

## Selection of Priority Area

### Section 2

## 2-1 Selection Process

### Stream Prioritization Matrix

In order to select a priority area, a systematic approach is required to identify stream reaches where enhancement efforts will bring the greatest benefit to salmonid habitat in the Tualatin Basin. The Tualatin River Watershed Council has developed a decision matrix that can be used as a tool to prioritize stream reaches in terms of highest potential benefit of restoration on stream system health. Eight habitat condition criteria form the basis of the decision matrix. When using the matrix, each stream reach is assigned a score for each of the eight criteria. The criteria are summarized in Table 2-1 (See Appendix A & B for the full criteria).

Table 2-1: Criteria Utilized in Decision Matrix

Habitat Condition Criteria	Range of Scores	Weight
Anadromous Spawning/Rearing	0 = not present, passage only 5 = 100% of reach is accessible, degradation is severe	5
Resident Salmonid Spawning/Rearing	0 = not present, passage only 5 = 100% of reach is accessible, degradation is severe	5
On DEQ's 303(d) list	One point per listed parameter, excluding temperature (maximum of 5 points)	3
On DEQ's 303(d) Temperature List	0 = Not listed and max. temp < 64°F 3 = 303d listed and max. temp < 70°F 5 = 303d listed and max. temp > 70°F	4
Accelerated Erosion	0 = < 15% of banks have accelerated erosion 3 = 15-60% of banks have accelerated erosion 5 = > 60% of banks have accelerated erosion	4
Riparian Quality (Vegetation Width and Diversity)	0 = Average width is > 50 feet 3 = Average width is 25 - 50 feet 5 = Average width is < 25 feet	5
Potential for Anadromous Fish Use	0 = No manmade barrier is present 3 = 2 <sup>nd</sup> order stream with manmade barrier 5 = 3 <sup>rd</sup> order stream with manmade barrier	5
Riparian Area Connected to a Wildlife Corridor	0 = No potential to serve as a wildlife corridor 3 = Already serves as a wildlife corridor 5 = Has potential to serve as wildlife corridor	3

The criteria were assigned weighting factors that relate to the potential effect that each habitat category could have on the ability for viable winter steelhead population to exist. The weighting factors are multiplied by the sum of the scores from the eight categories to produce a total score.

The habitat condition criteria were applied to nearly 160 stream reaches within the Tualatin River Basin. A full list of the stream reaches and their related scores is included in Appendix C. From this application of the decision matrix, a short list of high priority stream reaches was developed. Table 2-2 summarizes the results for the top priority reaches:

Table 2-2: Example of Stream Prioritization Matrix Results

Stream	Reach	Priority Rating
McKay Creek	Jackson Creek to Brunswick Canyon	3.32
Gales Creek	Roderick Creek to Godfrey Creek	3.18
West Fork Dairy Creek	Garrigus Creek to Mendenhall	3.12
West Fork Dairy Creek	Williams Creek to Burgholzer Creek	3.12
McKay Creek	Waible Gulch to Jackson Creek	3.00
Gales Creek	Prickett Creek to Roderick Creek	2.97
Gales Creek	Godfrey Creek to Clear Creek	2.97
East Fork Dairy Creek	Murtaugh Creek to Plentywater Creek	2.65
East Fork Dairy Creek	Big Canyon Creek to Murtaugh Creek	2.59

After the initial evaluation, an additional criterion was added to account for the potential success of stream projects for salmon habitat enhancement. It was assumed that success would be greatest where there was a nearby large population of salmonids within the stream or its tributaries. For this purpose, a 'run strength' criterion was added to the stream prioritization matrix. This criterion was assigned scores based on recent fish population surveys sponsored by CWS and the Council, and conducted by ODFW (2000 & 2001). The number of fish found in a stream reach, over a year period, were tallied and assigned a score based on this breakdown:

Table 2-3: Run Strength Scoring

Total Number of Fish	Score
> 40	5
20- 40	4
~ 5	2
1-2	1
0	0 <sup>1</sup>

Scores were assigned to each of the reaches in the stream prioritization matrix based on proximity to survey sites and known fish habitat, or lack of habitat. This method of assigning scores for run strength has some bias. It is possible that the same fish were counted more than once during a period of a year. However, the same process was applied to all the reaches so the bias is consistent throughout. A final priority score was calculated using the run strength score and the rest of the data from the original categories of the matrix.

<sup>1</sup> A score of zero indicates that the area is not accessible, was surveyed and no steelhead were found, or is not considered by ODFW to be a stream with anadromous fish habitat.

Following inclusion of the 'run strength' criterion the top stream prioritization scores were as follows:

Table 2-4: Adjusted Matrix with Run Strength Scoring

Stream	Reach	Priority Score
Gales Creek	Roderick Creek to Godfrey Creek	3.28
Gales Creek	Prickett Creek to Roderick Creek	3.10
Gales Creek	Godfrey Creek to Clear Creek	3.10
McKay Creek	Jackson Creek to Brunswick Canyon	3.03
East Fork Dairy Creek	Murtaugh Creek to Plentywater Creek	2.95
East Fork Dairy Creek	Big Canyon Creek to Murtaugh Creek	2.90
East Fork Dairy Creek	Bledsoe Creek to Gum Creek	2.90
West Fork Dairy Creek	Garrigus Creek to Kuder Creek	2.85
West Fork Dairy Creek	Kuder Creek to Witcher Creek	2.85

Based on these scores, it was determined that an approximately 4-mile stretch of Gales Creek, and connecting tributaries (Prickett Creek to Clear Creek) was the highest priority area. Sections of McKay and East Fork Dairy Creek were kept in consideration pending the review of other factors. Figure 2-1 shows the location of the high priority streams within the Tualatin River Basin.

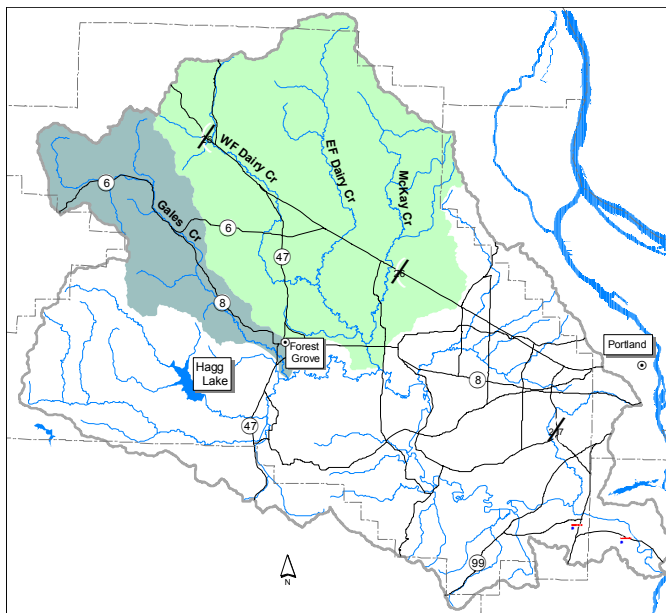


Fig 2-1: High Priority Stream Options

### Consultation with Local Experts

Conservation planners from the Natural Resources Conservation Service and the Tualatin Soil and Water Conservation District were consulted regarding the potential of finding landowners likely to participate in restoration projects. Staff from these agencies have built up relationships with agricultural landowners in the area. These sources did not indicate a stream reach under consideration that held a particular advantage over the other reaches. Individuals associated with the Tualatin River Watershed Council were also

consulted, and indicated that some efforts were made in the past to organize a community group in Gales Creek. During this process a group of rural residential landowners demonstrated an interest in protecting their local resources.

## Landowner Survey

An additional source of information for Gales Creek provides some insight on landowner perspectives relating to problems facing people and salmonids. In the fall of 2001, the Tualatin SWCD surveyed agricultural landowners along Gales Creek<sup>2</sup>. Twenty-four out of sixty surveys were returned. The survey results show that agricultural landowners have some understanding of problems facing fish; and over half of the landowners that responded felt that it was a medium to high priority to solve problems affecting fish (See Appendix D). Landowners also seemed to be aware of challenges in trying to plant trees along the creek. Over half of the landowners indicated that they might be interested in getting some technical assistance from the SWCD. While this is just a sampling of landowners' perspectives, the survey provides some insights into possible responses to future projects along Gales Creek. This type of information is not available for either East Fork Dairy Creek or McKay Creek.

## Examination of Data Sources

Existing data sources were examined to determine those stream sections that had the most available data. There was available data for Gales, McKay, and East Fork Dairy Creeks, but the type of data varied between stream reaches. The Gales Creek data was collected according to ODFW protocols, while East Fork Dairy Creek and McKay Creek had data collected according to BLM protocols. Although both of these protocols offered useful insights into habitat conditions, the Gales Creek data provided the most information applicable toward benchmarks for determining stream condition. While the Gales Creek habitat surveys were taken in forested reaches outside the focus reach, they did offer insights on upstream conditions that could potentially affect the priority area. Table 2-5 summarizes the data that is available for the three creeks. The data sources include the Oregon Department of Environmental Quality (DEQ), the Oregon Department of Agriculture (ODA), the Student Watershed Research Project (SWRP), the Farm Service Agency (FSA), and CWS.

Table 2-5. Coverage of selected data types for candidate priority streams

<i>Stream</i>	<i>Gales Creek</i>	<i>East Fork Dairy Creek</i>	<i>McKay Creek</i>
<b>Temperature</b>	DEQ 1999	DEQ 1999	DEQ 1999
<b>TRWC/CWS fish surveys</b>	Yes	Yes	Yes
<b>Habitat surveys</b>	Upper Gales	Above Big Canyon	Above EF McKay
<b>WQ sites: Agency</b>	1 (CWS)	1 (ODA)	2 (CWS, ODA)
<b>WQ sites: SWRP</b>	4	4	1
<b>Macroinvertebrate surveys</b>	Upper watershed (Cole, pers. Data)	2 sites (CWS)	None
<b>Riparian inventory</b>	FSA slides	FSA slides	FSA slides

<sup>2</sup> Surveys were mailed to select agricultural landowners along Gales Creek from approximately Southwest B Street (also known as Old Hwy 47) in Forest Grove to the confluence of Clear Creek and Gales Creek.

Although this study is designed to use existing data, the feasibility of access for future data collection was also considered. Most property along the candidate reaches is privately owned, thus limiting access opportunities. However, the Gales Creek area had the largest number of public stream crossings. Few public stream crossings were present along McKay Creek and East Fork Dairy Creek.

## **Results**

Gales, East Fork Dairy, and McKay Creek have similar salmonid enhancement values. However, Gales Creek ranked the highest and more information is available about landowner perspectives and potential willingness to participate in enhancement projects. Gales Creek also has an advantage in available information and the opportunity to acquire additional information at public access points.

Based on the above analysis, Gales Creek (Prickett to Clear Creek) was chosen for the priority area. The boundaries may be adjusted if warranted by further analysis. Since upstream factors influence conditions in the priority area, contributing stream reaches are also considered for potential projects.

The analysis performed during the site selection process determined that the identified priority area has the greatest potential for enhancement projects to benefit winter steelhead trout. As shown in Figure 2-2, the priority area encompasses more than just the creek and adjacent riparian area. In order to do meaningful enhancement it is important to consider the upland areas of Gales Creek and the condition of tributary creeks that feed into the priority area. Problems in the uplands like erosion and high water temperatures in small stream and ditches can significantly impact the health of winter steelhead trout.

## **2-2 Existing Conditions in the Priority Area**

Development of the Gales Creek watershed has followed a pattern of population growth commonly seen in the Northwest. The removal of vegetation for homes and farms, straightening of the stream channel, bank hardening, water withdrawals and the introduction of non-native species have decreased the complexity and channel stability of the creek. Over time, the changes in the creek and adjacent riparian areas have impacted the complex ecological functions necessary to support a healthy population of winter steelhead trout. Efforts are being made on the local, state, and federal level to restore the natural functions of waterways such as Gales Creek.

The Oregon Department of Environmental Quality (DEQ) is responsible for carrying out the requirements of the 1972 Federal Clean Water Act (CWA) in Oregon. The Clean Water Act requires the protection of lakes, rivers and other waters for fish and wildlife, human consumption, industry, agriculture, recreation, navigation, and other uses. DEQ has established standards to protect waters for these uses.

If a stream or river does not meet clean water standards, it is identified as water quality limited and placed on the Oregon 303 (d) list. Once a stream or portion of a stream has been listed DEQ is required to identify the sources of pollution causing the standards to be violated and to calculate how much reduction from those sources is necessary to meet water quality standards. This is commonly referred to as a Total Maximum Daily Load (TMDL). (Burkhart, 2000)

In 2001, four TMDLs were developed for the Tualatin Basin to address dissolved oxygen, temperature, bacteria, and algae/phosphorus. The TMDLs established standards that are designed to protect water quality and improve the conditions in listed streams. Lower Gales Creek has three water quality concerns: high temperatures (particularly in the summer months), low levels of dissolved oxygen (DO), and bacteria (during the summer).

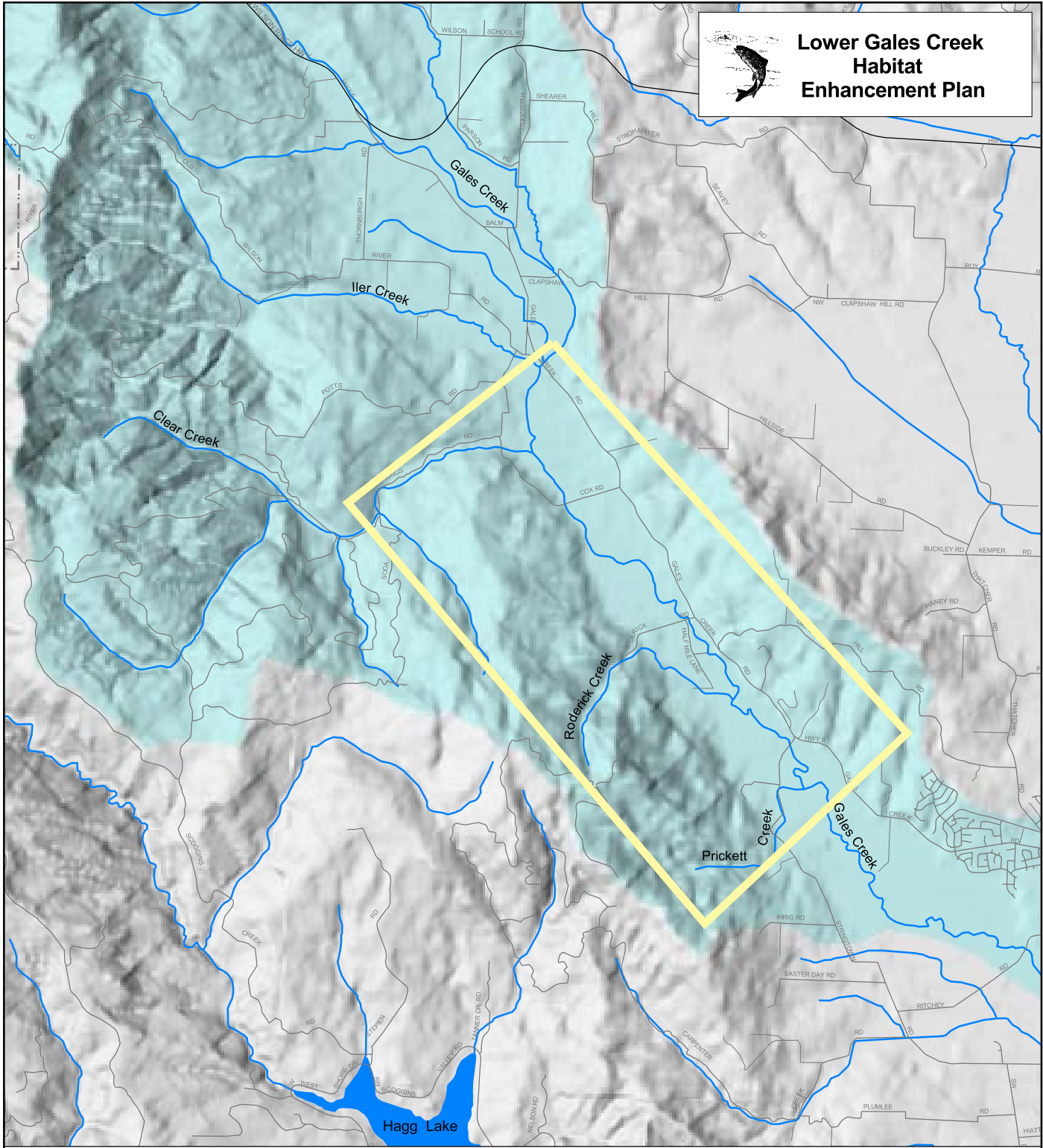
Gales Creek is home to winter steelhead trout and resident cutthroat trout. Elevated temperatures (above 64°F) can cause increased incidence of disease, an inability to spawn, reduced rates of growth and survival of eggs and juveniles, and increased competition for limited habitat and food. Temperatures in the mid 70's can become lethal to salmonids. Some of the causes of elevated stream temperatures in the Gales Creek area may include: lack of riparian vegetation, wide stream channels with little shading, and low water levels due to withdrawals from the stream. A standard of 64°F has been established for the many of the streams in the Tualatin Basin to protect temperature sensitive species like salmonids.

Most cold-water species like winter steelhead trout require high levels of dissolved oxygen in streams. Dissolved oxygen enters water by diffusion from the surrounding air, aeration (when water churns it picks up oxygen more easily), and as a waste product of photosynthesis. Low DO levels have an adverse affect on aquatic life and sustained low levels can lead to fish kills. According to the DEQ, the two factors that have the most significant effect on the low DO concentrations in streams, such as Gales Creek, are temperature and sediment oxygen demand (the decomposition of bottom sediments which consumes dissolved oxygen).

Recreational uses of Gales Creek include swimming, wading, fishing and boating. Bacterial contamination of this stream can affect the health of people recreating in the water. Bacteria can enter the waterway though several different routes. Failing septic systems, runoff contaminated with animal wastes (such as livestock or domestic pets), can elevate bacteria levels in surface water. The highest levels of bacteria in Gales Creek occur during the warm summer months and during periods of storm water runoff due to rain events.

Despite impairments, Gales Creek continues to have strong ecological value and real potential to benefit from enhancement and conservation efforts. Winter steelhead trout continue to utilize the upper reaches of Gales Creek for spawning. Enhancement efforts in the lower reaches will support healthier fish populations by improving rearing potential.

**Lower Gales Creek  
Habitat  
Enhancement Plan**



**Legend**

- County Line
- Rivers and Lakes
- Major Streams
- Selected Area
- Gales Creek Watershed

**Priority Area**



Data Sources: Washington County (2002)  
Metro (RLIS Lite 2002)  
Tualatin CD (1998)

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Figure 2 - 2

