

Chapter 2: Core Topics and Key Questions

This watershed analysis is designed to provide assistance in addressing diverse issues in the Middle Tualatin-Rock Creek watershed. A basic understanding of pertinent physical, biological, and social processes is essential to analysis of more specific questions related to watershed issues. For this purpose, it is useful to use a format of Core Topics and Key Questions. Core Topics are general discussions of processes operating within the watershed. Key questions are specifically designed to address these identified issues of concern. As a quick reference, page numbers are provided to direct the reader to report pages that address each key question.

2.1 Aquatic

2.1.1 Erosion issues

Accelerated erosion exists in some portions of the watershed. Related problems include loss of topsoil, accelerated sedimentation of streams, loss of habitat, and loss of water quality. Many practices leading to accelerated sediment delivery to streams are prohibited by management rules, including municipal codes, the Tualatin River Subbasin Agricultural Water Quality Management Area Plan and the Oregon Forest Practices Act.

Core topic

What erosion processes are dominant within the Middle Tualatin-Rock Creek watershed? Where have they occurred or are they likely to occur? What is the effect of those erosion processes on beneficial uses in the watershed? *See pages: 8, 25*

Key questions

- How have human activities affected erosion processes within the watershed? *See page: 85*
- What is the distribution of prohibited conditions as defined under the Tualatin River Subbasin Agricultural Water Quality Management Area Plan? What types of prohibited conditions occur in the watershed? What can be done to improve these conditions? *See pages: 28, 93*

2.1.2 Hydrology and water quantity issues

Management activities have modified the natural flow regime in the watershed. Impacts include an altered flooding regime during high water periods, and changes in the amount of water available for human and fish use during low water periods.

Human and instream needs place a heavy demand on water resources. In some areas, water quantity may be insufficient to meet these needs.

Core topic

What are the dominant hydrologic characteristics (e.g. total discharge, peak and minimum flows) and other notable hydrologic features and processes in the watershed? *See page: 28*

Key questions

- How have human activities altered the natural hydrologic regime? What are potential effects of the altered flow regime? *See page: 87*
- Are water rights allocations sufficient to provide both for human and fisheries needs? If not, when and where are the deficits greatest? Where would the purchase of instream water rights be most effective? *See pages: 29, 89*

2.1.3 Stream channel issues

Stream morphology affects the way in which streams transport water and sediments, as well as the stream's ability to provide suitable habitat for aquatic life. Where the channel has been altered through human activity, the ability of the stream to perform these functions will be changed. Furthermore, restoration activities must be appropriate to the natural characteristics of the stream channel.

Core topic

What are the basic stream morphological characteristics and the general sediment transport and deposition processes in the watershed? How have human activities changed these processes? *See page: 39*

Key questions

- How have human activities altered stream morphology? In instances where effects have been negative, what sort of restoration activities are appropriate and feasible? *See pages: 43, 89, 107*

2.1.4 Water quality issues

Streams within the Middle Tualatin-Rock Creek watershed have experienced diminished water quality relative to reference conditions¹¹. Two of these streams have been designated on the ODEQ 303(d) list as having characteristics limiting their ability to support aquatic life and provide recreation. These limitations generally occur on a seasonal basis, and include low dissolved oxygen levels, high water temperatures, elevated phosphorus levels, and high bacteria counts.

Core topic

What are the beneficial uses of water in the Tualatin subbasin and which of these are sensitive to activities occurring in the watershed? *See pages: 44, 90*

Key questions

- What beneficial uses of water occur in the Tualatin subbasin? *See page: 44*
- How is water quality being impacted by management activities and what can be done to reduce these impacts? *See pages: 90, 108*
- What are probable sources of phosphorus in streams? Where do phosphorus levels exceed TMDL standards? What can be done to reduce aquatic phosphorus levels? *See pages: 50, 91, 109*
- What are the factors causing 303(d) listed streams to exceed water quality criteria? What can be done to improve water quality on these streams? *See pages: 91, 109*
- Which stream reaches are affected by summer water temperatures above desirable levels for salmonid production? What measures can be taken to reduce water temperatures? *See pages: 50, 110*
- What is the effect of current water quality upon non-salmonid species? *See page: 94*
- What are the characteristics of macroinvertebrate populations in the watershed? What do they indicate about water quality? *See page: 45*
- Where are recreational activities limited by current water quality? What can be done to restore the ability of streams to support recreation? *See page: 93*

2.1.5 Aquatic species and habitat issues

Salmonid species are an important component of streams within this watershed. These species are sensitive to changes in aquatic habitat. Upper Willamette steelhead trout are listed as threatened under the Endangered Species Act. Coastal cutthroat trout are currently under review by the USFWS and are an Oregon state sensitive species.

Many species such as frogs, turtles, salamanders and newts are dependent on wetlands, ponds, and riparian areas. It is recognized in the scientific community that frogs are declining worldwide at an unprecedented rate.

Core topic.

What is the relative abundance and distribution of sensitive aquatic and amphibian species in the watershed? *See pages: 51, 55*

What is the distribution and character of their habitats? *See pages: 54, 55*

Key questions related to fisheries.

- What factors are impacting habitat quality, quantity, and diversity for fish species of interest? What management actions can be taken to improve habitat conditions for these species? *See pages: 54, 55*
- Where are barriers to fish passage located? *See page: 55*

Key questions related to amphibian species and wetland habitats.

- Where are marsh/wetland areas and ponds in the watershed? How does the current distribution of these areas compare with that existing historically? *See pages: 83, 94*
- How have human activities impacted these wetland areas? *See pages: 84, 94*
- What activities could enhance or restore the historic characteristics of these wetland habitats? *See pages: 112*
- What is the relative abundance and distribution of wetland-dependent species in the watershed? *See page: 95*
- What are the population trends for frogs and other species dependent upon moist and aquatic habitats? Are there any such species that have been extirpated, or face imminent extirpation, within the watershed? What is the prognosis for these species? *See pages: 55, 95*

2.2 Terrestrial

2.2.1 Vegetation issues

The structure and composition of vegetation has been extensively altered from reference conditions. This has altered the type and availability of beneficial uses provided by vegetation. Additionally, these changes are likely to have favored certain animal species at the expense of others.

Noxious weeds and other non-native species have colonized many areas within the watershed. These species tend to outcompete native plants, resulting in decreased diversity. Many of these exotic species provide inferior habitat for native wildlife. Additionally, some of these species are poisonous to livestock, and otherwise interfere with agricultural and forest management.

Riparian vegetation has been extensively altered, changing the functions that these areas are able to provide for aquatic and riparian plant and animal species.

Some native plant species are in danger of eradication, are endemic, or are otherwise of special concern. These species include those listed or proposed for listing under the Endangered Species Act (ESA), Survey and Manage Species as identified in the Northwest Forest Plan, and species identified under the BLM Special Status Species Policy.

Core topics

- What is the array and landscape pattern of plant communities in the watershed? How does this compare to reference historical patterns? *See pages: 57, 78*
- What processes caused this pattern? *See pages: 80, 95*

Key questions

- What measures can be taken to retain habitat for terrestrial species and to maintain and enhance forest health? *See pages: 112, 119*
- Are ecosystems losing diversity of native species because of the invasion of exotic/noxious plants? What control measures could be reasonably implemented to reduce the introduction and spread of exotic/noxious plants? What opportunities are available for partnerships in controlling the spread and introduction of exotic plants within the watershed? *See pages: 61, 96, 113*
- [BLM only] What kinds of management practices should be implemented in the Riparian Reserves to enhance their function? *See page: 119*

2.2.2 Wildlife species and habitat issues

Some terrestrial animal species bear special concern because of diminished numbers or endemic status. Care must be taken to avoid further reduction in numbers of these species. These include species listed or proposed for listing under the Endangered Species Act (ESA), Survey and Manage Species, or protection buffer species as identified in the Northwest Forest Plan, and species identified under the BLM Special Status Species Policy.

Introduced non-native species often diminish populations of native species through competition and predation.

Some species are popular as game. It is important to maintain these species at a sustainable level.

Core topic

What is the relative abundance and distribution of terrestrial species of concern that are important in the watershed? What is the distribution and character of their habitats? *See page: 61*

Key questions

- Which species are listed or proposed for listing under the Endangered Species Act, identified in the Northwest Forest Plan as Survey and Manage Species, or have status under the Bureau's Special Status Species Policy? What are their relative abundance and distribution? *See page: 61*
- What are the condition, distribution and trend of habitats required by those species of concern that may occur in the watershed? *See page: 61*
- What are the current distribution and density of snags and down wood on lands within the watershed? *See page: 66*
- What are the natural and human causes of change between historical and current species distribution and habitat quality for species of concern in the watershed? *See pages: 13, 95*
- What are the influences and relationships of species and their habitats with other ecosystem processes in the watersheds? *See pages: (dispersed throughout document)*
- What impact are exotic species having upon native species within the watershed? *See page: 66*
- What factors contribute to the decline in population levels for those species that are of concern? Given the current ownership pattern, what opportunities exist to manage for these species? How does the ownership pattern affect the potential to preserve and restore quality habitat within the watersheds? *See pages: 66, 96*

2.2.3 Forest resources issues [BLM only]

Key questions

- Given the goals and objectives for management emphasis in the AMA and the past forest stand management activities, which stands should be treated to promote the development of late-successional forest characteristics? *See Table 6-2*
- What stands are currently demonstrating characteristics common to late-successional forests and could contribute to the distribution of older-forest habitats across the landscape if protected? *See page: 59*
- What range of silvicultural prescriptions appears warranted to assist in meeting goals and objectives of the AMA and what order of priority should be given to these options? *See page 120 and Table 6-2*
- Which forest stands are most suitable to meet the directive to maintain 15% of federal lands in late-successional condition? *See pages: 59, and Table 6-2*
- What adaptive or forest management questions can be addressed in this area? *See Table 6-2*

2.3 Social

2.3.1 Issues related to human uses

Important economic and recreational activities take place in the watershed. These activities make demands upon watershed resources and provide potential conflicts with other watershed interests.

BLM lands are typically in small parcels scattered through the western portion of the watershed. Potential conflicts exist between BLM activities and the activities of other rural landowner/ users.

Dumping takes place on unoccupied forest lands.

Core topic

What are the major human uses and where do they occur in the watershed? What demands are changing land uses placing upon the watershed? *See pages: 17, 66, 99*

Key questions

- Is there a conflict between the public and BLM management practices, and what can be done to prevent possible conflicting situations? *See pages: 69, 121*
- What are current recreational opportunities in the watershed? What demands do they place on resources? Can these demands be reduced? Are there opportunities to encourage low-demand activities?
See pages: 69, 114

2.3.2 Road-related issues

Roads can contribute to hydrologic change, erosion, and mass wasting. Road-related ditches tend to concentrate flow, facilitating ditch erosion and transport of eroded sediments from the road. In certain cases, roads may contribute to excessive sediment delivery to streams, affecting fish habitat.

Stream crossings usually necessitate placement of culverts or bridges. Poorly placed culverts can alter channel morphology, increase stream density, and impede fish passage. Undersized culverts can wash out during flooding events. Poorly constructed bridges can negatively alter stream hydrology and cause sediment and erosion.

Hazards are not limited to currently maintained roads, but also extend to “legacy roads”. These compacted surfaces, railroad grades, and associated culverts, can impede fish passage and disrupt hydrologic and sediment regimes.

Restricted access to certain BLM lands may limit management opportunities. In many cases, physical constraints have prevented road construction. In other cases, existing roads have been closed by slope failures. For these roads, the road may need to be obliterated and another route determined. There may be areas where alternative means of access other than roads should be used.

Key questions

- Where are high risk areas for slope failures due to roads? What resources are potentially at risk as a result of road failures within these areas? What criteria should be used to determine the feasibility of road closures? *See pages: 70, 100, 114, 115*
- What is the overall road density, and the density in each subwatershed, for BLM roads and roads of other ownership? To what degree do legacy roads contribute to the watershed's road density? *See page: 70*
- How many stream crossings, bridges, and culverts are in the watershed? Which of these structures impede fish passage? *See page: 70*
- Where are rock pits and other sediment sources located? What measures should be taken to mitigate for impacts of these sites? What funding sources are available for mitigation? *See pages: 68, 69, 100*
- [BLM only] Which BLM-administered parcels lack road access? What factors limit access to these lands?
See page: 70

