Lower Columbia River Conservation and Recovery Plan

Guidance Document

Project Prioritization Tool

Assistance in Identifying High Priority Projects

Introduction

The Oregon Department of Fish and Wildlife (ODFW) developed this guidance document to assist anyone implementing watershed improvement or protection projects on the Oregon side of the Columbia River within the Lower Columbia River Evolutionary Significant Unit (ESU). The guidance document compliments the Lower Columbia River Salmon and Steelhead Recovery Plan (ODFW 2010) and attempts to facilitate the main goals of the plan of delisting and broad sense recovery of Lower Columbia River fish species.

To accomplish the goals of the plan, in the most expedient manner, restoration practioneers should focus their efforts by prioritizing project types and in priority areas that provide maximum benefits given limited resources. ODFW developed a four-step process to assist in prioritizing restoration and protection projects (**Figure 1**) as well as assisting in development of work schedules to address those high priority projects . This process will allow restoration practioneers as well as project funders to evaluate projects across the ESU and within populations to determine if they are high, medium or low priority.

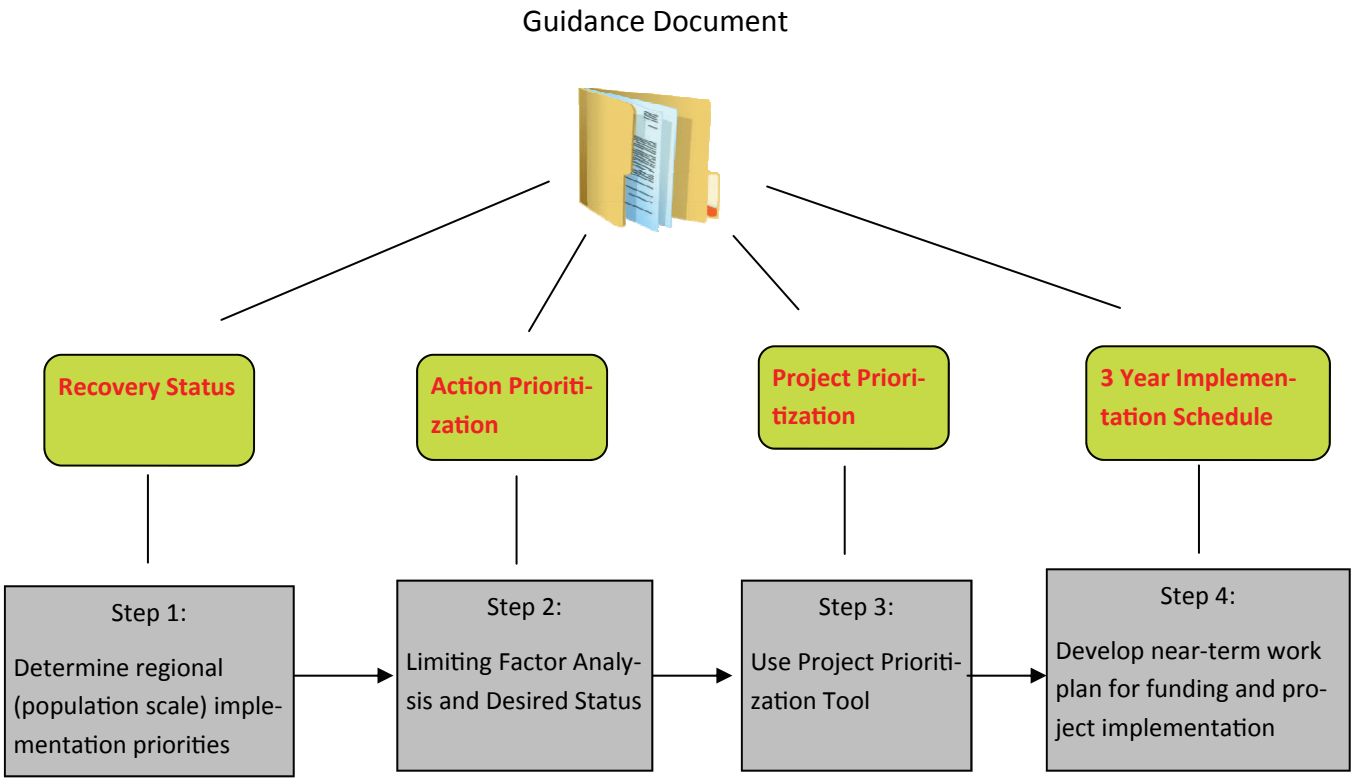


Figure 1. Project Prioritization Process For Implementing and Funding High Priority Projects.

Recovery Status

Step 1: The first step in determining the Evolutionary Significant Unit (ESU) wide priorities is to assess the number of species/races in each independent population which are designated as a viable status (low or very low extinction risk) population. Further prioritization occurs according to the number of those species/races which are not currently viable (**Figure 2**).

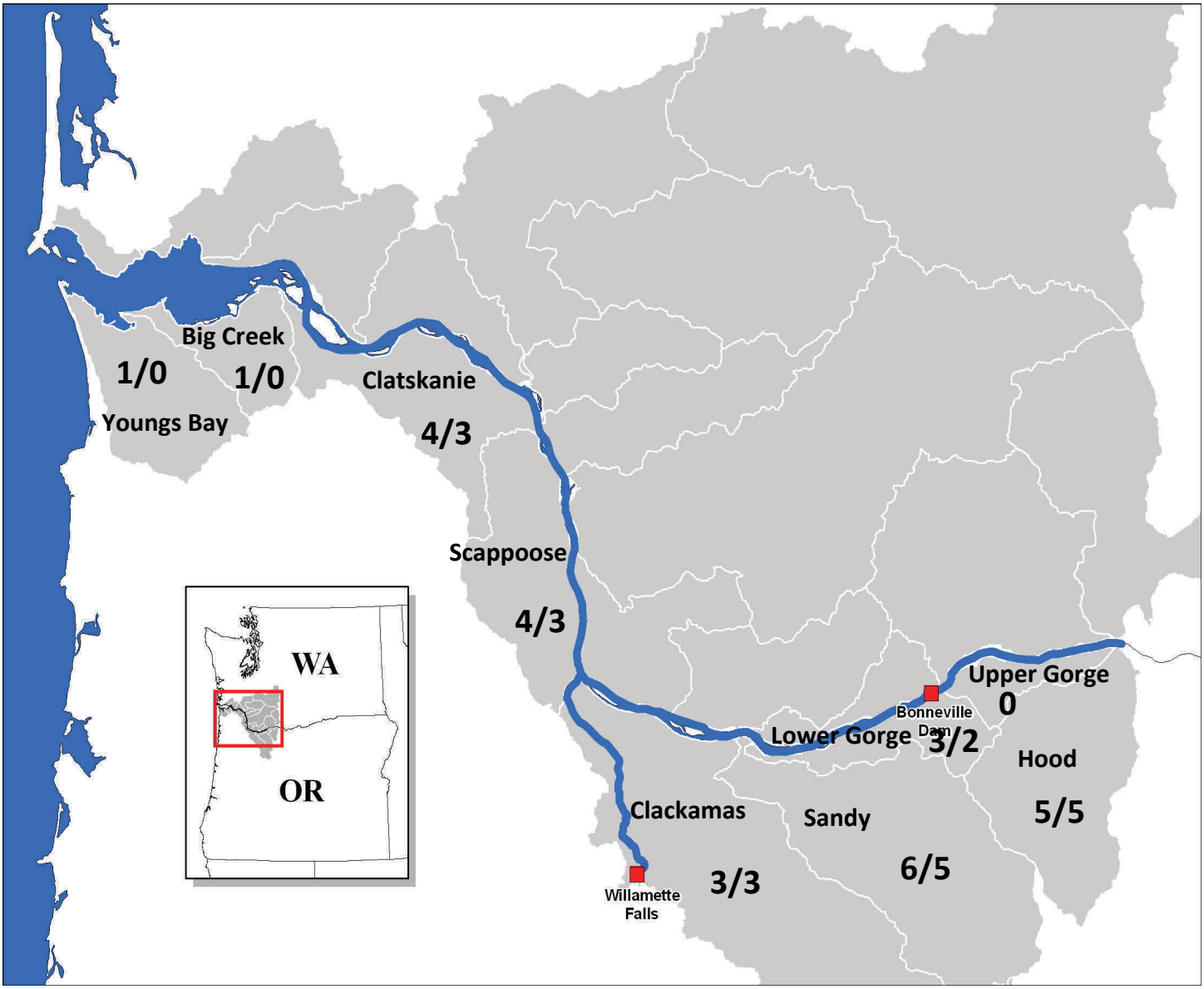


Figure 2. Map of the Lower Columbia River ESU with the 9 Oregon independent populations. The numbers within each independent population represent the number of species/races with a desired viable status and the number of those species/races which are not at a viable status, respectively.

ODFW and the National Oceanic and Atmospheric Association (NOAA) conducted a status review for all species/races within each independent population while developing the plan (ODFW 2010). The current biological extinction risk status is assessed through a model using the abundance/productivity, diversity and spatial structure metrics. The model produces an overall status score of 0-4, with 4 a very low extinction risk and a 0 a very high extinction risk.

To meet the biological delisting criteria for the ESU, each stratum must meet the biological delisting criteria. There are 3 strata, 1. Coast -Youngs Bay, Big Creek, Clatskanie, Scappoose (Oregon), 2. Cascade - Clackamas, Sandy (Oregon), and 3. Gorge– Lower Gorge, Upper Gorge, Hood (Oregon) (**Figure 3**). The stratum biological delisting criteria are, at least 2 independent populations must meet viability criteria[1] and the stratum extinction risk score is 2.25 or lower. The stratum extinction risk score is an average of the extinction risks for all independent populations within the stratum. The overall stratum extinction risk level of 2.25 allows some independent populations to remain at risk levels higher than viable.

Based upon the stratum delisting criteria, a desired status for each independent population was determined. The desired status goals for Oregon populations consider Washington populations since the Lower Columbia River ESU spans both states (**Figure 3**). An iterative process with Washington was conducted to develop desired statuses and extinction risks for each population, based on the feasibility of achieving a desired status (**Figure 4**).

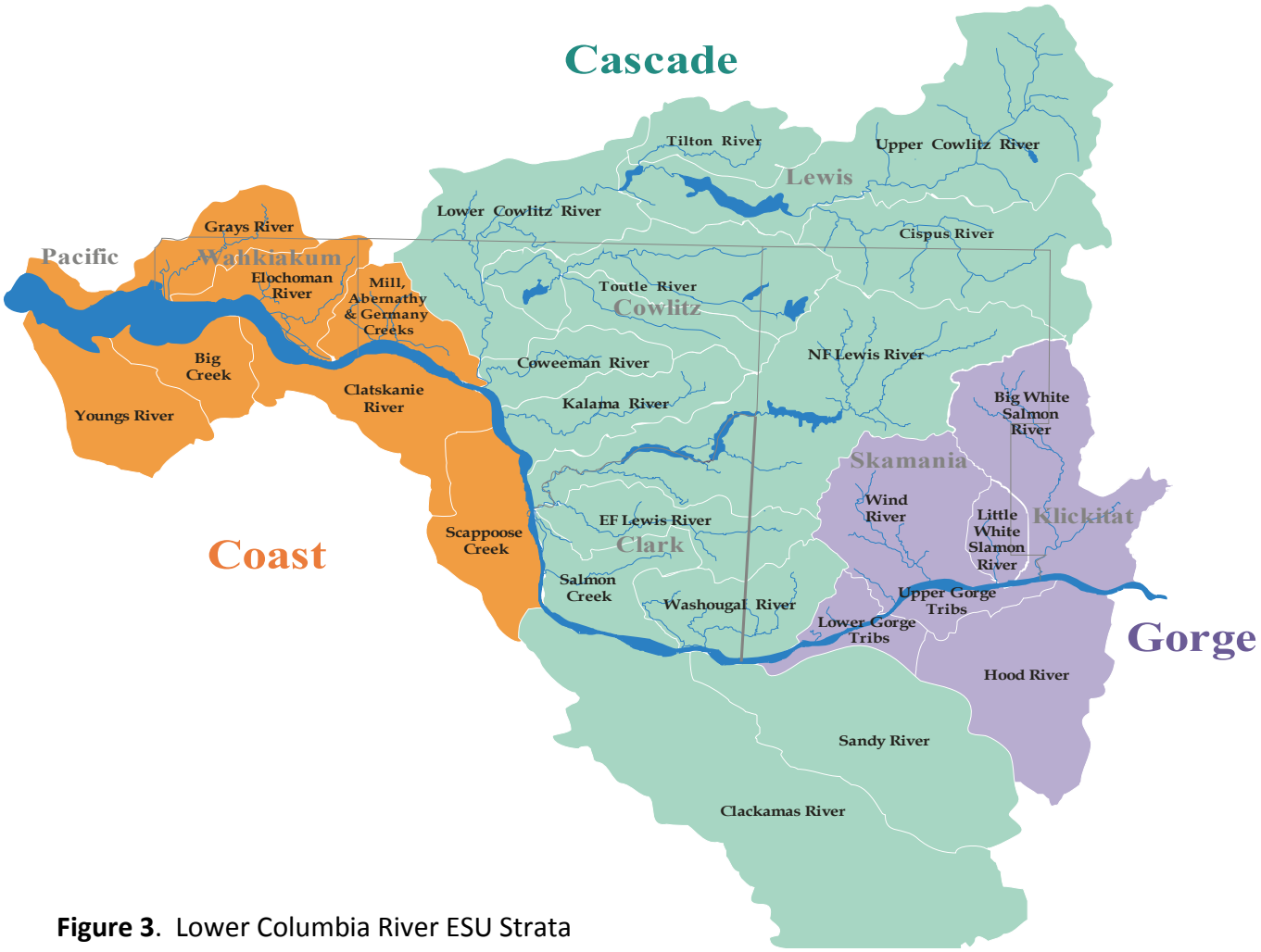


Figure 3. Lower Columbia River ESU Strata

[1] Given the results from the status and scenario modeling, particularly with respect to the Gorge stratum and its populations, ODFW does not feel that this criterion can be feasibly met. ODFW believes the inability to meet this criterion is largely an artifact of the strata and population structure and classification that the WLC-TRT developed (Myers 2006). The gorge strata independency is worthwhile to reconsider for consistency with other plans and ecoregion, genetic and viability information.

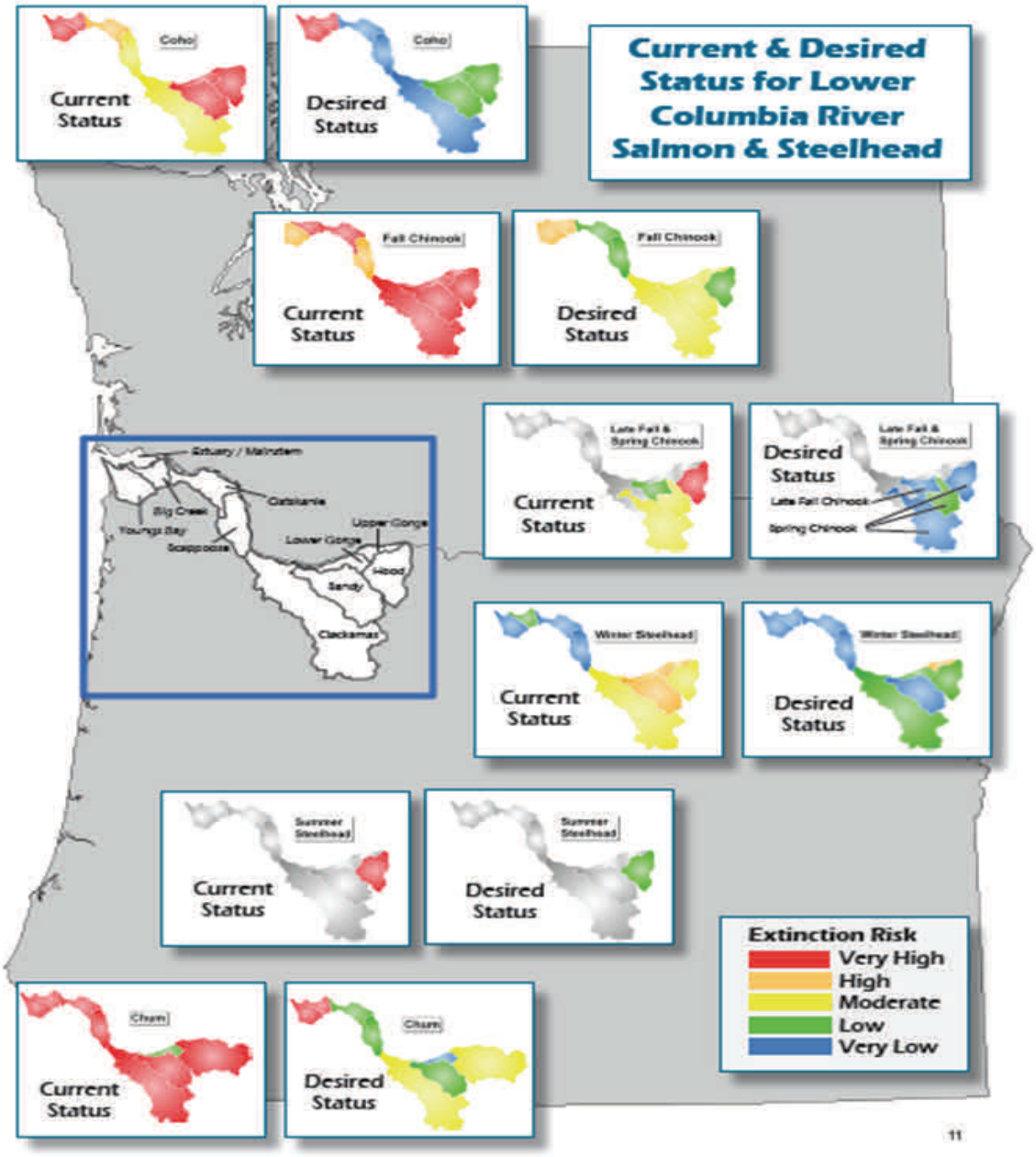


Figure 4. Current and Desired Status of Oregon Populations of Salmon and Steelhead.

Limiting Factor Analysis/Action Prioritization

Step 2: Consult the Lower Columbia River Conservation and Recovery Plan for Salmon and Steelhead pages 102-146 for a list and description of key and secondary limiting factors http://ww.dfw.state.or.us/fish/CRP/lower_columbia_plan.asp. Limiting factor analysis were conducted for each species and race for each independent population. The desired recovery status in conjunction with a limiting factor analysis determines an importance rating for all plan habitat actions (**Figure 5**).

The recovery planning team identified 9 general limiting factors (LF's). Within these general LF's, 33 specific limiting factors were identified and agreed upon by consensus via an expert panel, a planning team and a stakeholder team (**Table 1**). Additionally, 6 general threat categories were identified in which human actions have led to the limiting factors (**Table 2**).

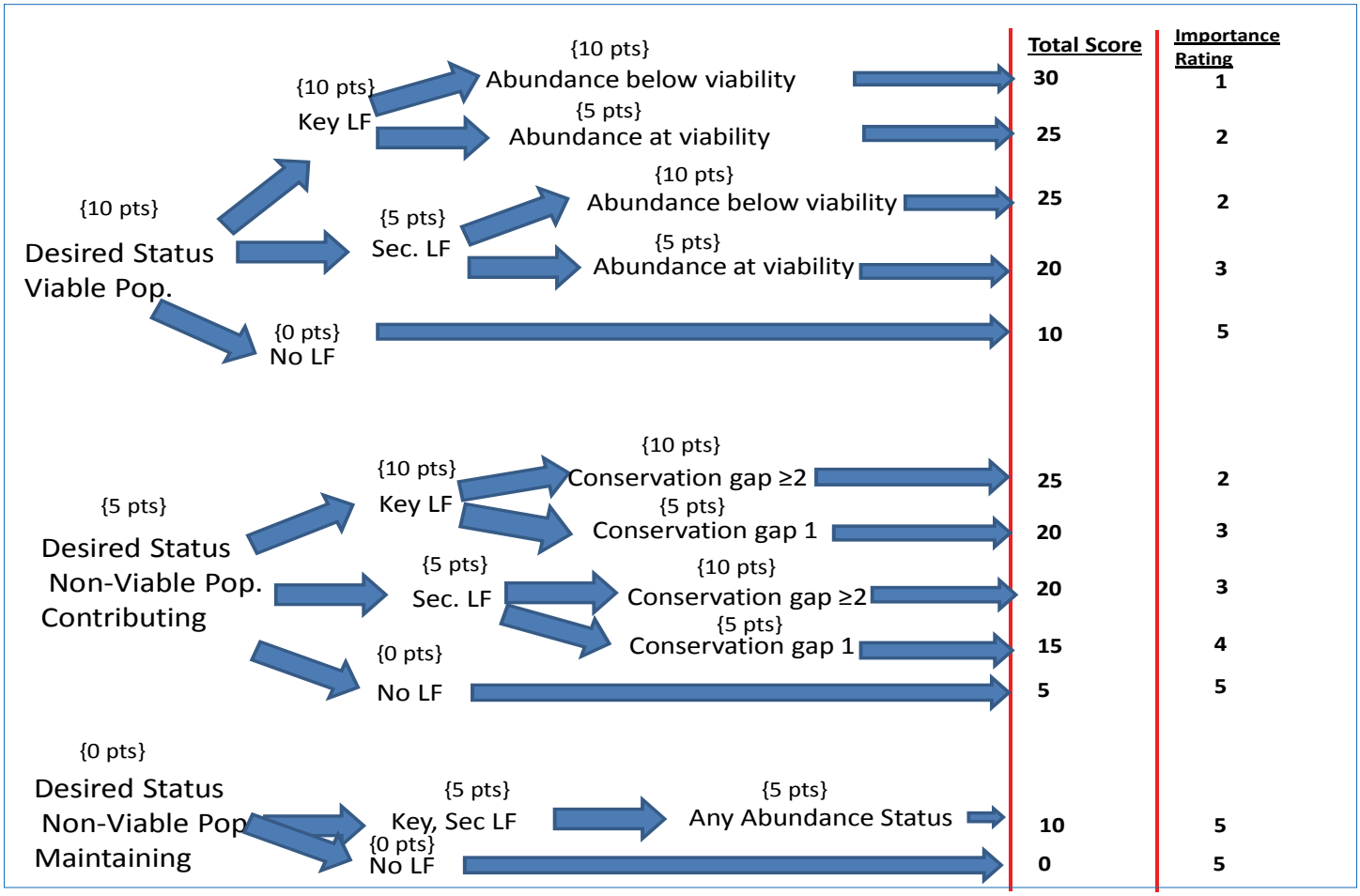


Figure 5. Action Importance Ranking Criteria

Sandy river side channel USFS

Table 1. General Limiting Factor Categories, Definitions, Related Limiting Factor/threat (LF/T) codes and VSP Parameters Affected.

Limiting Factor	Definition	Related LF/T Codes	VSP Parameters Affected
Competition	Interaction between naturally produced fish and other fish or species, both of which need a limited environmental resource (i.e. food or space).	1a (hatchery fish)	abundance, productivity, diversity, spatial structure
Disease	Pathological condition in naturally produced fish resulting from infection.		abundance, productivity, diversity, spatial structure
Food web	Changes in the food web, primarily affecting food sources for naturally-produced fish.	3a (reduced macrodetrital input) 3b (increased microdetrital input)	abundance, productivity, diversity, spatial structure
Habitat access	Impaired access to spawning and/or rearing habitat (e.g., impassable culverts, delayed migration over dams, dewatered stream channels, diked off-channel habitat, etc…).	4a (passage - large dam) 4b (downstream passage - large dam) 4c (upstream passage - hatchery weir) 4d (upstream passage - road crossing) 4e (upstream passage - road crossing, small dam or diversion)	abundance, productivity, spatial structure, and (sometimes) diversity
Hydrograph/water quantity	Altered hydrology (i.e., timing and magnitude of flows).	5a (low-head hydro diversions) 5b (Columbia River hydropower dams) 5c (upslope land uses) 5d (irrigation withdrawals) 5e (municipal withdrawals) 5f (hatchery withdrawals)	abundance, productivity, spatial structure, diversity
Physical habitat quality	Altered quality of physical habitat (e.g., floodplain connectivity and function, channel structure and complexity, channel morphology, riparian condition and large wood recruitment, sediment routing [fine and coarse sediment, sand], and upland processes).	6a (fine sediment - roads) 6b (fine sediment - roads and land use) 6c (sediment/sand - hydro dams) 6d (gravel recruitment - dams) 6e (habitat complexity/diversity, access) 6f (habitat quality and connectivity) 6g (reduced habitat from inundation)	abundance, productivity, spatial structure, diversity
Population traits	Impaired population condition(s) (e.g., genetic, life history, morphological, productivity, fitness, behavioral characteristics, and population size); although population traits are caused by other limiting factors, they may also act independently as a limiting factor.	7a (consumptive, targeted fishery) 7b (fisheries targeted at other stocks or species) 7c (stray hatchery fish interbreeding with wild fish)	Harvest: abundance, diversity Hatcheries: abundance, productivity, diversity
Predation	Consumption of naturally produced fish by another species (does not include fishery mortality).	8a (non-salmonid fish) 8b (birds) 8c (hatchery fish) 8d (marine mammals)	abundance, productivity, diversity
Water quality	Altered physical, chemical, or biological water characteristics (e.g., temperature, dissolved oxygen, suspended sediment, pH, toxins in both water column and sediment, etc…)	9a (elevated temperatures - land use) 9b (elevated temperatures – reservoirs) 9c (toxins – agricultural chemicals) 9d (toxins – urban and industrial)	abundance, productivity, diversity

Table 2. General threat categories and definitions.

Threat Category	How Threats Cause or Contribute to Limiting Factors
Tributary Habitat Management	Tributary habitat conditions are impacted both by current land use practices causing limiting factors and impairing fish populations, and by current practices not adequate to restore limiting factors caused by past practices. These practices include agricultural, timber harvest, mining and grazing activities, diking, damming, development of transportation corridors, and urbanization.
Estuary Habitat Management	Land and water management activities, combined with the effects of the hydropower/ flood control system, have changed estuarine habitat conditions in the Columbia River estuary. Complex habitats have been loss or modified through flow alterations, channelization, diking, development and other practices.
Hydropower and Flood Control Management	Hydropower and flood control management cause a loss or alteration of stream habitat. Management includes dam construction and operations, conversion of riverine habitat to reservoir, and water withdrawals and flow alterations.
Harvest Management	Fisheries cause direct and incidental mortality to naturally produced fish. Direct mortality is associated with fisheries that are managed to specifically harvest target stocks. Incidental mortality includes incidental mortality of fish that are caught and released, encounter fishing gear but are not landed, or are harvested incidentally to the target species or stock. Fisheries can also result in genetic selection (e.g. size or age)
Hatchery Management	Hatchery programs can harm salmonid viability in several ways: hatchery-induced genetic change can reduce fitness of wild fish; hatchery-induced ecological effects—such as increased competition for food and space—can reduce population productivity and abundance; hatchery-imposed environmental changes can reduce a population's spatial structure by limiting access to historical habitat. Hatchery programs can potentially benefit salmonid viability by contributing to increasing natural-origin fish abundance and spatial distribution, by serving as a source population for repopulating unoccupied habitat and by conserving genetic resources. Hatchery practices that affect natural fish production include removal of adults for broodstock, breeding practices, rearing practices, release practices, number of fish released, reduced water quality, and blockage of access to habitat.
Predation	Predation on, and consumption of, lower Columbia salmon and steelhead by birds, non-salmonid fish, marine mammals and other species can affect salmonid viability by reducing abundance, productivity, and/or diversity.

Key and secondary LF's and the associated threats to each lower Columbia River salmon and steelhead population are listed by life stage (juvenile and adult), by geographic area (tributary and estuary) and by each general threat in the plan. With the knowledge of the limiting factors the planning team, with the assistance from the stakeholder team, developed a suit of actions to address the key and secondary LF's. Recovery has the highest likelihood of success if actions that address key and secondary limiting factors are implemented in areas where the greatest benefit will result.

The teams developed actions for each threat category and the limiting factors associated with those threats. The focus of this prioritization effort is on tributary habitat. The team developed approximately 160 tributary habitat actions for either all populations or specific actions for each independent population. These actions are found in Chapter 7 page 228-294 of the plan.

Creation of a method to rank all actions directed at tributary habitat is an important part of stepping down to the project prioritization process. This step awards a total of up to 30 points to the 160+ tributary habitat actions. This step evaluates 3 metrics which assists in determining an importance rating (**Figure 5**) for each tributary habitat action. To determine the overall importance of the action, three questions need answered:

1. Does the action contribute to a population that has a desired status of viable? 10 points are awarded if the answer is yes, 5 points are awarded if the action is targeted at a contributing population (the **conservation gap** needs improvement but not to the point of viability), O points are awarded if the action is targeted at a maintaining population (not a designated viable population and the desired delisting status is maintained at the current status, i.e. no change in the **conservation gap**).
2. Is the action addressing a key, secondary or non- limiting factor at the population level? 10 points are awarded for actions addressing a key limiting factor, 5 points are awarded for actions addressing a secondary limiting factor and 0 points are awarded for actions not addressing a limiting factor.
3. What is the conservation gap of the target population? If the desired status of the population is viable, then is the population at or below viability (does it need improvement?) or for actions directed at populations desired as contributing, what is the **conservation gap**? For desired viable populations, if the population is not at viability then 10 points are awarded, if the population is currently viable then 5 points are awarded. For contributing populations, if the conservation gap is 2 or greater than 10 points are awarded, if the conservation gap is less than 2 then 5 points are awarded. For populations listed as maintain, 5 points are awarded for any abundance status.

Point totals are summed and an importance ranking is given according to the total score (**Figure 5**).

The **conservation gap** is a description of the magnitude of improvements needed to move a population from its current condition to a desired condition (**Figure 4**) by reducing the extinction risk. The current status of each population was given a probability of extinction between 0 and 1. Depending on the probability of extinction, a risk category was assigned. There are 5 risk categories ranging from very high to very low (**Table 3**).

Table 3. Definition of extinction risk categories and associated extinction probabilities (McElhany et al. 2007).

Probability of Extinction	Viability Category	Risk Category	Risk Category Score
0.00 to 0.01	Viable	Very Low (VL)	4.0
0.01 to 0.05	Viable	Low (L)	3.0
0.05 to 0.25	Non-viable	Moderate (M)	2.0
0.25 to 0.60	Non-viable	High (H)	1.0
0.60 to 1.00	Non-viable	Very High (VH)	0.0

Project Prioritization Tool

Step 3: Use the project prioritization tool to determine the priority of a project (high, medium, low).

Although significant progress was made in prioritization through action development which address primary and secondary limiting factors, projects which fall under those actions will vary in terms of benefits depending where they are located within an independent population's basin. The plan calls for more detailed prioritization between projects by type and location. Page 386 of the plan lists 8 methods for additional prioritization. The project prioritization tool developed for this plan includes the action importance rating developed in step 2, uses 7 of 8 prioritization methods suggested in the plan (resiliency against climate change has yet to be modeled) and two additional metrics to create an overall score. From the score a high, medium or low priority is assigned based upon the point total.

The formula used to determine a project score is derived from 11 metrics. The formula is: 2.5 (importance rating) + 2(viability ranking) + other species benefited ranking + threat reduction value + 2 (limiting factor value) + conservation gap rate + tiering value + 3(priority location rating) + high intrinsic potential value + wild fish sanctuary value= score.

The metrics are:

1. **<u>Action importance rating (5-1 points)</u> -** From step 2. This rating uses 3 metrics {Is there a population listed to reach viable status, is the action address a key limiting factor, is the population affected at or below the desired status conservation gap}? There is a maximum of 30 points total, 30pts=5pts, 25pts=4pts, 20pts=3pts, 15pts=2pts and 10pts or less=1pt in the importance rating scheme. If a population is designate as a viable population and the population needs to improve to reach the desired status and the action addresses a key limiting factor, then maximum points are awarded in this metric.

2. **<u>Viability rating (7-0 points)</u> -** The metric is based upon the number of species/races a project will benefit which need to achieve or maintain viable status in the watershed. The maximum number of species to reach viable status could be 7 (co, chs, chf, late chf, stw, sts, chum). The more a project benefits multiple species which need to achieve or maintain a viable status the more points a project is given.

3. **<u>Other species benefited ranking (up to 5 points)</u> -** The metric is based on other plan species (not all populations are designated to achieve viable status), other federally listed fish species (bull trout, eulachon) and Pacific Lamprey. Bonus points are added for benefits to other species which are benefited from the project.

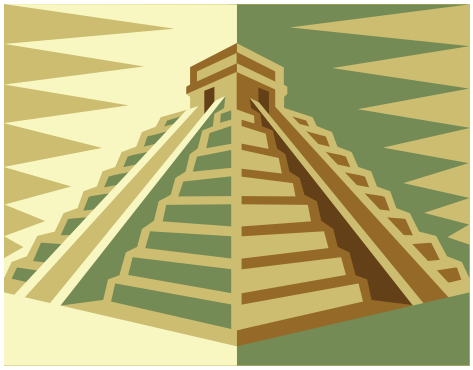
ODFW

4. **<u>Threat reduction value (10-0 points)</u> -** The threat reduction value is based on how much a plan action can reduce the specific threat category's mortality rate to a given population. The value is a point scheme which compares the populations current mortality rate (in a particular threat category) to the modeled mortality rate reduction needed to reduce a specific threat to the delisting desired value. The larger the difference between the current mortality rate (in a particular threat category) and the improvements needed to reduce that mortality rate to achieve the desired status receives a higher point total. This threat reduction value changes per threat category and independent population.

NOAA

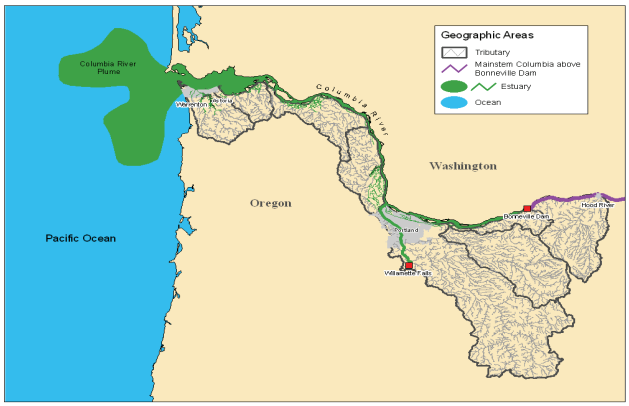
5. **<u>Limiting factor value (10-0 points)</u>** - Limiting factors are identified within the plan. If a particular project address a key limiting factor then 10pts are awarded, a secondary LF receives 5pts and no limiting factor addressed receives 0pts.

6. **<u>Conservation gap rate (5-1 points)</u> -** This metric looks at which species/races in the independent population would benefit from a project which has the highest conservation gap between current and desired status. There are 5 levels of extinction risk (very high, high, moderate, low, very low). The most improvement which could be realized is from very high to very low, which is a 4-gap improvement . A 4 -gap improvement is given 5pts, 3 gaps is given 4pts, 2 gaps is given 3pts, 1 gap is given 2pts, no gap improvement is given 1pt (maintaining population). The higher the gap between current and desired status the higher the point total awarded.



7. **<u>Tiering value (5-1 points)</u> -** The tiering rating is based upon a majority of watershed restoration principles and a subject of review for prioritizing work. 5 pts. are awarded for a project which attempts to protect the watershed for long-term (acquisition, easement), 4pts are awarded for reconnecting isolated habitats (off channel, fish passage, ect), 3pts are awarded for restoration of long-term processes (water quality/quantity), 2pts are awarded for restoring long-term processes in the riparian zone and 1pt is awarded for enhancement type projects.

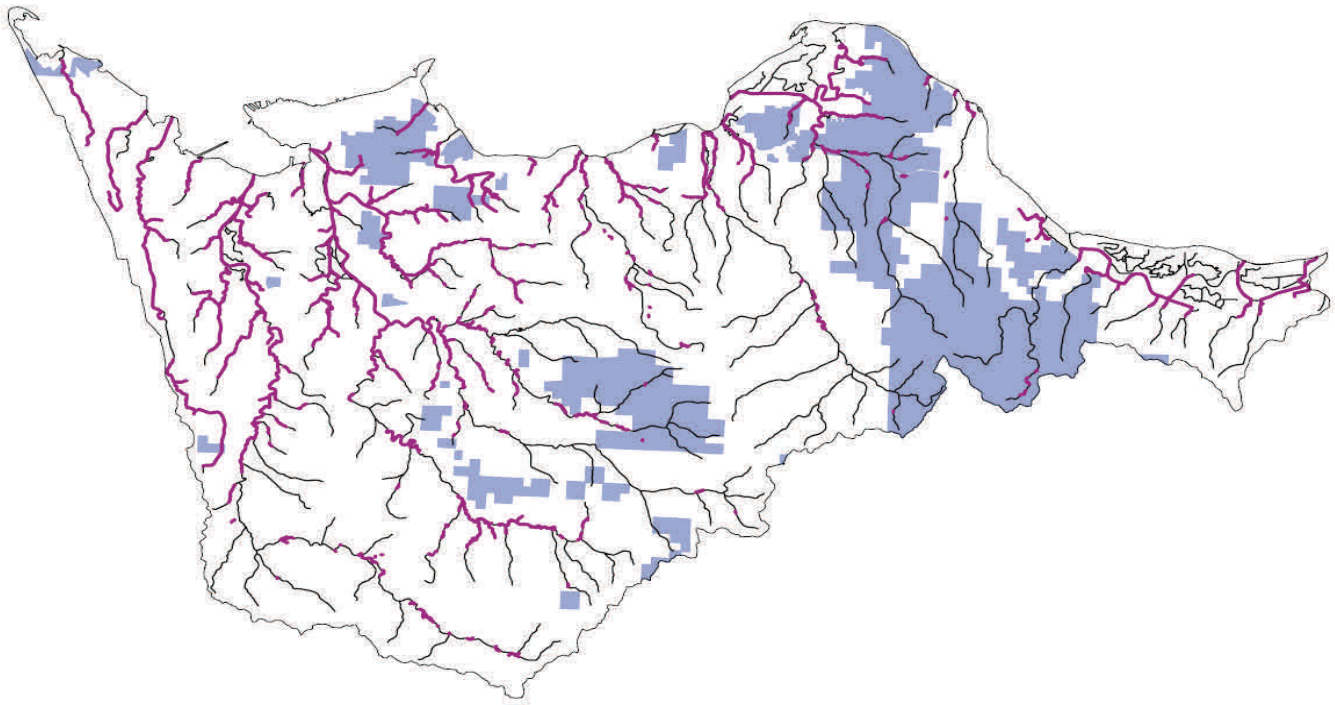
8. **<u>Priority location rating (5-1 points)</u> -** This metric is based upon local geographic priorities. Are implementers siting projects (approx. 6th field HUC level) where geographic priorities are identified within watershed assessments and action plans? Existing geographic prioritizations use a number of priorities based upon limiting factors, threats, number of species, ect. Since each independent population has a different number of listed geographic areas in a watershed, 5 pts. are awarded for conducting restoration in the top 20% of the geographic priorities, 4pts for working in the top 20-40%, 3pts for working in the top 40-60%, 2pts for working in the top 60-80% and 1pt for working in the bottom 20% of the geographic areas. Work in the top geographic priorities receives the highest amount of points.



Maps of geographic priorities are found in Appendix 1.

9. **<u>High Intrinsic Potential value (5 or 0 points)</u>-** This metric is based on if a project is placed in an area that is listed as an area of HIP then 5pts are awarded, if not, then no points are awarded. An area of HIP is an area that will respond with more frequency and quicker to watershed restoration activities. This is also coincident to higher numbers of fish species and densities using HIP areas.

High Intrinsic Potential maps for each independent population are found in Appendix 2.



Map 21. Intrinsic potential for coho salmon (>0.8 = high) in red in the Astoria North study area (source: CLAMS).

Meronim

10. **Projects sited in a wild fish sanctuary (5 or 0 points) -** This metric provides bonus points for siting a project in an area designated as a wild fish sanctuary. This metric does not preclude hatchery fish from the area but generally is limited in hatchery fish on the spawning ground and is designated in the LCR plan or by the ODFW Fish and Wildlife Commission.

USFS

Three Year Implementation Schedule (3YIS)

Step 4: Develop a near-term work plan for recovery project planning, implementation, and funding acquisition.

The ODFW Implementation Coordinator for the Lower Columbia River ESU will work with members of the LCR Implementation Team to develop a three-year implementation schedule. The 3 YIS is a work plan that summarizes how, when and where strategic actions and projects in the lower Columbia River ESU will be implemented over a three year period. The intent of the 3YIS is to create a plan in which high priority projects are identified so that project implementers and funders have the ability to complete and fund the highest priority projects.

The 3YIS's will be shared with all entities involved in implementation of recovery plan actions (**Figure 6**). The funding sources identified in the Plan will be made aware of the three-year Implementation Schedule priorities and asked to adopt or support those priorities. The implementation schedule will be shared with watershed councils, SWCDs, government agencies, other implementers and the general public by the Implementation Coordinator (IC) to make them aware of the priorities outlined in the plan for their local area and to seek commitment to help implement the recovery plan. The IC or members of the Implementation Team will regularly communicate with implementing organizations to keep them informed on implementation issues and to provide assistance or guidance. Members of the Implementation Team, as well as members of watershed councils and other implementing groups will be asked to encourage their constituents to commit to the implementation of the recovery plan and three-year Implementation Schedules.

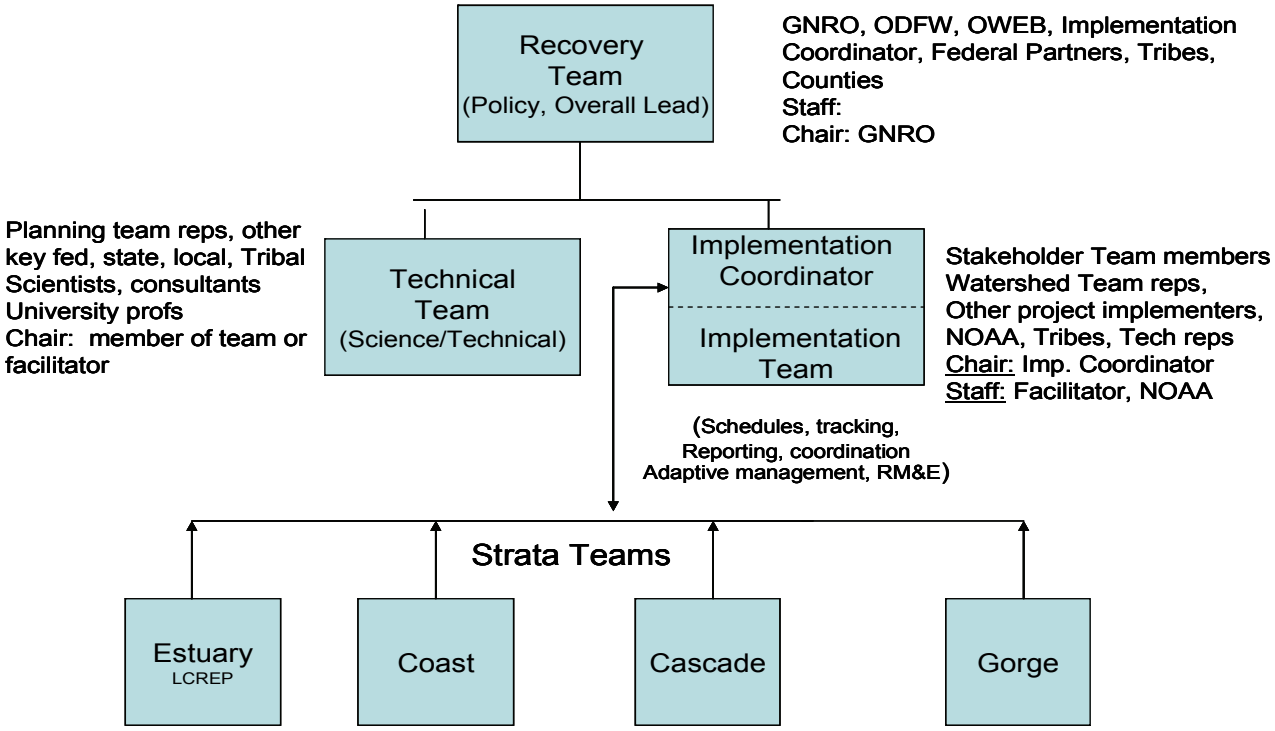


Figure 6. Implementation and adaptive management organizational chart for the Plan.

Research Monitoring and Evaluation (RME)

RM&E data are used to assess the status and trends in population viability and evaluate the success of recovery plan implementation in meeting the delisting and broad sense recovery goals. This information is periodically incorporated into ODFW annual implementation reports and NOAA 5-year status reviews.

For a species to be delisted both the biological criteria as well as the listing factor criteria must be addressed. NOAA has five ESA section 4(a)(1) listing factors. The listing factor most germane to this document is, "The present or threatened destruction, modification, or curtailment of the species' habitat or range". The decision framework for listing factors does not rely on explicit criteria when considering the stratum scale, but steps down directly from the ESU to the individual population. Also, in contrast to the measurable criteria developed for biological recovery, the measurable criteria described for listing factors are primarily related to directly tracking the success of actions designed to reduce the impact of current threats or serve as an early warning for emerging threats.

The decision question that will be asked for listing factor A is, "Are habitat related threats being ameliorated such that they do not limit attainment of the desire status of the population? The measurable criteria for habitat related threats are 5-year assessments of floodplain connectivity and function, channel structure and complexity, riparian condition and LWD recruitment, stream substrate, stream flow, water quality and fish passage. The evaluation thresholds are, "is habitat degrading for the measurable criteria discussed above?", "will the quantities identified in the delisting column of **Table 4** be reached in 15 years? **,** and how many new miles of high quality coho habitat are created" (**Table 4**)?

Table 4. Additional miles of high quality habitat needed to achieve delisting and broad sense recovery abundance goals for coho.

Population	Additional Miles of High Quality Coho Habitat Needed	
	Delisting	Broad Sense
Youngs Bay	0[a]	>135
Big Creek	0[a]	76
Clatskanie	19	19
Scappoose	10	24
Clackamas	0[a]	61
Sandy	37	37
Lower Gorge	10	31
Upper Gorge/Hood	53	>53

[a] Although the modeling approach indicates that no additional miles of high quality habitat are needed for several populations to strictly reach the delisting desired status, Oregon fully supports efforts to protect and restore habitat in order to assure healthy populations into the future, meet broad sense recovery goals, and be precautionary against model and future uncertainty. Chapter 6 of the plan also indicates a most probable scenario for Youngs Bay and Big Creek, between delisting and broad sense scenarios, where additional high quality habitat is necessary; the most probable scenario for Clackamas is the same as the broad sense goal presented here.

USFS

If RME indicates that recovery goals are not being met, more restrictive management, and possibly new or enhanced regulatory programs, may be necessary. It will take a concerted effort on the part of all local, state, federal, tribal, private, corporate, non-governmental, and other interested and affected entities within the lower Columbia River and beyond to achieve the goals of this Plan: the conservation and recovery of lower Columbia River salmon and steelhead.

References

McElhany, P., M. Chilcote, J. Myers, R. Beamesderfer. 2007. Viability status of Oregon salmon and steelhead population in the Willamette and lower Columbia basins, review draft. National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA.

Myers, J., C. Busack, D. Rawding, A. Marshall, D. Teel, D.M. Van Doornik, and M. T. Maher. 20006. Historical population structure of pacific salmonids in the Willamette River and Lower Columbia River Basins. NOAA Technical Memorandum NMFS-NWFSC-73, February, 2006. Seattle, WA.

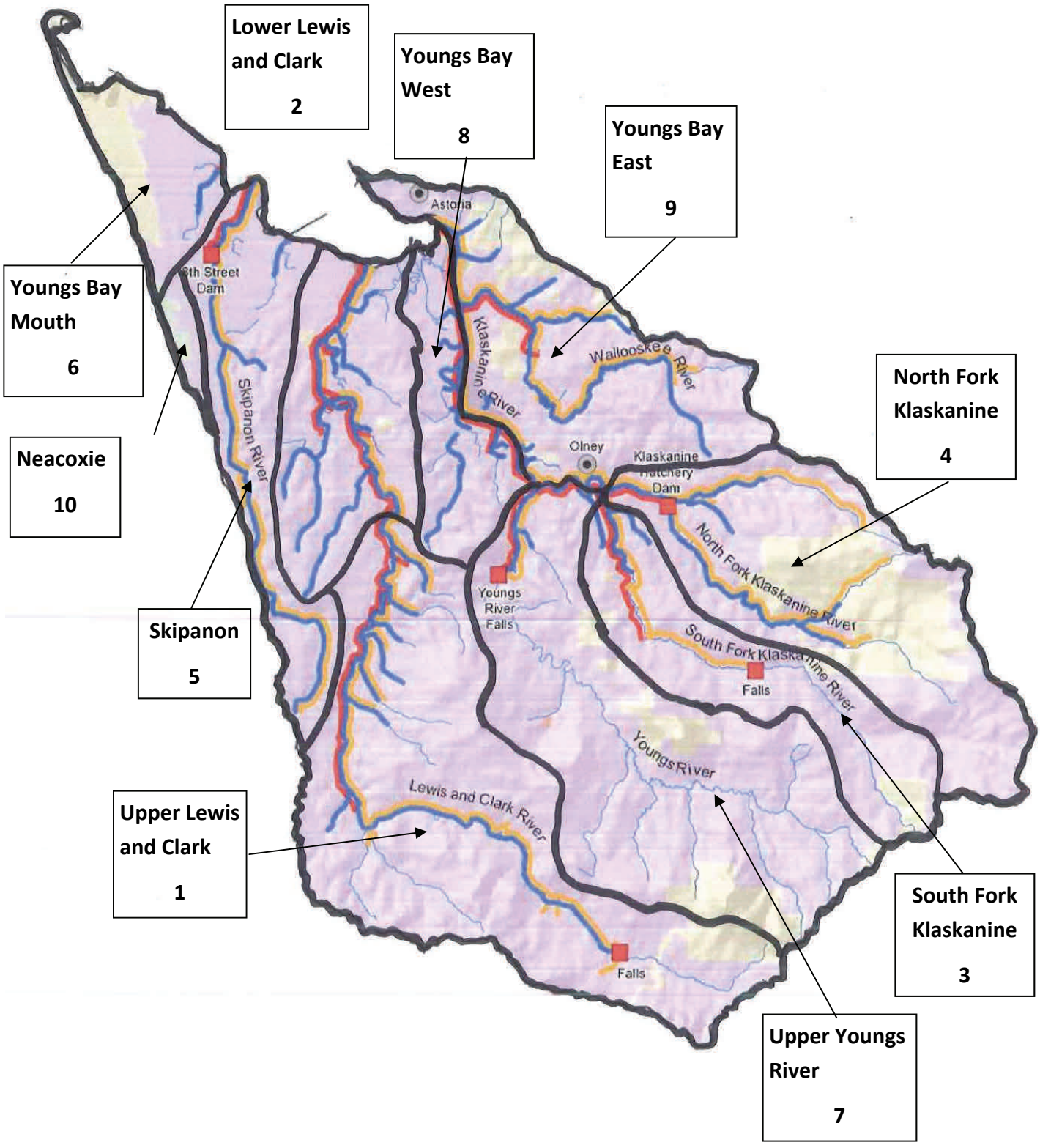
Oregon Department of Fish and Wildlife (ODFW). 2010. Lower Columbia River Conservation and Recovery Plan for Salmon and Steelhead. Oregon Department of Fish and Wildlife, Salem, OR. Available at http://www.dfw.state.or.us/fish/CRP/lower_columbia_plan.asp

Appendix 1

Geographic Prioritization Maps by Independent Population

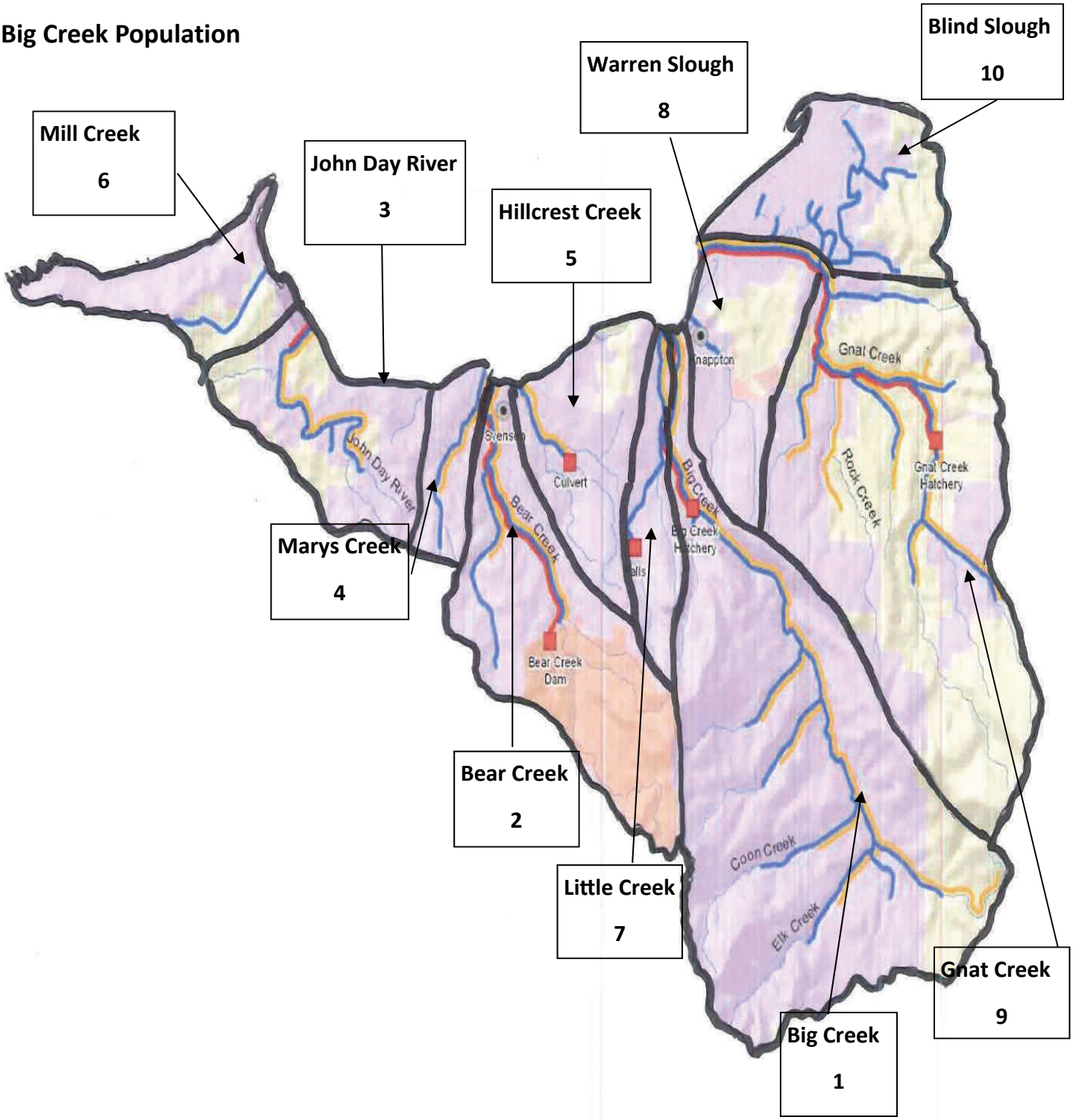
USFS

Youngs Bay Population



Geographic prioritization has not previously occurred at the Youngs Bay population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins and hatchery releases. The prioritization scheme may be amended in the future.

Big Creek Population



Geographic prioritization has not previously occurred at the Big Creek population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins and hatchery releases. The prioritization scheme may be amended in the future.

Clatskanie Population

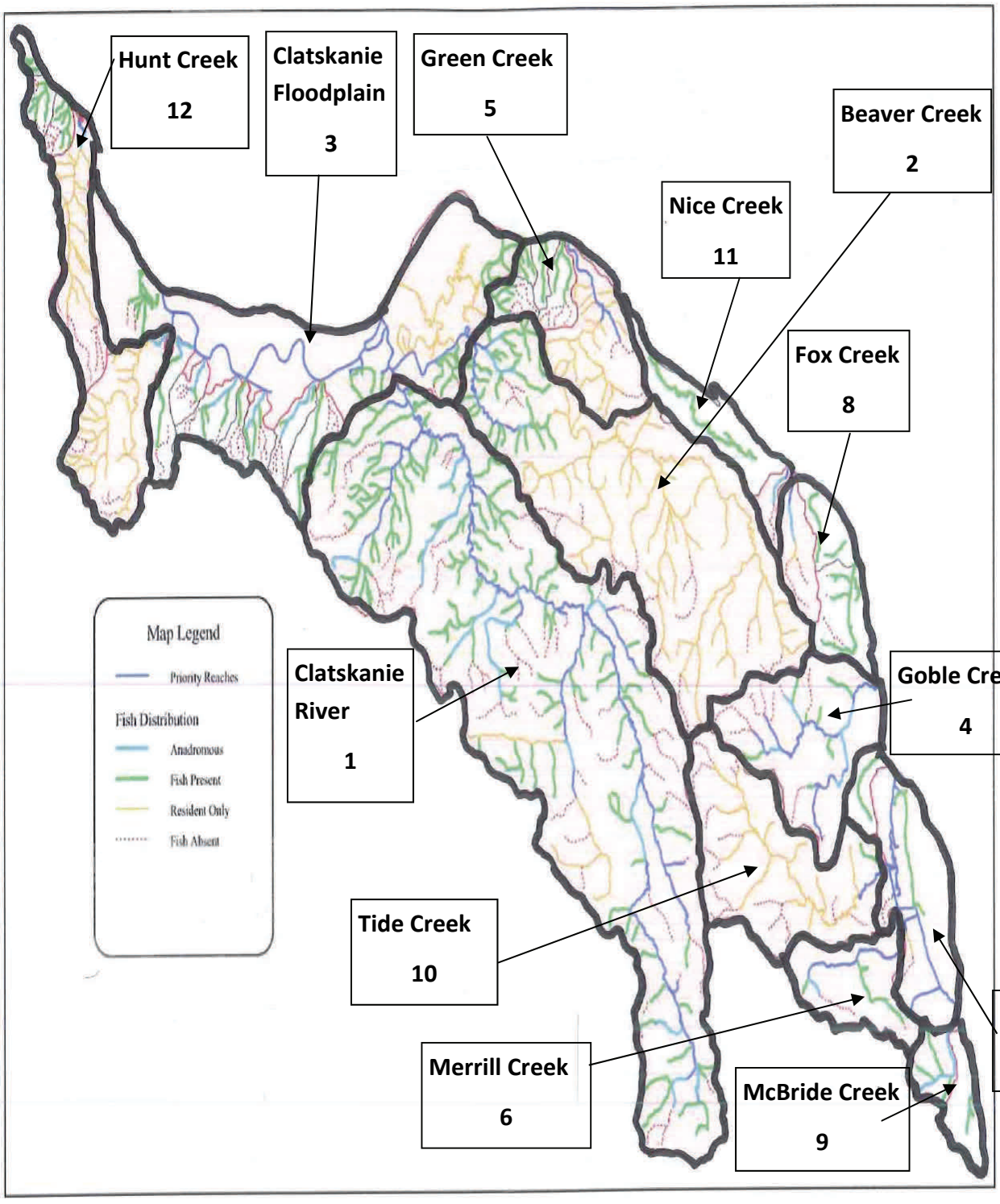
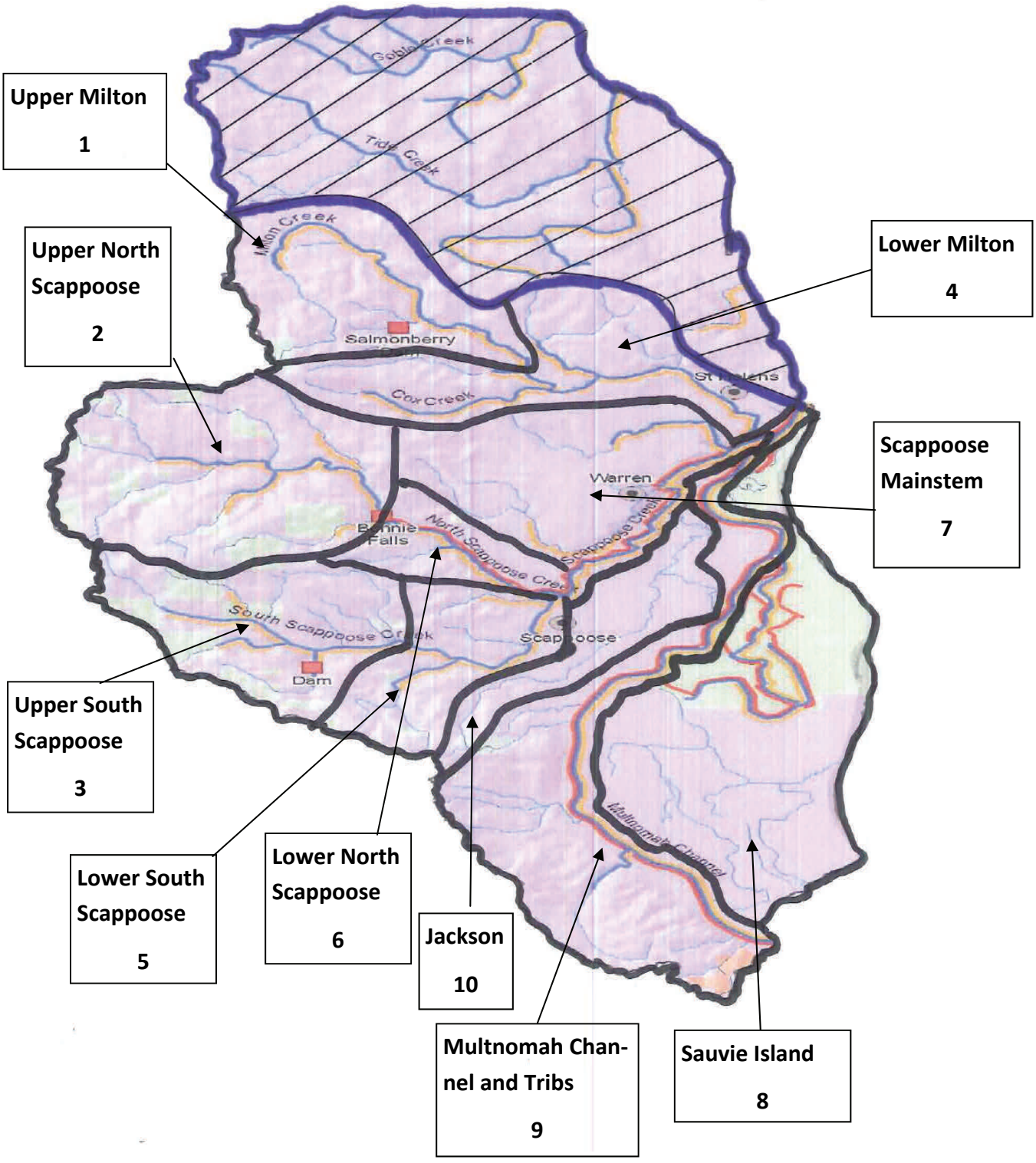


Figure 10.3: Priority stream reaches and priority watersheds identified by an evaluation of the watershed assessment compents.

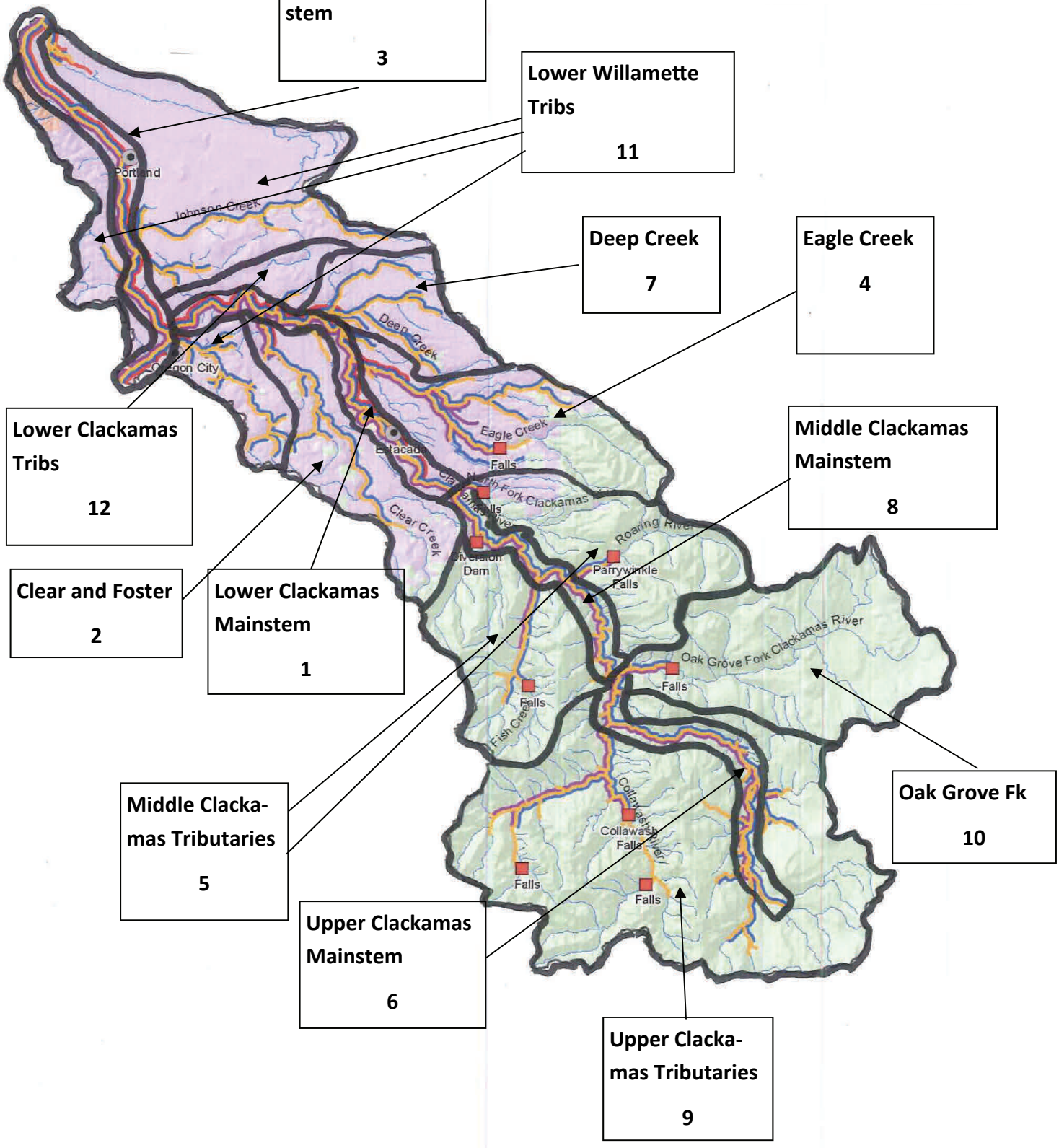
Lower Columbia-Clatskanie Watershed Assessment, 2001. Basin geographic priorities updated August 2012.

Scappoose Population



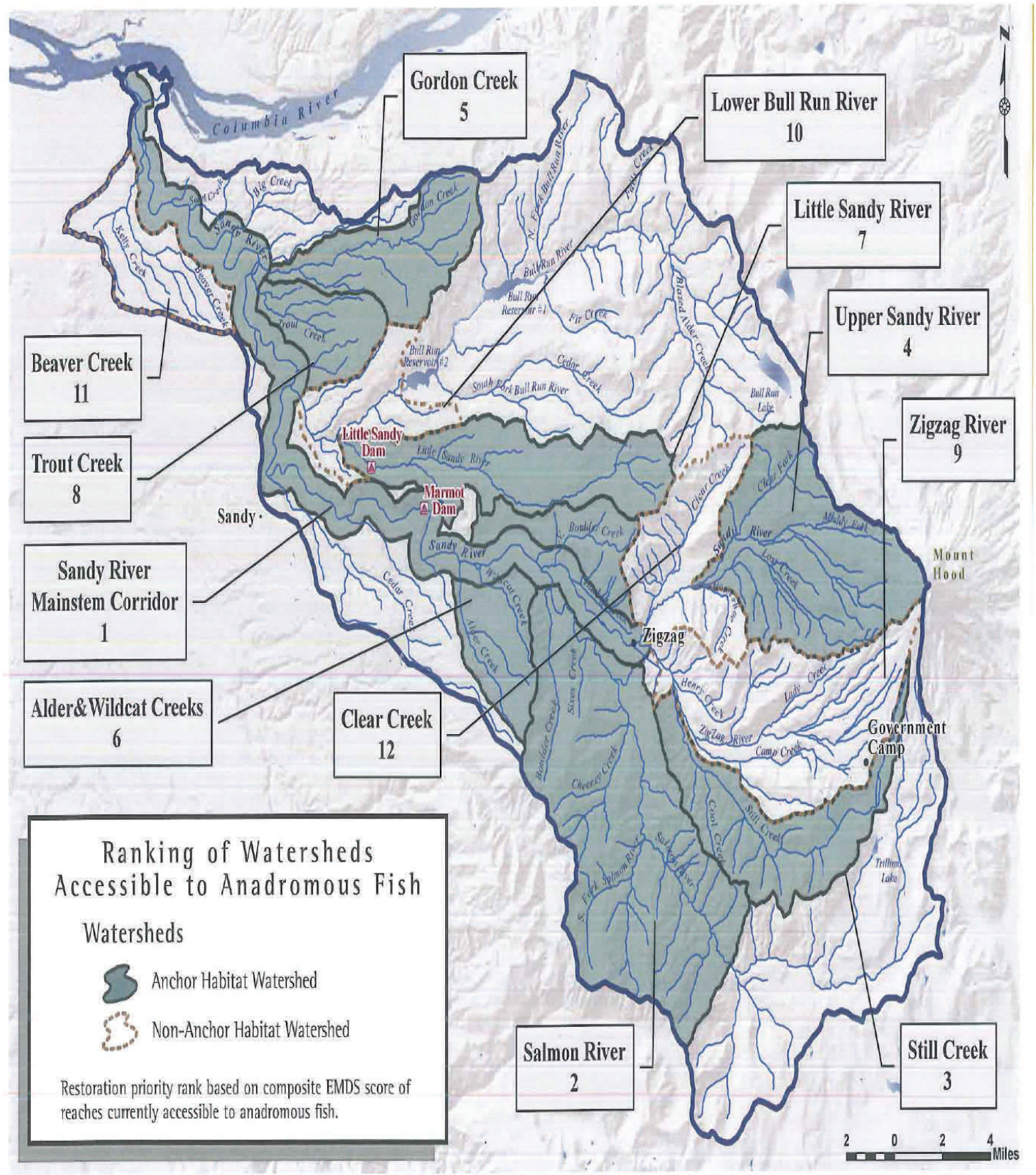
Geographic prioritization has not previously occurred at the Scappoose population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins, land ownership patterns and the Scappoose Bay Limiting Factor Analysis report. The prioritization scheme may be amended in the future.

Clackamas Population



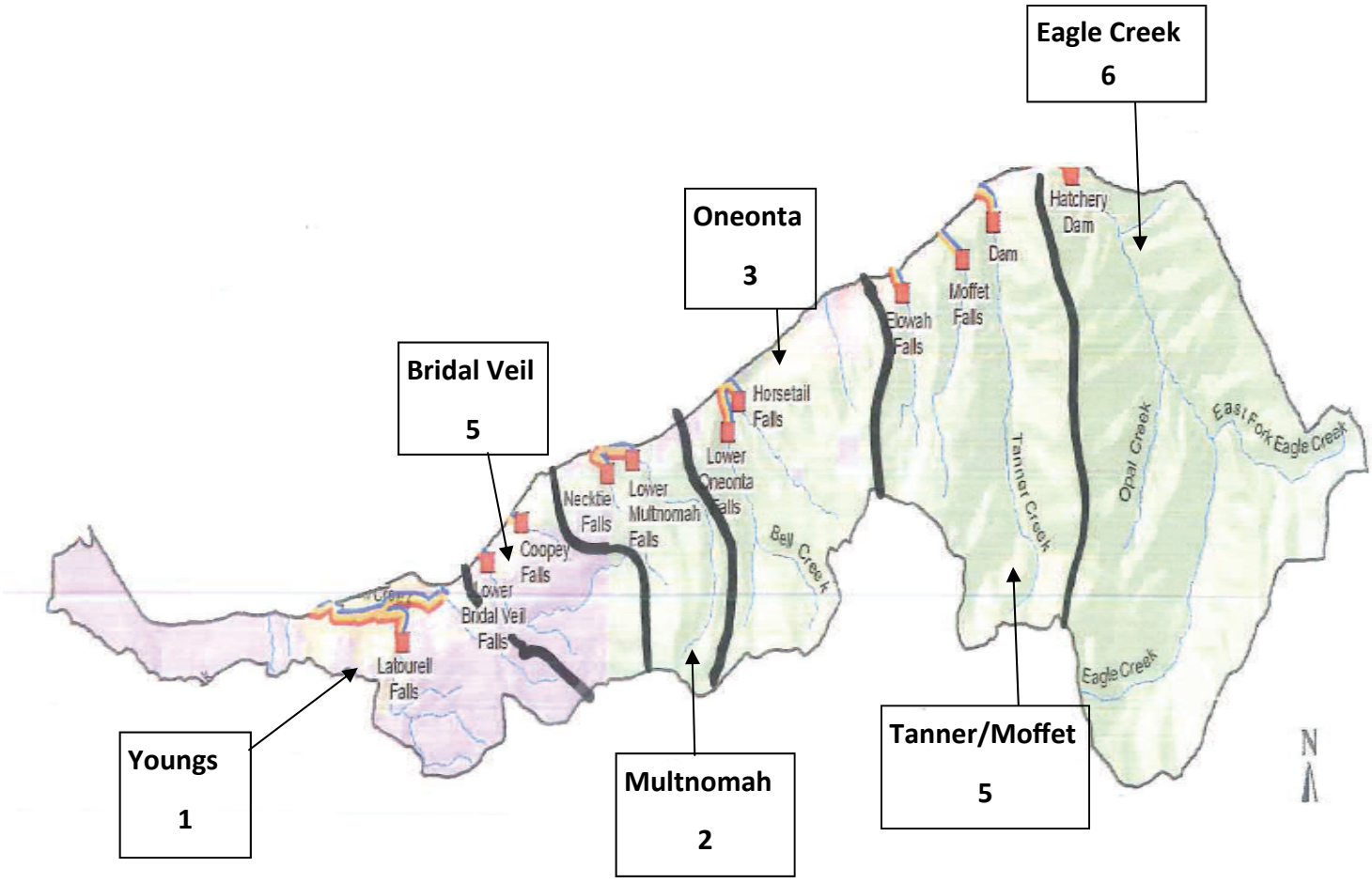
Geographic prioritization has not previously occurred at the Clackamas population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins, hatchery releases and the state of existing habitat conditions. The prioritization scheme may be amended in the future.

Sandy River Population



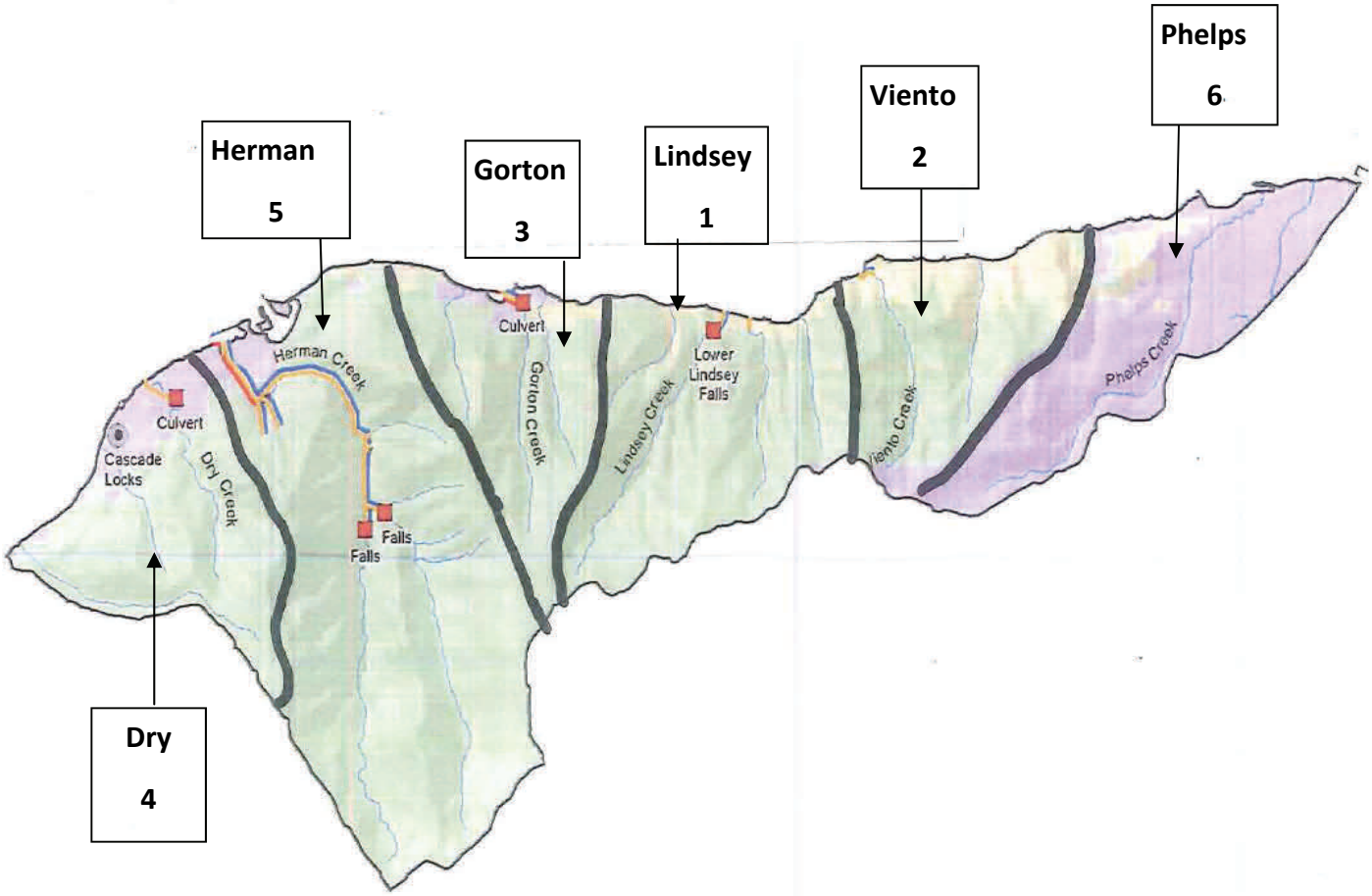
Sandy River Basin Aquatic Habitat Restoration Strategy, 2007

Lower Gorge Population



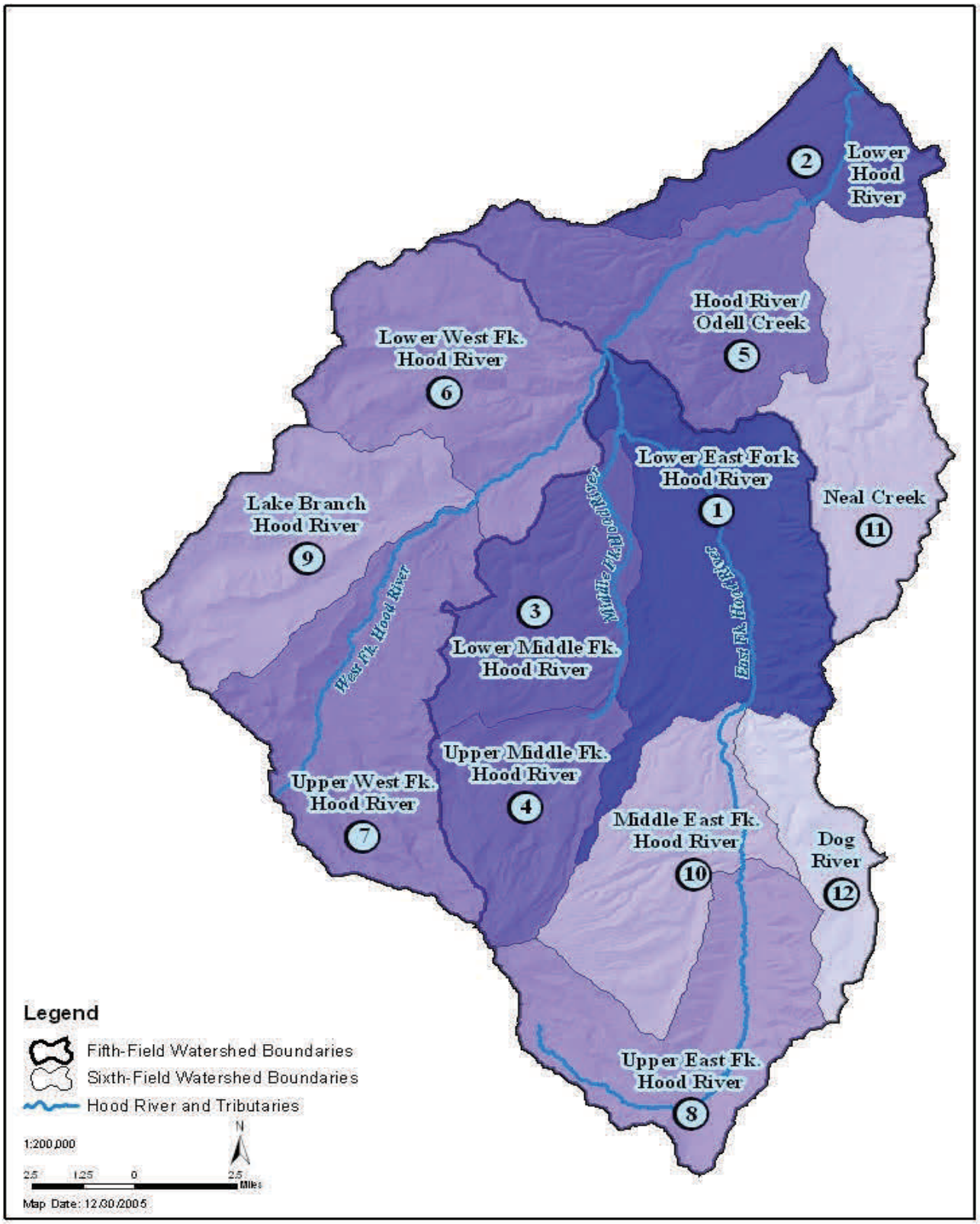
Geographic prioritization has not previously occurred at the Lower Gorge population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins and hatchery releases. The prioritization scheme may be amended in the future.

Upper Gorge Population



Geographic prioritization has not previously occurred at the Upper Gorge population level. This geographic prioritization scheme took into account the miles of anadromous fish habitat, the number of anadromous fish species using the sub-basins and hatchery releases. The prioritization scheme may be amended in the future.

Hood River Population



Hood River Basin Aquatic Habitat Restoration Strategy, 2006

Appendix 2

High Intrinsic Potential Habitat Maps by Species and Independent Population

Oregon State Parks

High Intrinsic Potential Maps can also be found at:

http://www.dfw.state.or.us/fish/CRP/lower_columbia_plan.asp