made pending further analysis, 3. Medium priority purchase, 4. Low priority purchase, 5. Public/Tribal/Land Trust/ Private conservation ownership, 6. High priority conservation easement, 7. Medium/Low conservation easement, and 8. Stewardship. The following criteria will help readers understand the differentiation among parcels and the resulting recommendations.

Table 1: General criteria used for making recommendations

Category	General Criteria
High priority purchase	Critical high quality salmonid habitat; Property integral to high priority restoration project which requires land use change; Human health, welfare, property at significant risk.
High priority purchase pending further analysis	Exact boundary determination for property integral to high priority restoration project needs to be completed.
Medium priority purchase	Property integral to medium priority restoration project which requires land use change.
Low priority purchase	Property integral to low priority restoration project which requires land use change.
Conservation ownership	Property owned by a public entity, Tribe, Land Trust, or private owner that has demonstrated commitment to conservation.
High priority conservation easement	Long term high quality salmonid habitat compatible with residential land use, if use in riparian area is limited.
Medium/ Low priority conservation easement	Long term fair to good quality salmonid habitat compatible with residential land use, if use in riparian area is limited.
Stewardship	Developed property which is not critical for a priority restoration project, nor considered a high flood/ erosion risk.

Public/ Tribal/ Land Trust/ Private conservation ownership

Property was identified as *Public/Tribal/Land Trust/ Private conservation ownership* if 1) the property is owned by a public entity (local, state or federal), the Jamestown S’Klallam Tribe, the North Olympic Land Trust, or has a private owner that has displayed significant interest in conservation and stewardship; or 2) there is a conservation easement on the deed of the property; or 3) there is a forest easement on the deed of the property held by WA Department of Natural Resources.

Purchase

Purchase recommendations were ranked high, medium and low. In general, purchase was recommended for: 1. high quality undeveloped habitat, 2. developed/ agricultural property needed for restoration or to protect river processes and 3. developed property subject to chronic flood hazard, including risk to residents. In these cases, outright purchase will prevent development or provide the ability to demolish existing development that currently impedes river functions. The recommendation was ranked from low to high in accordance with how important that parcel is in regards to the functioning of the entire river system.

Property was identified as *High priority purchase* if 1) the property is mostly within the channel meander zone (cmz) as it would be mapped without levees and 2) the property is integral to a restoration element identified in the Recommended Restoration Projects for the Dungeness River and WRIA 18 Limiting Factors Analysis; or 3) the property provides high habitat value and is contiguous with either conservation ownership or other high priority purchase parcels. *High priority purchase* was also recommended for parcels that are subject to chronic flood or erosion risk. In these cases, the recommendation serves two purposes. First, to help landowners out of the risky property, and second to prevent future flood and erosion mitigative actions that would impact the biological values of the river system.

There are two restoration elements identified in the Recommended Restoration Projects for the Dungeness River and the WRIA 18 Limiting Factors Analysis that are applied to recommend *High priority purchase*. Not listed in any ranking the restoration elements are: 1. Reestablish functional channel and floodplain in the lower 2.6 miles through dike management and constriction abatement, and 2. Protect side channels. It is noted in the limiting factors that while the restoration elements are not ranked, it is critical to restore functional floodplain processes in the lower 2.6 miles early on to better ensure success of other habitat restoration actions. Readers who wish to understand the reasons for these two recommended actions should consult both the Recommended Restoration Projects for the Dungeness River and the WRIA 18 Limiting Factors Analysis. These reports provide thorough discussions regarding salmonids populations and river conditions.

Property was identified as *Medium priority purchase* if purchase of the parcel supports a restoration element identified in the Recommended Restoration Projects

for the Dungeness River and the WRIA 18 Limiting Factors Analysis, but the parcel is mostly outside of the channel meander zone. The restoration element that applies for the *Medium priority purchase* recommendation is Protect side channels.

Property was identified as *Low priority purchase* if purchase of the parcel supports a restoration element identified in the Recommended Restoration Projects for the Dungeness River and the WRIA 18 Limiting Factors Analysis but, the parcel is mostly outside of the channel meander zone and the property is already developed. The restoration element applied to *Low priority purchase* is Restore functional riparian zones, including restoration of suitable riparian vegetation and riparian-adjacent upland vegetation.

Conservation Easements

Conservation Easements were recommended as the tool for long term conservation when the parcel has important biological values that may be compatible with some development. The easement recommendations are mapped in two rankings: high and medium/low. The attached matrix details the breakdown between medium and low priorities. The RRWG recognizes conservation easements as a valuable means to conserve natural resources while maintaining private ownership. In many cases, properties recommended for conservation easements already have a single dwelling that would be exempted from the easement. In other cases, the property is not developed, but the RRWG anticipates that an owner will exempt a portion of the property from the easement. While generally effective, there are potential weaknesses in using conservation easements. The easement may or may not provide enough restrictions to fully protect the biological values and privately owned easements are subject to violations, particularly when ownership is transferred. Nonetheless, easements provide a venue for landowners to provide perpetual stewardship of their property and many parcels along the Dungeness River are well suited for this type of long term conservation.

Property that was identified as a *High priority conservation easement* was either 1) property with no current development; and therefore considered to have a high likelihood of a land use change which could detract from current habitat values or 2) property that has been developed, but still exhibits substantial high quality habitat values. In most instances these properties have well vegetated riparian areas, and are neighbored by properties that also have a vegetated riparian area. Ensuring that the riparian areas and riparian-adjacent upland areas with suitable vegetation are not encroached upon is integral to the recommendation Restore functional riparian zones from both Recommended Restoration Projects for the Dungeness River and the WRIA 18 Limiting Factors Analysis.

Property that was identified as a *Medium/ Low conservation easement* recommendation is already developed and provides riparian biological values. The importance of these values relative to the high conservation easement recommendation is lower, often because the area of importance is smaller, or is isolated.

Stewardship

Property in which the prescription was *Stewardship* has already been developed and the recommended action is landowner management with consideration of river functions and salmon habitat.

Examples

For the purpose of understanding the method applied for each recommendation two examples are included here.

Example 1. Parcel 043002410200 – a five acre parcel with approximately 3.5 acres within the channel meander zone. The entire property floods as noted by a RRWG member and parcel neighbor. There is no house on the property, but a well has been dug. The mainstem along the property boundary is utilized for spawning and migration.

Recommendation: This parcel is not integral to restore the lower 2.6 mile floodplain, or critical to high quality side channel protection. A conservation easement is recommended, listed as high priority. The intent of the RRWG is to prevent land uses that would conflict with future flooding.

Example 2. Parcel 043014140025 – a five acre parcel with approximately 1.3 acres within the channel meander zone. There is a single family dwelling on the property outside of the channel meander zone and a lack of suitable riparian vegetation. The parcel is adjacent to very high quality habitat that is under negotiation for purchase.

Recommendation: The lack of suitable vegetation and existing house would predict a stewardship recommendation. However, the adjacent high quality habitat influences the recommendation so that it is purchase, low priority.

Maps created for this report

Set 1: Aerial photographs which have been “sewn” together for displaying the riparian corridor. High quality riparian habitat, high priority restoration projects, and sites where human welfare is at risk are shown. These maps were created by Randy Johnson, WDFW in conjunction with Hansi Hals and are presented in the Introduction. The photographs were taken in spring of 2003.

Set 2: Colored maps depicting each reach’s parcels with prescriptions and priority as assigned by the River Restoration Work Group. These maps were created by Pam Edens, GIS/ Data Management Specialist, Jamestown S’Klallam Tribe, in conjunction with Hansi Hals using Clallam County property data (year 2000). These maps are presented in the Reach by Reach Analysis.

Set 3: Orthophotos (aerial images which have been corrected for scale variations) with Channel Meander Zone overlay. Orthophoto data for year 2000 aerial images was provided by Washington State Department of Natural Resources. Property data

and Channel Meander Zone data are from Clallam County (year 2000). Orthophotos were prepared by Pam Edens, GIS/ Data Management Specialist, Jamestown S’Klallam Tribe.

The channel meander zone is defined in the Clallam County Critical Areas Ordinance as: areas subject to the natural movement of stream channel meanders associated with alluvial plains where long term processes of erosion and accretion of the channel can be expected to occur. The mapped meander zone does not include 1. areas protected from channel movement due to the existence of permanent levees and 2. areas outside of the meander hazard that may be subject to stream channel avulsion. These maps are presented in the Reach by Reach Analysis.

III. Reach by Reach Recommendations for Long Term High Quality Biological Values

Mouth to Schoolhouse Bridge (RM 0.0 – RM 0.9)

This reach encompasses the section of river from its mouth to the Schoolhouse Bridge. In this reach the channel is confined by dikes on both sides (River's End Homeowners, west bank and ACOE, east bank). The dikes restrict high flows from accessing the historic floodplain, utilizing the floodplain to reduce stream energy and to store and transport sediment. Pool condition in this reach is described as poor – the channel is confined and straightened by dikes limiting pool development. A few deep pools provide adult holding habitat, and very poor winter rearing habitat. The habitat complexity is described as poor due to minimal large woody debris. Finally the substrate is described as poor due to excessive sediment accumulation and instability. It is interesting to note that bed particle size is within the range preferred by spawning chinook and pink but the high percentage of sands and silts and the impacted nature of substrate suggests that actual spawning is limited. (Source: Limiting Factors Analysis Reach Tables)

In this reach there is conservation ownership and land recommended for purchase. Conservation ownership is depicted for properties owned by the North Olympic Land Trust, Dungeness Farms, joint ownership of the Pioneer Memorial Park, and the North West Oyster Company. Parcels along the west bank in private ownership are recommended as *high priority purchase*. Purchase of these parcels is the first step of an estuarine restoration project. A private dike, approximately 3,400' long, protects these properties along the western bank of the Dungeness River. A 2001 Salmon Recovery Funding Board grant was awarded to Clallam County for the purchase of properties along the dike, removal and demolition of residential infrastructure and the dike, and preliminary revegetation. The basis of the salmon recovery award is that the project will create functional floodplain and thereby reduce channel velocities, provide for sediment storage, and allow for meander development. The project will also eliminate chronic flood risks to property as well as address water quality concerns associated with septic systems in this developed reach. While the project scope includes purchase from willing sellers only, it is important to distinguish the technical recommendation is for purchase or perpetual conservation of all the properties along the west bank in this reach.

Schoolhouse Bridge to Hurd Creek (RM 0.9 to RM 2.6)

This reach encompasses the section of river from the Schoolhouse Bridge to the mouth of Hurd Creek. Dikes and levees occur along much of this reach (private Beebe levee on west bank, ACOE on east bank), with most set back from the immediate channel margin. The levees restrict the amplitude of meanders so channel is generally straight throughout this reach. The pool condition in this reach is described as poor; they lack cover, are short and have high velocities. The limited channel meanders provide several deep scour pools. In the lowest stretch of this reach the woody debris is relatively abundant, but of a

small size and limited to the channel margins. In the upper stretch there is a lack of woody debris. The substrate condition in this reach is described as poor. The bed instability is thought to be associated with a lack of wood in the channel, and increases in stream energy due to the channel confinement. (Source: Limiting Factors Analysis Reach Tables)

Technical studies have placed tremendous importance on reestablishing the floodplain in the lower 2.6 mile reach to restore salmon habitat and functional channel processes (Recommended Restoration Projects for the Dungeness River, 1997; Limiting Factors Analysis WRIA 18, 1999; Summer Chum Initiative, 2000). With this in mind, most of the properties in this reach have been mapped as *high priority purchase*. The 70 acre parcel mapped as *medium/low conservation easement* is considerably higher ground and not considered for reestablishing the floodplain. However, its current use of cropland provides a suitable vegetative buffer that should be retained. Three properties with development at the uppermost length of this reach have been recommended for *stewardship*. Most of the properties are within the channel meander zone, however the homes are located outside of it.

An overview of the discussion regarding the levee setback is included here. Further information is in the *Recommended Restoration Projects for the Dungeness River*. In 1964, the ACOE built a levee along the east side of the lowest 2.6 river miles (RM) of the Dungeness River to protect residential and agricultural land from flooding. In response to this levee, two private levees were established along the west side of the river (River's End levee and Beebe levee) to prevent flooding. All of the levees, in addition to other human impacts along the river, have altered the lower river affecting both the geomorphology of the river and biologic species that depend upon it.

Clallam County believes that the ACOE levee is no longer functioning as designed. Sediment accumulations due to the levees' constriction have reduced the conveyance capacity of the River channel. The levee was designed to provide 3 feet of freeboard to the 200 year flood, but has been observed within 2.5 feet of the top at a flood of approximately 4500 cfs (near a 10 year event).

The Schoolhouse Bridge is a constriction of the lower river at RM 0.9. A characterization of the subsurface soils and groundwater conditions was performed by Couvrette and Associates (Geologic Investigation, Dungeness River, Clallam County, Washington, February 2000). Clallam County has interpreted their finding to indicate that the Schoolhouse Bridge does not need widening due to the subsurface geology of the constriction. The Schoolhouse Bridge is located at a natural constriction of the Dungeness River where the channel passes between two topographic features that are naturally higher than the surrounding floodplains and the channel has historically been confined to this constriction. This conclusion has been further substantiated by a U.S. Bureau of Reclamation (BOR) study evaluating the Schoolhouse Bridge constriction and its effects on channel capacity and sediment transport. By modeling the maximum tidal elevation and the flood of record, river flows were estimated to not extend past 200' from the existing left bridge abutment, and depths of the overbank flow would be about 1

foot. However, high flood peaks occur infrequently and for only short periods of time. During low to moderate river flows the existing Schoolhouse Bridge has no impact on river depth or velocity relative to 1930's conditions. And, if the east bank upstream ACOE levee were setback so that the River could access more floodplain, the high flood peaks would be lesser in magnitude in accordance with how much floodplain is available (Bureau of Reclamation, 2001).

In an effort to resolve flood hazard concerns and restore critical fish habitat several alternatives have been discussed at a technical level for setting back or removing both the ACOE and private levees. Four alternatives generated during a February 2000 meeting with Jamestown S'Klallam Tribe, Clallam County and Washington Department of Fish and Wildlife were examined by BOR to look at impacts on the Dungeness River. In order to evaluate how the channel capacity of the lower Dungeness River would change due to setting back or removing the levees, a hydraulic model was used. The BOR reported the results of their levee scenario modeling in an addendum to their Draft Progress Report (March 2000). The BOR technical report includes channel elevation profiles and flow models throughout the lower 2.6 miles. Sediment transport data is available as well, collected by USGS from 1999 – 2001.

Additional discussion of levee setback and alternatives will be occurring at the DRMT and with local residents, agencies and the ACOE in 2003-2004. Purchase in this area will facilitate the levee setback.

Hurd Creek Mouth to Woodcock Road (RM 2.6 to RM 3.25)

This reach encompasses the section of the river from the confluence of Hurd Creek to Woodcock Rd. Bank protection for Ward Rd. is common through half of this reach along the west bank. Habitat condition is poor except for the portion of the reach that is not confined by armored banks. Pool characteristics in this reach are described as poor, and woody debris is limited to 3 large debris jams. The substrate condition is also described as poor. Spawning gravel is abundant, but bed instability may limit spawning productivity. There has been extensive reworking of the gravel bar margins due to the bridge constriction focusing flows. Poor substrate condition is thought to be associated with lack of large woody debris. Hurd Creek habitat condition is very good with abundant large woody debris.

Along the west side Clallam County owns undeveloped park land between the channel and Ward Rd. which is mapped as Public/Tribal/Land Trust/ Private conservation ownership. This category is also applied to private property that has an easement conserving the vegetative buffer as well as the WDFW hatchery properties. High conservation easement category is applied to two parcels that are not developed and have a high likelihood of a land use change that would detract from current habitat values. A medium priority conservation easement is recommended for a developed parcel with substantial suitable vegetation, and a stewardship is recommended for a developed parcel with little suitable vegetation.

[Map Link 18a: RM 0 – 3.25](#)

[Map Link 18b: Meander 0 - 3.5](#)

Woodcock Road to Severson Property (RM 3.25 to RM 4.7)

This reach encompasses the section of river from Woodcock Rd. to the northern boundary of the Severson parcels. Floodplain conditions are good throughout this reach, with an improvement from channel constrictions by the reconstruction of the Old Olympic Highway bridge. The channel is braided throughout most of this reach, with large side channels that offer off-channel rearing potential. Several large accumulations of large woody debris have created deep pools and channel roughness. The upper half has few pools, severe erosion and channel migration. The lack of woody debris throughout this reach is considered to be associated with bed instability after spawning. (Source: Limiting Factors Analysis Reach Tables)

The western bank of the northern half of this reach is mapped conservation ownership because there is a conservation easement on these parcels. On the east side conservation ownership continues with two easements and property owned by Jamestown S'Klallam Tribe. Properties identified as medium conservation easement have single family dwellings and suitable riparian vegetation. The property identified as high conservation easement has no development, is adjacent to conservation ownership, and has suitable riparian vegetation. The properties mapped for stewardship have single family dwellings with no suitable riparian vegetation.

On the west bank just upstream of Old Olympic Highway there are nine developed properties identified as low priority purchase that are experiencing extreme bank erosion. In 2001, the main channel moved east – temporarily their banks are not eroding. Continuing upstream to the reach end at river mile 4.7 most parcels are recommended for conservation easements or are in conservation ownership. High priority conservation easements were recommended on parcels with a higher habitat value, such as critical side channels. A 60 acre parcel just outside of the riparian zone is recommended for stewardship as land use on this property will effect the river corridor.

Severson Boundary to RailRoad Bridge (RM 4.7 to RM 5.6)

This reach encompasses the section of river from the northern boundary of Severson parcels to the RailRoad Bridge. The channel is braided in this reach with several large side channels that offer off-channel rearing potential. The west bank of this reach is in contiguous ownership. Large woody debris is limited with a few engineered log jams for 0.5 miles below RailRoad Bridge. Bed instability after spawning and armored bed substrate thought to be associated with lack of large woody debris. Visual observations indicate a high percentage of fine sediments. (Source: Limiting Factors Analysis Reach Tables)

A large portion of this reach has been mapped high priority purchase primarily due to its intact side channels, fine riparian conditions, and the length of the reach available for protection. Overall, the riparian conditions are excellent in this reach. However, a cleared field area on the west bank downstream of RailRoad bridge provides no suitable

vegetation and is eroding providing poor to fair riparian conditions. Contained within this river reach is the last large, contiguously owned, and relatively undisturbed parcel in the lower watershed. Within this reach chinook, coho, steelhead, and cutthroat spawn and rear, bull trout rear, and chum and pink salmon spawn. In addition to fish values, the expansive riparian forest, floodplain, forest openings, forest edge and open field areas provide the best forest habitat in the lower Dungeness watershed for birds and mammals. Long term conservation of this habitat would benefit spawning and incubation habitat for fall pink and chinook, and rearing habitat for all endemic salmonids with extended freshwater rearing life history strategies. Parcels mapped as high priority purchase are considered to be exceptionally high in habitat value as described above and any development would limit the biological values. Parcels mapped as high conservation easement provide very good habitat as well but limited development is compatible with river functions. One parcel is recommended as a medium priority conservation easement because the habitat values have been impacted by development but suitable vegetation remains. Two low priority purchases are recommended for parcels where development and clearing encroach the river channel. While stewardship is generally the recommendation in these cases, the proximity with the exceptional habitat values prompted the low priority purchase recommendation.

[Map Link 20a: Meander 3.5 – 5.6](#)

[Map Link 20b: RM 3.25 – 5.6](#)

RailRoad Bridge to Highway 101 (RM 5.6 – RM6.4)

This reach encompasses the section of river from the railroad bridge upstream to the Highway 101 bridge. The winter season of 2001 substantially improved habitat conditions of this reach. Now a braid of the Dungeness flows through good riparian forest on the west bank. There are several good sized pools, although pool habitat is still limiting. A fair amount of woody debris was also input, but woody debris large enough to be stable is still in low supply. There are three engineered log jams in this reach. Bed instability after spawning and armored bed substrate are thought to be associated with lack of large woody debris. There is abundant suitable riparian vegetation throughout this reach with the exception of the east bank just downstream of highway 101 – this location experiences severe erosion. There are three side channels that offer critical off-channel habitat. (Source: Limiting Factors Analysis Reach Tables and Salmon and Trout Life History Study in the Dungeness River)

This reach is comprised of two conservation ownership parcels, four large parcels in contiguous ownership and eight smaller parcels on the east bank downstream of highway 101. The four large parcels are mapped as high priority purchase primarily due to their intact side channels, fine riparian conditions, and the length of the reach available for protection. Purchase of these properties provides the added benefit of public ownership adjacent to the Rail Road Bridge Park. All of the eight smaller parcels on the east bank downstream of highway 101 are developed. Four of these are recommended for purchase as a high priority and four are recommended for purchase as a low priority. Parcels identified as high priority experienced significant land losses in year 2000 to the river. The east bank adjacent to these eight parcels experiences severe erosion directly conflicting with the developed land use. Purchase will assist landowners as well as prevent bank hardening and other erosion protection measures.

Highway 101 Bridge to Bear Creek (RM 6.4 – RM 7.5)

This reach is comprised of the section of river from the highway 101 bridge upstream to approximately the mouth of Bear Creek on the west bank. The floodplain condition in this reach is described as poor/fair. There is extensive channel braiding and a restriction of bedload transport and resulting bedload accumulation resulting from the highway 101 bridge. The mainstem channel pool habitat is very limited, primarily at meander bends with little cover and high velocities. The large woody debris availability and size in the mainstem is poor, with four engineered log jams, scattered unstable large woody pieces and one large natural log jam. Mainstem substrate conditions are described as poor and spawning habitat is limited due to depth, substrate and velocity conditions. This reach encompasses the Dawley side channel described as offering the most diverse side channel habitat in the lower river. Dawley side channel has known chinook and pink spawning, with significant chinook use during most of the year. The pools are diverse in character including alcove and backwater habitat. (Source: Limiting Factors Analysis and Salmon and Trout Life History Study in the Dungeness River)

High priority purchase is mapped for several parcels in this reach that are within the channel meander zone, have no significant development, and encompass reaches of the Dawley or Spring Creek side channel. High priority conservation easements on the east bank are recommended for parcels that have property within the channel meander zone and encompass critical side channel reaches, but also have property outside of the channel meander zone. Two high priority conservation easement recommendations on the west bank are intended to protect the suitable riparian vegetation and limit the possibility of subdivision.

Bear Creek to southern tip of Dungeness Meadows Dike (RM 7.5 – RM 8.2)

This reach encompasses the river reach from the mouth of Bear Creek upstream to the southern tip of the Dungeness Meadows Dike. The right bank is diked (Dungeness Meadows dike) from river mile 7.7 through river mile 8.2. Throughout the reach the straightened channel provides limited habitat diversity. There is little resting habitat or cover. The channel bed materials are coarse and there are extremely high levels of vertical and horizontal bed instability. Stable spawning habitat in the mainstem of this reach is essentially non-existent. Spring Creek begins downstream of the Dungeness Meadows dike and flows through conservation property in this river reach. Spring Creek flows into the Dawley side channel and provides additional flow and habitat diversity. (Source: Limiting Factors Analysis and Salmon and Trout Life History Study in the Dungeness River).

This reach has residential development on both banks of the river channel. The Dungeness Meadows development, protected by the Dungeness Meadows dike, on the east bank is a subdivision with approximately 200 lots mostly about ¼ acre in size. On the west bank parcels are generally about five acres in size.

This reach has a mix of recommendations. Thirteen lots in the most north eastern section of the Dungeness Meadows development are mapped as a medium priority purchase because of Spring Creek's presence and a history of flooding. In this reach, high priority conservation easement is recommended in two cases where there is a single owner for two lots, one developed and an adjacent undeveloped lot. In both cases, there is significant suitable riparian vegetation on each parcel and the parcels are adjacent to 25 acres of private conservation property. Five developed parcels along the west bank are recommended for medium priority conservation easements. These five parcels also have suitable riparian vegetation, though smaller in acreage and not adjacent to existing conservation ownership. Finally, six parcels in this reach have been recommended for stewardship.

[Map Link 22a: RM 5.6 – 8.8](#)

[Map Link 22b: Meander 5.6 – 8.8](#)

From Dungeness Meadows Dike to May Rd. (RM 8.2 to RM 9.1)

This reach extends from the Dungeness Meadows Dike upstream to May Rd. This reach encompasses the private Haller dike on the west bank. There is some meander to the channel in this reach. Upstream of the Dungeness Meadows dike there are several bank-based large woody debris jams. Bluffs under the powerline crossing (river mile 8.8) are considered to contribute substantial sediment into the river. Channel downcutting has happened in this river reach. Haller Dike has experienced extensive damage during flood seasons. (Source: Limiting Factors Analysis and Recommended Restoration Projects for the Dungeness River)

Nearly the entire east bank of this reach is owned by Washington State and managed by the State Department of Natural Resources as timber land. The west bank is a rural residential area with eight homes within the historic and geologic flood plains as mapped by the Bureau of Reclamation in 2002 (Physical Processes, Human Impacts, and Restoration Issues of the Lower Dungeness River, May 2002). Six parcels on the west bank without development were all recommended for conservation easements as a high priority. Most of these parcels have suitable riparian vegetation, but primarily the impetus for recommending restrictive easements in this area is to prohibit further incompatible land uses within the channel migration zone and floodplain. A 19 acre parcel with one single family dwelling was also recommended for a conservation easement, as a medium priority. While this property completely lacks suitable riparian vegetation and is a candidate for stewardship activity, it is also large enough for subdividing and therefore was recommended for an easement. Five parcels on the west bank of the river with homes were recommended for stewardship activity. The east bank Washington State property is mapped as public ownership. However, the RRWG recommends that Department of Natural Resource allow the riparian zone to be excluded from timber cuts in perpetuity rather than in accordance to ever changing forest practice codes. There are five private parcels upstream of the state parcel on the east bank. A 9 acre well vegetated parcel that lies mostly within the channel meander zone is recommended for purchase as a high priority. Two adjacent parcels developed for a home and associated uses are also recommended for purchase as a high priority for river restoration to remove a constriction. The river bank along these parcels has been armored by the owner with rock rip rap creating upstream sediment accumulation. Two east bank developed parcels are recommended for stewardship activity.

May Road to Kinkade Island (RM 9.1 to RM 9.5)

In this short reach from May Road to the northern end of Kinkade Island the channel has some natural meander though the pool conditions are described as poor, as is the condition of large woody debris. A riprap bank revetment along the west bank in this reach was lost in the flood of March 1997. The Bureau of Reclamation (BOR) has mapped the present east bank floodplain boundary immediately adjacent to the mainstem channel while the historic and geologic floodplains are mapped at least 500' east of the channel (Physical Processes, Human Impacts, and Restoration Issues of the Lower

Dungeness River, May 2002). On the west bank, bank armoring is maintained to protect Fish Hatchery Rd. and several residential properties.

Eight of the twelve parcels on the east bank are developed for residential or recreational dwellings and are recommended for stewardship activity. Three well vegetated contiguous parcels on the east bank with no development have been recommended for conservation easements as a high priority. A 1/3 acre parcel on the east bank surrounded by development is recommended for purchase, medium priority. Most of the structures on the five developed west bank parcels are outside of the floodplain. These properties were given a high restoration priority recommendation to provide floodplain restoration through dike setback. High priority conservation easements are recommended for three of these parcels, two which are developed and well vegetated and one which has residential infrastructure (well, electricity and septic) but no dwelling. Conservation easement, medium priority is recommended for two developed west bank parcels with lesser suitable vegetation and a third parcel, which has development within the channel meander zone. Stewardship is recommended for a residential west bank parcel which would benefit from restoration activity.

Kinkade Island to Canyon Creek (RM 9.5 to RM 10.8)

This reach encompasses the section of river from the downstream end of Kinkade Island upstream to Canyon Creek. Kinkade Island is entirely within the channel meander zone. The Kinkade Island reach is a dynamic area, and the island itself is built from materials deposited by the river as it leaves a confined canyon immediately upstream. Energy in this reach, particularly at the mouth of the canyon, is high. Lidar maps and aerial photos show the numerous channels that lace the island. As the west side of the river channel has filled with material deposited by the river, the main flow of the river is moving from the west channel to the east (known as Kinkade Creek).

In the recent past, large log jams have prevented a significant portion of the flow from using the three braids that form Kinkade Creek. Recent flood events (2001-2002) have changed that characteristic, however. While the logjams protecting two of the braids remain in place, more flow is moving into the third braid and around the logjams. Bureau of Reclamation analysis of 2002 flow data revealed that 50 to 60% of Dungeness River flow was going through Kinkade Creek (BOR presentation to DRMT, January 2003).

Efforts in the late 1970's to dredge the channel and build protective dikes give the illusion of safety to residents. However, impacts to the river and downstream landowners, the continued costs of project maintenance, and the risks to the lives and safety of residents when the projects fail indicate that these solutions do not provide cost-effective benefit to island residents or those who live downstream. People who live on the island, and who live in the path of the river channel, are in harm's way. All of the Kinkade Island parcels that are not in conservation ownership have been recommended

for high priority purchase. A nine acre parcel that is bisected by the main channel with half being on Kinkade Island and is entirely within the channel meander zone is recommended for a high priority conservation easement.

To resolve the flooding hazard Clallam County is seeking funds to acquire developed properties on Kinkade Island. Removing structures and infrastructure from the island will allow the river to move across the full span of its channel, slowing velocity and offering enhanced fish and wildlife habitat throughout the reach. Water quality impacts that have occurred in the past from failed wells and septic systems will be prevented and eliminated. Fish habitat in this reach may become increasingly stable as the need for dikes, riprap, and other bank hardening projects decreases. Spawning and rearing now occur in the channels that lace the island, and may increase as habitat quality and stability increase.

[Map Link 26a: RM 8.8 – 10.8](#)

[Map Link 26b: Meander 8.8 - 10.8](#)

IV. Discussion of Implementing Recommendations within this Report

Proper functioning of the Dungeness River floodplain has been altered by many human activities including diking, bridge and road constrictions, removal of log jams and large woody debris, forest and agricultural land management, vegetation removal, and water withdrawals (Orsborne and Ralph 1994). The resulting impacts have been deleterious to both property owners and fish (Recommended Restoration Projects for the Dungeness River 1997). Implementation of this strategy should reduce the negative effects experienced by both fish and property owners. Implementation of this strategy is expected to benefit fish through protection of critical habitat as well as allowing for needed restoration identified in multiple technical studies. Numerous other wildlife species will benefit from the critical habitat protection recommended in this report. Implementation of this strategy is expected to benefit property owners as well. In many instances, this strategy recommends removing owners from flood prone parcels. While the strategy does not provide funds to purchase property and relocate owners, it should assist in garnering funds by demonstrating the high priority. Implementation of this strategy is expected to benefit owners and neighbors of conservation easements as well. It is anticipated that owners will sell conservation easements and be reimbursed at an established fair market value. In turn, the easement will protect the biological values that benefit the entire community. While exploring the value of these biological functions is outside of the purview of this report, the benefits would extend to fin and shellfishing, tourism, agricultural production, water quality, and aesthetic enjoyment. Property owners with a conservation easement enrolled in Clallam County's Open Space Program receive a 90% reduction in annual property taxes.

Planners and biologists for the Dungeness River have extensive information on River processes and limiting factors of the fish populations. Multiple technical studies are the foundation for this strategy and if implemented there is a high degree of confidence in the benefit to salmon through protection of side channels for refugia, and high quality pool habitat; protection of and restoration of, as appropriate, suitable riparian vegetation and riparian-adjacent upland vegetation; as well as allowing for reestablishment of a functional floodplain in the lower 2.6 miles.

The cost of purchasing all of the high priority purchase recommendations is estimated at \$6.75 million, of which \$5.25 million is either currently funded or anticipated to be funded in July 2003. Close to \$4 million has been committed by state and federal sources to Clallam County and WDFW for the high priority purchase recommendations: River's End area, Army Corps of Engineers dike area, and Railroad Bridge Park area. Further, \$1.25 has been awarded to WDFW as a critical habitat grant to augment the Railroad Bridge area funds and for the Dawley side channel area. While Clallam County has sought funding for purchase of the Kinkade Island area parcels, there have been no funds awarded for this purpose. The costs estimated for the Kinkade Island area are expected to exceed \$1.2 million.

We have not attempted to forecast the cost of purchasing conservation easements as the value is expected to be highly variable due to unique conservation easements and the

potential of donations. It is noteworthy and perhaps cost indicative that in the late 1990s the North Olympic Land Trust acquired over 100 acres of Dungeness River riparian land into conservation easements by purchase and donation as part of a \$800,000 grant program.

A cursory analysis was performed to consider the repercussions of this strategy if all high priority recommendations were achieved on the property tax base. This analysis was performed without consideration of whom the long term property owner(s) will be for acquired properties. The long term ownership does influence the analysis as a private party such as the North Olympic Land Trust pays full property tax, as does Jamestown S'Klallam Tribe, unless the property is converted to Trust, and public agencies (Washington Department of Fish and Wildlife and Clallam County) are exempt. For the purposes of this discussion it was assumed that property purchased is removed entirely from the tax base.

For the tax year 2001 property taxes for the high priority purchase parcels totaled \$23,516. While there is no method to forecast tax rate changes that will apply and future assessed values, it is worthwhile to know that if these properties had been purchased in 2000 up to \$23,516 in tax revenue would have been forfeited. In addition, for the tax year 2001 \$7,088 was collected on parcels without development that are recommended as high priority conservation easements. In terms of tax effect, \$6,380 represents a 90% change as each of these parcels would be eligible for a 90% reduction in property taxes if enrolled in the Clallam County Open Space Program. Several parcels recommended as high priority conservation easement were not included because the value of the residence on the parcel would be excluded from future tax changes. The total annual effect for the year 2001 would have been up to \$29,896 in forfeited tax revenue.

V. Dungeness Corridor Regulatory Programs

A multitude of laws describe allowable and prohibited activities within the Dungeness Riparian area. In the lower Dungeness River, residential development and its associated infrastructure (septic installation, landscaping, continued flood protection, etc..) is the most common and pressing activity risking the long term ecological functions of the Dungeness River. The Clallam County Critical Areas Code, along with the Guidance for Threatened Species of Salmonids in Clallam County and the Shoreline Master Program, define the allowable uses and necessary protective measures in regards to residential development. The current use assessment or Clallam County Open Space Code defines the mechanisms to provide tax incentives for landowner stewardship. Each regulation has been summarized to describe its effect on riverside land uses and ownership.

Chapter 27.12 Clallam County Code Clallam County Critical Areas Code

The Amended Clallam County Critical Areas Code which defines and regulates use of critical areas in Clallam County was adopted June 26, 2001. The Purpose of the code is to identify and protect critical areas as required by Washington Growth Management Act (RCW 36.70 A). Furthermore, the purpose is to protect public health, safety and welfare, and maintain or enhance the biological and economic resources of the County while respecting legally established private property rights.

It is the intent of the Critical Areas Code to accomplish twenty goals, of which the following three resemble goals of the protection strategy:

Goal #3 Avoid potential loss of life and damage of property due to landslide, subsidence, erosion or flooding.

Goal #8 Preserve, protect, manage or regulate critical areas that have either a direct or indirect effect on conserving fish, wildlife, other natural resources, and values.

Goal #17 Maintain and enhance local control of resources in Clallam County in order to effectively respond to the challenges of federal Endangered Species Act listings.

Eleven separate activities are set forth in the code as activities that are not regulated including emergency work when done to protect life or property and authorized by County Board of Commissioners.

The critical areas that are identified and defined by this code are wetlands, aquatic and wildlife habitat conservation areas, geologically hazardous areas, frequently flooded areas, and critical aquifer recharge areas. Though properties considered within the protection strategy may contain wetlands; the habitat conservation areas, geologically sensitive areas and frequently flooded areas sections of the code are most pertinent. In addition, the lower Dungeness properties adjacent to the river are all within the critical aquifer recharge area as mapped by Clallam County and must adhere to the guidelines of that section.

In general, the following is a blue print of the protections afforded parcels along the Dungeness River.

Part Three of the Critical Areas Code: Aquatic and Wildlife Habitat Conservation Areas

The entire lower 11 mile reach of the Dungeness River is within the designated critical habitat by the National Marine Fisheries Service (NMFS) for three fish species listed as threatened by the Endangered Species Act - Puget Sound Chinook, Hood Canal/Strait of Juan de Fuca Summer Chum, and bull trout. The NMFS defined critical habitat is now regulated by Clallam County as Class 1 Wildlife Habitat Conservation Areas (adopted March 17, 2000). The Class 1 Wildlife designation provides stricter guidance than the former Dungeness River category of Aquatic Habitat Conservation Area. Regulated development activities which occur within or adjacent to (200 feet landward from Ordinary High Water Mark (OHWM)) Class I Wildlife Conservation Areas require the preparation of a Habitat Management Plan. A template Habitat Management Plan was prepared in April 2000 (“General Habitat Management Plans and Guidance for Threatened Species of Salmonids in Clallam County”). Landowners may utilize the guidance as set forth in the above management plan template or prepare their own. The Critical Areas Code lists specific criteria privately prepared plans must include. The general guidance offers:

For Rivers and Creeks –

1. Development should be located at least one site potential tree height from the OHWM and outside of the jurisdictional area (200’ landward from the OHWM) if possible given lot dimensions.
2. All native vegetation should be retained within one site potential tree height of the OHWM. Where the native vegetation no longer exists within one site potential tree height, native cover shall be re-established.
3. Construction of new dikes, levees, or bulkheads will generally occur within Channel Meander Hazards associated with riverine systems. These types of developments will require a Variance (Public Hearing before the County’s Hearing Examiner) from the Critical Areas Code and will require the preparation of a geotechnical report in addition to a Habitat Management Plan.
4. Clallam County will be allowed to monitor compliance with the Habitat Management Plan into the future.
5. Requires a notice to Title of the Class I jurisdictional area and a statement that a Habitat Management Plan has been formulated for this parcel and is on file with Clallam County Department of Community Development. All future development on this parcel shall occur in accordance with provisions of the Habitat Management Plan.
6. Prior to any zoning or comprehensive plan amendment, an environmental assessment shall be approved by Clallam County to determine if the proposal would be consistent with the Critical Areas chapter and if mitigation measures would be necessary if the proposal were approved. The review shall occur before any SEPA threshold determination.
7. All Forest Practices (timber harvesting and associated development activity) shall maintain the potential tree height buffer from Ordinary High Water Mark (OHWM). In addition, those lands harvested and not reforested under a Class I, II, or III permit and which do not meet the standards of this chapter and are later converted to non-forest use shall have all local permits withheld for six years.

Part Four: Geologically Hazardous Areas

Two of the purposes listed within this section are directly in line with the purposes of the protection strategy – 1. Provide standards to protect human life and property from potential risks and 2. Control erosion and siltation, and protect water quality in order to protect habitat for fish and marine shellfish, and allow for natural movements of streams and rivers within a floodplain. The **channel meander hazard**, defined as a landslide hazard area, **is described as areas subject to the natural movement of stream channel meanders associated with alluvial plains where long term processes of erosion and accretion of the channel can be expected to occur.** The meander hazard **does not include 1. areas protected from channel movement due to the existence of permanent levees and 2. areas outside meander hazard that may be subject to stream channel avulsion** (rapid movement of the entire stream). Clallam County has mapped the area considered a channel meander hazard. This section offers the following protection:

1. Buffer of 50' from the edge of the channel meander zone for all major and minor development.
2. Buffers that are in their natural state should not be altered.
3. Specific guidance provided for buffer reduction and hazard tree removal.
4. For land divisions – no lot or parcel shall be created within landslide hazard unless geotechnical report certifies it will be stable. Land divisions containing landslide hazard areas are prohibited unless each lot contains at least one building site. The hazard area and buffer shall be noted on final plat with a statement that subsequent development will comply with critical areas standards.
5. Notice to the Title when a development proposal is submitted. Statement containing notice of critical area and buffer, and applicability of part four of the Critical Areas Code.
6. Prior to any zoning or comprehensive plan amendment, an environmental assessment shall be approved by Clallam County to determine if the proposal would be consistent with the Critical Areas chapter and if mitigation measures would be necessary if the proposal were approved. The review shall occur before any SEPA threshold determination.
7. All Forest Practices (timber harvesting and associated development activity) shall maintain the 50' buffer from edge of geologic hazard area. In addition, those lands harvested and not reforested under a Class I, II, or III permit and which do not meet the standards of this chapter and are later converted to non-forest use shall have all local permits withheld for six years.

Part 5: Frequently Flooded Areas

The land defined as frequently flooded area is made up of “floodway” land (the channel of a stream, plus any adjacent areas, that must be kept free of encroachment in order to discharge the base flood without cumulatively increasing water surface elevation more than one foot) and “special flood hazard areas” (classified by the Federal Emergency Management Agency in the *Flood Insurance Study of Clallam County, December 5, 1989*). The 100-year floodplain is not included in the critical areas definition of frequently flooded areas. The frequently flooded areas designation offers the following protection:

1. In designated floodways construction or reconstruction of residential structures is prohibited. There are exceptions listed for existing homes (Part 5, section 6a).
2. In designated flood hazard areas residential, commercial and industrial buildings are prohibited unless constructed or placed on lots or parcels of land platted by a final plat approved by December 10, 1980 for the Dungeness River.
3. Critical facilities are prohibited. Critical facilities include but are not limited to: schools; hospitals; police, fire and emergency structures; nursing homes; pipelines; airports; municipal water and sewer facilities; highways.
4. Any land divisions must have one building site for each lot that is not within the frequently flooded area and is at least one acre in size.
5. Recreational vehicles are restricted in frequently flooded areas to fewer than 180 consecutive days. They must be fully licensed and ready for highway use, be on its wheels, and have no permanently attached additions.
6. For any property on which a development proposal is submitted there shall be a notice to Title filed. The notice shall include the presence of the critical area and a statement describing possible limitations in the critical area.
7. Prior to any zoning or comprehensive plan amendment, an environmental assessment shall be approved by Clallam County to determine if the proposal would be consistent with the Critical Areas chapter and if mitigation measures would be necessary if the proposal were approved. The review shall occur before any SEPA threshold determination.

Part Six: Critical Aquifer Recharge Areas

Intent #3 of this part of the Critical Areas Code, to recognize the relationship between surface and groundwater resources, is also within the broad purpose of the protection strategy. The Critical Aquifer Recharge Area is defined as an area which contains hydrogeologic conditions that provide the recharge to an aquifer which is a current or potential potable water source and is highly susceptible to the introduction of contaminants. The entire area considered by the Dungeness Protection Strategy is mapped as a Critical Aquifer Recharge Area and offers:

1. Specific criteria and regulation for aboveground/ underground storage tanks and vaults.
2. All new agriculture or hobby farms shall use best management practices concerning animal keeping, animal waste disposal, fertilizer use, pesticide use, waste water applications, and stream corridor management. All new farms shall seek the technical assistance of Clallam Conservation District and Cooperative Extension Agent.
3. Any land division proposals will be evaluated for impact to groundwater. In designated floodways construction or reconstruction of residential structures is prohibited. There are exceptions listed for existing homes (Part 5, section 6a).
4. Prior to any zoning or comprehensive plan amendment, an environmental assessment shall be approved by Clallam County to determine if the proposal would be consistent with the Critical Areas chapter and if mitigation measures would be necessary if the proposal were approved. The review shall occur before any SEPA threshold determination.

Current Use Assessment
Chapter 27.08 Clallam County Code
Clallam County Open Space Code:

In 2001 Clallam County adopted Chapter 27.08, Clallam County Open Space Code. It is a revised Current Use Assessment/ Open Space Lands code that is in accordance with Washington State RCW 84.34 and provides tax relief for properties that meet certain physical and land use requirements. The adopted code is supported by established goals of Title 31, Clallam County Comprehensive Plan that promote and conserve open space.

The Clallam County Open Space Code establishes a process for landowners to determine open space program eligibility and to define each parcel's tax relief. Within the code is a Public Benefit Rating System (PBRS) that ranks the public benefits provided by each property. Resource points are awarded for each public benefit criteria that the land parcel fulfills. The resource points accumulated determine the reduction in taxable value. Possible reductions range from five (5) to ninety (90) percent.

Properties with an eligible conservation easement or recorded transfer of development rights are awarded the maximum number of resource points and receive a ninety (90) percent reduction in land value for tax purposes. Further criteria considered in the award of resource points include: provision of public access; lot combination; farm and agricultural conservation lands; floodways, floodplains and meander hazard zones; wetlands; shorelines; historical and archaeological sites; streams; scenic vistas; landslide hazard areas; well head protection areas; and parcels which abut public or other open space lands

Chapter 35.01 Clallam County Code Clallam County Shoreline Master Program Shoreline Management

The Shoreline Master Program, as provided by Washington State law, seeks to establish shoreline uses that will acknowledge present development, but regulate future development with the goal of serving the maximum public interest, rather than private interest (excerpted from preamble of the Shoreline Master Program). The Master Program establishes five shoreline environments within Clallam County. The Dungeness River shoreline (from the Olympic National Forest boundary downstream to the mouth at Dungeness Bay) is defined as a Rural Environment. The definition of the rural environment is one which is presently marked by intensive agricultural or recreational use, or which has the potential of becoming prime farm land. The objectives for this environment are to protect agricultural shorelines from urban expansion, function as a buffer between urban expansion, and restrict intensive development along shorelines presently in an undeveloped state. The protection afforded to Dungeness shorelines through the Shoreline Master Program follows:

From section 4.10 Rivers, Streams and Creeks

1. Discharge of raw sewage, animal wastes, pesticides, herbicides and fertilizers into the water is prohibited.
2. Construction of dikes, levees and bulkheads should be done in such a way as to preserve the natural channel rather than constrict it into the conformation of a ditch.
3. Any such modification of the natural channel must be proven necessary for the protection of life and property.
4. Construction of dams for electrical power, water supply, or flood control must provide the accustomed upstream migration of anadromous fish and for their return to the sea.
5. Any alteration of the shoreline which would result in erosion of soil or siltation or pollution is prohibited.

From section 4.11 Floodplains

1. Dikes and levees designed to prevent destruction of property by floods should be set well back from the ordinary channel allowing the stream to meander.
2. Permits for residential development on unprotected floodplains shall be discouraged.
3. Removal of timber or other vegetation along the waterway of a floodplain shall be discouraged.

From section 5.01 Agricultural Practices

1. Buffer zones (size not defined) of permanent vegetation or other suitable soil erosion control methods shall be established and/or maintained between tilled or grazed areas and associated water bodies.
2. Animal feeding operations, retention and storage ponds, feed lot waste, and manure stockpiles must be located so as to prevent contamination of associated water bodies.

From section 5.03 Forest Management Practices

1. Forest Practices must comply with Forest Practices Chapter 90.58.150 RCW.

From section 5.08 Residential Development

1. Shore setback for dwellings and associated development shall be 50' from ordinary high water mark at a minimum for single family units and 100 feet for multi-family units.

VI. List of References

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Appendix A

Glossary

Aggradation: The geologic process of filling and raising the level of the streambed or floodplain by deposition of material eroded and transported from other areas; often results in broad, shallow, braided river channels.

Avulsion: When the stream channel suddenly changes position as a result of continued aggradation of the active river channel or other event.

Bank Armor: Bank hardening such as rock which is manually placed to reduce erosive effects of the river's flow on the bank.

Dike: An embankment of earth and of earthen rock built parallel with a river or stream to control the location of the waterway and for the purpose of flood control.

Ecological restoration: Involves replacing lost or damaged biological elements (populations, species) and reestablishing ecological processes at historical rates.

Estuarine: A partly enclosed coastal water body with free connection to open sea, within which seawater is measurably diluted by fresh water.

Floodplain: All lands along a river or stream which has been or may be inundated by the base flood of such a river or stream.

Geomorphology: The study of the form and origins of the surfaces of the earth.

Habitat: The specific area or environment in which a particular type of plant or animal lives; an organism's habitat must provide all the basic requirements for life.

Large woody debris (LWD): Large woody material that has fallen to the ground or into a stream (or has been placed there as part of a restoration project); an important part of the structural diversity of streams; usually refers to pieces at least 20 inches (51 cm) in diameter.

Levee: An embankment of earth and of earthen rock built parallel with a river or stream to control the location of the waterway and for the purpose of flood control.

Limiting Factor: A single factor that limits a system or population from reaching its highest potential.

Overflow channel: A side channel that carries water only during high flow events; although an overflow channel may become a more regularly watered channel as river systems are dynamic.

Reach: a section of a stream between two points.

Rearing habitat: Areas required for the successful survival to adulthood by young animals.

Recovery: The return of an ecosystem to a defined condition after a disturbance.

Riparian Area (riparian zone): A transition zone between aquatic habitats and upland areas; a healthy riparian zone typically has lush vegetation along a stream or river. The a riparian zone can be variously defined in terms of vegetation, topography, hydrology and soils, or ecosystem function. Essentially the riparian zone is the transition from wetland to upland.

Rip-Rap: Hard, angular quarry rock used for revetments or other bank stabilization projects.

River mile (RM): A measurement of river corridor length beginning at the mouth of the river.

Salmonid: Fish of the family salmonidae, including salmon, trout and char.

Sediment: Materials in streams or other bodies of water including boulders, cobbles, gravel, sand, silt and clay. Sediment may be suspended in water, transported by water or settle to the bottom of the water body.

Side channel: A portion of an active channel that does not carry the bulk of stream flow; side channels may carry water only during high flows, but are still considered part of the total active channel.

Watershed: The entire area that contributes both surface and underground water to a particular lake or river; in the Dungeness some streams outside the watershed are sometimes fed by Dungeness irrigation water, complicating the “outline” of the influence of the watershed.

Appendix B - Parcel Information Tables

1. [Parcel Table for River Mouth to Old Olympic Hwy \(River Reach RM 0.0 - 4.0\)](#)
2. [Parcel Table for Old Olympic Hwy to 101 \(River Reach RM 4.0 – 6.6\)](#)
3. [Parcel Table for Hwy 101 to Powerline Crossing \(River Reach RM 6.6 – 8.8\)](#)
4. [Parcel Table for Powerline Crossing to Hatchery \(River Reach RM 8.8 – 11\)](#)

