

**USDA Forest Service Watershed Condition Framework  
FY2012 WATERSHED RESTORATION ACTION PLAN  
Middle Dungeness River  
Olympic National Forest**



## **Summary**

### **Watershed Name and HUC**

Middle Dungeness River, 171100200306

### **General Location**

The Middle Dungeness River watershed is part of the larger Dungeness Watershed and is located near Sequim, Washington. The Olympic National Forest boundary is approximately 8 miles south of Sequim, on the Olympic Peninsula. Other nearby towns includes Port Angeles and Port Townsend. The Middle Dungeness River watershed drains into the Dungeness River, which flows north 10.8 miles from the forest boundary into the Strait of Juan de Fuca and the greater Puget Sound basin. Other fish-bearing streams that are within the Middle Dungeness watershed include Rock, Canyon, Pats, and Caraco Creeks.

## **Total Watershed Area**

**Total Acres:** 18,664

**National Forest area within watershed:** 45 percent

## **Watershed Characterization**

### General Physiography

The Middle Dungeness 6<sup>th</sup> field watershed is part of the larger Dungeness River watershed. It originates in the moderate relief glaciated lower portion of the Olympic Mountains, with elevations reaching from 5200 feet in the southwest corner within the Buckhorn Wilderness to 300 feet along the Dungeness River near State Highway 101. The southern boundary of the watershed follows an elevation ranging from 3000 to 3500 feet, and the elevation at the forest boundary is approximately 1200 feet. It encompasses the mainstem Dungeness River from the confluence of the Gray Wolf River downstream to well below the National Forest boundary. There are approximately 9 miles of anadromous fish habitat in the mainstem Dungeness River on NFS lands within the Middle Dungeness River and an additional 19 miles of resident fish habitat. Within the Middle Dungeness watershed, the Dungeness River and its tributaries are low to moderate gradient and offer significant spawning and rearing habitat for fish.

The larger Dungeness River watershed is a glacier and snowmelt fed system, with a high percentage in the snow-dominated zone. However, the Middle Dungeness watershed is predominantly a rain-on-snow (November-May) system on NFS lands, and rain-dominated lower in the watershed. Average daily discharges are substantially influenced by rates of snow accumulation and snowmelt within the Dungeness Watershed. Occasional spikes in the hydrograph during November through March are common from high flows associated with rain-on-snow events.

Annual precipitation ranges from 50 inches at its highest elevation to 20 inches in the lower Middle Dungeness drainage.

The landforms and soils within the Middle Dungeness are formed on relatively young geologic surfaces. The watershed is underlain primarily by dense, deep continental glacial till deposits from the Cordilleran ice sheets from British Columbia. Relic proglacial lake landforms dominate the landscape. These are meltwater-derived deposits of silts and clays that were deposited into lakes proximate to glacial ice. Soils are generally deep to very deep, moderately fine-textured, with moderately slow permeability and are moderately well drained. These soil deposits are thick, often with substantial amounts of fines (silts and clays), and containing layers of coarse sediment associated with the coarse continental till. This combination of fine and coarse layers influences water infiltration, retention of subsequent behavior (strength) of the soil materials. An extensive area of a complex deposit of glacial lacustrine sediments with layers of glacial till and or outwash was left near what is the confluence of the Dungeness and Gray Wolf Rivers. Downcutting through these unconsolidated glacial materials has formed steep, incised tributaries and inner gorge landforms along the mainstem of the Dungeness and Gray Wolf rivers creating large areas of deep-seated mass movement upslope. Mass wasting is common in this terrain, especially where stream erosion or incision has undercut the toe of the hillslopes. In areas with steeper inner gorge and dissected mountain slopes, deep-seated and shallow rapid mass wasting features are common, and fine sediment production is of significant concern to water quality and

fish habitat conditions. Hillslope processes that affect water quality to aquatic habitat conditions are primarily those associated with slope stability and those associated with runoff of water, both naturally and road drainage-related.

Major vegetation types within the Middle Dungeness include: Timber (8370 ac); irrigated cropland/grassland/pasture (34 ac). The timber zone types that occur are Western hemlock dry (*Tsuga herophylla*) and Pacific Silver Fir dry (*Abies amabilis*). Approximately 2156 acres (25 percent) has been clearcut harvested within the Middle Dungeness watershed, the majority of timber being harvested in the 1970's and 1980's. Commercial thinning has been conducted on approximately 2235 acres. Approximately 25 percent of the watershed is in early seral stand conditions, 8 percent is in mid-seral stand conditions, 67 percent is in late-seral stand conditions. European-Americans moved into the Dungeness River watershed in the 1800's via ships venturing up the Strait of Juan de Fuca. Today, the town of Sequim lies within the lower portion of the larger 5<sup>th</sup> field watershed. Land ownership in the Middle Dungeness watershed is approximately 45 percent Forest Service, 5 percent Olympic National Park, 19 percent State of Washington Department of Natural Resources, and 32 percent private lands.

#### Land Use

The history of human habitation of the watershed dates back 11,000 years. Archeological excavation sites near Sequim provide evidence of human inhabitation of the Dungeness watershed after the last glaciers receded. Anthropological study of local Native American in the watershed found that the area was used for hunting, fishing, and providing other foods such as huckleberries. When European settlers arrived in the Strait of Juan de Fuca and Puget Sound in the 1800's, they found occupied native villages and camps along the shores and bays. Today, the economic base of the Dungeness Watershed depends on agriculture, tourism, and service industries that support the retirement community, as well as forestry, fisheries. The Dungeness watershed provides a wide variety of recreational opportunities including more primitive types of recreation such as hiking, fishing, and backpacking.

Within NFS lands in the Middle Dungeness River sub-watershed 3441 acres have been designated as Adaptive Management Area (AMA), and 4782 acres are designated as Late Successional Reserve (LSR). Approximately 2474 acres of Riparian Reserve overlie all other land allocations. Recent vegetation management in the area has been primarily focused on commercial thinning of AMA stands to promote habitat diversity and accelerate late-successional forest characteristics. Recent projects within the watershed include a small (69ac) stewardship thinning, 1.4 miles of road decommissioning and 0.75 miles of road upgrading.

#### General Overview of Concerns

The primary threats to aquatic habitat and species within the Middle Dungeness watershed include increased coarse and fine sediment delivery from forest roads and a loss of stable instream large wood in the mainstem Dungeness River.

## Water Quality

Water quality is degraded in the Middle Dungeness watershed as a result of sediment delivery to streamcourses via forest roads. While the overall road density is relatively low, a significant percentage of the road system is located on relic proglacial lake and inner gorge landforms. These landforms have a high potential to produce mass wasting and surface erosion, and sediment delivery efficiency is also high.

## Large Woody Debris

A reduction in the amount of instream large wood within the mainstem Dungeness River due to past timber harvest and stream clearing activities has led to decreased channel sinuosity, increased channel slope, reduced floodplain roughness, decreased pool density, reduced off-channel habitat, and reduced retention of spawning gravels. Lack of stable instream large wood is one of the most significant issues within the Middle Dungeness watershed.

## Road Maintenance

There are a high percentage of undersized, inadequately spaced, and deteriorated culverts on forest system roads that are located in potentially unstable terrain and have highly erosive soils. Sediment delivery is high on many of these roads due to close proximity to stream channels and channel gradients

## Important Ecological Values

The Dungeness River Watershed is a Tier 1 Key Watershed (USDA and USDI 1994). The Dungeness River is also designated as a Focus Watershed for aquatic restoration within the USFS, Pacific Northwest Region, Aquatic Restoration Strategy (2007). The watershed is one of the seven high priority watersheds on the Olympic National Forest because of the potential of NFS lands to help maintain and restore anadromous fish stocks. The Middle Dungeness subwatershed contains approximately 9 miles of anadromous fish habitat and an additional 19 miles of resident fish habitat. The subwatershed serves as crucial refugia for maintaining and recovering four species of federally listed threatened fish including: Puget Sound Chinook, Puget Sound steelhead, Hood Canal summer chum, and Coastal Puget Sound bull trout. Designated critical habitat for Puget Sound Chinook and Coastal Puget Sound bull trout falls within the Middle Dungeness subwatershed. Essential Fish Habitat, habitat utilized by Chinook, coho, and pink salmon has also been designated within the Middle Dungeness. Puget Sound/ St Georgia Coho and Puget Sound Coastal Cutthroat Trout, both Forest Service Region 6 sensitive fish species, are also found in the Middle Dungeness. The subwatershed also provides habitat to fall chum salmon and pink salmon.

## Current Condition Class

2 - Functioning at Risk

## Target Condition Class

1 - Functioning Properly

## Key Watershed Issues

**Table 1. Attributes/Indicators within FS control to affect**

ATTRIBUTES /INDICATOR	REASON FOR RATING
1.0 Water Quality	Fine sediment input from roads and deteriorating crossings were identified with field inventory as factors contributing to degraded stream conditions. Water quality was rated as “functioning properly” for the subwatershed.
3.1 Aquatic Habitat - Habitat Fragmentation	Undersized culverts have fragmented habitats and caused barriers to aquatic organisms primarily in resident fish reaches of the subwatershed. Habitat Fragmentation was rated as “functioning at risk” for the subwatershed.
3.2 Aquatic Habitat – Large Wood	Lack of instream large wood resulting from riparian harvest and stream cleaning has led to decreased sinuosity, over steepened channel slope, lack of floodplain roughness, decreased pool densities, less off-channel habitat, and a reduction of spawning gravel. Large Wood was rated as “functioning at risk” for the subwatershed.
3.3 Aquatic Habitat – Channel	LWD density and habitat complexity levels are low in the mainstem river. Lack of floodplain connectivity, off-channel habitats, reduced slack water hiding cover, little retention of sediment and nutrients, little pool habitat. Impaired channel shape and function. Channel was rated as “functioning at risk” for the subwatershed.
6.0 Roads & Trails	Road density, road proximity to water, maintenance needs, and a history of road-related mass wasting are all significant contributors of this watershed. Roads & Trails were rated as “impaired” for the subwatershed.
6.4 Mass Wasting	Decommissioning unneeded roads that present high risk to aquatic resources will greatly reduce the potential for future road-related mass wasting events.

**Table 2. Attributes/Indicator beyond FS control to affect – other parties need to address**

<b>ATTRIBUTES /INDICATOR</b>	<b>REASON FOR RATING</b>
2.1 Water Quantity	Water diversions start occurring downstream of National Forest lands and increase in number as you move down the watershed.
3.1 Habitat Fragmentation	The water diversion, for WA State Dungeness Fish Hatchery, on Canyon Ck. is a barrier to anadromous fish. Recent funding through the State will fund installation of a fish ladder to allow fish to pass above the water diversion weir.
3.2 Large Woody Debris	Lack of instream large wood in the reach downstream of NFS ownership has led to decreased sinuosity, modified channel slope, lack of floodplain roughness, decreased pool densities, less off channel habitat, and reduction of spawning gravel retention.
3.3 Channel	LWD density and habitat complexity levels are low in the reach downstream of NFS ownership. Lack of floodplain connectivity, off channel habitats, reduced slack water hiding cover, little retention of sediment and nutrients, little pool
5.1 Riparian Vegetation	Dominant tree species within the floodplain areas in the reach downstream of NFS ownership have been converted from conifer to deciduous species or removed due housing development and farming.

## **Watershed Characteristics and Conditions**

### **General Context/Overview of the Watershed**

The Middle Dungeness watershed encompasses 15 percent of the greater Dungeness 5<sup>th</sup> field watershed that is within the Puget Sound basin. The Dungeness River drains 170 square miles of the northeastern part of the Olympic Mountain range. Located in the northeast corner of the Olympic Peninsula, the city of Sequim is located approximately 5 miles north of the forest boundary. The Strait of Juan de Fuca is located approximately 11 river miles north (downstream) of the Forest boundary. The entire watershed encompasses 179,300 acres, including both public and private lands.

The Dungeness River originates from glaciers in the Olympic National Park and the Buckhorn Wilderness area of the Olympic National Forest, carves its way through marine basalt, sedimentary rocks, and alpine and continental glacial till down to where it enters Dungeness Bay and the Strait of Juan de Fuca marine environment. The Dungeness, one of the steepest rivers in the United States, losing 4,000 feet in elevation during its first four miles.

The Middle Dungeness Watershed was once covered by continental glacial ice, resulting in moderately sloping terrain with complex, rolling topography. An extensive area of a complex deposit of glacial lacustrine sediments with layers of glacial till and or outwash was left in the Middle Dungeness watershed area. Downcutting through these unconsolidated glacial materials

has formed steep, incised tributaries and inner gorge terrain along the mainstem of the Dungeness and Gray Wolf Rivers, creating large areas of deep-seated mass movement upslope. Shallow-rapid mass wasting is associated with steep slope gradients and relatively, shallow to moderately deep soils. Glacial deposits remain on some midslopes and lower slopes and depending on slope gradient and configuration, have mass wasting potential. Often glacial deposits have seasonal water tables along contacts with denser or finer textured layers which contribute to elevated pore water pressure and instability.

Variations of weather and climate drive hydrologic response in the watershed. The land base is subject to moderate maritime influences that concentrate precipitation events beginning in November with few breaks in wet weather until March or April.

The Dungeness Watershed Analysis characterized the *lower* 10.8 miles of the mainstem Dungeness River (downstream from NFS lands) as extremely degraded and unstable fish habitat. Natural, on-going geologic conditions coupled with upstream erosion from human activities and attempts to control flooding and channel movement have caused large amounts of sediment to be deposited in the lower river. Also, portions of road fill slopes including culvert outlets, are chronic sediment sources which can be evaluated for sediment reduction activities. Numerous Forest Service roads have been identified as chronic sediment sources.

Most of the roads within the subwatershed are located on landforms considered sensitive to road construction and changes in water runoff. The Olympic National Forest Soil Survey identifies the presence of relic pro-glacial lakebed deposits and inner gorge landforms over much of the watershed. Deep-seated landslides are a common feature associated with these landforms. Roads constructed on these landforms have had a number of problems that affect conditions both adjacent to the road (on-site) and downstream (off-site). Erosion and soil loss, downstream sediment supply, water quality, and impacts to aquatic habitat are primary concerns. Of particular concern are affects to fish bearing channels.

Most of the forest roads within the Middle Dungeness subwatershed were built in the 1960's, using common construction specifications of the time. Some of these roads would likely not have been built today, or would have been constructed using better techniques and safeguards for environmental concerns. Many of the roads within the Middle Dungeness 6<sup>th</sup> field watershed sustained damage during the large storms of 1997 and 1999. Lack of funding to maintain the road drainage systems coupled with continued erosion and slope instability has created a deteriorating condition where erosion and damage is occurring even during modest storms. The resulting pulses of coarse and fine sediment (and elevated stream flow) are transported directly to the nearby mainstem of the Dungeness River. As culverts plug and fail, the resulting increased flow of water and debris often scours first and second-order channels and undercuts the channel slopes, creating additional erosion.

Prior to the major storms in 1994 and 1999, similar effects occurred less frequently and at a smaller scale. Numerous roads are located on pro-glacial lakebed deposits with deep, fine-grained soils, and moderate to steep slopes. These areas are very sensitive to changes in, or concentration of, water flow from the road drainage network. The process of intercepting subsurface flow in the road cutslope, capturing the water in the ditchline, and routing water to

ditch relief culverts has created many hillslope gullies at the culvert outlets. Surveys of numerous culverts on forest roads have identified many “new” first-order channels connected to the stream network resulting from severe gully erosion below culvert outlets. The resulting sediment volume from gullying as well as the change in runoff may have significant long term and chronic effects.

The Dungeness River Watershed is a Tier 1 Key Watershed (USDA and USDI 1994). The Dungeness River is also designated as a Focus Watershed for aquatic restoration within the USFS, Pacific Northwest Region, Aquatic Restoration Strategy (2007). The watershed is one of the seven high priority watersheds on the Olympic National Forest because of the potential of NFS lands to help maintain and restore anadromous fish stocks. The Middle Dungeness subwatershed contains approximately 9 miles of anadromous fish habitat and an additional 19 miles of resident fish habitat.

The subwatershed serves as crucial refugia for maintaining and recovering four species of federally listed threatened fish including: Puget Sound Chinook, Puget Sound steelhead, Hood Canal summer chum, and Coastal Puget Sound bull trout. Designated critical habitat for Puget Sound Chinook and Coastal Puget Sound bull trout falls within the Middle Dungeness subwatershed. Essential Fish Habitat, habitat utilized by Chinook, coho, and pink salmon has also been designated within the Middle Dungeness. Puget Sound/ St Georgia Coho and Puget Sound Coastal Cutthroat Trout, both Forest Service Region 6 sensitive fish species, are also found in the Middle Dungeness. The subwatershed also provides habitat to fall chum salmon, pink salmon, and sculpins.

#### Watershed Conditions

The portion of the Dungeness River mainstem within the Middle Dungeness is heavily influenced by past clear cut logging and a road network located within inner gorge landforms on unstable relic proglacial lake deposits. A large proportion of vegetation is homogenous stands of second growth western hemlock, many in very dense “dog-hair” stands.

Since 1994, the management direction on NFS lands within the watershed has changed from emphasizing resource extraction to a focus on watershed restoration. Clearcut timber harvesting has been replaced by commercial thinning in existing plantations to help accelerate the development of late-successional forest characteristics. Outside of the Middle Dungeness, several of the most unstable segments of forest roads that presented high risk to aquatic habitats have been decommissioned. Some of the other roads that will remain on the transportation system have been upgraded to improve drainage and reduce erosion. However, there is still significant amount of road improvements remaining.

A 2010 Forest Service habitat survey has identified a severe lack of large key pieces of wood within the mainstem of the Dungeness River. The flood prone areas of the Straights Reach also have very low levels of coarse woody debris. The lack of floodplain roughness has allowed the stream to lose sinuosity that has led to the increased gradient of the reach. The increased gradients have caused river channels to incise and become disconnected with floodplains and side channels. The increase in slope and loss of sinuosity has also significantly altered pool and riffle

spacing. Because of the size and power of the mainstem river, substantial accumulations of large trees will be needed to begin recreating the stable logjams that historically occurred in this stream. This is not likely to occur in the reasonably foreseeable future without active intervention to provide the necessary woody material from outside the riparian area.

## **Restoration Goals, Objectives, and Opportunities**

### Goal Identification

The goal of the Middle Dungeness WRAP is to improve water quality and enhance fish habitat throughout the drainage. Deep-seated and shallow rapid mass wasting events, surface and gully erosion from roads, and other road-delivered sediment contributes significant amounts of sediment to fish bearing streams. Reducing current sediment inputs by decommissioning roads and improving existing road conditions would move the watershed toward the desired condition.

### Desired Condition

The desired condition for the Middle Dungeness watershed is a resilient and properly functioning watershed which exhibits appropriate water quality and quantity, diverse and complex aquatic, riparian and terrestrial conditions, and self-sustaining wild populations of anadromous and resident fish species.

## **Objectives**

### Alignment with National, Regional and Forest Priorities

Alignment with National, Regional, and Forest Priorities includes:

- U.S. Forest Service Watershed Condition Framework (2011)
- U.S. Forest Service, Pacific Northwest Region, Aquatic Restoration Strategy (2005) – the Region has designated Puget sound as one of 7 Priority Basins and the Dungeness River as one of 50 Focus Watersheds for restoration actions.
- Olympic National Forest Land and Resource Management Plan as amended by the Northwest Forest Plan (1994) – the Dungeness is a Tier 1 Key Watershed with an emphasis to maintain and restore aquatic conditions.
- Olympic National Forest Strategic Plan (2004) – identified the Dungeness watershed as one of 7 Forest priority watersheds for aquatic restoration.
- Olympic National Forest Access and Travel Management Plan (2003) – recommends the future road system needed to address access and aquatic risk.

### Alignment with State or local goals

Alignment with State or local goals includes:

- Dungeness Collaborative Watershed Restoration Plan (In Progress)
- Dungeness River Management Team, Recommended Restoration Projects for the Dungeness River

- North Olympic Lead Entity Salmon Recovery Strategy (2008)
- Puget Sound Partnership, 2012 Action Agenda for Puget Sound
- U.S. Forest Service and Washington State Department of Ecology Clean Water Act Memorandum of Understanding (2000) – helps FS meet commitments in MOA regarding Federal and State water quality laws.
- Puget Sound Chinook Recovery Plan ( 2007)
- Draft Recovery Plan for the Coastal Puget Sound Distinct Population Segment of Bull Trout (2004)

## Opportunities

### Partnership Involvement

Partnership involvement in this priority watershed has been ongoing for decades. The Olympic National Forest has been a member of the Dungeness River Management Team (one of the oldest watershed councils in the State of Washington), since the 1980's.

In 2011, a collaborative team was formed to create a collaborative Watershed Restoration Plan for the Dungeness River 5<sup>th</sup> field watershed. The collaborative group includes members of the Dungeness River Management Team watershed council, The Wilderness Society, North Olympic Lead Entity for Salmon Recovery, Backcountry Horsemen of Washington, Olympic National Park, Dungeness River Audubon Center, OHV clubs, Olympic Park Associates, Sierra Club, Clallam County, and Olympic Forest Coalition. Representatives of these groups have come together to identify priority actions needed to protect and restore aquatic and terrestrial habitat within the larger Dungeness River Focus Watershed. The 5<sup>th</sup> field Dungeness Watershed encompasses the Middle Dungeness 6<sup>th</sup> field subwatershed. Projects within this WRAP have already been identified as part of the collaborative Focus Watershed effort. This core group of partners is expected to continue to partake in restoration efforts throughout the drainage assisting in funding, planning, and with project implementation. See Dungeness River Management Team (DRMT) website: <http://home.olympus.net/~dungenesswc/>

Also the Dungeness Watershed Action Plan Collaborative Group:

<http://www.fs.usda.gov/detail/olympic/workingtogether/partnerships/?cid=stelprdb5321771>

### Outcomes/Output

Upon completion of this WRAP the Middle Dungeness subwatershed will move from a condition class rating of functioning at risk (2) to a watershed functioning properly (1). Specific accomplishments will include:

- |  |            |
|--|------------|
| • Miles of Road Decommissioned             | 5.2 miles  |
| • Miles of Road Upgraded                   | 11.1 miles |
| • Miles of Fish Stream Habitat Improved    | 3.5 miles  |
| • Miles of Fish Stream Habitat Reconnected | 3.1 miles  |
| • Acres of Soil/ Water Improvement         | 25.0 acres |

Socioeconomic Considerations

Socioeconomic impacts of the projects are expected to be considerable in the form of local contracting jobs during the implementation phase of projects. Total projected costs of all essential projects in the watershed are approximately \$2.2 million. This would have a substantial economic impact to the small communities surrounding the watershed. Contracts and work crews would be employed during construction and there would additionally be the long term socioeconomic gains of improving the watershed through protecting fisheries.

**Specific Project Activities (Essential Projects)**

**a. Middle Dungeness Road Decommissioning**

- **Attribute/Indicator Addressed:** Water Quality, Roads and Trails, Mass Wasting, and Soil Erosion.
- **Project Description:**  
This road project will eliminate chronic sedimentation from National Forest roads in the Middle Dungeness River. A total of 5.2 miles of classified roads have been identified for decommissioning. These roads all have high aquatic risk ratings. Typical work includes; removal of road fill at large stream crossings, pullback of unstable sidecast fillslope material, outsloping, constructing cross ditches and drainage swales, scarifying the roadbed, placement of logs and other organic matter along excavated slopes, mulching and seeding, and planting with native trees and shrubs. The table below identifies the specific planned projects.

<u>Road Number</u>	<u>Miles</u>	<u>Proposed OBML</u>	<u>Estimated Cost</u>
2912, -040, -045, -050, -060, -063	11.3	D	\$1,485,000
2900072	3.8	D	\$486,000
2923-015, -020	3.3	D	\$486,000
2952000	2	D	\$162,000
2922-200, -250, -300	3.8	D	\$270,000
2900105	0.56	Level 1 storage	\$52,000

- **Partners Involvement:**  
Dungeness River Management Team – Assistance in pursuing funding, public outreach.  
Dungeness Collaborative Group- Assistance in pursuing funding, public outreach.  
Environment Protection Agency (EPA) - Funding
- **Timeline:** NEPA analysis is planned to begin in 2014 for the entire proposed road decommissioning projects in the watershed. Implementation of road decommissioning projects will begin in 2015 and continue for 2 years, pending available funding.
- **Estimated costs and associated Budget Line Item:** Approximately \$228,000. Large fills, significant pull back, and distance to suitable waste sites increase costs.

Middle Dungeness Watershed Restoration Action Plan  
Hood Canal Ranger District, Olympic National Forest

Potential BLI's include CMLG, CMRD, NFWW. Significant amounts of additional funding will be needed to accomplish project implementation as current funding levels generally only support planning time.

**b. Middle Dungeness Road Upgrades**

- **Attribute/ Indicator Addressed:** Water Quality, Roads and Trails, Mass Wasting, and Soil Erosion.
- **Project Description:** Lack of sufficient road maintenance and upgrades through the years have led to a dilapidated road system increasing the potential for failures and debris torrents and risk to aquatic habitats. This project will improve high risk road crossings to meet current BMP's by applying various treatments including replacing culverts, cleaning ditches, installing grade sags to reduce diversion potential, placing additional surfacing to reduce erosion, and removing unstable sidecast.

<u>Road Number</u>	<u>Treatments</u>	<u>Extent</u>	<u>Aquatic Risk</u>	<u>Estimated Cost</u>
2878	Restore ditchlines, replace undersized/deteriorating culverts, pull back unstable sidecast, install grade sags, upgrade surfacing at stream crossings	2.0 miles	High	\$200,000
2870-050	Restore ditchlines, replace undersized/deteriorating culverts, pull back unstable sidecast, install grade sags, upgrade surfacing at stream crossings	2.8 miles	High	\$67,000
2880	Restore ditchlines, replace undersized/deteriorating culverts, pull back unstable sidecast, install grade sags, upgrade surfacing at stream crossings	1.0 miles	High	\$75,000
2870	Restore ditchlines, replace undersized/deteriorating culverts, pull back unstable sidecast, install grade sags, upgrade surfacing at stream crossings	4.5 miles	High	\$342,000
	Total	11.1 miles		\$684,000

**Partners Involvement:**

Dungeness River Management Team – Assistance in pursuing funding, public outreach.

Dungeness Collaborative Group- Assistance in pursuing funding, public outreach.

Environment Protection Agency (EPA) - Funding

- **Timeline:** Starting in 2013 and continuing for 4 years, pending available funding.
- **Estimated costs and associated Budget Line Item:** Approximately \$684,000. Potential BLI's include CMLG, CMRD, NFWW. Significant amounts of additional funding will be needed to accomplish project implementation.

c. **Middle Dungeness Large Wood**

- **Attribute/ Indicator Addressed:** Aquatic Habitat – Large Wood, Aquatic Habitat - Channel
- **Project Description:** A 2010 Forest Service habitat survey has identified very low levels and a lack of large key pieces of wood within the mainstem of the Dungeness River. The flood prone areas of the Straights Reach have very low levels of coarse woody debris. The lack of floodplain roughness has allowed the stream to lose sinuosity that has led to the increased gradient of the reach. The increased gradients have caused river channels to incise and become disconnected with floodplains and side channels. The increase in slope and loss of sinuosity has also significantly altered pool and riffle spacing. The objectives for the Middle Dungeness Large Wood project area are designed to increase sinuosity and reduce channel slope, increase floodplain roughness, increase pool densities, increase off channel habitat, and increase spawning gravel retention. These objectives would be accomplished through addition of LW in the channel, floodplain, and off channel habitats. Approximately ten large wood jams would be placed within the mainstem of the Dungeness River spanning approximately 3.5 river miles. The proposed log jam sites do not have road access, thus wood is planned to be transported to the river by helicopter.
- **Partners Involvement:**
  - Jamestown S'Klallam Tribe – Design, implementation, securing funding, and technical assistance.
  - Dungeness River Management Team – Assistance in pursuing funding, public outreach.
  - Dungeness Collaborative Group- Assistance in pursuing funding, public outreach.
  - North Olympic Peninsula Lead Entity – Securing funding
  - Washington State Salmon Recovery Funding Board (SRFB) - Assistance in funding
- **Timeline:** Survey and design will be completed in 2013. NEPA analysis is planned to begin in 2014. Implementation of Large Wood project will begin in 2015.
- **Estimated costs and associated Budget Line Item:** Approximately \$765,000. Implementation costs would primarily be funded by WA SRFB grant. Forest Service contribution would be NEPA analysis and wood for the project. Potential BLI would be NFWF.

**d. Middle Dungeness Aquatic Organism Passage**

- **Attribute/ Indicator Addressed:** Aquatic Habitat -Habitat Fragmentation
- **Project Description:** There are two culverts that block resident fish passage – rainbow and cutthroat trout, and sculpin – which are considered high priority to replace with structures that will allow all aquatic organisms to pass. Both culverts disconnect more than a mile of fish habitat each. These undersized culverts which act as fish barrier are on arterial roads which have fairly large road fills over them, which increase the cost to replace these culverts.

<u>Road Number &amp; Mile Post</u>	<u>Stream</u>	<u>Miles of Habitat Upstream of Culvert</u>	<u>Estimated Cost</u>
2875 MP 3.5	Canyon Ck	1.6	\$333,000
2870 MP 1.3	Canyon Ck	1.5	\$400,000
Total		3.1	\$733,000

- **Partners Involvement:**  
Dungeness River Management Team – Assistance in pursuing funding, public outreach.  
Dungeness Collaborative Group- Assistance in pursuing funding, public outreach.
- **Timeline:** NEPA analysis and implementation of Aquatic Organism Passage crossings depends on available funding.
- **Estimated costs and associated Budget Line Item:** Approximately \$733,000. Potential BLI's include CMLG, CMRD, NFWF. Significant amounts of additional funding will be needed to accomplish project implementation.

**e. Costs:**

	Planning	Design	Implementation	Project Monitoring
FS Contribution	\$98,600	\$123,250	\$1,732,500	\$37,000
Partner Contribution (both in kind and \$)		\$150,000	\$500,000	
<b>Total</b>	\$148,600	\$223,250	\$2,232,500	\$37,000

**f. Timelines and Project Scheduling**

FY	Task	FS Cost	Partner cost
	<b><u>Middle Dungeness Road Decommissioning</u></b>		
2014	Complete NEPA for all road decommissioning	\$31,000	
2015	Implement decommissioning for 2878-050, 2878-110, and 2877-040	\$87,000	
2016	Implement decommissioning for remaining roads 2875-020 and 2875-070	\$105,000	
	<b><u>Middle Dungeness Road Upgrades</u></b>		
2013	FSR 2878 begin restoring ditchlines, replacing undersized/deteriorating culverts, pulling back unstable sidecast, installing grade sags, upgrading surfacing at stream crossings	\$200,000	
2014	FSR 2870-050 begin restoring ditchlines, replacing undersized/deteriorating culverts, pulling back unstable sidecast, installing grade sags, upgrading surfacing at stream crossings	\$67,000	
2015	FSR 2880 begin restoring ditchlines, replacing undersized/deteriorating culverts, pulling back unstable sidecast, installing grade sags, upgrading surfacing at stream crossings	\$75,000	
2016	FSR 2870 begin restoring ditchlines, replacing undersized/deteriorating culverts, pulling back unstable sidecast, installing grade sags, upgrading surfacing at stream crossings	\$342,000	
	<b><u>Middle Dungeness Large Wood</u></b>		
2013	Design Log Jams		\$150,000

Middle Dungeness Watershed Restoration Action Plan  
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2014	Complete NEPA EA	\$40,000	
2015	Implement Project		\$500,000
	<b><u>Middle Dungeness Aquatic Organism Passage</u></b>		
TBD*	Complete NEPA and design 2875 MP 3.5	\$45,000	
TBD*	Implement 2875 MP 3.5	\$288,000	
TBD*	Complete NEPA and design 2870 MP 1.3	\$54,000	
TBD*	Implement 2870 MP 1.3	\$346,000	

\*Pending funding

Action Plan Date: September 2012

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Reviewing Official and Title: Dean Yoshina Date: September 27, 2012  
Dean Yoshina  
District Ranger

# Middle Dungeness Watershed Restoration Action Plan Hood Canal Ranger District, Olympic National Forest

