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CHAPTER 2. NATURAL SETTINGS

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6

2.1 INTRODUCTION/PURPOSE

7

Yakima County recognizes the integral link between the health of the natural setting and the health of its inhabitants. ~~Therefore, it has chosen to include a natural setting element within.~~ To maintain our present quality of life "as defined through our natural surroundings" while accommodating population growth, certain measures must be taken. If we are able to accommodate our natural setting by anticipating and preventing environmental ~~impact problems~~, we can avoid the long-term costs associated with correcting them. The prevailing objective is to work with the natural environment rather than against it. ~~By doing so, we can all live better, healthier lives.~~

16

Yakima County's economy is diverse, with significant contributions from agriculture, food processing, healthcare, education, manufacturing, and retail trade. The county is renowned for its agricultural industry, particularly its production of tree fruits, hops, dairy products, and wine grapes. Tourism and advanced manufacturing further bolster the local economy, with both industries capitalizing on the County's rich natural resources and geographic setting.

22

This Natural Settings element serves two purposes: The first is to clarify the relationship between the natural environment and our built environment. The second is to secure a balanced, resilient, and sustainable approach to future development. Environmental degradation or depletion of our natural resources undermines the very qualities that attract people to live and work here and draw businesses to locate and operate successfully in our region. The element emphasizes the conservation and protection of our natural environment while preserving and protecting public health, property, key infrastructure, and the regional economy~~people's lifestyles and property~~.

30

Our natural setting involves and affects all other plan elements and is closely aligned with the Natural Hazards Element, Best Available Science (BAS), development and building codes, and multiple and associated sections of the Comprehensive Plan and is codified in Yakima County Code. While the County is protecting those natural features most sensitive to growth and development (e.g., geologically unstable areas, wetlands, critical aquifers, fish and wildlife habitat, frequently flooded areas, riparian areas, lakes and rivers) through Critical Areas Ordinances and the Shoreline Master Program, other aspects of our physical and cultural landscape deserve consideration as well.

Commented [KW1]: This entire section is added/edited to bring information up-to-date (2025).

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1 Yakima County and the communities within it can and will continue to grow, but this growth must
 2 occur in a way which balances nature's needs with our own. By embracing a philosophy of
 3 resiliency and sustainability, the County can help prevent or mitigate many environmental
 4 problemsimacts and avoid the unforeseen costs associated with correcting them.
 5

6
 7 ~~Our natural setting involves and affects all other plan elements. While the County is protecting
 8 those natural features most sensitive to growth and development (wetlands, flood plains,
 9 shorelines, and shrub steppe habitat) through the Critical Areas Ordinance and Shoreline Master
 10 Program, other aspects of our physical and cultural landscape deserve consideration as well.~~

Commented [KW2]: Stricken as redundant

11
 12 **2.1.1 Horizon 2046**

13
 14 Continued population growth is expected to occur in Yakima County. Over the twenty-year time
 15 frame of Horizon 2046, another ~~estimated 31,000~~^{60,000} people are expected to live here. This
 16 projected growth will have significant adverse impacts on our fiscal and natural resources unless
 17 measures are taken to address them in an environmentally sound, resilient and sustainable
 18 manner. ~~By anticipating and preventing environmental problems we can avoid the unforeseen
 19 costs associated with correcting them. By doing so, we can all live better, healthier lives.~~

20
 21 To ~~help complete~~achieve the compound purposes of the Natural Setting Element – and the
 22 Comprehensive Plan, ~~these purposes, the following six~~ guiding principles and assumptions are
 23 were used:

24
 25 1. Our cultural landscape “where we work, live and play” is shaped by our natural
 26 surroundings.
 27 2. Our economic base ~~of agriculture and forest products~~ is dependent upon the County’s
 28 natural setting and its resources.
 29 3. In order to protect the long-term capacity of the environment to support growth, we need
 30 to work within understand the limits of our natural setting and systems and changing
 31 environmental conditions.
 32 4. Responsible and beneficial local and regional growth requires us to work with and within
 33 our natural setting, develop sustainable and resilient plan elements. ~~We must work with~~
 34 ~~nature rather than against it.~~
 35 ~~We must recognize our limits. Humankind’s problems, especially in regards to the natural~~
 36 ~~setting, cannot always be solved with better science or a technological fix.~~
 37 5. While humankind faces significant and increasing challenges to the natural setting,
 38 community input, traditional knowledge, science, technology, and sound planning
 39 processes offer proven pathways to achieve growth-related goals and purposes.
 40 6. Through innovative approaches, adaptive management strategies, and evidence-based
 41 decision-making, we can develop sustainable solutions that balance development needs
 42 with nature.

Commented [KW3]: Added to bring information up-to-date
 and inclusive of BAS and acknowledgement of traditional (i.e.,
 Yakama Nation and other long term) knowledge resources.

1 **2.2 EXISTING CONDITIONS**

2 Yakima County's natural setting and has historically been a cornerstone of our economic
3 prosperity. The long sunny days and cool nights have helped Yakima County become one of the
4 top agricultural producing counties in the United States, generating a \$4.5 billion agricultural
5 economy that produces 71% of the nation's hops, 63% of apples, and 62% of cherries.

6
7 Our climate has also supported a thriving tourism industry, with over 300 days of sunshine per
8 year and a central location within the state making Yakima County an attractive destination for
9 conventions, outdoor recreation, and family travel. However, the environmental conditions
10 that have sustained our economy for generations are experiencing increased variability and
11 extreme weather events that require adaptive planning and management to ensure continued
12 prosperity and community resilience.

13
14 Climatic variation within Yakima County has always been extreme, and recent years have
15 intensified this variability beyond historical patterns. The Rocky Mountains partly shield the
16 region from strong arctic winds, while the Cascade Range partially blocks Pacific Ocean
17 influences, creating our characteristic semi-arid climate. Based on analysis of weather data
18 from 1980-2016, temperatures in Yakima typically vary from 23°F to 90°F over the course of the
19 year, with December averaging lows of 24°F and highs of 37°F, and July averaging lows of 56°F
20 and highs of 88°F (Weather Spark, 2025). Significant temperature variation occurs across
21 different elevations within the County, with higher elevation areas such as Rimrock
22 experiencing cooler conditions year-round, while lower elevation valley locations like Sunnyside
23 experience warmer temperatures, particularly during summer months.

24
25 However, the three consecutive years of severe drought from 2023 to 2025 have exposed the
26 region's vulnerability to extreme weather conditions. Temperatures during this period have run
27 2-4°F above normal, with some areas experiencing departures of 4-5°F or greater. May-June
28 2025 was the driest period on record for Yakima and Kittitas counties, and the basin received
29 less than 5% of normal precipitation over a critical 60-day period during spring 2025.

30
31 These conditions represent not isolated anomalies but markers along a continuously evolving
32 climate trajectory driven by current human behavior and population patterns. While these
33 behaviors can be modified, the physics of atmospheric gas laws—their physical rate of
34 abatement, and or their persistence, means that the greenhouse gases altering our weather, and
35 already emitted, will continue influencing climate systems for decades. Washington State
36 Department of Ecology officials have described such challenges as "the new normal," but this
37 characterization fails to capture the dynamic nature of our changing climate.

38
39 Best Available Science indicates that rather than settling into any fixed "new normal," we are
40 experiencing novel conditions within an accelerating trend of change—one that will persist
41 along its current trajectory absent behavioral and policy interventions. Climate change is not a
42 destination we arrive at, but an ongoing trajectory that demands we continuously update our

1 baseline understanding of environmental conditions. The atmospheric momentum already built
2 into Earth's systems means that what we define as extreme today may become moderate
3 compared to future conditions, requiring adaptive management strategies that both anticipate
4 perpetual evolution and actions to mitigate and be resilient to change. Each year's conditions
5 become data points in a pattern of escalating change rather than establishing any permanent
6 equilibrium. This framework compels us to plan for continuous adaptation.

7
8 The most critical environmental shift affecting Yakima County is the fundamental change in
9 precipitation patterns and snowpack accumulation that underpins our water security.
10 Historically, the County has depended upon significant snowpack accumulations at higher
11 elevations in the Cascade Range to supply irrigation water for agricultural operations in the
12 lowland areas, with an average growing season of 195 days and annual precipitation ranging
13 from over 100 inches in parts of the Cascades to less than 8 inches in the eastern lower
14 elevations. This natural water storage system is being disrupted by warmer winter
15 temperatures that are shifting precipitation from snow to rain, causing earlier snowmelt, and
16 reducing the total volume of water available during the critical summer irrigation season.

17
18 By September 2025, the Yakima Basin's five reservoirs reached only 20% capacity—the lowest
19 level since recordkeeping began in 1971. Snowpack that feeds these reservoirs has been
20 inadequate for three consecutive years, leaving them at only 35% of typical levels entering the
21 2025 irrigation season. Environmental projections indicate that snow droughts will occur in four
22 out of every ten years going forward, fundamentally challenging the water supply assumptions
23 upon which the County's agricultural economy and municipal water systems have been built.
24 These changing environmental conditions have cascading effects throughout the County's
25 natural and economic systems. Extended drought periods combined with higher temperatures
26 create conditions conducive to increased wildfire activity, as evidenced by major fires including
27 the Western Pines Fire, Pomas Fire, and Hope Fire that generated extended air quality alerts
28 affecting public health and outdoor recreation in 2024-2025.

29
30 Dried vegetation from prolonged drought becomes fuel for more intense wildfires, while earlier
31 snowmelt and longer fire seasons extend the period of risk for communities in the wildland-
32 urban interface. Low streamflows during summer months result in elevated water
33 temperatures that create thermal barriers for migrating salmon and steelhead, with lower
34
35 Yakima River temperatures approaching record highs in the 80s Fahrenheit during 2024. These
36 conditions threaten the treaty-protected fisheries resources of the Yakama Nation, the
37 recreational fishing industry, and the ecological health of the basin. Agricultural operations face
38 compounded stresses from reduced water allocations (40-45% of normal for junior water rights
39 holders in 2025), higher evapotranspiration rates, increased pest pressures, and market
40 uncertainties, resulting in fallowed fields, crop failures, and permanent farm closures that have
41 cost an estimated \$161-\$424 million and threatened over 6,000 jobs during the recent drought
42 years.

1 Despite these challenges, Yakima County's climate continues to offer significant advantages
2 that can be leveraged through adaptive management and strategic planning. The region still
3 receives abundant sunshine that supports not only agricultural productivity but also renewable
4 energy potential through solar installations. The diversity of microclimates across different
5 elevations provides opportunities for specialized crop production and ecosystem services. The
6 four-season climate continues to attract tourists and outdoor recreation enthusiasts, though
7 the timing and nature of recreational opportunities may shift as conditions evolve. The County's
8 central location within Washington State remains an asset for conventions, events, and sports
9 tournaments, even as facilities adapt to provide indoor alternatives during periods of poor air
10 quality from wildfire smoke or extreme heat. Tourism and recreation industries that have
11 grown around our climate can evolve to emphasize spring and fall shoulder seasons when
12 conditions are more moderate, while summer activities adapt to include water conservation
13 messaging and fire safety awareness as integral parts of the visitor experience.

14

15 Yakima County's resiliency and sustainability planning recognizes that maintaining economic
16 vitality requires proactive adaptation to changing environmental conditions and extreme
17 weather events. The Yakima Basin Integrated Plan provides a comprehensive framework for
18 water resource management that addresses both water supply reliability and ecosystem health
19 through reservoir storage optimization, conservation measures, habitat restoration, and
20 infrastructure improvements. The County's Community Wildfire Protection Plan reduces
21 vulnerability to fire through fuel reduction, defensible space creation, and emergency
22 preparedness. Agricultural support programs promote adoption of drought-resistant crop
23 varieties, precision irrigation technologies, soil health practices, and diversification strategies
24 that build resilience to environmental variability. Urban planning and development regulations
25 incorporate low-impact development, green infrastructure, and heat island mitigation to
26 reduce vulnerability of built environments. Energy policies encourage renewable energy
27 deployment, energy efficiency improvements, and transportation alternatives that reduce
28 environmental impacts while creating local economic opportunities. Emergency management
29 systems enhance coordination among agencies and communities for drought response, wildfire
30 evacuation, extreme heat events, and air quality emergencies.

31

32 Looking forward, Yakima County must view climate not as a static backdrop but as a dynamic
33 force requiring continuous monitoring, assessment, and adaptive response. The Washington
34 State Growth Management Act now requires counties to incorporate resiliency elements into
35 comprehensive planning, including drought preparedness, wildfire risk assessment, and
36 sustainability strategies. This planning imperative aligns with Yakima County's practical need to
37 protect lives, property, natural resources, and economic assets from weather-related hazards
38 while positioning the community to thrive under changing conditions. By embracing
39 environmental adaptation as a core planning principle—through water conservation, wildfire
40 preparedness, agricultural innovation, ecosystem restoration, renewable energy deployment,
41 and community resilience building—Yakima County can continue to leverage its geographic and
42 climatic advantages while managing emerging risks. The climate that has been a major
43 contributor to the health of our local economy can remain so, but only through deliberate,

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1 science-informed, and collaborative efforts to adapt our practices, infrastructure, and
 2 expectations to the environmental conditions of the 21st century.

3
 4 Yakima County and the larger Yakima River Basin is the site of the federally developed Yakima
 5 Project. The purpose of the Yakima Project is to store and deliver irrigation water, with
 6 hydroelectric power generation as an associated function. The six project reservoirs (see Table
 7 2.5.2.1-1) also provide incidental flood control, recreation benefits, and some flows for fish.
 8 Three of the project's six reservoirs, Rimrock Lake, Clear Lake and Bumping Lakes, lie within
 9 Yakima County in the upper Naches River basin. The other three reservoirs (Cle Elum, Kachess &
 10 Keechelus) are located in the upper Yakima basin near its headwaters in Kittitas County. The three
 11 upper reservoirs supply water to lands in the basin above the Yakima-Naches River confluence.
 12 They are also the main water suppliers of the large irrigation districts in the lower Yakima Valley.
 13 The upper Naches reservoirs provide irrigation water to lands in the lower Naches Valley. They
 14 also make a small irrigation contribution to lands in the lower Yakima Valley. Total storage
 15 capacity of all reservoirs is approximately 1.07 million acre feet, total diversions average over 2.5
 16 million acre feet.

17

Table 2.5.2.1-1 Major Reservoirs in the Yakima Subbasin

Reservoir	River system	Storage Capacity (acre-feet)
Keechelus Lake	Upper Yakima	157,800
Kachess Lake	Upper Yakima	239,000
Cle Elum Lake	Upper Yakima	436,900 (451,500, 2017))
Rimrock Lake	Naches	198,000
Bumping Lake	Naches	33,700
Clear Lake	Naches	5,300

18

19 Yakima County and the larger Yakima River Basin are also the site of the Yakima River Basin Water
 20 Enhancement Project (YRBWEP). The Yakima River Basin Integrated Water Resource
 21 Management Plan (Integrated Plan) is a component of YRBWEP. The purpose of the Integrated
 22 Plan is to address a variety of water resource and ecosystem problems affecting fish passage, fish
 23 habitat, and water supplies for agriculture, municipalities, and domestic uses. The plan includes
 24 the elements of: reservoir fish passage, structural and operational changes to existing facilities,
 25 surface water storage, groundwater storage, habitat/watershed protection and enhancement,
 26 enhanced water conservation, and market reallocation.

27

28 **Cle Elum Lake Project:** Prior to this enhancement project there were 436,900 acre-feet of active
 29 storage capacity Cle Elum Lake. **Increase from the Project:** The pool raise added approximately
 30 14,600 acre-feet of additional storage capacity. **After the Pool Raise:** Approximately 451,500
 31 acre-feet total active storage capacity is now available for use.

32

33 **Project Details:** The project raised the maximum water level of Cle Elum Reservoir by 3 feet, from
 34 a maximum elevation of 2,240 feet to 2,243 feet. Three-foot lips were added to the radial gates
 35 of the dam in 2017 to support the raise. Construction continues on project to improve fish passage
 36 and water storage. Shoreline stabilization work has been ongoing since then.

37

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Commented [KW4]: Update to reflect either new Cle Elum reservoir height and note planned YBIP changes for Bumping, Rimrock etc. (the seven, and timelines, b/c these are all by 2046 I think.)

Commented [KWS5]: Yakima Basin Integrated Plan INSERT

1 This was the first new water storage project in the Yakima Basin in over 80 years and is part of
 2 the larger Yakima Basin Integrated Water Resource Management Plan. The additional water is
 3 dedicated to enhancing instream flows for fish rearing, fish habitat, and migration, while also
 4 benefiting irrigation and municipal water users during drought conditions.
 5 The Integrated Water Resource Management Plan Alternative (Integrated Plan) was selected as
 6 the preferred alternative and represents a comprehensive approach to water management in
 7 the Yakima River basin. It is intended to meet the need to restore ecological functions in the
 8 Yakima River system and to provide more reliable and sustainable water resources for the health
 9 of the riverine environment and for agriculture and municipal and domestic needs.

Commented [KW6]: Updated information and moved here to match/flow.

Commented [KW7]: Drought, three years 2022-25

10
 11 The Integrated Plan is also intended to provide the flexibility and adaptability to address potential
 12 climate changes and other factors that may affect the basin's water resources in the future. The
 13 Integrated Plan includes three components of water management in the Yakima basin - Habitat,
 14 Systems Modification, and Water Supply. The intent of the Integrated Plan is to implement a
 15 comprehensive program that will incorporate all three components using seven elements to
 16 improve water resources in the basin:

Commented [KW8]: Here is most, but check for accuracy/dated

18. 1. Reservoir Fish Passage Element (Habitat Component);
 19. a. Provide fish passage at the five major Yakima River basin dams – Cle Elum,
Bumping Lake, Tieton, Keechelus, and Kachess – as well as Clear Lake Dam.
 - 21. • Structural and Operational Changes Element (Systems Modification
Component);
 23. 2. Cle Elum Pool Raise,
 24. 3. Kittitas Reclamation District Canal Modifications,
 25. 4. Keechelus-to-Kachess Pipeline,
 26. 5. Subordinate Power at Roza Dam and Chandler Powerplants, and
 27. 6. Wapatox Canal Improvements.
 - 28. • Surface Water Storage Element (Water Supply Component);
29. 7. Wymer Dam and Pump Station,
 30. a. Kachess Reservoir Inactive Storage,
 31. b. Bumping Lake Reservoir Enlargement, and
 32. c. Study of Columbia River Pump Exchange with Yakima Storage.
 - 33. • Groundwater Storage Element (Water Supply Component);
 - 34. d. Shallow Aquifer Recharge, and
 - 35. e. Aquifer Storage and Recovery.
 - 36. • Habitat/Watershed Protection and Enhancement Element (Habitat
Component);
 - 38. f. Targeted Watershed Protections and Enhancements, and
 - 39. g. Mainstem Floodplain and Tributary Enhancement Program.
 - 40. • Enhanced Water Conservation Element (Water Supply Component);
 - 41. h. Agricultural Conservation, and
 - 42. i. Municipal and Domestic Conservation Program.

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1 • [Market Reallocation Element \(Water Supply Component\).](#)

2
3 Reclamation and Ecology worked with the YRBWEP Workgroup to develop a package of projects
4 to meet the goals of the Integrated Plan. These projects are described individually; however,
5 Reclamation, Ecology and the YRBWEP Workgroup intend that the Integrated Plan would be
6 implemented in a comprehensive manner, incorporating all elements of the proposed plan.
7 Implementing the different elements of the Integrated Plan as a total package is intended to
8 result in greater benefits than implementing any of the seven elements independently.

9
10 2.4.2.2 Groundwater

11 Groundwater in Yakima County is found in the basalt that underlies most of the area, in the
12 alluvium deposits located along the various watercourses, and in the Ellensburg formation which
13 both overlies and interbeds within the basalt flows. The following sections describe the three
14 principal aquifers of Yakima County in more detail.

15
16 2.4.2.3 Yakima Basalt

17 Yakima Basalt, a subgroup of the Columbia Basalt, include confined aquifers in interbeds
18 sandwiched between layers of basalt. Within the region, the basalt aquifers vary in their water-
19 yielding character from 100 gal./min. to 2,000 gal./min. Although some deep municipal and
20 irrigation wells penetrate the Yakima Basalt, the source appears relatively untapped and is
21 potentially the most productive and least impacted of Yakima County's three principal aquifers.

22
23 Some portions of the interbed aquifers may involve fossil waters which have no source of
24 recharge. Potential recharge areas include contacts between the Columbia basalt flows and the
25 units within the Cascade Range, surface and subsurface drainage along exposed interbeds
26 associated with anticlinal ridges, at gaps where streams have cut through uplifted basalt exposing
27 interbeds, and along fault zones which bisect basalt layers. The Yakima Basalt may also be re-
28 charged in upper valley reaches by overlaying gravels and unconsolidated alluviums.

29
30 2.4.2.4 Ellensburg Formation

31 The Ellensburg Formation consists largely of layers of gravels, sand, silt, and clay sediments
32 transported from the westerly portion of Yakima County on to, and in some areas inter-bedded
33 with, the upper basalt flows. The capacity of the formation as an aquifer ranges from poor to
34 good, depending on its depth and composition. Underlying basalt layers generally dip toward
35 the center of valleys and easterly such that more productive Ellensburg aquifers are located in
36 the center of lower valley reaches having deeper profiles of the formation. Principal aquifers in
37 the formation are generally confined, weakly cemented, permeable layers of gravel and well-
38 sorted sands interbedded with less permeable layers of clay and shale. A basal layer of this
39 formation which lies directly above the uppermost basalt flow may be one of its more productive
40 water-bearing zones.

41
42 Recharge is by infiltration from precipitation and irrigation, by effluent seepage from surface
43 waters, and by upward leakage from the Yakima Basalt. The most important current source of

1 recharge is considered to be upward leakage from the underlying basalt. Susceptible recharge
2 areas are those where the formation is exposed at the surface or where saturated alluvial gravels
3 directly overlie the formation. Where the formation contains significant aquifers, the largest
4 natural discharge is potentially the upward seepage to overlying gravel units and alluviums.
5

6 **2.4.2.5 Upper Aquifer**

7 The Upper Aquifer generally consists of gravel units and principally stream-deposited,
8 unconsolidated alluviums distributed in variable thicknesses along the valley floors. The largely
9 cemented gravel units are considered a viable aquifer only where they contain deeper profiles of
10 weakly cemented sand and gravel. The most productive aquifer (second only to the Yakima
11 Basalt) is the unconsolidated alluvium. The alluvium aquifer is generally unconfined, with its
12 thickest, most productive units occurring in syncline centers. The Upper Aquifer is generally
13 associated with a shallow ground water table which supports the bulk of Yakima County's
14 domestic water supplies.
15

16 **2.32 ORGANIZATION OF THE ELEMENT**

17 The Natural Settings Element consists of six **major** sections: Introduction/Purpose, Growth
18 Management Act Requirements, Major Opportunities, Existing Conditions; Analysis of Assets,
19 Needs and Opportunities; and Goals, Objectives and Policies.
20
21

22 **2.43 GROWTH MANAGEMENT ACT REQUIREMENTS**

23 The Washington State Growth Management Act (GMA) does not require a Natural Settings
24 Element in **Horizon 2040** **Horizon 2046**, but RCW 36.70A.020 – Planning Goals [\(1-15\)](#) require that
25 the following related items are addressed [\(specific to this Chapter\)](#):
26

27 (6) Property rights. Private property shall not be taken for public use without just
28 compensation having been made. The property rights of landowners shall be protected
29 from arbitrary and discriminatory actions.

30 (8) Natural resource industries. Maintain and enhance natural resource-based industries,
31 including productive timber, agricultural, and fisheries industries. Encourage the
32 conservation of productive forest lands and productive agricultural lands, and discourage
33 incompatible uses.

34 (9) Open space and recreation. Retain open space, enhance recreational opportunities,
35 conserve fish and wildlife habitat, increase access to natural resource lands and water,
36 and develop parks and recreation facilities.

37 (10) Environment. Protect the environment and enhance the state's high quality of life,
38 including air and water quality, and the availability of water.

39 (13) Historic preservation. Identify and encourage the preservation of lands, sites, and
40 structures that have historical or archaeological significance. To view the list of sites

1 within Yakima County that are currently listed on the state or Federal historic register
 2 contact the Washington State Department of Archaeology & Historic Preservation.
 3

4
 5 **2.5 2026 SETTING**

6 **2.5.1 Historic vs. 2025: Yakima River Basin Fish and Wildlife Populations**

7 Comprising one of the most biodiverse ecosystems in Washington State with a diverse landscape
 8 spanning over 6,100 square miles from glaciated Cascade peaks exceeding 8,000 feet to Columbia
 9 Plateau lowlands at 340 feet elevation, the Yakima River Basin historically supported an
 10 estimated 500,000 to 900,000 adult anadromous fish annually Yakima River Subbasin Plan –
 11 (SOTSP, 2004). But as more of our natural resources have been put to use, the number and types
 12 of anadromous fish have rapidly declined. By the 1920s, the once awe-inspiring fish runs had
 13 dwindled to less than one percent of their historical numbers Northwest CouncilNorthwest
 14 Council.

Commented [KW10]: This section updates the Existing Settings above. Duplication or dated information is ~~stricken~~ above

15
 16 **2.5.2 Integrated Recovery Planning Frameworks:**

17
 18 **2.5.2.1 Yakima Subbasin Plan (2005) - Foundational Document:** The Yakima Subbasin Plan was
 19 written by the Yakima Subbasin Planning Board under contract with the Bonneville Power
 20 Administration (BPA) as part of the Northwest Power and Conservation Council Fish & Wildlife
 21 Program, which directs BPA and other managers of the federal Columbia River Power System to
 22 invest in projects that protect and enhance fish and wildlife species impacted by the hydropower
 23 system Subbasin Plan - Yakima Basin Fish and Wildlife Recovery Board. The plan is one of 40
 24 subbasin plans in the Columbia Basin, written by a team that brought together local
 25 governments, the Yakama Nation, and fish and wildlife advocates to identify issues and priority
 26 strategies for both aquatic and terrestrial habitats Subbasin Plan - Yakima Basin Fish and Wildlife
 27 Recovery Board.

28
 29 The Subbasin Plan establishes comprehensive habitat restoration priorities:

30
 31 **Flow and Temperature Management:** Altered flows of water, sediment and water temperature
 32 changes (mostly summer increases) severely reduce the quantity and quality of aquatic habitats.
 33 The Plan contains objectives to replicate basin-wide temperature variability by returning the
 34 timing and quantity of river flow to a more natural state through purchase, transfer, or lease of
 35 water rights; changes in flow management, conservation; and increased natural and artificial
 36 storage Yakima River Subbasin Plan - SOTSP.

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1
2 **Habitat Connectivity and Restoration:** The loss of floodplain habitat, especially side channels and
3 springs adjacent to the mainstem Naches and Yakima rivers, were identified as significant limiting
4 factors for aquatic habitat productivity. Actions include relocating infrastructure to allow natural
5 processes to operate, reconnecting side channels by removing obstructions, and constructing
6 artificial channels where current conditions allow Yakima River Subbasin Plan - SOTSP..

7
8 **Predation Management:** High predation risk for juvenile salmonids requires reducing
9 populations of smallmouth bass in the lower Yakima River, improving cover and off-channel
10 habitats, and implementing control on predator populations in mainstem reservoirs Yakima River
11 Subbasin Plan - SOTSP..

12
13 **Upper Columbia Recovery Plan Context (2007):** The Upper Columbia Spring Chinook Salmon and
14 Steelhead Recovery Plan was developed by the Upper Columbia Salmon Recovery Board with the
15 mission to restore viable and sustainable populations of salmon, steelhead, and other at-risk
16 species through collaborative, economically sensitive efforts, combined resources, and wise
17 resource management. The plan identifies 306 actions that will contribute to the long-term
18 recovery of Upper Columbia River spring-run Chinook salmon and steelhead NOAA
19 FisheriesNOAA Fisheries.

20
21 **Yakima-Specific ESA Recovery Plans:**

22
23 **Yakima Steelhead Recovery Plan (2009):** Between 2005 and 2008, the Yakima Basin Fish &
24 Wildlife Recovery Board worked with numerous local partners, GSRO and NOAA Fisheries to write
25 this locally-developed plan, which was formally incorporated into NOAA's Middle Columbia River
26 Steelhead Recovery Plan - the first time NOAA compiled multiple locally-generated recovery
27 plans into a larger recovery framework Ybfwr Federal Register. Biologists have identified four
28 distinct steelhead populations in the basin: Satus, Toppenish, Naches and Upper Yakima, with
29 production heavily weighted towards Satus and Toppenish Creeks, which have healthy
30 populations LEAD ENTITY MANUAL Updated January 2023.

31
32 **Yakima Bull Trout Action Plan (2012-2017-2025):** The Bull Trout Action Plan was created in 2012
33 as a locally-written document that complements the USFWS Bull Trout Recovery Plan, updated
34 by the Yakima Bull Trout Working Group in 2017, with another update expected in 2025. This
35 document provides detailed information on the status of each of the 12 individual bull trout
36 populations in the basin and the actions needed to stop their decline Bull Trout Recovery - Yakima
37 Basin Fish and Wildlife Recovery Board.

38
39 **Yakima Basin Integrated Plan (YBIP) - 30-Year Implementation Strategy:** Recognizing
40 vulnerability to drought and climate change, representatives of the Yakama Nation, irrigation
41 districts, environmental organizations, and federal, state, county, and city governments formed
42 a work group in 2009 to design a basin-wide climate adaptation strategy. The resulting Yakima
43 Basin Integrated Water Resource Management Plan is a 30-year, \$3.8 billion plan that restores

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1 [ecological integrity and provides assurances for meeting agricultural water needs despite](#)
 2 [ongoing climate change An Integrated Plan for Water and Long-Term Ecological Resilience | U.S.](#)
 3 [Climate Resilience Toolkit.](#)

4
 5 [YBIP Key Elements: Fish and wildlife habitat enhancement includes floodplain restoration, flow](#)
 6 [improvement, removing fish passage barriers, screening diversions, and land and river corridor](#)
 7 [protection. Upstream and downstream passage for anadromous and resident fish will be](#)
 8 [established at all U.S. Bureau of Reclamation reservoirs, allowing access to high-quality, cold-](#)
 9 [water habitat essential for restoring depleted runs. The plan will provide 450,000 acre-feet of](#)
 10 [new storage over thirty years The Integrated Plan - Yakima Basin Integrated Plan.](#)

11
 12 **[2025 Species Recovery Status and Implementation:](#)**

13
 14 [Spring Chinook Recovery: An important objective is to restore spring chinook population](#)
 15 [abundance, productivity and spatial distribution to viable, harvestable and sustainable levels over](#)
 16 [the next 30 years through research on habitat restoration and population management activities](#)
 17 [such as harvest management and hatchery supplementation Yakima River Subbasin Plan -](#)
 18 [SOTSP.. However, the 2025 forecast for the Yakima River is 5,000 spring chinook Rob Phillips:](#)
 19 [Forecasts show 2025 salmon seasons expected to be similar to 2024 | Outdoors and Recreation](#)
 20 [| yakimaherald.com, showing continued challenges.](#)

21
 22 [Fall Chinook Restoration: Fall chinook populations have been dramatically reduced from pre-](#)
 23 [1850s abundance levels. To increase Tribal and sport harvest opportunities, there should be an](#)
 24 [annual release of 1.8 million out-of-basin acclimated hatchery smolt releases from the Prosser](#)
 25 [Hatchery Yakima River Subbasin Plan - SOTSP..](#)

26
 27 [Coho Salmon Recovery: Coho salmon became extirpated in the Yakima Basin in the early 1980s](#)
 28 [Yakima River, but the Yakama Nation has achieved remarkable success, going from well under](#)
 29 [1,000 coho adults returning per year to over 10,000 fish in 2009, with both hatchery and natural-](#)
 30 [origin fish combined Yakama Nation's Innovative Techniques to Rebuild Salmon Runs In the](#)
 31 [Yakima River Basin. Current programs release approximately 500,000-850,000 coho juveniles](#)
 32 [annually, with the new Melvin Sampson coho hatchery facility completed in 2020 Northwest](#)
 33 [CouncilU.S. Fish and Wildlife Service.](#)

34
 35 [Sockeye Salmon Restoration: Extirpation of sockeye salmon from the Yakima Subbasin has](#)
 36 [reduced the productivity of the watershed and ecosystem as a whole, and eliminated a significant](#)
 37 [source of commercial and subsistence harvest Yakima River Subbasin Plan - SOTSP. However, the](#)
 38 [Yakama Nation has been working since 2009 to restore sockeye to Lake Cle Elum, and the first](#)
 39 [native-born sockeye have returned to the Yakima Basin in over 100 years Yakima Basin Sockeye](#)
 40 [Reintroduction | Yakama Nation Fisheries. A groundbreaking juvenile fish passage facility](#)
 41 [featuring a first-in-the-nation helix structure was completed in 2024, projected to help increase](#)
 42 [sockeye returns fivefold from 20,000 to 100,000 annually Salmon restoration project helps](#)
 43 [strengthen sockeye population in the Yakima Basin - Washington State Department of Ecology.](#)

1
2 **Threatened Species Recovery Implementation:** Two fish species in the Yakima basin remain
3 listed as threatened under the Endangered Species Act: bull trout and mid-Columbia steelhead
4 YbfwrbNorthwest Council. Bull trout surveys from 1996 to 2017 show an average of 558 redds,
5 with counts declining significantly for a number of populations LEAD ENTITY MANUAL Updated
6 January 2023. Steelhead numbers have remained below recovery targets since being listed in
7 1999 (PDF) Steelhead Trout Autecology in the Yakima River Basin.

8
9 **Pacific Lamprey Recovery:** Pacific lamprey, once an important food source for Native Americans
10 in the subbasin, is a Washington State species of concern under consideration for ESA listing by
11 USFWS. They are currently found in the mainstem Yakima and Naches Rivers, but fewer than 15
12 have been observed in the Yakima system since 1992 Yakima River Subbasin Plan - SOTSP..

13
14 **Coordinated Implementation Framework:** The Yakima Steelhead Recovery Plan and Yakima Bull
15 Trout Action Plan include detailed implementation schedules that identify priority actions for
16 recovery, with a living document approach providing specific and up-to-date information on
17 projects completed, underway, and in planning Implementation Schedule - Yakima Basin Fish and
18 Wildlife Recovery Board. The Yakima Bull Trout Working Group continues to meet regularly,
19 bringing partners together to organize fieldwork, make funding recommendations, provide
20 feedback on projects, and advocate for bull trout recovery Bull Trout Working Group - Yakima
21 Basin Fish and Wildlife Recovery Board.

22
23 **Federal Support and Partnerships:** Federal funding continues to provide crucial support, with
24 \$7.5 million in grants awarded in late 2024 for four projects along the Yakima River and its
25 tributaries Federal funding buoys Yakama Nation's fish recovery efforts | Sports
26 yakimaherald.com. The goal of the Yakima Program is the recovery of native anadromous and
27 resident fish populations through four primary objectives: improving instream flows, restoring
28 degraded aquatic habitat, protecting existing high quality habitat, and providing access to
29 headwater habitats Yakima Basin Program, Mid-Columbia Fish and Wildlife Conservation Office
30 | U.S. Fish & Wildlife Service.

31
32 **Current Challenges and Adaptive Management:** In 2025, the Washington Department of Fish
33 and Wildlife, Yakama Nation Fisheries, and partners are implementing major projects to remove
34 invasive water stargrass from the lower Yakima River to improve fish passage, spawning habitat,
35 and water quality Collaboration in the Yakima Basin: Project kicking off in September will remove
36 water stargrass, improve habitat in Yakima River | by The Washington Department of Fish and
37 Wildlife | Aug, 2025 | Medium. The region has experienced numerous droughts, including an
38 unprecedented snowpack drought in 2015, with climate change predictions forecasting the
39 valley's precipitation will change from snow to rain Yakima integrated plan - Washington State
40 Department of Ecology.

41
42 The Yakima Basin represents one of the most comprehensive and scientifically-based fish
43 recovery efforts in the Pacific Northwest, with an integrated framework that combines locally-

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1 developed subbasin planning, federal ESA recovery mandates, and innovative collaborative
2 implementation through the Yakima Basin Integrated Plan. This multi-layered approach
3 addresses the complex challenges facing anadromous fish restoration while balancing
4 agricultural, cultural, and ecological needs in a climate-constrained future.

5

6 **Wildlife Conservation in the Yakima Basin: WDFW Priority Habitats and Species Framework**
7 **Priority Habitats and Species Program Implementation:**

8

9 The Priority Habitats and Species (PHS) Program is WDFW's primary means of transferring fish
10 and wildlife information from resource experts to local governments, landowners, and others
11 who use it to protect habitat. The PHS List is a catalog of habitats and species that are priorities
12 for conservation and careful management, with WDFW advising landowners and local
13 governments to protect and conserve Priority Habitats and Priority Species Washington
14 Department of Fish & WildlifeWashington Department of Fish & Wildlife.

15

16 The species and habitats identified for Yakima County were developed using distribution maps
17 found in the Priority Habitat and Species List, which depict counties where each priority species
18 is known to occur as well as other counties where habitat primarily associated with the species
19 exists Title 16C Appx. B PRIORITY HABITAT AND SPECIES (PHS). PHS information is used primarily
20 by cities and counties to implement and update land use plans and development regulations
21 under the Growth Management Act and Shoreline Management Act Priority Habitats and
22 Species: Maps | Washington Department of Fish & Wildlife.

23

24 **Priority Habitat Types in Yakima County:** Priority habitats are habitat types or elements with
25 unique or significant value to a diverse assemblage of species. A priority habitat may consist of a
26 unique vegetation type (e.g., shrub-steppe) or dominant plant species (e.g., juniper savannah), a
27 described successional stage (e.g., old-growth forest), or a specific habitat feature (e.g., cliffs)
28 Priority Habitats and Species List | Washington Department of Fish & Wildlife. There are 20 types
29 of priority habitats in Washington Priority Habitats and Species List | Washington Department of
30 Fish & Wildlife.

31

32 **Shrub Steppe Priority Habitat:** Shrubsteppe landscapes are dominated by rolling, grassy plains
33 or "steppe," with an overstory of sagebrush and other woody shrubs. On the ground, a fragile
34 community of microscopic organisms form the cryptobiotic crust, which locks in moisture and
35 helps prevent erosion. Various habitat features such as streams, wetlands, rocky talus slopes,
36 and canyons support a variety of plants and animals uniquely adapted to the harsh and sensitive
37 shrubsteppe ecosystem Shrubsteppe | Washington Department of Fish & Wildlife.

38

39 While Wyoming big sagebrush is the most widespread shrub in this ecosystem, other common
40 shrubs include antelope bitterbrush, three-tip sagebrush, and stiff sagebrush. Common grasses
41 include Idaho fescue, bluebunch wheatgrass, Sandberg bluegrass, Thurber's needlegrass, and
42 needle-and-thread Shrubsteppe | Washington Department of Fish & Wildlife.

1 Riparian Priority Habitat: Riparian areas are the zones between land and water such as the edges
2 of rivers, streams, creeks, lakes, ponds, and wetlands. They have unique conditions that change
3 gradually from dry land to aquatic environments. These areas help connect waterbodies to the
4 surrounding land, both above and below the surface. They also play an important role in the
5 movement of energy and nutrients between land and water. Priority Habitats and Species:
6 Publications | Washington Department of Fish & Wildlife.
7

8 Cliff and Talus Priority Habitat: The Oak Creek Unit is comprised of riparian, shrubsteppe, mixed
9 forest, and cliff and talus habitats that support a diverse array of fish and wildlife. These units
10 include Tieton River riparian habitat, shrubsteppe, oak woodlands, Ponderosa pine and Douglas-
11 fir forests, cliffs and talus slopes, offering opportunities to view a variety of wildlife, including elk,
12 California bighorn sheep, and abundant bird life. Oak Creek Wildlife Area Unit | Washington
13 Department of Fish & Wildlife.
14

15 Priority Species Conservation Status: Priority species include State Endangered, Threatened,
16 Sensitive, and Candidate species; vulnerable animal groups (e.g., seabird concentrations, heron
17 rookeries, bat colonies); and species of recreational, commercial, or tribal importance that are
18 vulnerable. Priority Habitats and Species List | Washington Department of Fish & Wildlife. Priority
19 species require protective measures for their survival due to their population status, sensitivity
20 to habitat alteration, and/or recreational, commercial, or tribal importance. Priority Habitats and
21 Species List | Washington Department of Fish & Wildlife.
22

23 Threatened and Sensitive Species in Yakima County:

- Greater Sage-Grouse: State threatened, requiring large landscapes of intact sagebrush steppe
- Burrowing Owl: Experiencing range contraction, now uncommon outside core counties
- White-headed Woodpecker: Declining species dependent on dry forest habitats
- Northern Goshawk: Species of concern requiring mature forest habitat
- Golden Eagle: Priority species utilizing cliff and rimrock habitats
- Loggerhead Shrike: State candidate species dependent on shrub steppe
- Sage Thrasher: Sagebrush obligate species
- Sagebrush Sparrow: Shrub steppe specialist

34 GIS-Based Conservation Planning: The most common way people find information about known
35 locations of priority habitats and species in Washington is by using the Priority Habitats and
36 Species (PHS) on the Web app. This online app gives landowners and developers information they
37 need to conserve habitat and species. Many local governments use this app when reviewing
38 development proposals. Priority Habitats and Species: Maps | Washington Department of Fish &
39 Wildlife.
40

41 PHS data is added to the map after field-verification by WDFW biologists or a WDFW-verified
42 professional. Although mapped PHS data is useful for determining the general extent of priority
43 species or habitats, the department has not surveyed the entire state of Washington. PHS map

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1 [data is meant to serve as a starting point to identify priority habitats and species](#) Priority Habitats
2 and Species: Maps | Washington Department of Fish & Wildlife.

3
4 [Management Recommendations and Best Practices: WDFW develops management](#)
5 [recommendations for Priority Habitats and Species to align with the agency's mission to preserve,](#)
6 [protect, and perpetuate Washington's diverse fish and wildlife. This includes goals to: Stop or](#)
7 [reverse the decline of fish and wildlife, including state-listed or candidate species; Maintain or](#)
8 [enhance the current structural attributes and ecological functions of habitat needed to support](#)
9 [healthy populations; Maintain or enhance populations of priority species within present and/or](#)
10 [historical ranges](#) Priority Habitats and Species: Publications | Washington Department of Fish &

11 Wildlife.

12

13 [Arid Lands Initiative Integration: The Arid Lands Initiative is a collaborative effort led by the US](#)
14 [Fish and Wildlife Service that identified priority conservation areas in the Columbia Plateau](#)
15 [Ecoregion. The extensive effort involved WDFW, Washington Department of Natural Resources,](#)
16 [and The Nature Conservancy, among others, providing scorecards for individual Priority Core](#)
17 [Areas \(PCA\) and Priority Linkage Areas \(PLA\)](#) Priority Habitats and Species: Publications |

18 Washington Department of Fish & Wildlife.

19

20 [Washington Shrubsteppe Restoration and Resiliency Initiative: This initiative seeks to address](#)
21 [wildlife habitat protection and restoration challenges while also supporting working lands and](#)
22 [communities in the face of wildland fire across the shrubsteppe landscape. Wildland fire](#)
23 [preparedness, response, and recovery are important components of this effort](#) Priority Habitats

24 and Species: Publications | Washington Department of Fish & Wildlife.

25

26 [Local Implementation and Critical Areas Ordinances: Cities and counties use the PHS List when](#)
27 [designating and protecting Fish and Wildlife Habitat Conservation Areas under the Growth](#)
28 [Management Act and Shoreline Management Act. The mapping of a PHS species or a PHS](#)
29 [management recommendation does not by itself create an obligation on the landowner.](#)
30 [However, depending on how a local government's development regulations are worded, PHS](#)
31 [maps and management recommendations may trigger the local government's regulatory](#)
32 [authority](#) Priority Habitats and Species (PHS) | Washington Department of Fish & Wildlife.

33

34 [Ongoing Conservation Challenges: Results from PHS assessments often show that project sites](#)
35 [are near surveyed points of state candidate species, requiring landowners to hire professional](#)
36 [biologists to prepare Habitat Management Plans. Development can proceed but may require](#)
37 [steps to avoid and minimize impacts and on-site or off-site mitigation for unavoidable habitat](#)
38 [loss under the Growth Management Act's no net loss standard](#) Using the Priority Habitats and

39 Species (PHS) on the Web app | Washington Department of Fish & Wildlife.

40

41 [Partnership with Conservation Organizations: Organizations like Cowiche Canyon Conservancy](#)
42 [\(CCC\) are actively protecting shrub-steppe habitat in Yakima County—a unique landscape made](#)
43 [up of sagebrush and grasslands, flowering meadows, oak woodlands, and basalt cliffs. CCC owns](#)

1 and manages over 7,000 acres of land and offers over 60 miles of trails for non-motorized
2 outdoor recreation, conserving these natural areas and connecting people to them through
3 recreation and education Cowiche Canyon Conservancy | Yakima, WA | Protecting our shrub-
4 steppe habitat.
5

6 Scientific Foundation and Adaptive Management: The Washington Administrative Code refers to
7 PHS in sections dealing with Critical Area Ordinances, Shoreline Master Programs, and the
8 Essential Facilities Siting Evaluation Council. The state supreme court has held that PHS is a valid
9 source of best available science for the Growth Management Act Priority Habitats and Species
10 (PHS) | Washington Department of Fish & Wildlife.
11

12 Integrated Conservation Framework: Yakima County, and the Yakima Basin benefits from
13 multiple complementary conservation programs that provide a scientifically-based framework
14 for balancing development pressures with fish and wildlife conservation needs. These include the
15 Priority Habitats and Species program, the Yakima Subbasin Plan, ESA Recovery Plans, the Spirit
16 of the Salmon (WY-KAN-USM-MI WA-KISH-WIT), and the Yakima Basin Integrated Plan. Through
17 partnerships among state, local, federal, and tribal governments, along with municipalities and
18 conservation organizations, these programs create a coordinated approach to resource
19 management.
20

21 This systematic framework addresses four central questions: which species and habitats are
22 conservation priorities, where they are located, what measures should protect them, and how
23 effective current critical area efforts are proving. By grounding decisions in the best available
24 science while maintaining flexibility for local implementation, this approach successfully
25 maintains the basin's rich biodiversity while accommodating the agricultural, recreational, and
26 residential land uses that define Yakima County—one of Washington's most ecologically diverse
27 regions.
28

29 2.6 Update to the 2004 Report - BEST AVAILABLE SCIENCE 30

31 Best Available Science (BAS) is a statutory requirement under Washington State's Growth
32 Management Act (GMA) that mandates local governments to use current, scientifically valid
33 information when designating and protecting critical areas. This requirement, codified in RCW
34 36.70A.172, ensures that environmental regulations are grounded in empirical evidence rather
35 than speculation, protecting ecological functions while allowing for informed policy decisions
36 that balance environmental protection with economic viability.
37

38 Yakima County is updating its Critical Areas Ordinance to meet current BAS standards,
39 incorporating significant scientific advances since the 2004 baseline report. This comprehensive
40 update addresses seven key areas: ephemeral and intermittent streams, riparian buffers,
41 wetland ratings and protection, climate change adaptation and resilience, geologically hazardous
42 areas, groundwater and aquifer recharge protection, and monitoring and adaptive management
43 frameworks.

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1 The update process involves a multi-disciplinary Science Advisory Group (SAG) with
2 representatives from federal agencies (U.S. Bureau of Reclamation, U.S. Forest Service), state
3 agencies (Washington Department of Ecology, Washington Department of Fish and Wildlife),
4 tribal governments (Yakama Nation), and local expertise. The process runs from November 2025
5 through October 2026, culminating in a Final Draft BAS Report that will serve as the scientific
6 foundation for updating the county's Critical Areas Ordinance in compliance with GMA
7 requirements.

8
9 Yakima County has developed an innovative online enterprise application—the BAS Portal,
10 including an inclusive expert and stakeholder collaborative—to streamline the Best Available
11 Science update process and enhance collaboration among all stakeholders and as part of the
12 “Reasoned Process and Scientific Information Requirement” as defined in the WA Supreme
13 Court decision: Ferry County v. Concerned Friends (2005).

14
15 The update represents a critical step in ensuring that Yakima County's environmental protections
16 reflect the best current scientific understanding while supporting the county's agricultural
17 heritage and economic sustainability.

18
19 The Growth Management Act establishes clear requirements for the use of Best Available Science
20 in critical areas protection:

21
22 RCW 36.70A.172 – Primary BAS mandate for critical areas policies and regulations. This statute
23 requires that counties and cities include Best Available Science in developing policies and
24 development regulations to protect the functions and values of critical areas.

25
26 RCW 36.70A.172(1) – Defines BAS as current scientific information used to understand critical
27 areas functions and values. The statute requires giving special consideration to conservation or
28 protection measures necessary to preserve or enhance anadromous fisheries.

29
30 RCW 36.70A.172(2) – Required consideration and documentation in critical areas ordinances.
31 The public record must demonstrate that BAS was included in the decision-making process.
32 RCW 36.70A.172(3) – Required written rationale when departing from science-based
33 recommendations. If a jurisdiction adopts regulations outside the range recommended by BAS,
34 it must provide clear findings explaining the reasons and identifying other GMA goals being
35 implemented.

36 Administrative Implementation Framework
37 The Washington Administrative Code provides detailed guidance on implementing BAS
38 requirements:
39 WAC 365-195-900 – BAS framework and criteria definition. Establishes that BAS means scientific
40 information applicable to a critical area, including peer-reviewed scientific studies, government-
41 sponsored research, and professionally accepted models.
42 WAC 365-195-905 – Acceptable scientific information sources. Identifies qualified sources
43 including peer-reviewed research, government studies, professional technical reports, traditional
44 ecological knowledge from tribes, and grey literature with appropriate quality controls.

1 [WAC 365-195-910 – Required documentation and rationale for BAS application. Jurisdictions](#)
 2 [must document the BAS used and explain how it supports regulatory choices.](#)
 3 [WAC 365-195-915 – Scientific review and periodic update procedures. Requires regular review](#)
 4 [of new scientific information and incorporation into critical areas regulations during periodic](#)
 5 [updates.](#)
 6 [WAC 365-195-925 – Monitoring and adaptive management frameworks. Encourages monitoring](#)
 7 [programs to evaluate regulatory effectiveness and adaptive management to respond to new](#)
 8 [information.](#)

9

10 **2.6.1 GMA SMP REQUIREMENTS**

11 **SMP sections now reside exclusively in 16d**

12 **2.7 Critical Areas**

13
 14
 15
 16 [Under RCW 36.70A.030\(6\), Washington State law identifies five types of critical areas that must](#)
 17 [be designated and protected using Best Available Science. Each type has distinct characteristics,](#)
 18 [functions, and protection requirements. The GMA also requires local jurisdictions to designate](#)
 19 [critical areas and adopt development regulations which protect these them \(RCW](#)
 20 [36.70A.170\(1\)\(d\)\). The Washington Administrative Code \(WAC\) Chapter 365-190 identifies](#)
 21 ["Minimum Guidelines to Classify Agriculture, Forest, Mineral Lands and Critical Areas" \(hereafter](#)
 22 [referred to as *Minimum Guidelines*\). Yakima County is required to consider the definitions found](#)
 23 [in the *Minimum Guidelines* when designating environmentally sensitive areas. The general extent](#)
 24 [and scope of certain critical areas, such as the 100-year floodplain, over steepened slopes and](#)
 25 [wildlife habitat areas are depicted on the Yakima County Geographic Information System \(GIS\).](#)
 26 [Yakima County also maintains a more detailed series of maps specifically for administering its](#)
 27 [Critical Areas Ordinance.](#)

28
 29 [Yakima County's critical areas, including floodplains, wetlands, fish and wildlife habitat, critical](#)
 30 [aquifers, and geologically unstable areas are associated with stream corridors. The focus of the](#)
 31 [CAO is to protect these "hydrologically related areas." These designated critical areas include](#)
 32 [one or more of the following features:](#)

33
 34 (1) [Any floodway and floodplain identified as a special flood hazard area. Special flood](#)
 35 [hazard areas are those identified by the Federal Insurance Administration in the Flood](#)
 36 [Insurance Study for Yakima County which, together with accompanying Flood Insurance](#)
 37 [Rate Maps and frequently flooded areas are hereby adopted by reference and declared](#)
 38 [to be a part of this title as set forth in Chapters 16C.05.20 through 16C.05.72;](#)
 39
 40 (2) [Perennial and intermittent streams, excluding ephemeral streams, including the stream](#)
 41 [main channel and all secondary channels within the Ordinary High Water Mark;](#)
 42 (3) [Naturally occurring ponds under twenty acres and their submerged aquatic beds; and](#)
[man-made lakes and ponds created within a stream channel designated under \(2\) above;](#)

Commented [KW11]: Move CAO main section up to here. Lead with, and into the 5 + shorelines

Commented [KW12]: Corrected:

Yakima County's critical areas, including floodplains, wetlands, fish and wildlife habitat, critical aquifers, and geologically unstable areas are associated with stream corridors. The focus of the CAO is to protect these "hydrologically related areas." These designated critical areas include one or more of the following features:

Commented [KW13]: check

1 (4) All wetlands, that meet the definition found in Section 16C.02.425, as required by WAC
 2 365-190-080(1), and as designated in Section 16C.07.02(1) of the wetland chapter;
 3 (5) Where specifically cited, any flood-prone area not included in a designated floodway and
 4 floodplain, but indicated as flood-prone by U.S. Soil Conservation Service soil survey data
 5 or geologic evidence developed through professional geologists or engineers (i.e. specific
 6 flood frequency, stream channel migration), by information observable in the field such
 7 as soils or geological evidence, or by materials such as flood studies, topographic surveys,
 8 photographic evidence or other data;
 9 (6) A management zone area extending on a horizontal plane from the ordinary high water
 10 mark of a stream channel, lake, or pond, designated in this section or from the edge of a
 11 wetland designated in this section according to the distances set forth in Section
 12 16C.06.16 (Vegetative Management zones).

14 Rivers, Lakes and Streams in the County are categorized according to their relative ecological
 15 function and value and annual flow characteristics into a five tiered rank typing system. Type 1
 16 Streams and Shoreline lakes and ponds are protected by the County's Shoreline Master Program
 17 (SMP). Vegetative (i.e., Riparian) and other management zone along Type 2, 3 and 4 streams
 18 are set and classified according to their size and presence or absence of fish with Type 5 streams
 19 (intermittently flowing drains) having no management zone requirements.

Commented [KW14]: Corrected:

Rivers, Lakes and Streams in the County are categorized according to their relative ecological function and value and annual flow characteristics into a five tiered rank typing system. Type 1 Streams and Shoreline lakes and ponds are protected by the County's Shoreline Master Program (SMP). Vegetative (i.e., Riparian) and other setbacks along Type 2, 3 and 4 streams are set and classified according to their size and presence or absence of fish with Type 5 streams (intermittently flowing drains) having no setback requirements.

21 CAO-defined wetlands are classified by a system modeled after the Department of Ecology's four-
 22 tiered rating system. This allows the County to distinguish between the most environmentally
 23 significant wetlands (Type 1) and those minor wetlands having slight to moderate function and
 24 value (Type 4). Vegetative management zones have been established that relate to the wetland
 25 type and are used to protect them.

27 As it was merged into the CAO, the County's 1985 Flood Hazard Ordinance was updated to
 28 meet minimum federal and state requirements to maintain eligibility in the National Flood
 29 Insurance Program. Development meeting the vegetative management zoning requirements
 30 from nearby streams and wetlands, but remain in the 100-year floodplain, are processed
 31 through the flood hazard permit system administered directly by the Building Department.

33 The GMA also requires local jurisdictions to designate five critical areas and adopt development
 34 regulations which protect these them (RCW 36.70A.170(1)(d)). The Washington Administrative
 35 Code (WAC) Chapter 365-190 identifies "Minimum Guidelines to Classify Agriculture, Forest,
 36 Mineral Lands and Critical Areas" (hereafter referred to as *Minimum Guidelines*). Yakima County
 37 is required to consider the definitions found in the *Minimum Guidelines* when designating envi-
 38 ronmentally sensitive areas. The general extent and scope of certain critical areas, such as the
 39 100-year floodplain, over steepened slopes and wildlife habitat areas are depicted on the Yakima
 40 County Geographic Information System (GIS). Yakima County also maintains a more detailed
 41 series of maps specifically for administering its Critical Areas Ordinance, these too are located in
 42 GIS.

1 The following description summarizes the definition of each critical area according to the
2 *Minimum Guidelines*, with some discussion of their functions and importance:

3

4 **1. Wetlands**

5 Wetlands are areas inundated or saturated by surface or groundwater at a frequency and
6 duration sufficient to support vegetation typically adapted to saturated soil conditions. Wetlands
7 provide critical ecological functions including flood storage, water quality improvement,
8 groundwater recharge, fish and wildlife habitat, and carbon sequestration.

9 Washington State uses the Eastern Washington Wetland Rating System (2014, updated 2018) to
10 classify wetlands by category based on functions and values. Category I wetlands are rare, high-
11 functioning systems requiring the highest level of protection. Categories II through IV receive
12 progressively less stringent protection based on their functions and replacement potential.

13 Yakima County's wetlands range from high-elevation montane systems in the Cascades to
14 riparian wetlands along rivers and streams to agricultural wetlands in the valley floor. The 2026
15 BAS update will incorporate the latest wetland science including updated buffer requirements
16 and mitigation ratios.

17 **2. Critical Aquifer Recharge Areas**

18 Aquifer recharge areas are areas with critical recharging effects on aquifers used for potable
19 water supplies. These areas are characterized by permeable soils, shallow water tables, and
20 significant connections between surface water and groundwater systems.

21 Protection of aquifer recharge areas is essential for maintaining water supply quantity and
22 quality. The Washington State Department of Health has mapped Wellhead Protection Areas and
23 Source Water Protection Areas that must be incorporated into critical areas designations.

24 Yakima County's aquifer systems include both shallow alluvial aquifers and deeper basalt
25 aquifers. The Yakima Basin Integrated Water Plan provides important context for understanding
26 groundwater-surface water interactions and sustainable water management.

27 Critical Aquifer Recharge Areas (CARAs) within Yakima County have been identified and mapped
28 using the Washington State Department of Ecology publication "Critical Aquifer Recharge Area
29 Guidance Document" (Publication 05-10-028, Revised March 2021), and (CITE YBIP GW Studies
30 KVID's ES Engineering et. al study, Vano, et. al 2021, Vacaro, 2009 etc.). Using the procedures set
31 forth by the guidance document, Yakima County has mapped wellhead protection areas, sole
32 source aquifers, susceptible groundwater management areas, special protection areas,
33 moderately or highly vulnerable aquifer recharge areas, and moderately or highly susceptible
34 aquifer recharge areas.

35

36 Some areas in Yakima County are underlain by soils which are highly permeable and allow surface
37 waters to infiltrate into the ground water. Below the surface, the percolating water enters the
38 geologic layer saturating the aquifer and supplying water in sufficient quantities and quality to

1 be used as a resource. These conditions create aquifer recharge areas. Some of these aquifer
 2 recharge areas are highly vulnerable to ground water contamination and depletion. Soils, depth
 3 to ground water and hydraulic conductivity must all be analyzed to determine their vulnerability.

4
 5 CARA's also provide critical flood storage capacity and support overall water availability, making
 6 them particularly vital during extreme weather events such as flooding and prolonged and severe
 7 drought conditions. CARAs maintain groundwater levels that support instream flow and
 8 temperature-moderated stream conditions. The dynamic groundwater-surface water exchange
 9 within these areas support hyporheic zones that filter pollutants and provide critical habitat for
 10 salmon and other native fish, wildlife, and plant species wetlands and riparian areas.

11
 12 Aquifer recharge represents a fundamental component of the County's Growth Management Act
 13 Natural Settings and Hazards elements, enhancing regional resilience against extreme weather
 14 impacts while serving as a key sustainability measure to safeguard Yakima County's agricultural
 15 economy and natural resource heritage.

16

17 3. Fish and Wildlife Habitat Conservation Areas

18 Fish and Wildlife Habitat Conservation Areas (FWHCAs) include areas with primary association
 19 for endangered, threatened, sensitive, or candidate species, as well as habitat for species of local
 20 importance. This includes both aquatic and terrestrial habitats.

21 In Yakima County, FWHCAs include habitat for several ESA-listed species including steelhead, and
 22 bull trout. The Yakima River and its tributaries provide critical spawning and rearing habitat for
 23 anadromous fish. Terrestrial habitats support species including sage grouse, ferruginous hawks,
 24 and numerous other species of concern.

25 The 2026 update will incorporate updated Priority Habitats and Species data from Washington
 26 Department of Fish and Wildlife, as well as emerging science on climate impacts to habitat
 27 suitability and species distribution.

28 "Fish and wildlife habitat conservation" means land management for maintaining populations of
 29 species in suitable habitats within their natural geographic distribution so that the habitat
 30 available is sufficient to support viable populations over the long term and isolated
 31 subpopulations are not created. This does not mean maintaining all individuals of all species at
 32 all times, but it does mean not degrading or reducing populations or habitats so that they are no
 33 longer viable over the long term.

34
 35 Yakima County contains large areas of some of the most diverse and unique fish and wildlife
 36 habitat found anywhere in the country. Habitat types range from upland forest to high arid
 37 desert. Lakes, wetlands, pristine streams, forests, shrub-steppe and alpine meadows provide
 38 support for a variety of plants, fish and wildlife species. Protection of these environments provide
 39 places where animals can find food, water, shelter and security, and act as gene pools to assure
 40 continued genetic diversity. Large intact blocks of these habitat parcels also provide critical

Commented [KW15]: New section recognizes the need and value of managed aquifer recharge for drought resilience and flood storage/protection. This is in addition to the existing emphasis on drinking water quality through well head protection (Yakima County Dept. of Health). This also brings CARA's in line with the general Critical Area Ordinance realm of environmental protection.

1 movement corridors that allow animals to disperse across the landscape, which is vital to their
2 continued existence on the landscape.

3
4 In addition to supporting fish and wildlife populations, habitat diversity and types can provide
5 biological indicators of the health of the environment. Habitat conservation provides for water
6 quality protection, flood control and preservation of biological diversity.

7
8 Fish and wildlife need food, water and shelter. Locations such as riparian (streamside), upland
9 areas meet these needs and are called habitat areas. Riparian areas describe the interface
10 between land and a river or stream. These are ecologically important transition areas that
11 support unique plant and animal communities adapted to the moist conditions near water
12 bodies. Riparian management zones refer to vegetated areas maintained along waterways to
13 help filter pollutants, prevent erosion, and provide fish and wildlife habitat. They include
14 wetlands, bank vegetation, and understory, midstory and canopy tree and shrub assemblages.

15
16 The Minimum Guidelines (WAC 365-190-130(2)) identify critical fish and wildlife habitat as the
17 following (a) areas with which endangered, threatened and sensitive species have a primary
18 association; (b) habitats and species of local importance; (e) naturally occurring ponds under
19 twenty acres and their submerged aquatic beds that provide fish or wildlife habitat; (f) waters of
20 the state; (g) lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal
21 entity; and, (h) state natural area preserves, natural resource conservation areas, and state
22 wildlife areas.

23
24 Fish and wildlife habitat conservation areas are protected through Yakima County's Critical Area
25 Ordinance and Shoreline Master Program. Critical areas and shoreline jurisdiction mapping is
26 available at www.yakimap.com. Projects that are proposed in fish and wildlife habitat
27 conservation areas are evaluated on a case by case basis. When required, Yakima County
28 provides notice of proposed projects to other agencies, such as the Washington Department of
29 Fish and Wildlife, who can require their own permits and/or suggest project design revisions or
30 mitigation to protect species or their habitat. In addition, projects that are not exempt from
31 environmental review under the State Environmental Policy Act (SEPA) require the proponent to
32 assess impacts to species of importance and their habitat. The County, along with the input of
33 other agencies, can require project design revisions or mitigation to protect species of
34 importance and their habitat.

35
36 Preserving a wide range of habitats provides numerous benefits to County residents, including:
37 ensuring the protection of rare species and maintaining sensitive ecosystems; reaping significant
38 economic benefits from commercial and recreational fishing and hunting; preserving of cultures,
39 lifestyles, and livelihood which center on fish and wildlife resources; and providing aesthetic and
40 open space values which contribute to the overall quality of life.

41
42

1 **4. Frequently Flooded Areas**

2 Frequently flooded areas are lands subject to a one percent or greater annual chance of flooding
 3 (the 100 and 500-year floodplain). These areas are identified through FEMA Flood Insurance Rate
 4 Maps and supplemental hydrologic and hydraulic studies.

5 Floodplain protection serves dual purposes: protecting public health and safety from flood
 6 hazards and maintaining the natural functions of floodplains including flood storage,
 7 groundwater recharge, and riparian habitat. Climate change is increasing flood risk in many areas
 8 through changes in precipitation patterns and snowmelt timing.

9 Yakima County must incorporate updated FEMA flood maps and consider the impacts of climate
 10 change on future flood risk. Channel migration zones must also be identified for alluvial rivers
 11 where lateral channel movement poses risks to development.

12 Flooding is the most commonly occurring natural disaster in Yakima County, posing threats to
 13 lives, properties, and resources. Floods occur when a stream or river receives more water than
 14 its channel can accommodate. Floods can originate from natural causes such as heavy rainfall or
 15 snowmelt. However, human activities such as building can often increase the frequency,
 16 magnitude and displacement of the flood, hence causing flooding in other areas of the river.
 17 Frequently flooded areas are normally adjacent to rivers or other water bodies and include the
 18 entire 100-year floodplain, that area which has a one percent chance of flooding in a given year.
 19 The floodplain receives water which overflows from the main floodway of a stream or river.

21 Flood plains and other areas subject to flooding (wetlands) perform important hydrologic
 22 functions including storing and slowly releasing floodwaters, reducing floodwater velocities, and
 23 settling and filtering sediment. Frequently flooded areas provide natural areas for wildlife and
 24 fisheries habitat, recreation areas and rich agricultural lands. Development in frequently flooded
 25 areas diminishes these values and increases risk to people and property. Building in flood hazard
 26 areas can also result in additional costs for flood protection measures to protect life, ecological
 27 functions, and property.

29 Loss of riparian and floodplain function occurs when areas are improperly developed. This can
 30 increase impermeable surfaces and the volume of storm water released directly into streams,
 31 rather than being absorbed by vegetation or soil. Similarly, unsustainable logging of forest lands
 32 can increase storm water runoff, erosion, and sedimentation. The result is an increase in the area
 33 covered by floodwaters. Structures built in flood prone areas are often damaged or destroyed by
 34 floods.

36 Frequently Flooded Areas (FFA), are defined as the floodway, flood fringe, the 100 and 500 year
 37 floodplain, flood zones, and Special Flood Hazard Areas by the Federal Emergency Management
 38 Agency (FEMA) under the National Flood Insurance Act. Preliminary and updated Flood Insurance
 39 Rate, or FIRM, maps, floods of records, and mapped channel migration zones provide spatial
 40 boundaries for FFA's.

Commented [KW16]: The majority of SMP ORD language will be referenced in 16C.05 Frequently Flooded Areas/Flood Hazard 8th Areas, Wetlands, CARAs and the other CAO sections.

Commented [KW17]: Title 22 INSERT
 SMP INSERT See p43 **SHORELINES:**
 PURPOSE STATEMENT NS 7 and Title 22 "hazard" and ref. CH3 Natural Hazard content

Commented [KW18]: Corrected: Loss of riparian and floodplain function occurs when areas are improperly developed. This can increase impermeable surfaces and the volume of storm water released directly into streams, rather than being absorbed by vegetation or soil. Similarly, unsustainable logging of forest lands can increase storm water runoff, erosion, and sedimentation. The result is an increase in the area covered by floodwaters. Structures built in flood prone areas are often damaged or destroyed by floods.

1 Projects that are proposed on parcels in special flood hazard areas are reviewed under the
2 authority of Yakima County's Critical Area Ordinance and Shoreline Master Program and require
3 a flood hazard determination or flood hazard permit. Projects within special flood hazards areas
4 must comply with building standards that are designed to protect property and not cause a rise
5 in the base flood elevation.

6 **5. Geologically Hazardous Areas**

7 Geologically hazardous areas include areas susceptible to erosion, sliding, earthquake, volcanic
8 activity, or other geological events. These areas pose risks to health, safety, and property and
9 require careful site-specific evaluation for development proposals.

10 Yakima County's geological hazards include landslide hazard areas (particularly in areas with
11 steep slopes and unstable soils), seismic hazard areas (the county lies within a seismically active
12 region), volcanic hazard areas (proximity to Mount Adams and Mount Rainier), and erosion
13 hazard areas (wind and water erosion in agricultural areas).

14 The 2026 update will incorporate updated geological hazard mapping from the Washington
15 Geological Survey and consider climate change impacts on landslide risk from changing
16 precipitation patterns.

17 Geologic Hazards pose a threat to the health and safety of County citizens when development
18 and associated infrastructure is sited in areas of significant hazard. In some cases the risk to
19 proposed activities, and/or the environment within or near geologic hazards can be reduced (or
20 mitigated) to acceptable levels by engineering design, or modified construction practices. In
21 areas where these measures are not sufficient to reduce the risk from geologic hazards, building
22 or disturbance is best avoided. Land use controls should reflect the degree of hazard and risk.
23

24 Alluvial areas and drainage corridors constitute particularly significant components of
25 geologically unstable critical areas. Alluvial zones, formed by sediment deposits from flowing
26 water, create inherently unstable soils prone to erosion, liquefaction, and lateral movement.
27 These areas, combined with steep drainage channels and associated riparian corridors, form
28 interconnected hydrological systems where geological instability can cascade through entire
29 watersheds. Development activities in these sensitive areas can trigger erosion processes that
30 extend far beyond the immediate project site, affecting both upstream and downstream areas.
31

32 A critical function of controlling development in these geologically unstable areas is protecting
33 receiving waters from excessive sediment input and preventing hydrological alteration that
34 accelerates stream course and bank erosion. When alluvial soils and drainage areas are disturbed,
35 the resulting increase in sediment loading can severely degrade water quality in downstream
36 receiving waters, harm aquatic ecosystems, and reduce the capacity of water bodies to support
37 beneficial uses. Additionally, alterations to natural drainage patterns and the removal of
38 stabilizing vegetation can fundamentally change hydrological processes, increasing surface
39 runoff velocity and volume, which in turn accelerates channel incision that can undermine
40 adjacent infrastructure and natural systems.

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1 Characteristic reasons for controlling land-use activities proposed in areas of geological
2 hazardous areas include:

- 5 1. Preventing damage or loss of property;
- 6 2. Protecting water quality, river and stream hydrological functions, and preventing
7 increased flooding risk and hazard.;
- 8 3. Minimizing public expenditures for repairing or preventing damage to public and private
9 property;
- 10 4. Protecting aesthetic resources (e.g. integrity of steep slopes) and natural character of
11 the landscape.

12 For example, failing to control drainage on development sites up-gradient from a landslide hazard
13 or steep slope area could result in slope failure. This can lead to loss of life, is difficult and
14 expensive to mitigate, can impact the landscape and degrade water quality, and exacerbate
15 flooding. Projects proposed in or near a mapped geological hazard are evaluated on a case by
16 case basis under the authority of Yakima County's Critical Area Ordinance and Shoreline Master
17 Program. The proponent may be required to prepare a geological hazard report (typically
18 mandatory in identified landslide areas) and receive a development authorization. Projects that
19 could potentially contribute to an increase in the hazard, or in the risk to life and property on or
20 off the site, would be required to mitigate risks to an acceptable level through design and
21 construction practices.

23 **2.3.2 Wetlands**

24 Wetlands are areas which have saturated soils or standing water for at least part of the year,
25 contain hydric soils, and which contain water-loving vegetation. Areas such as swamps, marshes,
26 and bogs are generally considered wetlands. The Critical Areas Ordinance uses a four tier rating
27 system for wetlands, recognizing that some wetland systems are more valuable or irreplaceable
28 than others. The rating system is based on the wetland's functions and values, degree of
29 sensitivity to disturbance, rarity, and ability to compensate for destruction or degradation (WAC
30 365-190-090).

31 Wetlands are economically, biologically, and physically valuable resources to Yakima County.
32 They are the most biologically productive ecosystems in nature, even though they constitute only
33 a small percentage of the County's total landscape. For many species, including waterfowl, birds,
34 fish, reptiles, invertebrates, and mammals, wetlands are essential habitat for feeding, nesting,
35 breeding, and cover. Illustrative of wetland importance is the fact that at least one third of the
36 state's endangered and threatened species require wetlands for their survival. The state
37 Department of Fish and Wildlife lists over 175 wildlife species that use wetlands for primary
38 feeding habitat and 140 species that use them for primary breeding habitat. Since the turn of the
39 century, the Department of Fish and Wildlife estimates that Washington State has lost half of its
40 original wetlands. Consequently, the functions and values of the existing wetlands increase and
41 require more protection.

1 Wetlands are important nursery and spawning areas and provide nutrient sources critical to the
 2 survival of fisheries. These fisheries in turn support a strong commercial and recreational
 3 industry. Wetlands are also potential sources for harvesting of marsh vegetation and aquaculture
 4 and under proper management, forested wetlands are an important source of timber. Wetlands
 5 play important functions in local and regional hydrologic cycles. These functions include:

- 6 1. Lessening flood damage by slowing and storing flood waters;
- 7 2. Reducing shoreline erosion by waves and currents;
- 8 3. Protecting water quality by filtering out sediment and other water pollutants;
- 9 4. Biological processes that recycle and restore nutrients; and
- 10 5. Storing and recharging water to both surface and ground water systems, thereby helping
 11 to maintain stream flows during periods of low flow and replenishing drinking water
 12 supplies.

Commented [KW19]: Other processes to be more EA. WA.? Or just "reducing shoreline erosion by protecting....stabilizing...."

14
 15 Wetland areas within Yakima County have been identified through the National Wetland
 16 Inventory (NWI) mapping efforts, as well as a landscape assessment by County staff. "Potential
 17 Wetland" locations are available through Geographic Information System (GIS) mapping efforts
 18 both within Yakima County Public Services and available online at www.yakimap.com. This
 19 mapping system, along with aerial photography interpretation, is used to review projects that
 20 have the potential to disturb wetland areas. Both project level and non project level actions are
 21 reviewed on a case-by-case basis to ensure there is no loss of wetland functions and values.
 22 Depending on the location, protection of the wetlands are accomplished through development
 23 standards in the Critical Areas Ordinance or Shoreline Master Program.

24 **2.3.3 Critical Aquifer Recharge Areas**

25 Ground water is the primary source of drinking water for most rural County residents. The city of
 26 Yakima is the only city within the County that uses surface water as a primary source (Naches
 27 River). All other jurisdictions currently depend upon the County's aquifers as their primary source
 28 of water. Once ground water is contaminated it is difficult, costly, and often impossible to clean
 29 up. Some contaminants like microbial organisms can cause sickness and discomfort while others
 30 like organic chemicals, inorganic metals, and radio nuclides can cause neurological disorders,
 31 cancer, mutations and even death.

Commented [KW20]: Update to ID the new Nelson diversion,
 and the planned Naches expansion of the WWTP?

33
 34 Critical Aquifer Recharge Areas (CARAs) within Yakima County have been identified and mapped
 35 using the Washington State Department of Ecology publication "Critical Aquifer Recharge Area
 36 Guidance Document" (Publication 05-10-028, Revised March 2021). Using the procedures set
 37 forth by the guidance document, Yakima County has mapped wellhead protection areas, sole
 38 source aquifers, susceptible groundwater management areas, special protection areas,
 39 moderately or highly vulnerable aquifer recharge areas, and moderately or highly susceptible
 40 aquifer recharge areas. Some areas in Yakima County are underlain by soils which are highly
 41 permeable and allow surface waters to infiltrate into the ground water. Below the surface, the
 42 percolating water enters the geologic layer saturating the aquifer and supplying water in

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1 sufficient quantities and quality to be used as a resource. These conditions create aquifer
2 recharge areas. Some of these aquifer recharge areas are highly vulnerable to ground water
3 contamination. Soils, depth to ground water and hydraulic conductivity must all be analyzed to
4 determine their vulnerability.

5

6 **2.3.4 Fish and Wildlife Habitat Conservation Areas**

7 "Fish and wildlife habitat conservation" means land management for maintaining populations of
8 species in suitable habitats within their natural geographic distribution so that the habitat
9 available is sufficient to support viable populations over the long term and isolated
10 subpopulations are not created. This does not mean maintaining all individuals of all species at
11 all times, but it does mean not degrading or reducing populations or habitats so that they are no
12 longer viable over the long term. Yakima County contains large areas of some of the most diverse
13 and unique fish and wildlife habitat found anywhere in the country. Habitat types range from
14 upland forest to high arid desert. Lakes, wetlands, pristine streams, forests, shrub steppe and
15 alpine meadows provide support for a variety of plants, fish and wildlife species. Protection of
16 these environments provide places where animals can find food, water, shelter and security, and
17 act as gene pools to assure continued genetic diversity. Large intact blocks of these habitat
18 parcels also provide critical movement corridors that allow animals to disperse across the
19 landscape, which is vital to their continued existence on the landscape.

20

21 In addition to supporting fish and wildlife populations, habitat diversity and types can provide
22 biological indicators of the health of the environment. Habitat conservation provides for water
23 quality protection, flood control and preservation of biological diversity.

24

25 Fish and wildlife need food, water and shelter. Locations such as riparian (streamside), upland
26 areas meet these needs and are called habitat areas. The *Minimum Guidelines* (WAC 365-190-
27 130(2)) identify critical fish and wildlife habitat as the following (a) areas with which endangered,
28 threatened and sensitive species have a primary association; (b) habitats and species of local
29 importance; (c) naturally occurring ponds under twenty acres and their submerged aquatic beds
30 that provide fish or wildlife habitat; (d) waters of the state; (e) lakes, ponds, streams, and rivers
31 planted with game fish by a governmental or tribal entity; and, (f) state natural area preserves,
32 natural resource conservation areas, and state wildlife areas.

33

34 Fish and wildlife habitat conservation areas are protected through Yakima County's Critical Area
35 Ordinance and Shoreline Master Program. Critical areas and shoreline jurisdiction mapping is
36 available at . Projects that are proposed in fish and wildlife habitat conservation areas are
37 evaluated on a case by case basis. When required, Yakima County provides notice of proposed
38 projects to other agencies, such as the Washington Department of Fish and Wildlife, who can
39 require their own permits and/or suggest project design revisions or mitigation to protect species
40 or their habitat. In addition, projects that are not exempt from environmental review under the
41 State Environmental Policy Act (SEPA) require the proponent to assess impacts to species of
42 importance and their habitat. The County, along with the input of other agencies, can require
43 project design revisions or mitigation to protect species of importance and their habitat.

1 Preserving a wide range of habitats provides numerous benefits to County residents, including:
 2 ensuring the protection of rare species and maintaining sensitive ecosystems; reaping significant
 3 economic benefits from commercial and recreational fishing and hunting; preserving of cultures,
 4 lifestyles, and livelihood which center on fish and wildlife resources; and providing aesthetic and
 5 open space values which contribute to the overall quality of life.
 6

7

8 **2.3.5 Frequently Flooded Areas**

9 ~~Flood plains and other areas subject to flooding (wetlands) perform important hydrologic~~
 10 ~~functions including storing and slowly releasing floodwaters, reducing floodwater velocities, and~~
 11 ~~settling and filtering sediment. Frequently flooded areas provide natural areas for wildlife and~~
 12 ~~fisheries habitat, recreation areas and rich agricultural lands. Development in frequently flooded~~
 13 ~~areas diminishes these values and can present a risk to persons and property on the development~~
 14 ~~site and/or downstream from the development. Building in flood hazard areas also results in~~
 15 ~~additional costs for installing flood protection measures to protect life and property. Additional~~
 16 ~~costs are incurred when flooded property must be repaired.~~

17

18 ~~Flooding is the most commonly occurring natural disaster in Yakima County, posing threats to~~
 19 ~~lives, properties, and resources. Floods occur when a stream or river receives more water than~~
 20 ~~its channel can accommodate. Floods can originate from natural causes such as heavy rainfall or~~
 21 ~~snowmelt. However, human activities such as building can often increase the frequency,~~
 22 ~~magnitude and displacement of the flood, hence causing flooding in other areas of the river.~~
 23 ~~Frequently flooded areas are normally adjacent to rivers or other water bodies and include the~~
 24 ~~entire 100 year floodplain, that area which has a one percent chance of flooding in a given year.~~
 25 ~~The floodplain receives water which overflows from the main floodway of a stream or river.~~

26

27 ~~Loss of vegetation and soil often occurs when areas are developed. This causes a loss in~~
 28 ~~permeable surfaces, thereby increasing the volume of storm water which is released directly into~~
 29 ~~streams, rather than being absorbed by vegetation or soil. In a similar manner, extensive logging~~
 30 ~~of forest lands can increase storm water runoff erosion, and sedimentation. The result of these~~
 31 ~~actions is an increase in the area which can be expected to be covered by floodwaters. Structures~~
 32 ~~built in flood prone areas are often damaged or destroyed by floods. At times, people's lives are~~
 33 ~~jeopardized.~~

34

35 ~~Frequently Flooded Areas (FFA), defined as floodways, 100-year floodplain as identified by the~~
 36 ~~Federal Emergency Management Agency (FEMA), preliminary updated FIRM maps, floods of~~
 37 ~~records and mapped channel migration zones. Projects that are proposed on parcels that have~~
 38 ~~mapped special flood hazard areas are reviewed under the authority of Yakima County's Critical~~
 39 ~~Area Ordinance and Shoreline Master Program and require a flood hazard determination or flood~~
 40 ~~hazard permit. Projects within special flood hazards areas must comply with building standards~~
 41 ~~that are designed to protect property and not cause a rise in the base flood elevation.~~

Commented [KW21]: The majority of SMP ORD language will be referenced in 16C.05 Frequently Flooded Areas/Flood Hazard 8th Areas, Wetlands, CARAs and the other CAO sections.

Commented [KW22]: Title 22 INSERT
 SMP INSERT See p43 **SHORELINES**
 PURPOSE STATEMENT NS 7 and Title 22 "hazard" and ref. CH3
 Natural Hazard content

Commented [KW23]: Corrected: Loss of riparian and floodplain function occurs when areas are improperly developed. This can increase impermeable surfaces and the volume of storm water released directly into streams, rather than being absorbed by vegetation or soil. Similarly, unsustainable logging of forest lands can increase storm water runoff, erosion, and sedimentation. The result is an increase in the area covered by floodwaters. Structures built in flood prone areas are often damaged or destroyed by floods.

1 **2.3.6 Geologically Hazardous Areas**2 **2.3.7 Cultural Resources**

3 The location of many areas of cultural significance are unknown to most property owners and
 4 typically will remain confidential to protect their integrity. However, Yakima County utilizes the
 5 Washington State Department of Archaeology and Historic Preservation's (DAHP) archaeological
 6 and historic database and the Yakama Nation's Cultural Resource Program to determine if
 7 prospective land use permits may impact archaeological or cultural resources. As part of permit
 8 review, if a proposal requires public notice Yakima County notifies the Yakama Nation Cultural
 9 Resources office soliciting comments regarding cultural resources. In addition, if the property is
 10 within 500' of an identified archaeological or cultural resource site, as determined by DAHP's
 11 database applicants will be required to consult with ~~both~~ the Confederated Tribes and Bands of
 12 the Yakama Nation (Yakama Nation) and DAHP to determine if their project has ~~any~~ potential ~~to~~
 13 impacts ~~to these~~ resources. ~~For On~~ project ~~permits~~ beyond 500' of an identified archaeological
 14 or cultural resource site, Yakima County will rely on the Yakama Nation comments on projects
 15 that require notification, as well as DAHP's comments through the SEPA register.

16
 17
 18 **2.3.8 Critical Areas Ordinance**
 19 ~~Following a number of hearings and considerable public testimony, Yakima County adopted a~~
 20 ~~Critical Areas Ordinance (CAO) in July, 1994 that focused on the protection of twenty selected~~
 21 ~~stream corridors. This original ordinance was challenged, and under orders from the Eastern~~
 22 ~~Washington Growth Management Hearings Board, was amended by the Board of Yakima County~~
 23 ~~Commissioners in July, 1995. In compliance with the requirements of the Growth Management~~
 24 ~~Act, Yakima County updated the 1995 CAO in December 2007. The 2007 update of the CAO~~
 25 ~~started in May of 2004 with three public workshops at three different geographic locations to~~
 26 ~~introduce the CAO draft update strategy. At that time, the draft update strategy was dispersed~~
 27 ~~throughout the county and was used to encourage discussion between the public and the project~~
 28 ~~staff so that general strategies could be understood before writing the ordinance.~~

29
 30 ~~From May 2004 to August 2004, planning staff held twenty-five meetings with interest groups,~~
 31 ~~local and State agency representatives, local government groups, The County Wide Planning~~
 32 ~~Policy Committee, and the Yakima County Planning Commission in order to solicit comments on~~
 33 ~~the draft update strategy. From these meetings, project staff compiled a list of all comments~~
 34 ~~received on the draft update strategy. Comments received were closely reviewed and compiled~~
 35 ~~them into a separate document for public review.~~

36
 37 ~~After reviewing all comments, staff applied edits to the update strategy. With the edited update~~
 38 ~~strategy, staff ultimately received final consensus and input on the broad strategy concepts and~~
 39 ~~began to draft the more technical draft ordinance language (the CAO). Input continued to be~~
 40 ~~solicited from a broad section of interests and the public throughout the update process,~~
 41 ~~including roundtable meetings with the Planning Commission, which played a large role in how~~
 42 ~~Yakima County met State requirements for updating the CAO.~~

Commented [KW24]: This para. Is dated and does not effectively convey and outcome, remedy or relevant information. It is inarticulate, superfluous and is stricken.

Commented [KW25]: Edited for clarity, flow, sentence structure and grammatical precision.

Commented [KW26R25]: Corrected paragraph as follows:

Between May and August 2004, planning staff held a series of meetings with interest groups, local and State agency representatives, local government groups, a County-Wide Planning Policy Committee, and the Yakima County Planning Commission to solicit comments on the draft update strategy. Staff then compiled a list of all comments received for public review and applicable consideration.

Staff ultimately received final consensus and input on the broad strategy concepts and completed the draft critical area ordinance language. Final edits to the CAO were limited to those required by state law, or those necessary to incorporate Best Available Science (BAS).

1 The 2017 update of the CAO took a more simplistic approach than the 2007 CAO update. Text
 2 edits to the CAO were limited to those required by state law, or those necessary to accommodate
 3 changes in Best Available Science (BAS).

4
 5 Since a good deal of Yakima County's critical areas, like floodplains, wetlands and important
 6 habitat, lie along our numerous stream corridors, the focus of the CAO is to protect these "hydro-
 7 logically related critical areas." The stream corridor and other hydrologically related critical areas
 8 are designated critical areas and include one or more of the following features:

9
 10 (1) Any floodway and floodplain identified as a special flood hazard area. Special flood
 11 hazard areas are those identified by the Federal Insurance Administration in the Flood
 12 Insurance Study for Yakima County which, together with accompanying Flood Insurance
 13 Rate Maps and frequently flooded areas are hereby adopted by reference and declared
 14 to be a part of this title as set forth in Chapters 16C.05.20 through 16C.05.72;
 15
 16 (2) Perennial and intermittent streams, excluding ephemeral streams, including the stream
 17 main channel and all secondary channels within the Ordinary High Water Mark;
 18
 19 (3) Naturally occurring ponds under twenty acres and their submerged aquatic beds; and
 20 man-made lakes and ponds created within a stream channel designated under (2) above;
 21
 22 (4) All wetlands, that meet the definition found in Section 16C.02.425, as required by WAC
 23 365-190-080(1), and as designated in Section 16C.07.02(1) of the wetland chapter;
 24
 25 (5) Where specifically cited, any flood-prone area not included in a designated floodway and
 26 floodplain, but indicated as flood-prone by U.S. Soil Conservation Service soil survey data
 or geologic evidence developed through professional geologists or engineers (i.e. specific
 flood frequency, stream channel migration), by information observable in the field such
 as soils or geological evidence, or by materials such as flood studies, topographic surveys,
 photographic evidence or other data;
 27
 28 (6) A buffer area extending on a horizontal plane from the ordinary high water mark of a
 29 stream channel, lake, or pond, designated in this section or from the edge of a wetland
 30 designated in this section according to the distances set forth in Section 16C.06.16
 (Vegetative Buffers).

31
 32 Each stream in the County is typed according to their relative function and value into a five tiered
 33 ranking system. Type 1 Streams and Shoreline lakes and ponds are protected by the County's
 34 Shoreline Master Program (SMP). Vegetative buffers along the other four stream types vary ac-
 35 cording to their size with Type 5 streams (drains) having no buffer requirements.

36
 37 CAO-defined wetlands are classified by a system modeled after the Department of Ecology's four-
 38 tiered rating system. This allows the County to distinguish between the most environmentally
 39 significant wetlands (Type 1) and those minor wetlands having slight to moderate function and
 40 value (Type 4). Vegetative buffers have been established that relate to the wetland type and are
 41 used to protect them.

Commented [KW27]: Corrected:

Yakima County's critical areas, including floodplains, wetlands, fish and wildlife habitat, critical aquifers, and geologically unstable areas are associated with stream corridors. The focus of the CAO is to protect these "hydrologically related areas." These designated critical areas include one or more of the following features:

Commented [KW28]: check

Commented [KW29]: Corrected:

Rivers, Lakes and Streams in the County are categorized according to their relative ecological function and value and annual flow characteristics into a five tiered rank typing system. Type 1 Streams and Shoreline lakes and ponds are protected by the County's Shoreline Master Program (SMP). Vegetative (i.e., Riparian) and other setbacks along Type 2, 3 and 4 streams are set and classified according to their size and presence or absence of fish with Type 5 streams (intermittently flowing drains) having no setback requirements.

1 As it was merged into the CAO, the County's 1985 Flood Hazard Ordinance was updated to meet
2 minimum federal and state requirements to maintain eligibility in the National Flood Insurance
3 Program. Development meeting the vegetative buffering requirements from nearby streams and
4 wetlands, but that will still remain in the 100-year floodplain, are processed through the flood
5 hazard permit system administered directly by the Building Department.

1 earlier spring runoff, higher temperatures, and increased wildfire activity all threatening the
2 County's water security over the next twenty years.

3
4 Today, irrigated agriculture remains the biggest user of water, supporting a \$4.5 billion
5 agricultural economy that produces 71% of the nation's hops, 63% of apples, and 62% of
6 cherries. Yakima County agriculture depends largely on irrigation surface water supplied by the
7 U.S. Bureau of Reclamation's Yakima Project. However, severe drought conditions have
8 dramatically reduced water availability, with junior water rights holders receiving only 40-45%
9 of their full allocations in 2025. The needs of other surface water uses, particularly those
10 dealing with the protection and restoration of anadromous fish runs, have become more critical
11 as low flows and high water temperatures threaten salmon and steelhead populations.

12 Anadromous fish are those species that are born in fresh water and eventually migrate out to
13 sea where they spend a large part of their life, returning to the fresh water stream in which
14 they were hatched to reproduce. Along with the water needs of habitat, the demand for water
15 to serve the County's growing urban and rural areas continues to increase, creating intensified
16 competition for limited supplies.

17
18 The basin was characterized as over-appropriated in 1904 and Yakima Basin surface water
19 rights were subsequently defined in concert with the U.S. Bureau of Reclamation authorization
20 of the Yakima Project in May of 1905, which is also the priority date of Reclamation's water
21 rights in the Basin. More recent court cases have established that the Yakama Nation has a
22 water right to maintain fish life as a result of the 1855 treaty with the United States, the priority
23 date of that water right is "time immemorial". Since surface waters within the Yakima River
24 Basin are over-appropriated, our dependence on groundwater for domestic uses is likely to
25 continue and may intensify during drought periods. To sustain growth, every resident and
26 jurisdiction within Yakima County must meet the ongoing challenge of protecting and managing
27 increasingly scarce water resources.

28
29 It is now generally accepted that Yakima River basin surface water and groundwater are
30 hydrologically connected. Rural domestic water supply is generally provided from groundwater
31 sources (i.e., private wells). The withdrawal of water from these groundwater sources may have
32 an adverse impact on senior water rights established before and including 1905. RCW
33 90.44.050 provides for the supply of rural domestic water through the use of "exempt wells,"
34 which can pump up to 5,000 gallons per day for residential use. Permit-exempt groundwater
35 withdrawals don't require a water right permit. However, to the extent the groundwater is
36 beneficially used, the water user withdrawing groundwater under the exemption establishes a
37 water right that enjoys the same privileges as a water right permit or certificate obtained
38 directly from Washington State Department of Ecology. Though such withdrawals are "permit
39 exempt," they are still subject to Washington State law regarding the seniority of water
40 withdrawals.

41
42 Water use of any sort is subject to the "first in time, first in right" clause, originally established
43 in historical western water law and now part of Washington State law. This means that a senior

1 right cannot be impaired by a junior right. Seniority is established by priority date—the date an
2 application was filed for a permitted or certificated water right or the date that water was first
3 put to beneficial use in the case of claims and exempt groundwater withdrawals. Although
4 exempt groundwater withdrawals don't require a water right permit, they are always subject to
5 state water law. In some instances, Ecology has had to regulate, stop or reduce groundwater
6 withdrawals when they interfere with prior or "senior" water rights, including instream flow
7 rules. During the recent drought years, these conflicts between groundwater withdrawals and
8 senior surface water rights have become more acute as reduced streamflows threaten both
9 agricultural diversions and fish habitat.

10
11 The 2023-2025 drought crisis has exposed the vulnerability of the County's water supply
12 system. May-June 2025 was the driest period on record in Yakima and Kittitas counties, with
13 the basin receiving less than 5% of normal precipitation over a 60-day period. Temperatures ran
14 2-4°F above normal, accelerating evaporation and crop water demand. Snowpack in the Central
15 Cascades failed to adequately fill reservoirs, leaving them at only 35% of typical levels entering
16 the 2025 irrigation season. Many farmers were forced to fallow fields, reduce plantings, or face
17 complete crop failure, with estimated economic losses between \$161-\$424 million and over
18 6,000 jobs at risk. Irrigation districts such as Roza shut off water supplies for extended periods,
19 and some agricultural operations have permanently closed. Low streamflows and elevated
20 water temperatures have caused fish stranding, migration barriers, and increased mortality for
21 threatened salmon populations. The combined pressures of drought, increased wildfire activity
22 degrading watersheds, and climate-driven shifts in precipitation timing create compounding
23 risks for all water users.

24
25 Climate projections indicate these challenges will intensify. Washington State Department of
26 Ecology officials have characterized the current conditions as "the new normal," with more rain,
27 less snowpack, earlier springs, hotter and drier summers, and an expectation that snow
28 droughts will occur in four out of every ten years. Six of the last ten years have required
29 drought declarations for some part of Washington State. Recent State Court decisions on
30 Washington State Growth Management Act requirements have created a positive duty for
31 Yakima County to ensure that water for development is legally and physically available. Closure
32 of portions of the Yakima Basin to exempt well construction has already occurred in
33 neighboring Kittitas County, significantly affecting development patterns and property values.
34 Therefore, Yakima County must secure future domestic water supply for its projected rural
35 population growth while simultaneously addressing agricultural water needs, fish habitat
36 protection, wildfire recovery, and flood management in an era of unprecedented climate
37 variability. The County's Water Resource System (YCWRS), described in detail in the Utilities
38 Element of Horizon 2046, represents one strategic response to these interconnected water
39 supply challenges.

40
41 As with much of the West, water in Yakima County serves competing, and often conflicting, uses.
42 Securing certainty in our water supply will be a major issue over the next twenty years. Reliable

1 access to water is necessary for direct human uses like household, agriculture, commercial and
2 industrial operations, and for indirect human needs such as habitat and recreation.

3
4 Today, irrigated agriculture is the biggest user of water. Yakima County agriculture depends
5 largely on irrigation surface water supplied U.S. Bureau of Reclamation's Yakima Project. But
6 recently the needs of other surface water uses, particularly those dealing with the protection and
7 restoration of anadromous fish runs, have been argued. Anadromous fish are those species, like
8 salmon and steelhead that are born in fresh water and eventually migrate out to sea where they
9 spend a large part of their life, returning to the fresh water stream in which they were hatched
10 in order to reproduce. Along with the water needs of habitat, the demand for water to serve the
11 County's growing urban and rural areas will significantly increase.

12
13 The basin was characterized as over appropriated in 1904 and Yakima Basin surface water rights
14 were subsequently defined in concert with the U. S. Bureau of Reclamation authorization of the
15 Yakima Project in May of 1905, which is also the priority date of Reclamation's water rights in the
16 Basin. More recent court cases have established that the Yakama Nation has a water right to
17 maintain fish life as a result of the 1855 treaty with the United States, the priority date of that
18 water right is "time immemorial". Since surface waters within the Yakima River Basin are over
19 appropriated, our dependence on ground water for our domestic uses is likely to continue. To
20 sustain growth, every resident and jurisdiction within Yakima County must meet the ongoing
21 challenge of protecting and managing our water resources.

22
23 It is now generally accepted that Yakima River basin surface water and ground water are
24 hydrologically connected. Rural domestic water supply is generally provided from groundwater
25 sources (i.e. private wells). The withdrawal of water from these groundwater sources may have
26 an adverse impact on senior water rights established before and including 1905. RCW 90.44.050
27 provides for the supply of rural domestic water through the use of "exempt wells", which can
28 pump up to 5,000 gallons per day for residential use. Permit exempt groundwater withdrawals
29 don't require a water right permit. However, to the extent the groundwater is beneficially used,
30 the water user withdrawing groundwater under the exemption establishes a water right that
31 enjoys the same privileges as a water right permit or certificate obtained directly from
32 Washington State Department of Ecology. Though such withdrawals are "permit exempt", they
33 are still subject to Washington State law regarding the seniority of water withdrawals.

34
35 Water use of any sort is subject to the "first in time, first in right" clause, originally established in
36 historical western water law and now part of Washington State law. This means that a senior
37 right cannot be impaired by a junior right. Seniority is established by priority date—the date an
38 application was filed for a permitted or certificated water right or the date that water was first
39 put to beneficial use in the case of claims and exempt groundwater withdrawals. Although
40 exempt groundwater withdrawals don't require a water right permit, they are always subject to
41 state water law. In some instances, Ecology has had to regulate, stop or reduce groundwater
42 withdrawals when they interfere with prior or "senior" water rights, including instream flow
43 rules.

1 Recent State Court decisions on the requirements of the Washington State Growth Management
 2 Act and County Land Use plans result in a positive duty for Yakima County to ensure that water
 3 for development is legally and physically available. Closure of the portions of the Yakima Basin
 4 to exempt well construction has already occurred in Kittitas County, which in turn has had effects
 5 on the development patterns and a large effect on the value and marketability of legal lots which
 6 can no longer be developed with the use of exempt wells. Therefore, Yakima County must secure
 7 future domestic water supply for its projected rural population growth.

8 ~~On December 10, 2013, in anticipation of the possibility that the Department of Ecology might, by rule, declare the unavailability of water for development in Yakima County, the Yakima County Board of Commissioners adopted Resolution 399-2013, "In the Matter of the Formation of the Yakima County Water Resource System." Yakima County's Water Resource System (YCWRS) expands its current water systems to address a County wide rural domestic water supply to be available to those who would otherwise rely on the "exempt" well strategy offered by RCW 90.44.050. Yakima County understands that groundwater withdrawal may have effects on senior water rights, including the Yakama Nation Water right for the protection of fish life. Thus, the potential effects of future groundwater withdrawals on senior water users and habitat conditions have been addressed by the County in the technical report title "Assessment of the Availability of Groundwater for Residential Development in the Rural Parts of Yakima County," which was completed on January 2016. The report identifies mitigation strategies for providing water for rural development, while avoiding impacts to flows in main stem reaches and tributaries. To implement the strategies identified in the report the County has developed the Yakima County's Water Resource System (YCWRS). A more detailed description of Yakima County Water Resource System is outlined in the Utilities Element of *Horizon 2040*.~~

Commented [KW30]: Replace with YBIP language

25
 26 **2.9 Water Quality**
 27 ~~The water quality of our streams, lakes, and ground water influences the domestic, economic, recreational, and natural environments of Yakima County. We all need clean water for daily use in our homes. Residents and tourists alike use our lakes and streams extensively for recreational activities such as boating, fishing, and swimming. Many industries require clean water for manufacturing processes. Some uses, such as commercial fishing and fish hatcheries, are dependent on a constant source of high quality water. As growth and development have increased, so have the problems associated with maintaining water quality. A specific area of water quality concern is in the Lower Yakima Valley, where high levels of nitrates have contaminated drinking water supplies.~~

Commented [KW31]: Update with YCWRS 2024 or later language

36
 37 ~~In 2011, the Lower Yakima Valley Groundwater Advisory Committee (GWAC) developed a Groundwater Management Area program which is a multi agency, citizen based, coordinated effort to reduce groundwater nitrate contamination in the lower Yakima Valley. Yakima County, as the GWMA lead agency under RCW 173-100-080, was responsible for development of the program that shows the responsibilities and roles of each of the advisory committee members as agreed upon by the committee. The GWAC was responsible for overseeing the development of the program. The primary goal of the GWMA is to reduce concentrations of nitrate in~~

Commented [KW32]: Up-to-date?

1 ~~groundwater to below Washington State drinking water standards. The program objectives have~~
2 ~~been divided into six key categories: data and monitoring, problem identification, measures to~~
3 ~~reduce groundwater contamination, education, drinking water systems and other general~~
4 ~~objectives. The GWMA is currently working towards the development of best management~~
5 ~~practices (BMPs) and strategies for implementing those BMPs such as technical assistance,~~
6 ~~education, ordinances, support enforcement of new and existing laws and ordinances and the~~
7 ~~coordination with other regulatory and nonregulatory programs. The anticipated conclusion of~~
8 ~~the GWMA is 2018.~~

9
10 The water quality of our streams, lakes, and groundwater influences the domestic, economic,
11 recreational, and natural environments of Yakima County. Many industries require clean water
12 for manufacturing processes. As growth and development have increased, so have the problems
13 associated with maintaining water quality, while the three consecutive years of severe drought
14 (2023-2025) have intensified water quality challenges through reduced streamflows, elevated
15 water temperatures, and concentrated pollutant loads that threaten both human health and
16 aquatic ecosystems.

17
18 A critical area of ongoing water quality concern is in the Lower Yakima Valley. In 2012, the Lower
19 Yakima Valley Groundwater Advisory Committee (GWAC) was established. In 2019, the GWAC
20 adopted 64 recommendations to reduce nitrate loading and meet drinking water standards, and
21 the Washington State Department of Ecology certified the plan, which continues implementation
22 through partnerships involving federal, state, tribal, county, and local health agencies to protect
23 public health while addressing the complex sources of contamination. In December 2024, a U.S.
24 District Court ordered three dairies in the Lower Yakima Valley to test drinking water wells within
25 3.5 miles downgradient of their operations and provide alternative water sources where nitrate
26 levels exceed drinking water standards, reflecting ongoing enforcement efforts to protect
27 communities from contamination sources.

28
29 Beyond nitrate contamination, water quality in the Yakima Basin faces intensifying challenges
30 from elevated water temperatures, particularly during the summer months when drought
31 conditions reduce streamflows and increase thermal stress on aquatic life. During the 2024
32 drought, water temperatures in the lower Yakima River approached record highs in the 80s
33 Fahrenheit, creating thermal barriers that prevent salmon and steelhead from migrating
34 between the ocean and spawning habitats. These extreme temperatures cause fish stranding,
35 increased predation, blocked migration routes, and elevated mortality rates for threatened and
36 endangered species including sockeye salmon, steelhead, coho salmon, and federally protected
37 bull trout. Low flows combined with high water temperatures compromise dissolved oxygen
38 levels, concentrate pollutants, and degrade critical spawning and rearing habitats that are
39 essential to both the cultural traditions of the Yakama Nation under the 1855 Treaty and the
40 region's recreational fishing industry.

41
42 Climate variability and the shift from snow-dominant to rain-dominant precipitation patterns are
43 fundamentally altering the basin's hydrologic regime and water quality dynamics. Earlier

July 2026 – GMA Update 2046
May 1997 – GMA Update June 2017

1 snowmelt, extended low-flow periods during summer, and reduced cold-water refuges for
2 migrating fish compound the effects of chronic water quality stressors. In response to these
3 interconnected challenges, the Yakima Basin Integrated Plan (YBIP)—a collaboration of state,
4 federal, tribal, business, and community organizations—provides a comprehensive 30-year
5 strategy to address water supply, fishery habitat, and environmental variability challenges. YBIP
6 projects include fish passage construction at Cle Elum Dam (enabling sockeye reintroduction),
7 habitat restoration efforts totaling more than \$10 million in current and planned projects,
8 riparian tree and shrub planting to provide stream shading, cold-water refuge establishment,
9 removal of invasive aquatic vegetation, acquisition of watershed conservation lands, and
10 implementation of pulse flows to aid fish migration. These integrated efforts recognize that water
11 quality cannot be separated from water quantity, habitat connectivity, and landscape-scale
12 watershed health.

13
14 Maintaining and improving water quality requires coordinated monitoring, research, and
15 adaptive management across the basin. The Washington State Department of Ecology conducts
16 ongoing water quality monitoring for temperature, dissolved oxygen, and pH to assess aquatic
17 life conditions and track compliance with water quality standards. The U.S. Geological Survey
18 provides groundwater availability modeling for the lower Yakima Basin to guide management
19 decisions and future emergency drought well authorizations. Conservation districts lead on-the-
20 ground implementation of best management practices including dust control, efficient irrigation
21 systems, nutrient management, conservation tillage, and riparian management zones reduce
22 nonpoint source pollution from agricultural operations. The Yakima Regional Clean Air Agency
23 addresses air quality impacts that indirectly affect water quality through atmospheric deposition.
24 Yakima Health District provides public health surveillance, well testing programs, and community
25 education about water quality risks and protective measures.

26
27 Looking forward, Yakima County must integrate water quality protection into all planning and
28 development decisions, recognizing that land use patterns, stormwater management,
29 wastewater treatment, agricultural practices, and urban growth all influence the quality of
30 surface water and groundwater throughout the basin. Development standards should require
31 low-impact development techniques, green infrastructure, and source control measures that
32 prevent pollutant loading to receiving waters. Septic system regulations must ensure proper
33 siting, construction, and maintenance to prevent groundwater contamination. Agricultural
34 support programs should provide technical and financial assistance for adoption of precision
35 agriculture technologies, soil health practices, and nutrient management plans that minimize
36 fertilizer applications while maintaining productivity. Riparian corridor protection through critical
37 areas regulations preserves natural filtration, temperature moderation, and habitat functions
38 that are essential to water quality. Emergency preparedness planning must address water quality
39 degradation during drought periods and coordinate response efforts among county agencies,
40 health districts, water purveyors, irrigation districts, and state and federal partners. Through
41 these integrated approaches—combining regulatory oversight, voluntary stewardship, technical
42 assistance, monitoring and research, emergency response, and multi-stakeholder

1 collaboration—Yakima County can work toward the goal of clean, safe, and abundant water for
 2 all beneficial uses even as environmental pressures intensify in the decades ahead.

3
 4 **2.9 Air Quality**

5 ~~We all contribute to air quality problems. Our daily lives are filled with single person car trips,~~
 6 ~~smoke from woodstoves and the burning of brush and yard wastes. More traffic on gravel roads~~
 7 ~~increases dust for residents and agricultural operations. Commercial and industrial operations~~
 8 ~~also contribute to air quality problems, but the primary source of air pollution in Yakima County~~
 9 ~~is motor vehicles. Although state and federal laws regulate some emissions, however, air~~
 10 ~~pollution will increase as the population grows. Our challenge is to maintain or improve air~~
 11 ~~quality as growth continues, particularly within urban areas. To that end, Yakima County works~~
 12 ~~closely with the Yakima Regional Clean Air Agency to improve the quality of our air and minimize~~
 13 ~~potential impacts resulting from development.~~

14
 15 Air quality in Yakima County faces mounting challenges from multiple sources, with wildfire
 16 smoke emerging as a critical and increasingly frequent threat to public health and quality of life.
 17 Between 2024 and 2025, the region experienced extended air quality alerts due to wildfire smoke
 18 from regional fires including the Western Pines Fire, Pomas Fire, and Hope Fire. These smoke
 19 events, combined with the County's semi-arid climate and geography, create complex air quality
 20 challenges that demand coordinated action across all sectors. While we all contribute to air
 21 quality problems through our daily activities, the convergence of prolonged drought conditions
 22 and increased wildfire activity has fundamentally altered the region's air quality landscape and
 23 requires adaptive management strategies for the decades ahead.

24
 25 Our daily lives are filled with actions that degrade air quality: single-person car trips, smoke from
 26 woodstoves and the burning of brush and yard wastes, and increased dust from traffic on gravel
 27 roads affecting both residents and agricultural operations. Commercial and industrial operations
 28 also contribute to air quality problems, but the primary source of traditional air pollution in
 29 Yakima County remains motor vehicles. Although state and federal laws regulate some emissions,
 30 air pollution from conventional sources will increase as the population grows. However, wildfire
 31 smoke has emerged as an episodic but severe air quality threat that can overwhelm all other
 32 sources during fire season, with particulate matter (PM2.5 and PM10) reaching hazardous levels
 33 that force residents to shelter indoors, close schools and businesses, and threaten vulnerable
 34 populations including children, elderly residents, and those with respiratory conditions.

35
 36 The challenge of maintaining or improving air quality as growth continues is now compounded
 37 by environmental changes that require comprehensive resiliency and sustainability planning. The
 38 three consecutive years of severe drought (2023-2025), combined with temperatures 2-4°F
 39 above normal and reduced snowpack, have created conditions where four out of every ten years
 40 may experience drought conditions conducive to wildfire. Dried vegetation from prolonged
 41 drought becomes fuel for more frequent and intense wildfires, while earlier snowmelt and longer
 42 fire seasons extend the period of wildfire risk. These environmental impacts create a feedback
 43 loop: drought stresses vegetation, increasing wildfire fuel loads; wildfires degrade watersheds

Commented [KW33]: There is nothing here of substance. Cite the YRCAA "plan" and adopt? ID Climate Change GHG reduction actions in the Transportation Element? Wildfire prevention also, so adopt Wildlife Urban Interface and Firewise + any other YC and DOI programs. Work to do here.

1 and vegetation, reducing the landscape's resilience; and smoke from fires creates acute air
2 quality crises that can persist for weeks. Addressing air quality therefore requires integrated
3 strategies that reduce emissions from traditional sources while simultaneously building
4 community resilience to wildfire through prevention, preparedness, and post-fire recovery.
5

6 Yakima County works closely with the Yakima Regional Clean Air Agency (YRCAA) to regulate air
7 pollution from stationary sources, monitor air quality conditions, and implement programs that
8 protect public health. YRCAA's comprehensive regulatory framework includes New Source
9 Review permitting requirements, source registration and testing procedures, dust control
10 requirements, residential wood smoke reduction programs, asbestos control, and outdoor
11 burning permit systems. The County and YRCAA have adopted updated air quality regulations
12 approved by the Environmental Protection Agency and incorporated into Washington's State
13 Implementation Plan, ensuring compliance with federal Clean Air Act standards while addressing
14 local conditions. YRCAA operates real-time air quality monitoring stations in downtown Yakima
15 and Sunnyside, providing hourly particulate matter measurements that inform public health
16 advisories and burn bans when air quality deteriorates.
17

18 To address wildfire threats in the wildland-urban interface (WUI)—areas where homes are built
19 near or among lands prone to wildfire—Yakima County has adopted the International Wildland-
20 Urban Interface Code and established comprehensive wildfire prevention and preparedness
21 programs. Studies show that as many as 80 percent of homes lost to wildfire could have been
22 saved if brush around homes were cleared and defensible space created around structures. The
23 County's Fire Marshal's Office provides fire and life safety services including wildland-urban
24 interface management, fire prevention education, and enforcement of fire safety standards.
25 Annual burn bans, typically covering June through September depending on fire danger, restrict
26 outdoor burning during high-risk periods to prevent fire ignitions that could quickly spread under
27 drought conditions.
28

29 The Yakima County Community Wildfire Protection Plan (CWPP), approved by the Board of
30 Commissioners in 2015 and endorsed by the Washington Department of Natural Resources,
31 provides a strategic framework for reducing wildfire risks to people, structures, infrastructure,
32 and ecosystems. Developed through the Yakima Valley Fire Adapted Communities Coalition
33 (YVFACC)—a partnership uniting residents, emergency responders, land managers, business
34 owners, and developers—the CWPP identifies high-risk areas, prioritizes fuel reduction projects,
35 and establishes collaborative implementation strategies. The plan integrates with the National
36 Fire Plan, Healthy Forests Restoration Act, Disaster Mitigation Act, and National Cohesive
37 Wildland Fire Management Strategy, while recognizing local budgets, personnel, and equipment
38 constraints. Goals include engaging communities in wildfire preparedness, implementing
39 vegetation management projects that promote natural fire regimes, improving fire department
40 response capabilities, and deterring unmitigated development in high fire risk areas through
41 strategic planning and protection measures.
42

1 Community-based wildfire risk reduction programs provide direct assistance to property owners
 2 in high-risk areas. The North Yakima Conservation District, in cooperation with the Highway
 3 410/12 Community Wildfire Protection Plan steering committee, conducts Firewise home
 4 assessments that provide landowners with specific actions to reduce wildfire risk on their
 5 property. The program promotes fuels reduction, creation of defensible space around structures,
 6 removal of ladder fuels that allow fire to climb into tree crowns, and pruning and thinning to
 7 reduce fire intensity. The conservation district provides chipping services for cut vegetation,
 8 making it easier for property owners to remove hazardous fuels. Yakima County residents are
 9 encouraged to join the Firewise Communities/USA Recognition program, which empowers
 10 neighborhoods to take collective action to reduce wildfire vulnerability through coordinated
 11 landscape management, community education, and implementation of science-based fire
 12 protection measures. These community-level efforts, combined with agency vegetation
 13 management on public lands, create a network of fire-adapted communities more resilient to
 14 inevitable wildfire events.

15
 16 Looking forward, Yakima County's resiliency and sustainability planning must integrate air quality
 17 improvement strategies into all planning efforts, as required by Washington State's Growth
 18 Management Act. Transportation planning should identify strategies to reduce vehicle miles
 19 traveled, promote alternative transportation modes, and design compact, walkable communities
 20 that reduce vehicle emissions while improving quality of life. Building codes and development
 21 standards should encourage energy-efficient construction and low-emission heating systems that
 22 improve local air quality and reduce particulate pollution from woodstoves and other residential
 23 heating sources. Agricultural best management practices should address dust control from field
 24 operations, efficient fertilizer application to reduce ammonia emissions, and conservation tillage
 25 practices that improve soil health while reducing particulate emissions. Coordination between
 26 the County, YRCAA, fire districts, conservation districts, health department, emergency
 27 management, and community organizations creates the collaborative framework necessary to
 28 protect air quality through both day-to-day emission reductions and emergency response to
 29 episodic wildfire smoke events that increasingly define summer air quality conditions in Yakima
 30 County.

31
 32
 33 **2.4.5 The Loss of Fish and Wildlife Habitat**
 34 ~~Statewide, much of the historical fish and wildlife habitat has been lost to habitat conversion. In~~
 35 ~~the Columbia Basin, over half of the historical extent of shrub-steppe has been converted by~~
 36 ~~development or crop production and in some eastern Washington counties as much as 75~~
 37 ~~percent of the historical extent of shrub-steppe has been lost. The shrub-steppe habitats that~~
 38 ~~remain are often fragmented and degraded by frequent fires and invasive weeds such as~~
 39 ~~cheatgrass. Due to its ability to support rich agricultural use, the deep-soil shrub-steppe~~
 40 ~~communities that many priority wildlife species depend on have been disproportionately~~
 41 ~~converted at a higher rate than other shrub-steppe communities.~~

Commented [KW34]: Update with ESA recovery plan and any YK coho/sockeye information

Commented [KW35]: Run by WDFW

Commented [KW36R35]: Update GIS with PHS, including verification and BAS for SS.

1 The riparian management zones that line the regional rivers and streams are critically important
 2 to our regional fish and wildlife species, comprising one of the most biodiverse ecosystems in
 3 Washington State. Historically an estimated 900,000 adult anadromous fish returned to the
 4 Yakima River Basin annually, ranking second only to Idaho's Snake River. But as more of our
 5 natural resources have been put to use, the number and types of anadromous fish have rapidly
 6 declined. By the 1920's, the once awe inspiring fish runs had dwindled to less than one percent
 7 of their historical numbers. Coho salmon became extirpated in the Yakima Basin in the early
 8 1980's, and sockeye were extirpated from the Yakima River in the early 1900's with the
 9 construction of irrigation dams on the Keechelus, Kachess, Cle Elum, and Bumping lakes. Sockeye
 10 require lakes to spawn to as part of their life history, and when the dams were constructed
 11 without access, the sockeye were extirpated in the Yakima River Basin.

Commented [KW37]: Is this term used in YCC? RMZ?

Commented [KW38R37]: Interaction with CMZ, Shorelines, wetlands etc. setbacks and development code restrictions.

Commented [KW39]: Check and Update w/ YN and WDFW

12
 13 In the Yakima Basin, these riparian management zones have been reduced to narrow corridors,
 14 reducing the functionality of the riparian areas for both the fish and wildlife species that depend
 15 on them. Reduction of these corridors have resulted in reduced aquatic habitat for our important
 16 fish species and reduced breeding, wintering and migration habitat for wildlife. Reduction of
 17 these management zones increases pressure on the border between the riparian zones and other
 18 land use activities in the adjacent uplands with many wildlife species becoming stressed or
 19 disappearing due to the decreased riparian management zones.

20
 21 Meanwhile, as wildlife and the habitat they need declines, our culture's recreational and land use
 22 activities that impact riparian and upland habitats have greatly increased. As demands on fish
 23 and wildlife habitat grow in light of our growing communities, to maintain functional fish and
 24 wildlife populations we need to maintain core areas of both upland and aquatic habitat while
 25 also ensuring that connectivity corridors exist through more heavily used areas to allow healthy
 26 populations of fish and wildlife species to maintain and thrive in Yakima County and the Yakima
 27 Basin.

29 **2.10 Priority Habitats and Species List (PHS)**

30
 31 The PHS List is a catalog of habitats and species considered to be priorities for conservation and
 32 management. Priority species require protective measures for their survival due to their
 33 population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal
 34 importance. Priority species include State Endangered, Threatened, Sensitive, and Candidate
 35 species; animal aggregations (e.g., heron colonies, bat colonies) considered vulnerable; and
 36 species of recreational, commercial, or tribal importance that are vulnerable.

Commented [KW40]: Pull new PHS listing and info

37
 38 Priority habitats are habitat types or elements with unique or significant value to a diverse
 39 assemblage of species. A priority habitat may consist of a unique vegetation type (e.g., shrub-
 40 steppe) or dominant plant species (e.g., juniper savannah), a described successional stage (e.g.,
 41 old-growth forest), or a specific habitat feature (e.g., cliffs).

1 In general, areas of priority habitats of greater importance to fish or wildlife tend to have one
2 or more of these characteristics:

- 4 • Habitat areas that are larger are generally better than areas that are smaller,
- 5 • Habitat areas that are more structurally complex (e.g., multiple canopy layers, snags,
6 geologically diverse) are generally better than areas that are simple,
- 7 • Habitat areas that contain native habitat types adjacent to one another are better than
8 isolated habitats (especially aquatic associated with terrestrial habitat),
- 9 • Habitat areas that are connected are generally better than areas that are isolated,
- 10 • Habitat areas that have maintained their historical processes (e.g., historical fire
11 regimes) are generally better than areas lacking such processes.

12
13 Table 2.4.5.1-1 below represents the PHS list (updated 2016) for Yakima County.

14

	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
<u>Habitats</u>	<u>Aspen Stands</u>		
	<u>Biodiversity Areas & Corridors</u>	-	
	<u>Eastside Steppe</u>	-	
	<u>Inland Dunes</u>	-	
	<u>Old-Growth/Mature Forest</u>	-	
	<u>Oregon White Oak Woodlands</u>	-	
	<u>Riparian</u>	-	
	<u>Shrub steppe</u>	-	
	<u>Freshwater Wetlands & Fresh Deepwater</u>	-	
	<u>Instream</u>	-	
	<u>Caves</u>	-	
	<u>Cliffs</u>	-	
	<u>Snags and Logs</u>	-	
	<u>Talus</u>	-	-
<u>Fishes</u>	<u>Pacific Lamprey</u>	-	-
	<u>River Lamprey</u>	<u>Candidate</u>	-

	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
	White Sturgeon	-	-
	Leopard Dace	Candidate	-
	Umatilla Dace	Candidate	-
	Mountain Sucker	Candidate	-
	Bull Trout/ Dolly Varden	Candidate *	Threatened *
	Chinook Salmon	-	Threatened (Upper Columbia Spring run is Endangered)
	Coho Salmon	-	Threatened – Lower Columbia
	Kokanee	-	-
	Rainbow Trout/ Steelhead/ Inland Redband Trout	Candidate **	Threatened **
	Sockeye Salmon	-	Threatened – Ozette Lake Endangered – Snake River
	Westslope Cutthroat Trout	-	-
Amphibians	Cascade Torrent Salamander	Candidate	-
	Larch Mountain Salamander	Sensitive	-
	Van Dyke's Salamander	Candidate	-
	Columbia Spotted Frog	Candidate	-
	Western Toad	Candidate	-

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	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
Reptiles	Sharp-tailed Snake (formerly Common Sharptail Snake)	Candidate	-
	Striped Whipsnake	Candidate	-
	Sagebrush Lizard	Candidate	-
Birds	Western grebe	Candidate	-
	E WA breeding concentrations of: Grebes, Cormorants	-	-
	E WA breeding: Terns	-	-
	Black-crowned Night-heron	-	-
	Great Blue Heron	-	-
	Cavity-nesting ducks: Wood Duck, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Hooded Merganser	-	-
	Harlequin Duck	-	-
	Tundra Swan	-	-
	Waterfowl Concentrations	-	-
	Ferruginous Hawk	Endangered	-
	Golden Eagle	Candidate	-
	Northern Goshawk	Candidate	-
	Prairie Falcon	-	-

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	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
	Chukar	-	-
	Ring-necked Pheasant	-	-
	Greater Sage-grouse	Endangered	-
	Sooty Grouse	-	-
	Wild Turkey	-	-
	Sandhill Crane	Endangered	-
	E WA breeding occurrences of: Phalaropes, Stilts and Avocets	-	-
	Band-tailed Pigeon	-	-
	Yellow-billed Cuckoo	Endangered	Threatened
	Burrowing Owl	candidate	-
	Flammulated Owl	Candidate	-
	Northern Spotted Owl (formerly called Spotted Owl)	Endangered	Threatened
	Vaux's Swift	-	-
	Black-backed Woodpecker	Candidate	-
	White-headed Woodpecker	Candidate	-
	Loggerhead Shrike	Candidate	-

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	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
	<u>Sagebrush Sparrow (formerly Sage Sparrow)</u>	<u>Candidate</u>	-
	<u>Sage Thrasher</u>	<u>Candidate</u>	-
Mammals	<u>Roosting Concentrations of: Big-brown Bat, Myotis bats, Pallid Bat</u>	-	-
	<u>Townsend's Big-eared Bat</u>	<u>Candidate</u>	-
	<u>Black-tailed Jackrabbit</u>	<u>Candidate</u>	-
	<u>White-tailed Jackrabbit</u>	<u>Candidate</u>	-
	<u>Western Gray Squirrel</u>	<u>Endangered</u>	-
	<u>Townsend's Ground Squirrel</u>	<u>Candidate</u>	-
	<u>Cascade Red Fox</u>	<u>Endangered</u>	-
	<u>Fisher</u>	<u>Endangered</u>	-
	<u>Marten</u>	-	-
	<u>Wolverine</u>	<u>Candidate</u>	<u>Threatened</u>
	<u>Gray Wolf</u>	<u>Endangered</u>	<u>Endangered: only in Western two-thirds of Washington</u>
	<u>Bighorn Sheep</u>	-	-
	<u>Columbian Black-tailed Deer</u>	-	-
	<u>Mountain Goat</u>	-	-

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	<u>SPECIES/ HABITATS</u>	<u>STATE STATUS</u>	<u>FEDERAL STATUS</u>
	Northwest White-tailed Deer	-	-
	Elk	-	-
	Mule Deer (formerly called Rocky Mountain Mule Deer)	-	-
Invertebrates	Columbia Oregonian	Candidate	-
	Western Bumble Bee	Candidate	Candidate
	Mardon Skipper	Endangered	-
	Monarch	Candidate	Candidate
	Silver-bordered Fritillary	Candidate	-
		** Steelhead Only	
		* Bull Trout only	

[These are the species and habitats identified for Yakima County. This list of species and habitats was developed using the distribution maps found in the Priority Habitat and Species \(PHS\) List \(see <http://wdfw.wa.gov/conservation/phs/>\).](#)

[Species distribution maps depict counties where each priority species is known to occur as well as other counties where habitat primarily associated with the species exists.](#)

[Two assumptions were made when developing distribution maps for each species:](#)

- [1. There is a high likelihood a species is present in a county, even if it has not been directly observed, if the habitat with which it is primarily associated exists.](#)
- [2. Over time, species can naturally change their distribution and move to new counties where usable habitat exists.](#)

[Distribution maps in the PHS List were developed using the best information available. As new information becomes available, known distribution for some species may expand or contract. WDFW will periodically review and update the distribution maps in PHS list.](#)

1
2

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Table 2.4.5.1.1 Priority Habitat and Species in Yakima County

Priority Habitats			
Habitat	Priority Area		
— Aspen Stands	— Pure or mixed stands greater than 1 acre		
— Biodiversity Areas & Corridors	-		
— Inland Dunes	-		
— Old-Growth/Mature Forest	-		
— Oregon White Oak Woodlands	— Stands greater than 5 acres in size		
— Shrub Steppe	-		
— Riparian	-		
— Freshwater Wetlands & Fresh Deepwater	-		
— Instream	-		
Priority Habitat Features			
— Caves	-		
— Cliffs	— Greater than 25 feet high and occurring below 5000 ft.		
— Snags and Logs	-		
— Talus	-		

Fish			
Species	Priority Area	State Status	Federal Status
— Pacific Lamprey	Any Occurrence		Species of Concern
— River Lamprey	Any Occurrence	Candidate	Species of Concern
— White Sturgeon	Any Occurrence		
— Leopard Dace	Any Occurrence	Candidate	
— Umatilla Dace	Any Occurrence	Candidate	
— Mountain Sucker	Any Occurrence	Candidate	
— Bull Trout	Any Occurrence	Candidate	Threatened
— Chinook Salmon	Any Occurrence		
— Coho	Any Occurrence		
— Kokanee	Any Occurrence		
— Rainbow Trout/ Steelhead	Any Occurrence	Candidate *	Threatened *
— Sockeye Salmon	Any Occurrence		
— Westslope Cutthroat	Any Occurrence		

Reptiles and Amphibians			
Species	Priority Area	State Status	Federal Status
— Cascade Torrent Salamander	Any occurrence	Candidate	
— Larch Mountain Salamander	Any occurrence	Sensitive	Species of Concern
— Van Dyke's Salamander	Any occurrence	Candidate	Species of Concern
— Columbia Spotted Frog	Any occurrence	Candidate	
— Western Toad	Any occurrence	Candidate	Species of Concern
— Common Sharp-tailed Snake	Any occurrence	Candidate	Species of Concern
— Striped Whipsnake	Any occurrence	Candidate	
— Sagebrush Lizard	Any occurrence	Candidate	Species of Concern

Birds			
Species	Priority Area	State Status	Federal Status
— Western Grebe	Regular concentrations, Breeding areas, Migratory stopovers, Regular occurrences in winter	Candidate	-
— EWA Breeding Concentrations of: Grebes, Cormorants	Breeding areas	-	-

— E WA Breeding: Terns	Breeding areas	-	-
— Black-Crowned Night Heron	Breeding areas	-	-
— Great Blue Heron	Breeding areas	-	-
— Cavity-Nesting Ducks: Wood Duck, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Hooded Merganser	Breeding areas	-	-
— Harlequin Duck	Breeding areas	-	-
— Tundra Swan	Regular concentrations		
— Waterfowl Concentrations	Significant breeding areas, Regular concentrations in winter		
— Bald Eagle	Breeding areas, Communal roosts, Regular concentrations	Sensitive	Species of Concern
— Ferruginous Hawk	Breeding areas, including alternate nest sites, If breeding area is not known, approximate with a 7.0 km ² (4.35 mi ²) area around known nest sites, foraging areas	Threatened	Species of Concern
— Golden Eagle	Breeding and foraging areas	Candidate	-
— Northern Goshawk	Breeding areas, including alternate nest sites, post fledging foraging areas	Candidate	Species of Concern
— Peregrine Falcon	Breeding areas, Regular occurrence	Sensitive	Species of Concern
— Prairie Falcon	Breeding areas	-	-
— Chukar	Regular concentrations in WDFW primary management zones for chukar	-	-
— Ring-Necked Pheasant	Self-sustaining birds observed in regular concentrations in WDFW's eastern Washington Primary Management Zone for pheasant	-	-
— Sage-Grouse	Breeding areas, leks, Regular concentrations	Threatened	Candidate
— Sooty Grouse	Breeding areas, Regular concentrations	-	-
— Wild Turkey	Regular concentrations and roosts in WDFW's Primary Management Zones for wild turkeys	-	-
— Sandhill Crane	Breeding areas, Regular concentrations, migration staging areas	Endangered	-

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— EWA Breeding Occurrences of: Phalaropes, Stilts and Avocets	Breeding areas	-	-
— Band-Tailed Pigeon	Regular concentrations; Occupied mineral sites	-	-
— Yellow-Billed Cuckoo	Any occurrence	Candidate	Candidate
— Burrowing Owl	Breeding areas, foraging areas, Regular concentrations	Candidate	Species of Concern
— Flammulated Owl	Breeding sites, Regular occurrences	Candidate	-
— Spotted Owl	Any occurrence	Endangered	Threatened
— Vaux's Swift	Breeding areas, Communal roosts	Candidate	-
— Black-Backed Woodpecker	Breeding areas, Regular occurrences	Candidate	-
— Lewis' Woodpecker	Breeding areas	Candidate	-
— Pileated Woodpecker	Breeding areas	Candidate	-
— White-Headed Woodpecker	Breeding sites, Regular occurrences	Candidate	-
— Loggerhead Shrike	Regular occurrences in breeding areas, Regular concentrations	Candidate	-
— Sage Sparrow	Breeding areas, Regular occurrences in suitable habitat during the breeding season	Candidate	-
— Sage Thrasher	Breeding areas, Regular occurrences in suitable habitat during the breeding season	Candidate	-

Mammals

Species	Priority Area	State Status	Federal Status
— Merriam's Shrew	Any occurrence	Candidate	-
— Preble's Shrew	Any occurrence	Candidate	Species of Concern
— Roosting Concentrations of: Big Brown Bat, Myotis Bats, Pallid Bat	Regular concentrations in naturally occurring breeding areas and other communal roosts	-	-
— Townsend's Big-Eared Bat	Any occurrence	Candidate	Species of Concern
— Black-Tailed Jackrabbit	Regular concentrations	Candidate	-
— White-Tailed Jackrabbit	Regular concentrations	Candidate	-
— Western Gray Squirrel	Any occurrence	Threatened	Species of Concern
— Townsend's Ground Squirrel	Breeding Area, Occurrence, Regular concentrations	Candidate	Species of Concern
— Cascade Red Fox	Any occurrence	Candidate	-
— Fisher	Any occurrence	Endangered	Candidate
— Marten	Regular occurrence	-	-
— Wolverine	Any occurrence	Candidate	-
— Bighorn Sheep	Breeding areas, Regular concentrations	-	-

—Columbian Black-tailed Deer	Regular concentrations, Migration corridors	-	-
—Mountain Goat	Breeding areas, Regular concentrations	-	-
—Northwest White-tailed Deer	Migration corridors, Regular concentrations in winter	-	-
—Elk	Calving Areas, Migration Corridors, Regular concentrations in Winter and in foraging areas along coastal waters	-	-
—Rocky Mountain Mule Deer	Breeding areas, Migration corridors, Regular concentrations in winter	-	-

Invertebrates

Species	Priority Area	State Status	Federal Status
—Mardon Skipper	Any occurrence	Endangered	Species of Concern
—Silver Bordered Fritillary	Any occurrence	Candidate	-

*Steelhead only

Important Note

These are the species and habitats identified for Yakima County. This list of species and habitats was developed using the distribution maps found in the Priority Habitat and Species (PHS) List (see <http://wdfw.wa.gov/conservation/phs/>). Species distribution maps depict counties where each priority species is known to occur as well as other counties where habitat primarily associated with the species exists. Two assumptions were made when developing distribution maps for each species:

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2. Over time, species can naturally change their distribution and move to new counties where usable habitat exists.

Distribution maps in the PHS List were developed using the best information available. As new information becomes available, known distribution for some species may expand or contract. WDFW will periodically review and update the distribution maps in PHS list.

1

2

3 2.5 EXISTING CONDITIONS

4

5 2.5.1 The Physical and Cultural Landscape

6 Yakima County contains an impressive array of landscapes. Ranging from the western snow fields
7 of the Cascade Mountains to the arid basalt ridges of the east, the collective histories of these
8 landscapes is what makes Yakima County such a vibrant place to live. The dynamic forces which
9 shape our natural setting must be considered when planning for continued and sustained growth.

10

11 As we examine our natural setting, we must also explore its relationship to our manmade or
12 cultural landscape. We often observe our assembled surroundings but we seldom think about
13 them in terms of their ties to the natural environment. Our built out environment is directly
14 influenced by the ways in which we utilize our natural surroundings. Understanding the linkages

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1 between our natural and cultural landscapes is an important dimension of sound growth
 2 management.

3

4 **2.5.2 Hydrology**

5 Water is Yakima County's most precious resource. Water is available from various rivers, springs,
 6 lakes and underground sources. The majority of Yakima County is drained by the Yakima River
 7 and its tributaries, the far northeastern and southwestern sections of the County drain into the
 8 Columbia River. When viewed as a watershed, the Yakima River Basin is the largest drainage
 9 contained wholly within Washington State, about half of which lies within Yakima County. Mean
 10 annual precipitation ranges from over 100 inches in parts of the Cascades to less than 8 inches in
 11 the eastern lowlands.

12

13 **2.5.2.1 Surface Water**

14 The headwaters of the Yakima River begin in the Cascade Mountains above Keechelus Lake in
 15 northern Kittitas County. After flowing through the Cle Elum and Kittitas Valleys, the river enters
 16 Yakima County along the high basalt columns of Yakima Canyon and emerges onto a broad
 17 alluvial plain just north of the city of Selah. Through the upper Yakima Valley, the Yakima River
 18 flows in a north-south direction past the cities of Selah, Yakima and Union Gap. As the river cuts
 19 its way through Umptanum, Yakima and Ahtanum Ridges, its flow is augmented by numerous
 20 streams in (downstream order) the Wenas Valley and Selah area, the Naches Valley, the Moxee
 21 area, and the Ahtanum Valley. Below Union Gap, the Yakima River flows onto a broad riparian
 22 plain sometimes several miles wide.

23

24 In the lower Yakima Valley, the Yakima River collects water from even more streams and drains,
 25 the most notable being Satus, Toppenish and Simcoe Creeks. Scattered across the floodplain is
 26 evidence of a highly active Yakima River, one that wandered frequently and sometimes far from
 27 its present course. Dozens of old channel scars and partially filled oxbows remind us that the
 28 Yakima River is perhaps our most dynamic natural feature. As it leaves the County south of
 29 Grandview, the Yakima River continues running in a southeasterly direction through Benton
 30 County before emptying into the Columbia River near Richland. Throughout its 200-mile course,
 31 the Yakima is supplemented with irrigation and storm water runoff which is of a far lesser quality
 32 than when it was withdrawn. The combined actions of over withdrawal, pollution and vegetation
 33 removal produce a waterway that leaves Yakima County completely altered from the one that
 34 begins near Snoqualmie Pass.

35

36 Yakima County and the larger Yakima River Basin is the site of the federally developed Yakima
 37 Project. The purpose of the Yakima Project is to store and deliver irrigation water, with
 38 hydroelectric power generation as an associated function. The six project reservoirs (see Table
 39 2.5.2.1-1) also provide incidental flood control, recreation benefits, and some flows for fish.
 40 Three of the project's six reservoirs, Rimrock Lake, Clear Lake and Bumping Lakes, lie within
 41 Yakima County in the upper Naches River basin. The other three reservoirs (Cle Elum, Kachess &
 42 Keechelus) are located in the upper Yakima basin near its headwaters in Kittitas County. The three
 43 upper reservoirs supply water to lands in the basin above the Yakima-Naches River confluence.

Commented [KW41]: Up to date? Climate change, drought, ECY?

1 They are also the main water suppliers of the large irrigation districts in the lower Yakima Valley.
 2 The upper Naches reservoirs provide irrigation water to lands in the lower Naches Valley. They
 3 also make a small irrigation contribution to lands in the lower Yakima Valley. Total storage
 4 capacity of all reservoirs is approximately 1.07 million acre feet, total diversions average over 2.5
 5 million acre feet.

6

Table 2.5.2.1-1 Major Reservoirs in the Yakima Subbasin

Reservoir	River system	Storage Capacity (acre-feet)
Keechelus Lake	Upper Yakima	157,000
Kachess Lake	Upper Yakima	239,000
Cle Elum Lake	Upper Yakima	436,900
Rimrock Lake	Naches	198,000
Bumping Lake	Naches	33,700
Clear Lake	Naches	5,300

7
 8 Yakima County and the larger Yakima River Basin are also the site of the Yakima River Basin Water
 9 Enhancement Project (YRBWEP). The Yakima River Basin Integrated Water Resource
 10 Management Plan (Integrated Plan) is a component of YRBWEP. The purpose of the Integrated
 11 Plan is to address a variety of water resource and ecosystem problems affecting fish passage, fish
 12 habitat, and water supplies for agriculture, municipalities, and domestic uses. The plan includes
 13 the elements of: reservoir fish passage, structural and operational changes to existing facilities,
 14 surface water storage, groundwater storage, habitat/watershed protection and enhancement,
 15 enhanced water conservation, and market reallocation.

16
 17 The Integrated Water Resource Management Plan Alternative (Integrated Plan) was selected as
 18 the preferred alternative and represents a comprehensive approach to water management in
 19 the Yakima River basin. It is intended to meet the need to restore ecological functions in the
 20 Yakima River system and to provide more reliable and sustainable water resources for the health
 21 of the riverine environment and for agriculture and municipal and domestic needs.

22
 23 The Integrated Plan is also intended to provide the flexibility and adaptability to address potential
 24 climate changes and other factors that may affect the basin's water resources in the future. The
 25 Integrated Plan includes three components of water management in the Yakima basin—Habitat,
 26 Systems Modification, and Water Supply. The intent of the Integrated Plan is to implement a
 27 comprehensive program that will incorporate all three components using seven elements to
 28 improve water resources in the basin:

29

- 30 ● Reservoir Fish Passage Element (Habitat Component);
- 31 ○ Provide fish passage at the five major Yakima River basin dams—Cle Elum,
 32 Bumping Lake, Tieton, Keechelus, and Kachess—as well as Clear Lake Dam.
- 33 ● Structural and Operational Changes Element (Systems Modification Component);
- 34 ○ Cle Elum Pool Raise;
- 35 ○ Kittitas Reclamation District Canal Modifications;
- 36 ○ Keechelus to Kachess Pipeline;

Commented [KW42]: Update to reflect either new Cle Elum reservoir height and note planned YBIP changes for Bumping, Rimrock etc. (the seven, and timelines, b/c these are all by 2046 I think.)

Commented [KW43]: Yakima Basin Integrated Plan INSERT

Commented [KW44]: Drought, three years 2022-25

Commented [KW45]: Here is most, but check for accuracy/dated

- 1 o Subordinate Power at Roza Dam and Chandler Powerplants, and
- 2 o Wapatox Canal Improvements.
- 3 • Surface Water Storage Element (Water Supply Component);
- 4 o Wymer Dam and Pump Station,
- 5 o Kachess Reservoir Inactive Storage,
- 6 o Bumping Lake Reservoir Enlargement, and
- 7 o Study of Columbia River Pump Exchange with Yakima Storage.
- 8 • Groundwater Storage Element (Water Supply Component);
- 9 o Shallow Aquifer Recharge, and
- 10 o Aquifer Storage and Recovery.
- 11 • Habitat/Watershed Protection and Enhancement Element (Habitat Component);
- 12 o Targeted Watershed Protections and Enhancements, and
- 13 o Mainstem Floodplain and Tributary Enhancement Program.
- 14 • Enhanced Water Conservation Element (Water Supply Component);
- 15 o Agricultural Conservation, and
- 16 o Municipal and Domestic Conservation Program.
- 17 • Market Reallocation Element (Water Supply Component).

19 Reclamation and Ecology worked with the YRBWEP Workgroup to develop a package of projects
 20 to meet the goals of the Integrated Plan. These projects are described individually; however,
 21 Reclamation, Ecology and the YRBWEP Workgroup intend that the Integrated Plan would be
 22 implemented in a comprehensive manner, incorporating all elements of the proposed plan.
 23 Implementing the different elements of the Integrated Plan as a total package is intended to
 24 result in greater benefits than implementing any of the seven elements independently.

25 2.5.2.2 Groundwater

26 Groundwater in Yakima County is found in the basalt that underlies most of the area, in the
 27 alluvium deposits located along the various watercourses, and in the Ellensburg formation which
 28 both overlies and interbeds within the basalt flows. The following sections describe the three
 29 principal aquifers of Yakima County in more detail.

30 2.5.2.3 Yakima Basalt

31 Yakima Basalt, a subgroup of the Columbia Basalt, include confined aquifers in interbeds
 32 sandwiched between layers of basalt. Within the region, the basalt aquifers vary in their water-
 33 yielding character from 100 gal./min. to 2,000 gal./min. Although some deep municipal and
 34 irrigation wells penetrate the Yakima Basalt, the source appears relatively untapped and is
 35 potentially the most productive and least impacted of Yakima County's three principal aquifers.

36 Some portions of the interbed aquifers may involve fossil waters which have no source of
 37 recharge. Potential recharge areas include contacts between the Columbia basalt flows and the
 38 units within the Cascade Range, surface and subsurface drainage along exposed interbeds

1 associated with anticlinal ridges, at gaps where streams have cut through uplifted basalt exposing
2 interbeds, and along fault zones which bisect basalt layers. The Yakima Basalt may also be re-
3 charged in upper valley reaches by overlaying gravels and unconsolidated alluviums.

4

5 **2.5.2.4 Ellensburg Formation**
6 The Ellensburg Formation consists largely of layers of gravels, sand, silt, and clay sediments
7 transported from the westerly portion of Yakima County on to, and in some areas inter-bedded
8 with, the upper basalt flows. The capacity of the formation as an aquifer ranges from poor to
9 good, depending on its depth and composition. Underlying basalt layers generally dip toward
10 the center of valleys and easterly such that more productive Ellensburg aquifers are located in
11 the center of lower valley reaches having deeper profiles of the formation. Principal aquifers in
12 the formation are generally confined, weakly cemented, permeable layers of gravel and well-
13 sorted sands interbedded with less permeable layers of clay and shale. A basal layer of this
14 formation which lies directly above the uppermost basalt flow may be one of its more productive
15 water-bearing zones.

16

17 Recharge is by infiltration from precipitation and irrigation, by effluent seepage from surface
18 waters, and by upward leakage from the Yakima Basalt. The most important current source of
19 recharge is considered to be upward leakage from the underlying basalt. Susceptible recharge
20 areas are those where the formation is exposed at the surface or where saturated alluvial gravels
21 directly overlie the formation. Where the formation contains significant aquifers, the largest
22 natural discharge is potentially the upward seepage to overlying gravel units and alluviums.

23

24 **2.5.2.5 Upper Aquifer**
25 The Upper Aquifer generally consists of gravel units and principally stream deposited,
26 unconsolidated alluviums distributed in variable thicknesses along the valley floors. The largely
27 cemented gravel units are considered a viable aquifer only where they contain deeper profiles of
28 weakly cemented sand and gravel. The most productive aquifer (second only to the Yakima
29 Basalt) is the unconsolidated alluvium. The alluvium aquifer is generally unconfined, with its
30 thickest, most productive units occurring in syncline centers. The Upper Aquifer is generally
31 associated with a shallow ground water table which supports the bulk of Yakima County's
32 domestic water supplies.

33

34 **2.11 Climate Change and Resiliency, Achieving Sustainability**

35

36 The Climate Resiliency and Sustainability Element is included here for use in Critical Area
37 Ordinances and is based on Best Available Science and is pursuant to Second Engrossed
38 Substitute House Bill 1180 (2023), which amended the Growth Management Act (GMA) under
39 RCW 36.70A.070(8) to require mandatory climate change planning. This element establishes a
40 comprehensive framework for identifying, preparing for, and adapting to the significant
41 climate-related risks facing Yakima County, with the overarching goal of ensuring the resilience
42 and sustainability of critical areas, shorelines, property, life, health, and the economy through

1 preparation for, survival of, and recovery from extreme weather events and cumulative natural
2 hazards.

3

4 **Legal Framework and Integration Requirements**

5

6 Growth Management Act Requirements. ESHB 1180 mandates integration of climate
7 considerations across all aspects of comprehensive planning. This Climate Resiliency Element
8 must coordinate with and inform:

9

10 Critical Areas Ordinances (CAO): Under RCW 36.70A.172, best available science must inform
11 critical area protections. Climate projections must be incorporated into designation and
12 protection of frequently flooded areas (including climate-informed flood projections beyond
13 FEMA maps, 500-year floodplains, and post-wildfire flood risks), fish and wildlife habitat
14 conservation areas (addressing temperature-sensitive species and climate-driven habitat shifts),
15 geologically hazardous areas (including climate-exacerbated landslide risks from changing
16 precipitation), wetlands (considering hydrologic changes and drought impacts), and critical
17 aquifer recharge areas (addressing changing recharge patterns and water supply vulnerability).

18

19 Shoreline Master Program (SMP): Under RCW 90.58 and the Shoreline Management Act, climate
20 projections are required for shoreline planning. While Yakima County's shoreline jurisdiction is
21 limited, planning must address climate impacts on river dynamics, channel migration, riparian
22 vegetation, floodplain connectivity, and in-stream flows necessary for salmonid habitat.

23

24 Overarching Goal: Ensure the resilience and sustainability of critical areas, shorelines, property,
25 life, health, and the economy through preparation for, survival of, and recovery from extreme
26 weather events and cumulative natural hazards.

27

28 The provisions of this element recognize that climate adaptation is an ongoing process requiring
29 flexibility, innovation, partnership, and long-term commitment. While uncertainty exists
30 regarding the precise magnitude and timing of climate impacts, the direction of change is clear
31 and the costs of inaction far exceed the investments required for adaptation. Through science-
32 based planning, community engagement, equitable resource allocation, and coordination with
33 federal, state, tribal, and local partners, Yakima County will enhance the resilience of its
34 communities, economy, infrastructure, and natural systems to ensure prosperity and quality of
35 life for current and future generations.

36

37 Chapter 3, Natural Hazards provides the implementation and policy and goal detail for Yakima
38 County's Resilience and Sustainability Strategy.

39

40 Yakima County's climate is an important yet often overlooked aspect of our natural setting. The
41 long sunny days and cool nights have helped Yakima County become one of the top agricultural
42 producing counties in the United States. Our attractive climate has also boosted the County's

1 tourism industry. With over 300 days of sunshine per year and a central location within the state,
 2 Yakima County is an increasingly popular site for conventions, softball and tourism.
 3

4 Climatic variation within Yakima County is extreme. The Rocky Mountains partly shield the region
 5 from strong arctic winds, so winters, while cold, are generally not too severe. In summer, Pacific
 6 Ocean winds are partially blocked by the Cascade Range. Thus the days are hot, but the nights
 7 are fairly cool. In winter the average temperatures at Yakima, Rimrock and Sunnyside are 32, 29,
 8 and 35 degrees Fahrenheit, respectively. In summer the average temperature is 68 degrees at
 9 Yakima, 61 degrees at Rimrock, and 70 degrees at Sunnyside. [USDA Soil Survey For Yakima
 10 County 1985, pg. 3] Temperatures elsewhere within the County can vary greatly from those
 11 measurements given. Scientific research supports the presence of the current climatic pattern
 12 over the last 2,500 years (Ubelacker 1986; Calder; 1974; Chatters 1981).

Commented [KW46]: Dated and disingenuous. Update with BAS.

13
 14 Yakima County's climate is an important yet often overlooked aspect of our natural setting. The
 15 long sunny days and cool nights have helped Yakima County become one of the top producing
 16 agricultural counties in the United States. The average length of our growing season is 195 days.
 17 Annual precipitation ranges from over 100 inches in parts of the Cascades to less than 8 inches
 18 in the eastern lower elevations. We depend upon significant snowpack accumulations at the
 19 higher elevations to supply irrigation water for much of the agricultural uses found in the lowland
 20 areas.

21
 22 Our attractive climate has also boosted Yakima County's tourism industry. Tourism is a big
 23 business in Yakima County and it's growing. One reason people visit Yakima County is for our
 24 four full seasons of outdoor recreational opportunities. Our climate and central location within
 25 the state makes Yakima County an increasingly popular site for large conventions. And every
 26 summer hundreds of sports teams travel with their families to play in our parks and stay in our
 27 motels. It's clear that Yakima County's climate is a major contributor to the health of our local
 28 economy.

Commented [KW47]: AWK

29
 30 **2.5.3.1**
 31 The Growth Management Act mandates that Yakima County's Horizon 2026 Comprehensive Plan
 32 integrate resiliency and sustainability principles to address 21st-century challenges while
 33 preserving the region's agricultural heritage and natural resources. This requirement recognizes
 34 that traditional planning approaches must evolve to accommodate rapid environmental and
 35 demographic changes.

36
 37 **Cascading Natural Hazards: An Existential Challenge**
 38 Human activities and climate change require that Yakima County fundamentally rethink how it
 39 manages growth, protects critical resources, and builds adaptive capacity for an uncertain future.
 40 The county faces an interconnected web of natural hazards that threaten every aspect of
 41 community life, economic stability, and environmental health.

1 **Wildfire: The Accelerating Threat.** Wildfires now pose an existential risk to Yakima County's
2 communities and economy. The 2020 Pearl Hill Fire consumed over 223,000 acres, destroying
3 homes in Malaga and forcing evacuations across the Wenatchee Valley border. The 2021
4 Schneider Springs Fire burned 108,000 acres of prime timber and grazing land, while the Evans
5 Canyon Fire threatened Yakima's western suburbs and shut down Interstate 82 for days,
6 disrupting the region's transportation lifeline.

7
8 These fires demonstrate wildfire's all-encompassing impact: residential areas face direct
9 destruction and chronic smoke exposure affecting public health; critical infrastructure including
10 power transmission lines, cell towers, and transportation corridors suffer repeated damage and
11 costly rebuilding; agricultural operations lose crops, livestock, irrigation infrastructure, and
12 processing facilities, with smoke taint devastating wine grape harvests worth millions annually.
13 The economic cascade extends beyond immediate fire damage. Tourism to recreational areas
14 diminishes due to air quality concerns and facility closures. Insurance costs skyrocket, making
15 development and business operations financially challenging. Forest industries face supply chain
16 disruptions as timber harvests are delayed or rendered impossible. Most critically, wildfire
17 threatens the county's water supply infrastructure, with post-fire erosion and debris flows
18 compromising watershed quality and reservoir capacity for years following major burns.
19

20 **Drought: Historic Levels and Repeated Emergency Declarations.** Drought conditions, intensified
21 by climate change and competing water demands, create a slow-moving economic and
22 environmental catastrophe. The 2015 drought declared the Yakima Basin in emergency status,
23 forcing farmers to fallow 164,000 acres of productive farmland—equivalent to 14% of irrigated
24 acreage. Junior water rights holders received zero allocation, while senior rights holders faced
25 47% curtailment, triggering \$54 million in federal drought assistance.

26
27 **Residential communities** experience water shortages requiring usage restrictions, well failures
28 forcing expensive drilling deeper wells, and deteriorating water quality as aquifer levels drop.
29

30 **Municipal infrastructure** strains under increased demand while facing reduced supply, forcing
31 costly emergency water purchases and system upgrades.
32

33 **Agricultural impacts** extend far beyond immediate crop losses. Permanent crops like fruit trees
34 and vineyards, representing decades of investment, die during extended drought, requiring
35 complete replanting and years of recovery. Processing facilities face supply shortages, leading to
36 reduced operations and job losses. Ranchers sell livestock at distressed prices when grazing lands
37 fail, disrupting multi-generational ranch operations.
38

39 The **economic multiplier effect** is devastating: for every dollar of agricultural loss, rural
40 communities lose \$2-3 in related economic activity. Food processing plants, equipment dealers,
41 trucking companies, and agricultural service businesses face reduced demand. Rural banks
42 experience increased loan defaults as agricultural borrowers struggle with reduced income and
43 increased costs.

1 **Flooding: Our Rivers, Streams, Aquifers and Floodplains.** Yakima County's flood vulnerability
2 became tragically evident during the November 1996 floods, when record rainfall and rapid
3 snowmelt caused \$270 million in damages, destroyed hundreds of homes, and resulted in nine
4 fatalities. The Yakima River at Umtanum reached 164,700 cubic feet per second—nearly three
5 times flood stage—while the Naches River crested at double its previous record.
6

7
8 **Residential areas** face not only immediate displacement and property destruction but long-term
9 health risks from contaminated floodwaters and mold growth. Lower Valley communities,
10 including portions of Sunnyside, Grandview, and Mabton, remain chronically vulnerable, with
11 flood insurance claims averaging \$2.5 million annually even in non-disaster years.

12
13 **Critical infrastructure** suffers cascading failures during major floods. Transportation networks
14 become impassable, severing connections between communities and markets. The closure of
15 State Route 410, Interstate 82, and numerous county roads during flood events isolates rural
16 communities and disrupts agricultural supply chains worth hundreds of millions annually.
17 Wastewater treatment facilities overwhelmed by floodwaters discharge untreated sewage,
18 contaminating drinking water supplies and requiring expensive emergency responses.
19

20 **Agricultural infrastructure** faces complete destruction during major flood events. Irrigation
21 systems, farm buildings, equipment, and stored crops suffer losses exceeding \$100 million during
22 severe floods. Topsoil erosion removes the foundation of agricultural productivity, while debris
23 deposition renders fields unusable for multiple growing seasons. Livestock losses compound
24 economic impacts, with dairy operations particularly vulnerable to extended power outages and
25 facility damage.

26
27 **Interconnected Vulnerabilities.** These hazards create compounding effects that threaten the
28 county's fundamental viability. Post-fire landscapes become more flood-prone, as burned
29 watersheds generate debris flows and increased runoff. Drought conditions increase wildfire risk
30 while making communities more vulnerable to water infrastructure failures. Flooding damages
31 water treatment facilities just as drought increases demand for clean water supplies.
32

33 **Aquifer Protection: The Foundation of Ecosystem and Water Resource Integrity**
34

35 Aquifer protection and groundwater recharge represent far more than safeguarding drinking
36 water supplies—they constitute the fundamental life-support system for Yakima County's
37 interconnected terrestrial and aquatic ecosystems. Groundwater serves as the critical
38 hydrological bridge between surface water bodies and deep subsurface systems, maintaining the
39 delicate hyporheic zones where streams and aquifers exchange water, nutrients, and dissolved
40 organic matter essential for aquatic ecosystem health. These hyporheic environments support
41 specialized biological communities that process nutrients, regulate water temperature, and
42 provide spawning and rearing habitat for salmon and steelhead during crucial life stages.
43

1 Throughout the county's riparian corridors, phreatophytic vegetation—including native
2 cottonwoods, willows, and shrub communities—depends on shallow groundwater access to
3 survive the region's arid summers, creating the green ribbons of habitat that support wildlife
4 movement corridors and provide critical ecosystem services including carbon sequestration,
5 flood mitigation, and stream shading. The intricate connectivity between groundwater and
6 surface water systems means that aquifer depletion or contamination cascades through entire
7 watersheds, reducing baseflows that sustain fish populations during low-flow periods,
8 compromising the water temperature regulation that prevents thermal stress in aquatic species,
9 and eliminating the subsurface water sources that maintain wetland hydroperiods essential for
10 migratory waterfowl and amphibian reproduction. Protecting aquifer recharge areas through
11 strategic land use planning, maintaining natural infiltration processes, and preventing
12 groundwater contamination thus represents a cornerstone strategy for preserving the biological
13 diversity and ecological resilience that underpin Yakima County's environmental and economic
14 sustainability.

15
16 Infrastructure systems designed for historical conditions fail under contemporary stresses. The
17 county's electrical grid, built for moderate weather, suffers cascading failures during extreme
18 events. Telecommunication networks experience repeated damage, hampering emergency
19 response and economic continuity. Transportation infrastructure faces simultaneous pressure
20 from flood damage, fire closures, and increased maintenance needs due to extreme weather.

21
22 Economic resilience erodes as businesses face repeated disruption. Agricultural operations
23 struggle with crop insurance gaps that fail to cover specialty crops and emerging climate risks.
24 Tourism, increasingly important for economic diversification, suffers from air quality impacts and
25 facility closures. The county's competitive advantage in food processing becomes vulnerable as
26 reliable water supplies and transportation access face chronic threats.

27
28 **The Imperative for Integrated Planning:** Climate projections for the Yakima Basin indicate
29 temperature increases of 3-5°F by 2050, earlier snowmelt reducing summer water availability,
30 and more frequent drought conditions coinciding with extended fire seasons. These changes will
31 stress existing infrastructure, alter flood patterns, and challenge traditional water management
32 practices that have sustained the region's prosperity.

33
34 The Horizon 2046 Comprehensive Plan must therefore weave resiliency and sustainability into
35 every element—from transportation networks designed to withstand extreme weather, to land
36 use patterns that preserve carbon sequestration capacity and reduce fire risk, to economic
37 development strategies that build diversified, climate-adaptive local economies. This integration
38 requires moving beyond compliance to embrace innovation, ensuring that Yakima County's
39 unique assets—its agricultural productivity, natural beauty, cultural heritage, and strategic
40 location—remain viable despite escalating environmental challenges.

41
42 By embedding resiliency and sustainability principles into its comprehensive planning framework,
43 Yakima County positions itself not merely to meet Growth Management Act requirements, but

1 to lead Washington State in demonstrating how rural and agricultural communities can thrive
 2 while adapting to environmental change and managing responsible growth. This approach
 3 recognizes that true sustainability requires balancing economic vitality, environmental
 4 stewardship, and social equity—creating a foundation for prosperity that can endure the
 5 intensifying challenges and evolving opportunities of the decades ahead.

6
 7 The county's survival and prosperity depend on this transformation. Without comprehensive
 8 adaptation, the recurring cycle of drought, wildfire, and flood will eventually overwhelm the
 9 community's capacity to recover, threatening not just individual livelihoods but the entire
 10 regional economy that depends on Yakima County's agricultural production and strategic
 11 location in the Pacific Northwest.

12
 13 Often this analysis can be done in terms of outright dollars and cents. Yet our actions should also
 14 be evaluated for their effects on the quality of life we enjoy today and want to see for our
 15 children. Sustainability means leaving something for the next time, the next generation. This
 16 practice applies equally to the streams we divert water from. We need to look closer at the long
 17 term costs and benefits of our activities. This includes the operation of large scale extractive
 18 industries and our individual daily actions.

19
 20 The Yakama Nation's Climate Adaptation Plan for the Territories of the Yakama Nation was
 21 published in April, 2016 . The Climate Adaptation Plan represents the first collective effort by the
 22 Yakama Nation to identify (1) important resources and cultural components most likely to be
 23 impacted by climate change, (2) work the Tribe is currently undertaking that recognizes and will
 24 help to reduce climate change impacts, and (3) specific recommendations for deeper analyses of
 25 vulnerabilities and risks to their most important interests and adaptation actions that should be
 26 implemented. The Climate Adaptation Plan's goal is to be a starting point for the conversation
 27 about climate change and planning for adaptation throughout all of the territories of the Yakama
 28 Nation. It is derived from the experience of the Yakama Nation people, its tribal programs, and
 29 findings from regional experts on these important topics. This document is one way to educate
 30 ourselves about current vulnerabilities and future risks and share ideas about actions that may
 31 need to be taken to build climate resilience. It is a living document that will be revisited and
 32 adjusted over time to reflect new information, new understandings, and new priorities.

33
 34 Some local governments in the state are taking action to address climate change through a
 35 combination of mitigation and adaption techniques in their operational and comprehensive
 36 plans. While addressing climate change or energy are not specific requirements under the
 37 Growth Management Act (GMA), many counties and cities are addressing climate change
 38 through land use and transportation planning or by adding climate change policies or even
 39 optional elements to their comprehensive plans. The expected return on investment of
 40 addressing climate change issues through planning at the local level is that development will
 41 occur where urban services exist or are planned for, where transportation choices can be more
 42 efficiently provided, and where the majority of jobs and housing are located.

Commented [KW48]: NS: x.x. Priority Actions Preserve culturally important sites and foods from climate impacts. Recognize and incorporate cultural forms of conservation and adaptation wherever possible, with emphasis on coterminous lands i.e., adjacently managed, zoned etc.

Commented [KW49]: Update first two sentences to reflect that THIS PLAN IS....resiliency. This from: [Preparing for Drought | U.S. Geological Survey](#)

Commented [KW50]: Get ref, and see if this is feasible in YC.

Commented [KW51]: •Promoting stormwater and rainwater capture to augment water supplies and replenish aquifers.
 •Continued advancements in irrigation efficiency (VSP)
 •Drought prediction and planning
 •Improper land use during drought has been a major driver of land degradation in drylands globally, especially in the western U.S. Increasing aridity in western U.S. drylands under future climates will exacerbate risks associated with drought and land use decision.
 •addressing gaps in our understanding of how vegetation and soils will respond to future climates, land use, and the interactions between these factors. We will build this understanding using a several approaches, including:
 1.Surveys of vegetation and soils fertility across lands with differing in land use history (grazing by domestic livestock);
 2.Experiments in which we manipulate precipitation to simulate future droughts;
 3.Using ecosystem simulation modelling; and
 4.Experiments where we simulate the interaction of grazing and drought.

Commented [KW52]: This ROI is valid, but there are several more including protection from wildfire damages, health impacts, runoff from burnt areas, drought-resiliency...

1 This also conserves resource lands (designated agricultural, forest, and mineral lands of long-term
2 commercial significance) and rural areas (lands outside of designated urban growth areas that
3 are not formally designated resource lands). It may also result in a greater likelihood of
4 transportation alternatives to the single-occupancy vehicle, fewer vehicle miles traveled, a
5 greater mix of land uses and densities in urban areas, and a better jobs/housing balance. In fact,
6 it is believed that the desired outcomes of addressing climate change are also the desired
7 outcomes of the Growth Management Act.

8
9 In addition to the GMA, Yakima County may address potential impacts of climate change through
10 the administration of **State Environmental Policy Act (SEPA)**. Under SEPA, actions by a
11 governmental entity, such as granting a development permit, must be assessed for potential
12 impacts to the natural and built environment. To perform this assessment, Yakima County relies
13 on the use a SEPA checklist.

14
15 The SEPA checklist consists of a series of questions that ask for information about a proposal,
16 such as a subdivision, a commercial building or a public building. Part of the checklist requests
17 information describing the proposed actions impact on climate, but there is no guidance on
18 whether or how to quantify, analyze and mitigate for greenhouse gas emissions at this time. To
19 begin to provide such guidance, DOE is engaged with a SEPA working group to help clarify the
20 SEPA rules and prepare important guidance information to:

21
22 • Clarify how, where and when to incorporate climate change considerations into the
23 environmental review of a proposal.
24 • Recommend changes to the SEPA rules and/or environmental checklists, threshold
25 determination, and/or Environmental Impact Statements (EIS).
26 • Provide instruction or guidance to local and state governments on how to determine
27 possible mitigation strategies, and whether the impacts of climate change may affect the
28 project over its lifetime.
29 • Encourage greater use of SEPA in a programmatic, upfront manner that results in
30 streamlining permitting for compact development in urban growth areas or urban
31 centers.

32
33 2.12 VSP and Agriculture

34
35 • Soil Moisture-Based Drought Monitoring for the South Central Region
36 • Soil moisture is a critical variable for understanding the impact of drought on ecological,
37 hydrological, and agricultural systems. However, key research gaps currently prevent
38 existing soil moisture measurements from being used to assess and mitigate drought
39 impacts such as wildfire outbreaks, lost agricultural production, and degraded wildlife
40 habitat. We are building the necessary scientific foundation for soil moisture-based
41 drought monitoring in the South Central region and beyond. We will produce effective
42 soil moisture-based drought indices that decision-makers can use retrospectively or in

1 [real-time with data from existing monitoring networks to assess drought severity in the](#)
2 [South Central region or across the US.](#)

3 • [Assessing the Use of Biochar for Drought Resilience and Crop Productivity: Regional](#)
4 [assessment of biochar soil amendments on crop productivity, drought resilience, and](#)
5 [carbon sequestration](#)

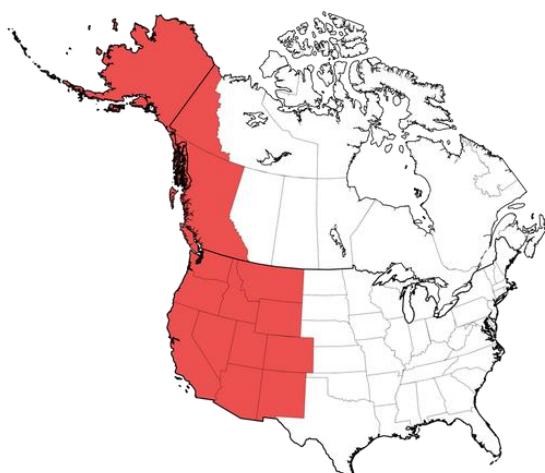
6 • [Climate change impacts on water resources in the Pacific Northwest are predicted to have](#)
7 [transformational effects on agriculture. Research is ongoing in the Northwest to](#)
8 [understand agriculture practices that might allow farmers to prepare for these climate](#)
9 [change impacts. One potential technique is the use of biochars \(charcoal made from](#)
10 [decomposition of organic matter at high temperatures in the absence of oxygen\), which](#)
11 [can be used as a soil amendment that can increase soil moisture retention, improve](#)
12 [agricultural yields, and hold carbon in soil for long periods of time](#)

13 • [Nature-Based Solutions and Water Security](#)

14 • [Local perspectives in protected area design \(invasive species\)](#)

15 **[2.13 Wildfires and drought](#)**

16 to measure and communicate social and environmental dimensions of wildfire resilience.





1
2
3 Comparison of Upper Lewis Creek previously treated with prescribed fire. The top photo was
4 taken on July 8, 2015 prior to the Rough Fire. The bottom photo was taken on Sep. 29, 2015
5 after the Rough Fire came through. Notice the still standing live trees. Photo: NPS/
6 K.Howard (Public domain.)

7
8 Drought is one of the biggest threats facing our forests today. In the western U.S., severe
9 drought and rising temperatures have caused increased tree mortality and complete forest
10 diebacks. Forests are changing rapidly, and while land managers are working to develop long-
11 term climate change adaptation plans, they require tools that can enhance forest resistance to
12 drought now. To address this immediate need, researchers are examining whether a common
13 forest management tool, prescribed fire, can be implemented to help forests better survive
14 drought.

Commented [KW53]: How about the “fire, flood, debris, project by DOE (Amanda)? Information here?

15
16 **Managing Forests for Drought**

17 Severe droughts cause widespread tree mortality and decreased growth in forests across the
18 globe—even in areas with cooler climates. Mitigating the negative effects of climate change, in
19 particular increased drought frequency and severity, poses a major challenge to forest
20 managers. Yakima County is working with the USFS in identifying which forest management
21 practices best minimize drought impacts for a range of forest types and climates in the County.

22
23 **INSERT USFS PLANNING**

24
25 Researchers are using eight long term forest management experiments that are already
26 underway across the country to identify how different forest management practices can
27 increase the resistance and resilience of forests to drought. (FIND AND USE IN BAS)

28
29 Yakim County defines ecological drought as “an episodic deficit in water availability that drives
30 ecosystems beyond thresholds of vulnerability, impacts our agricultural economy, ecosystem
31 services, and triggers feedbacks in natural and/or human systems” (Crausbay, 2017).

32
33 **2.5.4 Air Quality**

1 The primary source of air pollution in Yakima County is motor vehicles. Air quality is lowest during
2 the winter, when the valley's shape and weather patterns combine to create an inversion layer
3 of trapped air. Wood smoke, car exhaust, road dust (track out), and other emissions collect in
4 this trapped layer and remain until weather conditions permit their dilution. With increased
5 population, we will face an increasing challenge to maintain and improve air quality, particularly
6 in urban areas.

7
8 Under state law, growth must be focused in urban areas. Yet more people locating into Yakima's
9 Urban Growth Areas (UGA) will concentrate growth in a setting that traps air pollution. Gravel
10 road dust is tracked out of rural areas into urban areas and is re-suspended. In order to maintain
11 air quality, pollution from cars, wood smoke and industry must be addressed. The County's focus
12 should be 1) to reduce single occupancy vehicle (SOV) trips, 2) reduce dependence on wood
13 stoves as sole source of heat, and 3) work with local industries to help them comply with air
14 quality standards.

15
16 One of mankind's most basic needs is the air we breathe. Polluted air contributes to a variety of
17 health problems and consumes millions of dollars in medical costs each year. Polluted air also
18 obscures visibility, creates unpleasant odors, and adversely affects animal and plant life. The
19 attractiveness and livability of Yakima County is directly related to the quality of our air.
20 Air quality concerns in Yakima County are the greatest during the winter months. The weather
21 patterns combine with our valley's topography shapes to create an inversion layer of trapped air.
22 Wood smoke, car exhaust, suspended road dust, and other emissions collect in this trapped layer
23 where they stay until the weather dilutes them. Polluted air contributes to a variety of health
24 problems. Polluted air also obscures visibility, creates unpleasant odors, and adversely affects
25 animal and plant life. Heavily traveled gravel roads also contribute to our air quality concerns in
26 dry seasons. Yet the cost of solving the problem increases proportionately with the increased
27 traffic resulting from Yakima's growth.

28
29 **2.5.4 Geology**
30 Between 16 and 10 million years ago, the central and eastern portions of Yakima County were
31 overrun repeatedly by massive flows of molten lava. These flows originated from large fissures
32 or rifts in what is now southeastern Washington and northeastern Oregon. Over and over again,
33 each flow incident spread westward and eventually cooled to form basalt. The layers of basalt
34 thin to the west and are generally absent at the crest of the Cascade Range. However, basalt
35 exposures exist near the crest at Jumpoff Peak, Meeks Table and the Little Naches-American Fork
36 River junction (Campbell, 1984). The local accumulation of these flows are known as the Yakima
37 Basalt Group and are the youngest members of the greater Columbia River Basalts.

38
39 Near the end of the last great basalt flows, the Cascade Mountain Range was in the early stages
40 of formation. Between basalt flood episodes came the deposition of volcanic materials, mostly
41 large mud flows (lahars), from the newly-forming Cascades. These deposits, known as the
42 Ellensburg Formation, are found both overlying and between Yakima basalt flows and ended

1 about 4 million years ago. Because the basalts become thinner and pinch out to the west, the
2 interbedded deposits are difficult to distinguish from the overlying deposits.

3
4 Subsequent folding of the basalts and volcanic deposits has formed a series of five east-to-west
5 trending anticlinal (upfolds of rock) ridges with broad synclinal valleys lying in between.
6 Collectively named the Yakima Fold Belt, the ridges are individually named Umtanum, Yakima,
7 and Ahtanum/Rattlesnake Ridges; Cleman Mountain and the Horse Heaven Hills. Their folding
8 occurred at different rates, at times fairly rapid and others very slowly. As uplift of the ridges
9 occurred, the Yakima River was able to down-cut rapidly enough to generally maintain its present
10 course. Most are used primarily as rangeland. Between the ridges are basin valleys that are
11 tributary to the Yakima Valley. These include the Wenatchee, Naches, Moxee, and Ahtanum valleys.
12 These valleys are quite extensive and are the main areas used for irrigated crops.

13
14 The ridges and basins form the visual perspective of Yakima County and provide community
15 definition. The quality of our human environment is dependent, in part, on the quality of these
16 ridges and basins. For example, the quality of surface water may be seriously degraded if the
17 ridge drainages are disturbed by development or erosion due to overgrazing. Wildlife habitat for
18 upland game birds and big game may also be destroyed.

19
20 Water quality can also be degraded by development in the valley bottoms. As additional areas
21 are paved, run-off collects urban-area pollutants which are transferred back to the surface and
22 ground water environment. The ridges are also vulnerable to degradation as a visual resource
23 from the construction of transmission lines, towers, houses, and roads.

24
25 The cost of developing along the ridges is high. Infrastructure costs more because water must
26 be piped farther and upwards against gravity. Poor road networks make it difficult to reach
27 developments. Slopes create difficulty in siting septic systems. An excessively drained septic
28 system, for example, may contaminate wells located down slope. These conditions will not be
29 solved in the near future by technology or a "quick fix" instead, they support the *Visioning*
30 statement that "we must recognize that we can't live everywhere."

31
32 About one million years ago, lava began flowing from a volcano lying near the Goat Rocks region
33 of western Yakima County. One eruption of this andesite lava flowed down the Tieton River
34 toward the City of Yakima forming what is now Naches Heights. Another flow of this Tieton
35 Andesite forced the Naches River northward from its original course along what is now Cowiche
36 Creek. Today, the most striking exposures of the Tieton Andesite are found across from the Oak
37 Creek Wildlife Recreation Area near the confluence of the Tieton and Naches Rivers.

38
39 During the last ice age, a glacial dam formed to block the Clark Fork of the Columbia River in
40 Idaho. This blockage backed up a tremendous amount of water known as Glacial Lake Missoula.
41 When this ice dam broke, the lake rushed westward to scour the top of the basalt flows and
42 create the channelled scab lands of the Columbia Basin. Glacial flood events of this type were
43 repeated as many as forty times during the last 30,000 years. The flood waters flowed out to the

1 mouth of the Columbia River and up the Yakima Valley depositing gravel and slack water
2 sediments as far north as Union Gap. These flood deposits can be seen in several places in the
3 Lower Valley including the gravel pits south of Grandview, along old Highway 12 near Buena, and
4 along the north side of Snipes Mountain.

5
6 With the notable exception of the eruption of Mount St. Helens in 1980, recent geologic history
7 has been a time of little change. While several minor landslides and tremors have occurred, uplift
8 of the ridges has almost stopped. The large scale erosive events of the past have diminished, but
9 the Yakima River and its side streams continue to down cut, transport and deposit sediments.

10
11 The geologic history of Yakima County has provided us with rich volcanic and river deposited soils
12 that have proven outstanding for agriculture. This aspect of our landscape, along with abundant
13 cattle grazing opportunities, is what originally spurred people to move here. Although our
14 economy has become more diversified, agriculture and its related industries are still Yakima
15 County's biggest business. In this regard, our success is tied directly to our geologic past. But
16 while large areas remain productive for agriculture, growth within Yakima County continues to
17 remove substantial tracts of the best agricultural land for urban and suburban development. We
18 will continue to face some difficult challenges in preserving our best agricultural ground as we
19 continue to develop home sites and diversify our economy.

20
21 Another important local enterprise tied to our geologic past is the sand and gravel mining
22 industry. While not a major local employer, these operations provide us with important
23 construction materials. The primary source for these aggregates is the Yakima River flood plain
24 although several sites have been developed along the ridges.

25
26 **2.5.5 Soils**
27 The geologic history of Yakima County has provided us with rich volcanic and river deposited soils
28 that have proven outstanding for agriculture. Although our economy has diversified over time,
29 agriculture and its related industries are the County's leading industry. In this regard, our success
30 is tied directly to our geologic past. But while large areas remain productive for agriculture,
31 growth within Yakima County continues to remove substantial tracts of the best agricultural land
32 for urban and suburban development. Yakima County encourages agricultural producers to
33 coordinate their activities with local, state, and federal agencies to limit loss of soil due to erosion.
34 Our challenge is to preserve our best agricultural ground as we continue to develop home sites
35 and diversify our economy.

36
37 Another important local enterprise tied to our geologic past is the sand and gravel mining
38 industry. While not a major local employer, these operations provide us with important
39 construction materials. The primary source for these aggregates is the Yakima River flood plain
40 although several sites have been developed along the ridges.

41
42 **2.5.6 Vegetation**

1 Natural vegetation in Yakima County reflects the wide range of climatic conditions found here.
2 The eastern portions of the County are dominated by steppe and shrub-steppe plants common
3 to the greater Columbia Basin. Eastern slopes and ridges are generally treeless and in their native
4 condition are covered with sagebrush and desert grasses. Typical community dominants include
5 shrubs such as big sagebrush, bitterbrush and stiff sagebrush. Stiff perennial grasses such as blue
6 bunch wheat grass, Idaho fescue and giant wild rye were once commonplace. Traveling west and
7 upward in elevation, the vegetation changes with climate and hydrology to allow an abundance
8 of plant life, and includes extensive tracts of ponderosa pine, mountain hemlock, Douglas fir and
9 various other conifer species. Ultimately, the harsh conditions of the highest points in the
10 Cascades allow for little vegetative growth. What does survive has adapted to the extreme con-
11 ditions found there.

12
13 Along stream corridors are [riparian](#) vegetative belts that contain various kinds of shrubs, trees
14 and grasses such as; black cottonwood, aspen and alder. These well vegetated stream-side
15 [riparian](#)-zones provide substantial food and shelter for wildlife. Many aquatic organisms feed on
16 leaf litter and woody debris that collect in these streams. Insects and other invertebrates falling
17 from these plants provide an important source of food for many fish species. Birds and land
18 animals depend on stream-side vegetated areas for food, thermal protection, visual cover and as
19 a migratory corridor to other parts of their habitat. It is the sum of these parts, from
20 microorganism to migrating fish, that make habitat vibrant and healthy.

21
22 As development takes place, native vegetation is often indiscriminately removed and as a result,
23 wildlife habitat is lost. Birds as diverse as osprey, heron and wood ducks all need large trees
24 adjacent to streams for nesting. Early logging practices in the headwaters of the Yakima River
25 removed many of the larger trees from these reaches and thus ended the gathering of large
26 organic debris along the river's banks. The commonly accepted actions we take in developing
27 our resources disrupt the natural cycle that is essential to the continued health of riparian areas.
28 Livestock, logging and irrigated agriculture have irrevocably altered the native vegetation of
29 Yakima County. While our success at modifying our surroundings has driven our local economy,
30 another perspective sees the missed opportunities. Stream corridors stripped of their vegetation
31 no longer support the fish they once did. The "stair step" appearance along many of the ridges
32 are long-term signs of overgrazing. With the difficulty these lands have in recovering, pressure
33 mounts to convert them to other uses, most often housing.

34
35 The County's dominant native vegetative pattern is steppe and shrub-steppe. In the higher
36 western elevations, trees become more abundant. The majority of Yakima County's commercial
37 timber lies above 3,000 feet and much of this is outside of local land use jurisdiction. The health
38 of the timbered areas contributes to the prosperity of the County's agriculture. With fewer trees
39 in the mountains, water runs off faster and isn't retained for later seasonal use. Although
40 standard forest practices encourage replanting, re-vegetation is more difficult on the eastern
41 slopes of the Cascades. The practice of mono-cropping also makes the ecosystem more
42 vulnerable to disease and other problems.

1 The introduction of livestock and agricultural production in the mid- to late 1800's has also
2 drastically changed the County's vegetation patterns. This in turn has reduced wildlife habitat
3 since the native vegetation they depend upon is reduced. Native plants have been edged out by
4 invaders and all this increases wind and water erosion.

5

6 **2.5.7 Visual**

7 Perhaps the most popular "postcard" image of Yakima County is of a bountiful orchards, hop
8 fields, and vineyards stretching westward with Mount Adams visible in the background. A
9 somewhat lesser known image is the nearby ridge lines and valley bottoms. And intermixed with
10 the ridges and valleys are other places that hold people, roads, buildings and lights. For most of
11 us, these urban images dominate our daily visual perspective. They seem more dynamic and fluid
12 than ridges, vineyards, hopfields, orchards and valleys. We see the changes in our urban setting
13 more readily than anywhere else because that is where most of us live. But in Yakima County,
14 many feel that what once looked rural and open has become increasingly filled up and more
15 urban in appearance. We won't see our rural lands disappearing until it's already happened.

16

17 The ridge lines of Yakima County have become more than striking natural visual features. As
18 Yakima County has grown, many of these high points have become highly coveted places in which
19 to live and build homes. Areas like the Naches Heights west of Yakima, Lookout Point south of
20 Selah and Yakima Ranches above Terrace Heights all offer outstanding views of the valley
21 bottoms and seclusion from crowded city streets. Other ridge lines, such as Ahtanum and
22 Rattlesnake Ridges, are serving the needs of a growing communication industry for the
23 placement of transmitter towers. Yet we forget that these high points present problems for
24 development due to the costs of providing services like roads, water and sewer. Past land use
25 and subdivision practices have diminished the function of many ridge lines as important wildlife
26 habitat. These same practices have also reduced the ridges' ability to serve the more traditional
27 uses applied to them as range or agricultural land.

28

29 The open spaces in Yakima County come in many forms, some of it dedicated and protected while
30 others are informal and not publicly accessible. The majority of Yakima County is owned and/or
31 managed by federal, state or Tribal interests. While these lands lie largely outside of County
32 jurisdiction, they provide the bulk of our open spaces. Most of Yakima County's recreational
33 opportunities lie within them and they contribute significantly to other open space values such
34 as wildlife habitat. To protect the informal, privately held open spaces, Yakima County has an
35 Open Space Tax Program which reduces the tax assessment on agricultural and timber lands in
36 open space. Other open space lands can also qualify for reduced assessments if their
37 preservation provides some public benefit.

38

39 The provisions of Yakima County's adopted Critical Area Ordinance (CAO) also encourages open
40 spaces by establishing vegetative buffermanagement zones along our streams, shorelines, and
41 wetlands. The vegetative buffermanagement zoneing provisions of the CAO were established to
42 support the functional properties of wetlands and stream corridors. These include flood water

1 storage, streambank and shoreline stabilization, erosion prevention, and migratory corridors for
2 wildlife.

3
4 The Land Use Element advocates a large lot rural zoning pattern to preserve the remaining
5 openness of these areas. Past zoning and subdivision regulations have allowed lots down to one-
6 half acre in size anywhere in the County. This permissiveness has resulted in a sprawling rural
7 land use pattern that has consumed large areas of our informal open spaces.

8
9

10 **2.6 ANALYSIS OF ASSETS, NEEDS AND OPPORTUNITIES**

11 **2.6.1 Natural Resource Protection**

12 As discussed in the preceding section, Yakima County is rich in both natural and cultural
13 resources. This inheritance puts us in an enviable position for future growth. However, the
14 prosperity of our near- and long-term future is in our hands and in many ways we are at a
15 crossroads. ~~Will we continue to meet our short term needs at the expense of our long-term
16 resources? Or will we meet the challenge of sustaining growth while preserving options and
17 resources for both ourselves and upcoming generations?~~

18
19 For individuals, sustaining resources can be simple actions: turning off the bathroom tap while
20 brushing your teeth. Recycling and properly disposing of hazardous materials like motor oil and
21 antifreeze. Or finding alternative ways to get to work. Likewise, businesses can help build a
22 sustainable community by “adding value” to locally produced renewable resources, providing
23 internships and job training. These types of actions, if practiced by enough of us, foster a
24 commitment to place and bring stability to both the economy and the environment.

25
26 To better meet this challenge, five components of sustainable land use management have been
27 identified. These components are referred to throughout the Natural Setting goals and policies
28 of Horizon 2040 and Horizon 2046 and include:

29
30 • Strategies to foster improvement of the natural resources common to us all, particularly
31 air and water quality;

32 • Protection of designated critical areas, including wetlands, stream corridors, and
33 frequently flooded areas;

34 • Education efforts that will further awareness of environmental issues;

35 • Incentives that encourage the use of long-term, least-cost alternatives; and

36 • Performance measures that assess the state of certain key natural amenities today so
37 they can be compared to their condition in the future.

1

2

3 **2.7 GOALS, OBJECTIVES AND POLICIES**

4 To help guide development of the Goals and Policies for the Natural Setting Element, several
5 principles have been identified:

6

7 1. Landscapes, both cultural and natural, provide clues to a region's human personality. The
8 way we live our lives and create our cultural landscape is a function of the natural setting,
9 of our environment.

10 1-2. In turn, the long-term capacity of the environment to support significant population and
11 economic growth is directly related to our understanding the limits of natural systems.

12 2-3. The natural setting and its resources drive our economic base and define our cultural
13 landscape. It shapes our quality of life.

14

15 **2.7.1 Visioning "Check In"**

16 Yakima County took part in a "Visioning check in" process in 2014 and 2015. This effort used
17 online surveys to gain feedback from Yakima County residents on whether they feel the original
18 Visioning Goals that influenced Yakima County's Comprehensive Plan - **Plan 2015** are still relevant
19 today or should be updated or discarded. A total of 254 people took the survey related to the
20 natural environment, resulting in the list of revised Visioning Goals below.

21

22

1

2.7 POLICIES AND GOALS, CHAPTER 2 – NATURAL SETTINGS

3

4 **CRITICAL AREAS GENERAL:**

5 PURPOSE STATEMENT 8

6

7 Critical Areas are an important part of the natural setting in Yakima County. Their protection is
 8 required by the Growth Management Act and important to the quality of life of the residents of
 9 this county. Critical Areas include groundwater, fish and wildlife priority species and habitat
 10 (which includes surface waters), wetlands, frequently flooded areas, and geologic hazards. The
 11 protection of critical areas must include certain general approaches based on Best Available
 12 Science, and processes for implementation, which are provided for in the goals and policies below.

13

14 General

GOAL NS 8	Establish critical areas protection measures to protect environmentally sensitive areas, and protect people and property from hazards. Establish critical areas protection for environmentally sensitive areas.
POLICIES:	
NS 8.1	Update the 2004 Best Available Science Report. Require the use of best available science to develop regulations to protect the functions and values of critical areas, including shorelines. Develop resiliency measures for flood, wildfire and drought, air quality and extreme heat hazards. Sustainability will provide benchmark principles and standards. Adaptive Management and High Resolution Change Detection (e.g., imagery and GIS analysis) will provide a monitoring approach.
NS 8.2	Ensure proposed subdivisions, other development, and associated infrastructure are designed at a density, level of site coverage, and occupancy to preserve the structure, values and functions of the natural environment and to safeguard the public from hazards to health and safety.
NS 8.3	Use a preference-based system of mitigation sequencing for the County's stream, lake, pond, wetland, floodplain and fish and wildlife priority species and habitat critical areas that reduces impacts using approaches ranging from avoidance to replacement. This system, similar to a hierarchy-based system of mitigation, should seek to achieve consistency in application and include methods to detect the measurable effects and adequacy of mitigative actions.
NS 8.4	In order to encourage Critical Area protection and restoration, the density and lot size limits stipulated in other policies may be adjusted or exceeded to accomplish clustering and bonus provisions adopted under the (Critical Areas Ordinance) CAO. The use of incentive based programs is encouraged. Yakima County will consider amendments to the Reasonable Accommodations provisions in 16C to provide definitions and criterial for specific allowances and

Commented [KW54]: 1. Update to current 2. added to reflect integration between and among 16C, 16D and Title 22. GMA and SMA required.

Commented [KW55]: Required for SMP via the SMA. For the VSP and Critical Ordinances, BAS establishes the basis for compliance under GMA for Critical Areas coupled with HRCD to meet Adaptive Management (in the absence or ambiguity of BAS), effectiveness and implementation monitoring and reporting requirements.

Commented [KW56]: Change necessary b/c "bonus provisions" do not exist in ord. Adjustments to increase density, in TBD circumstances, can have protective effects to critical areas (e.g., reduced IS). YCC needs to be amended to better define and clarify how adjustments will be allowed w/in the Reasonable Accommodations section.

	<p>or denials.▪</p> <p>NS 8.4a</p> <p><u>Low Impact Development Requirements. Require Low Impact Development (LID) techniques for all development to:</u></p> <ul style="list-style-type: none"> • Minimize impervious surfaces and preserve natural infiltration capacity • Disperse and infiltrate stormwater close to source rather than concentrating flows • Protect natural drainage patterns and surface water connections • Enhance groundwater recharge that maintains summer base flows • Filter pollutants through vegetation and soil rather than direct discharge to streams <p><u>LID shall be the preferred and presumptive stormwater management approach, with conventional collection and detention systems approved only where site constraints preclude LID implementation.</u></p>
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Resiliency and Sustainability – Climate Change

Building resilience and sustainability is fundamental to Yakima County's ability to thrive under changing climate conditions. Climate resilience planning is required by ESHB 1181 and essential to protecting critical areas, infrastructure, agriculture, and community wellbeing. Resilience encompasses preparedness for extreme weather events, adaptation to changing conditions, protection of vulnerable populations, and sustainable resource management. Resilience strategies must include approaches based on Best Available Science, equitable resource allocation, nature-based solutions, and adaptive management for implementation.

GOAL NS 9:	<u>Ensure the resilience and sustainability of critical areas, shorelines, property, life, health, and the economy through preparation, survival, and recovery from extreme weather events and cumulative natural hazards.</u>
POLICIES:	
<u>NS-9.1</u>	<u>Best Available Science Integration – Require the use of best available climate science, including projections from the University of Washington Climate Impacts Group, NOAA models, USGS data, and other credible sources, to inform all land use planning, development regulations, and critical area protections. Planning decisions shall account for changing precipitation patterns, reduced snowpack, increased wildfire frequency and severity, extended drought periods, and temperature increases affecting water resources and ecosystems.</u>
<u>NS-9.2</u>	<u>Climate-Informed Critical Areas Protection – Update critical areas regulations to incorporate climate change impacts across all critical area types, including climate-informed flood projections beyond current FEMA maps and Comprehensive Flood Management Plan from the Ahtanum, Cowiche, and eventually, from the Lower Yakima Valley (planned in 2026) scenarios for shoreline areas, and for post-wildfire debris flow risks in geologically hazardous</u>

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	<i>areas, hydrologic changes and drought impacts to wetlands, and temperature-driven habitat shifts for fish and wildlife. Development in or adjacent to critical areas must demonstrate resilience to projected climate conditions over the expected lifespan of structures and infrastructure.</i>
<u>NS-9.3</u>	<i>Shoreline Climate Adaptation – Integrate climate resilience into Shoreline Master Program updates by requiring analysis of sea level rise vulnerability, establishing shoreline hazard areas, managing development to reduce risk, protecting channel migration zones, and emphasizing riparian vegetation conservation and restoration. Prioritize nature-based solutions such as soft shore stabilization, living shorelines, and green infrastructure over hard armoring where feasible.</i>
<u>NS-9.4</u>	<i>Flood Resilience and Stormwater Management – Adopt the American Society of Civil Engineers and the Washington State Floodplain Managers ASCE 24-24 ordinance language. Expand floodplain mapping and regulation to include 500-year floodplains, incorporate climate-adjusted precipitation projections, and address post-wildfire flood risks and debris flows. Promote low-impact development, green stormwater infrastructure, floodplain reconnection, and natural hydrologic function restoration to increase flood storage capacity and reduce downstream impacts.</i>
<u>NS-9.5</u>	<i>Wildfire Risk Reduction – Require wildfire risk assessments for development in high-risk areas and implement wildfire hazard mitigation strategies including defensible space requirements, ignition-resistant construction standards, emergency access and evacuation route planning, and coordination with local fire districts. Support vegetation management, forest health treatments, and community wildfire preparedness programs on both public and private lands. Adopt the Urban Wildfire Interface criteria and the USFS's Wildfire Protection and Response Plan.</i>
<u>NS 9.6</u>	<i>Policy Drought Preparedness and Water Resource Protection – Conduct water resource vulnerability assessments that account for reduced summer stream flows, declining snowpack, and increased water demand from higher temperatures. Promote water conservation, irrigation efficiency improvements, drought-resistant landscaping, aquifer recharge protection, and coordinated water resource planning across jurisdictions to ensure reliable water supply for people, farms, ecosystems, and fish. Integrate the policy, goals and Yakima County Code supporting Managed Aquifer Storage for drought resiliency and agricultural sustainability, public health and infrastructure protections. Coordinate with the Yakima Basin Integrated Plan's Groundwater Group, the Yakama Nation, and Yakima County Cities and Towns to incorporate their resiliency and sustainability goals from their Comprehensive and other plans.</i>
<u>NS 9.7</u>	<i>Protection of Vulnerable Populations – Identify communities and populations with heightened vulnerability to climate impacts based on factors including age, income, health status, housing conditions, language barriers, and access to resources. Ensure that climate adaptation planning, emergency</i>

	<u>management, infrastructure investments, and cooling/clean air resources prioritize equitable outcomes and address disproportionate risks faced by overburdened communities</u>
<u>NS 9.8</u>	<u>Emergency Management and Hazard Planning Integration – Coordinate Comprehensive Plan implementation with local emergency management plans under RCW 38.52, ensuring consistency in hazard identification, risk assessment, emergency response protocols, and recovery planning. Update hazard mitigation plans to reflect increasing frequency and severity of climate-driven extreme weather events including heat waves, wildfires, floods, and droughts. Ensure proposed subdivisions, other development, and associated infrastructure are designed at a density, level of site coverage, and occupancy to preserve the structure, values, and functions of the natural environment or to safeguard the public from hazards to health and safety. Encourage mechanisms to restrict or minimize development in high-risk hazard areas to protect public health and safety. Maintain existing infrastructure to reduce the risk of infrastructure failure during a natural disaster. Locate critical facilities and infrastructure outside of high-risk hazard areas. Ensure new developments in high-risk hazard areas include adequate egress from floods and wildfires and have emergency access. Develop processes and procedures for streamlining projects intended to mitigate for natural hazards. Implement Recovery Plan to guide the redevelopment, public participation process, and long-term recovery after a natural disaster. Provide a process and procedure to streamline projects intended to provide relief and recovery from a natural disaster.</u>
<u>NS-9.9</u>	<u>Climate-Resilient Infrastructure – Require capital facilities, transportation systems, utilities, and public infrastructure to incorporate climate resilience design standards that account for projected changes in temperature, precipitation, flooding, wildfire, and other hazards over the infrastructure's expected lifespan. Prioritize infrastructure investments that provide co-benefits for habitat restoration, carbon sequestration, flood reduction, and community resilience.</u>
<u>NS-9.10</u>	<u>Agricultural Viability and Working Lands Conservation – Support the long-term viability of agriculture and working lands through voluntary conservation programs, technical assistance for climate-smart practices, irrigation modernization, soil health improvements, and economic incentives for landowners. Protect prime agricultural lands, farmland soils, and water rights from conversion while facilitating adaptation to changing climate conditions. Continue support and coordination with the Voluntary Stewardship Program and the Yakama Nation's Climate Action Plan.</u>
<u>NS-9.11</u>	<u>Natural Systems and Habitat Connectivity – Protect, restore, and enhance natural systems to provide continued ecological, cultural, social, and economic benefits under changing climate conditions. Maintain and improve habitat connectivity to allow species movement and migration, prioritize restoration of riparian corridors and wetlands, protect cold-water refugia for salmon and</u>

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	<i>other temperature-sensitive species, and support ecosystem-based adaptation strategies.</i>
<u>NS-9.12</u>	<i>Green Infrastructure and Nature-Based Solutions – Prioritize green infrastructure, nature-based solutions, and natural resource conservation over structural approaches where feasible to address flooding, stormwater management, erosion control, heat island mitigation, and water quality protection. Examples include riparian buffers, urban forests, green roofs, bioswales, floodplain restoration, and wetland creation or enhancement.</i>
<u>NS-9.13</u>	<i>Extreme Heat Preparedness – Address extreme heat risks through urban forestry and tree canopy expansion, cool pavement and roofing materials, building energy efficiency standards, cooling centers in accessible locations, public education campaigns, and coordination with public health agencies. Ensure that vulnerable populations have access to cooling resources during heat events.</i>
<u>NS-9.14</u>	<i>Air Quality and Wildfire Smoke Protection – Improve community resilience to wildfire smoke through indoor air quality improvements in public buildings, schools, and vulnerable populations' housing; public education about smoke health impacts; monitoring and alert systems; and coordination with public health and air quality agencies. Support clean air spaces and filtration resources during smoke events.</i>
<u>NS-9.15</u>	<i>Monitoring, Adaptive Management, and Plan Updates – Establish monitoring systems to track climate change impacts, implementation of adaptation strategies, and effectiveness of resilience measures. Use adaptive management principles to adjust policies and actions based on new scientific information, observed climate impacts, and evaluation of outcomes. Update comprehensive plans and development regulations on a regular cycle to incorporate current climate projections and best practices.</i>

1

2 **WATER QUALITY AND QUANTITY:**

3

Critical Areas: Groundwater And Critical Aquifer Recharge Areas (CARAs)

4

PURPOSE STATEMENT NS 10

5

~~Groundwater is the primary source of drinking water for many people. Once groundwater is contaminated it is difficult, costly, and may be impossible to clean up. The following goal and policies address these concerns by encouraging the identification of aquifers and taking steps to reduce potential contamination.~~

9

~~Groundwater and Critical Aquifer Recharge Areas (CARAs) are essential for maintaining groundwater quality and quantity that support domestic water supply, agricultural irrigation, industrial uses, flood storage and attenuation, stream base flows, wetland hydrology, and ecosystem functions in Yakima County's semi-arid climate. Designation and protection of CARAs is required by the Growth Management Act under RCW 36.70A.060 and necessary to prevent groundwater contamination that is difficult, costly, or impossible to remediate and to ensure adequate water supply and flood management capacity under increasing drought and extreme~~

Commented [KW57]: Purpose Statements are expanded to reflect changes in GMA and updates to the natural settings of Yakima County. Relevant RCW's and WAC's are provided as references for utility and definitions.

1 *precipitation conditions. CARAs include aquifer recharge areas, wellhead protection areas for*
 2 *public water systems, areas of high infiltration providing both groundwater recharge and flood*
 3 *storage, sole source aquifers, groundwater management areas, areas where surface water and*
 4 *groundwater are hydraulically connected, and floodplain areas providing infiltration and*
 5 *recharge functions. Protection and management of CARAs must include approaches based on*
 6 *Best Available Science under RCW 36.70A.172, assessment of climate impacts on recharge*
 7 *patterns, groundwater availability, and flood storage capacity as required by ESHB 1181, land use*
 8 *controls preventing contamination from pollution sources, Low Impact Development techniques*
 9 *maximizing infiltration for both recharge and flood reduction, support for Managed Aquifer*
 10 *Recharge projects enhancing drought resilience and capturing winter floodwaters for summer*
 11 *use, wellhead protection standards, preservation of natural infiltration areas providing dual flood*
 12 *storage and aquifer recharge benefits, coordination with groundwater management under the*
 13 *Yakima Basin Integrated Plan and Comprehensive Flood Management Plans, and integration of*
 14 *aquifer protection into the Comprehensive Plan, Shoreline Master Program, and development*
 15 *regulations for implementation.*

16

GOAL	Maintain and manage the quality of the groundwater resources in Yakima County as near as possible to their natural conditions and in compliance with state water quality standards and engage opportunities to implement Managed Aquifer Recharge and other actions to protect and enhance the quantity of groundwater resources.
POLICIES:	
NS 10.1	Identify and map important aquifers, critical <u>areas</u> , aquifer recharge <u>zones</u> , and surface waters. <u>Engage with ongoing regional programs to expand managed aquifer recharge.</u>
NS 10.2	Develop performance standards and regulate uses for activities which adversely impact water quantity and quality in aquifers, wetlands, watersheds and surface waters.
NS 10.3	Evaluate the potential impact of development proposals on groundwater quality and require alternative site designs to reduce contaminant loading where site conditions indicate that the proposed action will measurably degrade groundwater quality.
NS 10.4	Continue data collection and evaluation efforts to better understand the County's groundwater system and its vulnerability to contamination.
NS 10.5	Encourage the retention of natural open spaces in development proposals overlying areas highly susceptible for contaminating groundwater resources.
NS 10.6	Conduct and support educational efforts which inform County citizens of measures they can take to reduce contaminant loading of groundwater systems.
NS 10.7	Encourage development and expansion of community public water systems to lessen the reliance on individual wells.
NS 10.8	Ensure that abandoned wells are closed properly.

Commented [KW58]: 1.Grammatical precision 2. Inserted to establish groundwater resiliency (water quantity) goal

NS 10.9	Ensure sufficient water quantity exists to support residential development and land use activities.
NS 10.10	Support efforts to develop long-term solutions to prevent contamination of domestic wells.
NS 10.11	<u>Recognize and describe the hydraulic connection between groundwater and surface water systems in CARA designation and regulation. Protect recharge functions that maintain summer base flows, support cold-water refugia, and sustain both agricultural and municipal water supplies during drought periods.</u>
NS 10.12	<u>Support and facilitate Managed Aquifer Recharge (MAR) projects within CARAs as a climate adaptation strategy for drought resilience, agricultural sustainability. Develop streamlined permitting processes for MAR projects that demonstrate net benefit to aquifer storage and water quality and to protect critical area functions connected to groundwater resources.</u>
NS 10.13	<u>Protect the function of CARAs for both aquifer recharge and flood storage. Prohibit development that would reduce infiltration capacity through soil compaction, increased impervious surfaces, or other alterations within CARAs, particularly in areas identified in Comprehensive Flood Management Plans as providing significant flood attenuation benefits.</u>
NS 10.14	<u>Require water availability analysis for development proposals in CARAs that rely on groundwater, evaluating:</u> <ul style="list-style-type: none"> <u>Aquifer sustainability under projected increased pumping demand during more frequent drought periods</u> <u>Potential impacts to nearby wells, springs, streams, and wetlands from new or expanded groundwater withdrawals</u> <u>Climate-adjusted safe yield calculations accounting for reduced recharge and increased demand</u> <u>Coordination with Yakima Basin Integrated Plan Groundwater Group recommendation</u>
NS 10.15	<u>Enhance wellhead protection area regulations for public water supply wells to address climate-related vulnerabilities including:</u> <ul style="list-style-type: none"> <u>Contamination risks from more intense precipitation events overwhelming infiltration capacity or mobilizing contaminants</u> <u>Aquifer depletion from increased demand during extended drought periods</u> <u>Water quality degradation from reduced dilution capacity during low-flow conditions</u> <u>Poor-quality water intrusion from altered aquifer gradients</u>
NS 10.16	<u>Support Managed Aquifer Recharge (MAR) projects that provide surface water benefits including:</u> <ul style="list-style-type: none"> <u>Storage of winter high flows for summer release to streams through groundwater discharge</u> <u>Temperature moderation through cool groundwater inputs to streams</u> <u>Maintenance of summer base flows critical for fish survival</u>

	<ul style="list-style-type: none"> • Drought resilience for both agricultural and environmental water needs • Floodwater storage reducing downstream flood peaks
--	--

1

2 **Critical Areas: Surface Water**3 **PURPOSE STATEMENT NS 11 & 12**

4 *Efforts have been made to improve stream corridors within the County, especially in the areas of*
 5 *water quality and habitat. The following goals and policies should guide decisions related to*
 6 *surface water.*

7 Surface waters and stream corridors are interconnected systems linking mountain snowpack
 8 reservoir storage, river and stream flows, wetlands, riparian corridors, and groundwater aquifers
 9 that sustain life, economy, and ecosystems throughout Yakima County. Protection of surface
 10 water resources is required by the Growth Management Act under RCW 36.70A.060, the Shoreline
 11 Management Act under RCW 90.58, and ESHB 1181's climate planning mandates. Protection is
 12 necessary to maintain water quantity, quality, timing, and temperature for agricultural
 13 production, municipal and domestic water supply, fish and wildlife habitat, recreation, tribal
 14 treaty rights, and cultural resources. Surface waters also include springs, seeps, riparian
 15 management corridors, in-stream flows, channel migration zones, hyporheic zones, cold-water
 16 sources, and areas where surface water and groundwater are hydraulically connected. Protection
 17 and management of surface waters must include approaches based on Best Available Science
 18 under RCW 36.70A.172, assessment of altered flow regimes and temperature increases, and
 19 protection of base flow sources and cold-water refugia critical for salmonid survival. In-stream
 20 flows must be maintained to meet ecological and water right requirements, through coordination
 21 with U.S. Bureau of Reclamation Yakima Project operation, the Yakima Basin Integrated Plan
 22 implementation, and integration with tribal co-management and treaty-reserved water rights.
 23 Low Impact Development stormwater practices that protect water quality, and stream corridor
 24 habitat and water quantity should also be implemented.

GOAL NS 11:	Enhance the quantity and quality of surface water.
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POLICIES:	
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NS 11.1	Improve water conservation through education and incentives.
NS 11.2	Encourage groundwater detention and storage where the practice benefits stream base flow characteristics and flood-risk reduction.
NS 11.3	Protect water quality from the adverse impacts associated with erosion and sedimentation
NS 11.4	<p><u>Protect natural and managed flow regimes that are essential to maintaining ecological functions, recognizing that climate change is altering historical patterns. Regulations shall account for:</u></p> <ul style="list-style-type: none"> • Declining spring snowmelt and earlier peak flows (shift from late May to February-March in most climate scenarios) • Reduced summer base flows and increased frequency of critically low flow conditions • Increased winter flows from rain-dominant/rain-on-snow rather than snowpack-dominant precipitation and melt

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	<ul style="list-style-type: none"> More extreme flow variability with intensified storm events and extended low-flow periods Temperature increases affecting cold-water species survival and reproduction
<u>NS 11.5</u>	<p>Prioritize protection of streams, rivers, and reservoir releases that provide cold-water habitat for temperature-sensitive species, particularly salmonids. Recognize that water temperature is a critical limiting factor that will become increasingly constrained under projected climate warming of +1.18°C to +3.52°C.</p>
<u>NS 11.6</u>	<p>Require stream temperature monitoring for development proposals supporting cold-water species. Where summer maximum temperatures exceed or approach critical thresholds (16°C for juvenile salmonid rearing, 13°C for spawning), require:</p> <ul style="list-style-type: none"> Enhanced riparian vegetation management zones (proposed 25% increase over standard management zones – BAS to define) Retention or restoration of mature conifer trees providing stream shading Protection or restoration of cold-water refugia including spring seeps, tributary confluences, hyporheic upwelling zones, and deep pools Stormwater management that infiltrates runoff to maintain cool base flows rather than routing warm surface runoff to streams Prohibition of activities that would remove riparian vegetation, destabilize banks, or increase sediment delivery
<u>NS 11.7</u>	<p>Protect in-stream flows necessary for fish life, water quality, recreation, and aesthetic values as required under RCW 90.54.020 and the Shoreline Management Act. Development shall not:</p> <ul style="list-style-type: none"> Reduce base flows through groundwater withdrawal that depletes hydraulically connected surface waters Divert or impound surface water in a manner that eliminates or substantially degrades in-stream habitat Reduce flows below minimum in-stream flow levels established by Washington Department of Ecology or tribal co-management agreements Create barriers to fish passage or impede sediment transport processes essential to channel formation and habitat maintenance
<u>NS 11.7a</u>	<p>Identify and protect channel migration zones (CMZs) for rivers and major streams as required by Washington Department of Ecology Shoreline Master Program guidelines. CMZ protection shall:</p> <ul style="list-style-type: none"> Map historical channel locations, avulsion channels, floodplain connectivity, and areas of active channel migration using minimum 100-year assessment period Expand CMZ boundaries to account for increased channel mobility under climate-driven flow variability and bank erosion

	<ul style="list-style-type: none"> Prohibit structural bank hardening, residential development, and infrastructure within CMZ except for water-dependent uses, bridges, fish habitat enhancement, and floodplain restoration Require management zones for new development sufficient to avoid CMZ hazards over structure lifespan (minimum 100 years) Restore floodplain connectivity and natural channel processes where feasible
NS 11.8	<p>Protect headwater streams (Type Np and Ns waters) that provide critical hydrologic functions including:</p> <ul style="list-style-type: none"> Groundwater recharge and discharge maintaining summer base flows in downstream fish-bearing waters Filtration and nutrient processing that protect downstream water quality Sediment storage and gradual release that maintains channel forming processes Organic matter input supporting aquatic food webs Hydrologic connectivity between upland forests, wetlands, and fish-bearing streams <p>Prohibit or minimize impacts to headwater streams through avoidance, stream crossing limitations, and enhanced management zones, recognizing their disproportionate importance to watershed hydrology despite small individual size.</p>
NS 11.9	<p>Require water availability analysis for development that relies on surface water diversions, demonstrating:</p> <ul style="list-style-type: none"> Legal water right or access to water supply adequate for proposed use Evaluation of water availability under projected climate scenarios showing declining summer flows and more frequent drought Analysis of impacts to in-stream flows, water quality, and downstream water users Conservation measures and drought contingency planning Coordination with irrigation districts, water purveyors, and Yakima Basin Integrated Plan recommendations
NS 11.10	<p>Agricultural Water Conservation Support voluntary agricultural water conservation through:</p> <ul style="list-style-type: none"> Technical assistance for irrigation modernization and efficiency improvements Incentive programs for conversion from flood/furrow irrigation to drip, micro-spray, or other high-efficiency systems Soil moisture monitoring and crop water demand scheduling Drought-resistant crop varieties and climate-adapted agricultural practices Coordination with Conservation Districts, State Conservation Commission programs, and Voluntary Stewardship Program

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	<ul style="list-style-type: none"> Recognize that agriculture accounts for most of the water use in Yakima County and that agricultural stewardship is essential to maintaining both the economy and environmental flows.
NS 11.11	<p><u>Coordinate critical areas regulation for agricultural lands with Voluntary Stewardship Program (VSP) implementation as authorized under RCW 36.70A.700-760. Where VSP work plans and practices achieve surface water protection benchmarks, recognize these as failing, meeting or exceeding critical areas protection standards. Support VSP riparian restoration, irrigation efficiency, and livestock management practices that protect surface water quality and quantity.</u></p>
NS 11.12	<p><u>Coordinate with the WA. Department of Ecology and others to monitor surface water and track:</u></p> <ul style="list-style-type: none"> <u>Stream temperature trends relative to species tolerance thresholds</u> <u>Streamflow patterns including timing of peak flows, duration of low flows, and base flow recession rates</u> <u>Water quality parameters including sediment, nutrients, dissolved oxygen, and pH</u> <u>Riparian vegetation condition and canopy cover</u> <u>Channel stability, erosion rates, and morphology changes</u> <u>Effectiveness of critical areas management zones and protection measures</u> <p><u>Use monitoring data and Best Available Science to implement adaptive management adjustments to critical areas regulations and to inform Comprehensive Plan and or YCC updates.</u></p>

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GOAL NS 12:	Identify future needs and promote increased water supplies through coordinated development and conservation efforts. The compounding deficits in precipitation, soil moisture, and snowpack from consecutive drought years have created a situation where spring runoff is insufficient to replenish both reservoirs and soil. Identify future needs and promote increased water supplies through coordinated development and conservation efforts.
POLICY:	
NS 12.1	Support local and regional cooperative efforts which help to accomplish this goal, such as the Yakima Basin Integrated Plan.
NS 12.2	<p><u>Coordination with Yakima Basin Water Management entities and managers for critical areas regulation, and with U.S. Bureau of Reclamation Yakima Project operations and Yakima Basin Integrated Plan implementation.</u></p> <p><u>Recognize that:</u></p> <ul style="list-style-type: none"> <u>The five-reservoir system (Bumping Lake, Cle Elum, Kachess, Keechelus, Rimrock) provides managed storage of approximately 30% of mean annual flow—a ratio that makes the system highly sensitive to snowpack decline</u>

	<ul style="list-style-type: none"> The “sixth reservoir,” snowpack, is threatened and declining due to climate change. Climate projections indicate water shortage years (prorating to 75% or less for junior water rights) may increase from historical 14% of years to 27-77% by end of century depending on emissions scenario and timeframe Reservoir storage timing is shifting earlier (peak storage moving from June to April-May) due to earlier snowmelt Senior water rights may experience continued shortfalls based on modeling scenarios Agricultural stewardship and water conservation are essential to maintaining economic viability
NS 12.3	<p>Recognize that irrigation return flows and seepage from unlined canals contribute to:</p> <ul style="list-style-type: none"> Summer base flows in streams that support fish and riparian ecosystems Groundwater recharge that sustains domestic wells and municipal supplies Hydrologic connectivity between agricultural lands, wetlands, and natural waterways <p>Development that converts irrigated agriculture to other uses shall evaluate impacts to these hydrologic functions and mitigate loss of return flows and recharge where necessary to maintain stream flows, wetland hydroperiods, and groundwater levels.</p>
NS 12.4	<p>Regional Surface Water Coordination Coordinate surface water protection with:</p> <ul style="list-style-type: none"> Yakama Nation: Co-management of fisheries, water quality standards, climate action plan implementation, and treaty-reserved water rights protection Yakima Basin Integrated Plan: Implementation of integrated water resource management addressing water supply, fish habitat, flood management, and climate adaptation Washington Department of Ecology: Water quality standards, in-stream flow rules, stormwater management guidance, and climate resilience programs Washington Department of Fish and Wildlife: Fish habitat protection, cold-water refugia identification, and habitat connectivity planning Irrigation Districts and Water Users: Agricultural water conservation, return flow maintenance, and drought preparedness Cities and Towns: Coordination of development regulations, stormwater management, and water supply planning across jurisdictional boundaries

NS 12.5	<p><u>Climate Adaptation for Surface Waters</u> Implement adaptive management for surface water protection as climate impacts manifest:</p> <ul style="list-style-type: none"> • <u>Update management zones, development setbacks, and protection standards based on observed temperature and flow changes</u> • <u>Adjust stormwater design standards as precipitation patterns change</u> • <u>Modify in-stream flow protection measures to reflect altered hydrologic regimes</u> • <u>Enhance restoration efforts in areas showing greatest climate stress</u> • <u>Prioritize protection of climate refugia and areas likely to maintain suitable conditions</u> <p><u>Review and update surface water protection policies during each Comprehensive Plan periodic review cycle (RCW 36.70A.130) using best available science on observed and projected climate impacts.</u></p>
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3 **Critical Areas: Stormwater**
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PURPOSE STATEMENT NS 13 & 14

~~When the amount of impervious area in a watershed increases, and provisions are not made for retaining stormwater on-site, development can contribute to the flooding hazards of their downstream neighbors, and flooding becomes more frequent and more severe. If the natural drainage courses are obstructed with fill material, buildings, or roads that lack adequately sized culverts, storm water can cause localized flooding, with property damage and disruption of services. The following goals and policies should guide decisions related to stormwater. These policies establish Yakima County's framework for protecting water quality and managing stormwater in compliance with the federal Clean Water Act and Washington State's Eastern Washington Phase II Municipal Stormwater Permit. They describes the County's Stormwater Management Program (SWMP), which implements eight required program elements designed to reduce pollutant discharge from stormwater runoff, protect citizens from drainage damage, and ensure that development activities do not create water quality or quantity problems. Through this comprehensive approach, the County aims to safeguard both surface and groundwater resources while meeting regulatory requirements and addressing current and emerging water quality concerns..~~

GOAL NS 13:	<p>Prevent increased flooding from stormwater runoff.</p>
POLICIES:	
NS 13.1	<p>Require on-site retention of stormwater.</p>
NS 13.2	<p>Preserve natural drainage courses.</p>
NS 13.3	<p>Minimize adverse storm water impacts generated by the removal of vegetation and alteration of land forms. Update processes to include new information on climate change and how to mitigate climate impacts through stormwater management techniques like nature-based solutions, upsizing facilities and conveyances pipes and reducing impervious surfaces, this will</p>

	<p><u>ensure that stormwater infrastructure is designed to meet future needs under a changing climate.</u></p>
NS 13.4	<p><u>Stormwater and Surface Water Quality (see CH3)</u></p> <p><u>Climate-Adjusted Stormwater Design</u> Require stormwater management systems designed for climate-adjusted precipitation scenarios including:</p> <ul style="list-style-type: none"> • <u>Increased storm intensity (minimum 20% increase in design storm magnitude by 2050, 40% by 2080)</u> • <u>More frequent exceedance of historical design storms</u> • <u>Greater soil saturation from fall/winter precipitation increases leading to higher runoff coefficients</u> • <u>Post-wildfire conditions where infiltration capacity is severely reduced</u> <p><u>Design standards shall use forward-looking precipitation data from University of Washington Climate Impacts Group regional projections rather than historical records alone.</u></p>
NS 13.5	<p><u>Green Stormwater Infrastructure</u> Prioritize green stormwater infrastructure including:</p> <ul style="list-style-type: none"> • <u>Bioretention facilities (rain gardens, bioswales, filter strips)</u> • <u>Permeable pavements and porous surfaces</u> • <u>Tree canopy and vegetated areas that intercept precipitation</u> • <u>Rainwater harvesting and reuse systems</u> • <u>Green roofs and rooftop detention</u> • <u>Preservation and restoration of natural depressions, swales, and drainage features</u> <p><u>Green infrastructure provides multiple benefits including flood reduction, aquifer recharge, water quality improvement, temperature moderation, and habitat enhancement that become increasingly valuable under climate change.</u></p>
NS 13.6	<p><u>Post-Wildfire Stormwater Management</u> Require enhanced stormwater management for development in watersheds experiencing wildfire, including:</p> <ul style="list-style-type: none"> • <u>Increased design storm standards (minimum 50% increase in design flow capacity)</u> • <u>Sediment trapping and erosion control measures sized for post-fire debris loads</u> • <u>Monitoring and maintenance protocols for minimum 5 years following fire</u> • <u>Coordination with watershed-scale post-fire recovery planning</u> • <u>Avoidance of development in areas at high risk of post-fire debris flows</u>

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GOAL NS 14:	Improve water quality through improved stormwater management.
POLICIES:	
NS 14.1	<u>Review the recommendations of locally adopted stormwater management plans and develop an implementation schedule. Use best science available to monitor and mitigate for new and emerging toxics in Stormwater.</u>
NS 14.2	Control stormwater in a manner that has positive or neutral impacts on the quality of both surface and groundwater.
NS 14.3	<u>Monitor the implementation and effectiveness of water quality protection measures and critical areas regulations, and adaptively manage programs based on monitoring results to ensure protection goals are being met."</u>
NS 14.3a	<u>Maintain adequate stream flows and groundwater levels to support ecological functions, public water supplies, and existing water rights in the Yakima River Basin</u>
NS 14.4	<u>Control and reduce both point source and nonpoint source pollution that degrades surface water quality, including agricultural runoff, stormwater, and illicit discharges</u>
NS 14.5	<u>Achieve and maintain compliance with state water quality standards for surface waters as established under Chapter 173-201A WAC</u>
NS 14.6	<u>Protect and restore stream temperatures to support beneficial uses, particularly cold-water fish habitat, through riparian shade, flow management, and other cooling strategies</u>
NS 14.7	<u>Prioritize prevention of water quality degradation while also implementing restoration actions in impaired water bodies to achieve water quality standards</u>
NS 14.8	<u>Provide education and outreach to landowners, businesses, and residents about actions they can take to protect and improve surface water quality</u>

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2 **Critical Areas: Fish And Wildlife Habitat, Wetlands, And Frequently Flooded Areas**3 **PURPOSE STATEMENT NS 15, 16, 17 & 18**

4 Stream corridors, lakes, ponds, wetlands, flood plains and other areas subject to flooding perform
 5 important hydrologic functions including storing and slowly releasing flood waters, reducing
 6 floodwater velocities, settling and filtering of sediment and nutrients, shading surface waters, and
 7 other functions. These areas also provide natural areas for wildlife and fisheries habitat, upland
 8 wildlife habitat, recreation areas, and rich agricultural lands. Development in these areas
 9 diminishes their functions and values and can present a risk to persons and property on the
 10 development site and/or downstream from the development. Building in frequently flooded areas
 11 also results in high costs for installing flood protection measures to protect life and property and
 12 to repair flood damages.

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14 The following goals and policies work ~~toward to preserving~~, protecting and ~~managing~~ managing fish and
 15 wildlife habitat and wetlands by adopting management zones boundaries, and a ~~data~~ Best
 16 Available Science and information managment system to track them, and establishing
 17 development regulations for their protection. These goals and policies also seek to reduce the

1 *hazards and impacts of development through comprehensive flood control planning, directing*
 2 *facility development away from these areas, and developing site development standards.*

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Critical Areas: Fish and Wildlife Habitat

GOAL NS 15	Provide for the <u>Maintain and</u> and protection of <u>protect fish and</u> wildlife habitat functions and values
POLICIES:	
NS 15.1	Encourage the protection of aquatic, riparian, upland and wetland fish and wildlife habitat. This can be approached from both a region-wide and site specific perspective to ensure that the best representation and distribution of habitats remains to protect the natural values and functions of those habitats. Fish and wildlife habitat protection considerations should include: <ol style="list-style-type: none"> 1. The physical and hydrological connections between different habitat types to prevent isolation of those habitats; 2. Diversity of habitat types both on a local and regional scale; 3. Large tracts of fish and wildlife habitat 4. Connectivity between tracts of habitat; 5. Areas of high species diversity; 6. Locally or regionally unique and rare habitats; and
NS 15.2	Direct development away from areas containing significant fish and wildlife habitat areas, especially areas which are currently undeveloped or are primarily dominated by low intensity types of land uses such as forestry.
NS 15.3	Encourage the retention of sustainable natural resource based industries such as forestry and agriculture in order to protect important fish and wildlife habitat.
NS 15.4	Coordinate fish and wildlife protection efforts with state and federal agencies and the Yakama Nation to: <ol style="list-style-type: none"> 1. Avoid duplication of effort; 2. Ensure consistency in protecting fish and wildlife habitat which crosses political boundaries; 3. Facilitate information exchanges concerning development proposals which may impact fish and wildlife habitat; and 4. Take advantage of any available financial, technical, and project review assistance.
NS 15.5	Protect fish and wildlife habitat for all native species in Yakima County, so as to maintain current population over time. Protect the habitat of Washington State Listed Species of Concern and Priority Habitats and Species in order to maintain their populations within Yakima County.
NS 15.6	Work with the resource agencies to prioritize habitats and provide appropriate measures to protect them according to their relative values.

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NS 15.7	Support efforts to enhance fish and wildlife habitat made by local organizations, local agencies, state agencies, federal agencies, and the Yakama Nation.
NS 15.8	Temperature-Sensitive Species Protection Identify and protect cold-water refugia, thermal refugia, and riparian corridors critical for temperature-sensitive species, particularly salmonids. Require stream temperature monitoring and establish enhanced management zones and shade requirements for streams where summer water temperatures approach or exceed species tolerance thresholds (16°C for juvenile salmonid rearing).
NS 15.9	Climate-Driven Habitat Shift Planning Update habitat conservation area designations to account for projected species range shifts, phenological changes, and habitat transitions. Consider criteria for protecting areas that may become suitable habitat under future climate conditions ("climate refugia" and "migration corridors") even if not currently occupied by priority species but can be proven to be suitable under reasonable circumstances.
NS 15.10	Habitat Connectivity Requirements Consider reasonable conditions to development to maintain or enhance habitat connectivity, particularly for wildlife movement corridors, riparian networks, and landscape linkages identified in the Washington Habitat Connectivity Action Plan. Consider restricting development that would sever or substantially degrade connectivity corridors essential for species adaptation to changing climate conditions.
NS 15.11	Riparian Management Zones. Increase floodway, floodplain, channel migration, CARA, wetland and or other critical area setback widths to account for increased extreme weather events and hazards, and or where stream temperatures, altered flow regimes, and greater erosion potential, for example are shown to exist. Minimum management zones should be increased by BAS-validated amounts over current standards for streams supporting cold-water fish species, with greater increases required based on site-specific stream temperature modeling and bank stability analysis.

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GOAL NS 16:	Conserve, protect and enhance the functions and values of stream corridors to provide for natural functions and maintain protect hydrologic connections between features.
POLICIES:	
NS 16.1	Flood Development projects should not be authorized if they obstruct fish passage or result in the unmitigated loss or damage of fish and wildlife resources.
NS 16.2	Encourage and support the retention of natural open spaces or land uses which maintain hydrologic functions and are at low risk to property damage from floodwaters within frequently flooded areas.
NS 16.3	Protect public and private properties by limiting development within hazardous

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	areas of the stream corridor.
NS 16.4	Support restoration of floodplain topography and historic drainage features to regain normative stream functioning.
NS 16.5	Give special consideration to conservation and protection measures necessary to preserve or enhance anadromous fisheries.
NS 16.6	Establish a system of vegetative buffer <u>management</u> zones landward from the ordinary high water mark of streams, lakes and ponds and the edge of wetlands.
NS 16.7	<p><u>Develop and implement Riparian Management Zone standards. Establish riparian management zones widths sufficient to:</u></p> <ul style="list-style-type: none"> <u>Maintain stream shading that moderates water temperature increases (target: limit temperature increase to <0.5°C above natural thermal regime)</u> <u>Filter sediment, nutrients, and contaminants from upland runoff</u> <u>Provide large woody debris recruitment for in-stream habitat complexity</u> <u>Stabilize streambanks against increased erosion from altered flow regimes</u> <u>Create microclimates and movement corridors for terrestrial and aquatic species</u> <p><u>Minimum management zones shall be based on stream classification, fish presence, channel width, and slope, with the following climate-adjusted standards:</u></p> <p><u>See Types 1-5) YCC CAO's ref to Types 1-3)</u></p> <ul style="list-style-type: none"> <u>Type S (shorelines of the state) and Type F (fish-bearing) streams: Minimum 150 feet from ordinary high water mark (OHWM), increased to 200 feet for streams supporting cold-water fish species or designated critical habitat</u> <u>Type Np (non-fish perennial) streams: Minimum 100 feet from OHWM, increased to 150 feet where streams provide connectivity to fish-bearing waters or wetlands</u> <u>Type Ns (non-fish seasonal) streams: Minimum 75 feet from OHWM in areas with erodible soils or steep slopes</u> <u>All streams in post-wildfire watersheds: Increase baseline management zones by 50% for minimum 5 years following fire events</u>

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2 **Critical Areas: Frequently Flooded Areas**

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4 Purpose NS 17 - Frequently flooded areas perform critical functions for flood storage, groundwater recharge, water quality protection, and fish and wildlife habitat in Yakima County.

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1 *Designation and protection of frequently flooded areas is required by the Growth Management*
 2 *Act under RCW 36.70A.060 and necessary to protect public health, safety, and property.*
 3 *Frequently flooded areas include 100-year and 500-year floodplains, floodways, channel*
 4 *migration zones, alluvial fans, and post-wildfire flood and debris flow hazard areas. Protection*
 5 *and management of frequently flooded areas must include approaches based on Best Available*
 6 *Science under RCW 36.70A.172, climate-informed flood modeling, avoidance of inappropriate*
 7 *development, and restoration of natural floodplain functions.*

GOAL NS 17:	Prevent the loss of life or property and minimize public and private costs associated with repairing or preventing flood damages from development in frequently flooded areas. Protect life and property from flood hazards and reduce public and private repair costs by preventing development in high-risk flood areas
POLICIES:	
NS 17.1	Support comprehensive flood control planning (i.e. Comprehensive Flood Hazard Management Plans).
NS 17.2	Conduct additional analysis and mapping of frequently flooded areas in cases where the 100-year, <i>and 500-year</i> floodplain maps prepared by the Federal Emergency Management Agency, <i>or BAS</i> , do not adequately reflect the levels of risk or the geographic extent of flooding.
NS 17.3	Direct new critical facility development away from areas subject to catastrophic, life-threatening flood hazards where the hazards cannot be mitigated.
NS 17.4	Where the effects of flood hazards can be mitigated, require appropriate standards for subdivisions, parcel reconfigurations, site developments and for the design of structures.
NS 17.5	Plan for and facilitate returning Shoreline rivers to more natural hydrological conditions and recognize that seasonal flooding is an essential natural process.
NS 17.6	EWhen evaluating alternate flood control measures on Shoreline rivers: Consider the removal or relocation of structures in the FEMA 100-year floodplain; and modification to structural and location standards in the FEMA 500-year floodplain.
NS 17.7	MOVED TO ABOVE
NS 17.6	Where feasible, give preference to nonstructural flood hazard reduction measures over structural measures;
NS 17.8	Structural flood hazard reductions measures should be consistent with the County's comprehensive flood hazard management plan.
NS 17.9	<i>Climate-Informed Floodplain Mapping</i> Expand the definition and mapping of frequently flooded areas beyond current FEMA Flood Insurance Rate Maps to include: <ul style="list-style-type: none"> • Modeled 500-year floodplain boundaries • Climate-adjusted flood projections using precipitation scenarios that account for projected increases in storm intensity (minimum 20%

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	<ul style="list-style-type: none"> <u>increase over historical 100-year storm events by 2050)</u> <u>Comprehensive Flood Management Plans for Ahtanum Creek, Cowiche Creek, and Lower Yakima Valley watersheds incorporating climate projections – TBD 2027 8?</u> <u>Post-wildfire flood and debris flow hazard areas in watersheds with high or moderate wildfire risk</u> <u>Channel migration zones expanded to account for increased flow variability and bank erosion potential</u>
<u>NS 17.10</u>	<p><u>Flood Standards Adoption</u> Adopt and implement American Society of Civil Engineers ASCE 24-24 flood-resistant design standards and Washington State Floodplain Managers Association model ordinance language, with additional requirements for climate resilience including:</p> <ul style="list-style-type: none"> <u>Increased freeboard requirements (minimum 2 feet above base flood elevation, 3 feet for critical facilities)</u> <u>Evaluation of flood risk over structure lifespan using climate-adjusted flood frequency curves</u> <u>Prohibition of new critical facilities and infrastructure in climate-adjusted 100-year and 500-year floodplains</u>
<u>NS 17.11</u>	<p><u>Floodplain Connectivity and Function</u> Protect and restore floodplain connectivity to rivers and streams, recognizing that intact floodplains:</p> <ul style="list-style-type: none"> <u>Store floodwaters reducing downstream peak flows and flood damages</u> <u>Recharge groundwater aquifers that sustain summer base flows</u> <u>Provide slow-water habitat for juvenile fish during high flows</u> <u>Trap sediment and nutrients maintaining water quality</u> <u>Support riparian forests that provide large woody debris, shade, and organic matter</u> <p><u>Prohibit fill, structures, and vegetation removal in floodplains except for restoration activities, water-dependent uses, and fish habitat enhancement.</u> Require floodplain compensation at minimum 1.5:1 ratio (acres restored: acres impacted) for unavoidable floodplain impacts.</p>
<u>NS 17.12</u>	<p><u>Comprehensive Flood Management Plan Integration</u> Incorporate Comprehensive Flood Management Plans for Ahtanum Creek, Cowiche Creek, and Lower Yakima Valley (anticipated 2026) into critical areas regulation. These plans provide:</p> <ul style="list-style-type: none"> <u>Climate-adjusted flood modeling and mapping</u> <u>Identification of priority areas for floodplain restoration and protection</u> <u>Nature-based flood risk reduction strategies</u> <u>Coordination between flood management, habitat restoration, and agricultural sustainability</u> <u>Multi-benefit projects addressing flooding, water supply, water quality, and ecosystem health</u>
<u>NS 17.13</u>	<p><u>Natural Flood Storage Protection</u> Identify and protect natural flood storage areas including:</p>

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	<ul style="list-style-type: none"> Off-channel floodplain depressions and alcoves Beaver pond complexes and beaver dam analog installations Distributary channels and historical overflow pathways Forested floodplains with high roughness and water retention Wetland-floodplain complexes providing connected storage <p>These features provide flood attenuation benefits that become increasingly valuable as climate change drives more extreme flow variability.</p>
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2 **Critical Areas: Wetlands**
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Purpose Statement NS-18. Wetlands perform critical functions for water quality protection, flood storage, groundwater recharge and discharge, fish and wildlife habitat, and drought resilience in Yakima County's semi-arid landscape. Designation and protection of wetlands is required by the Growth Management Act under RCW 36.70A.060 and necessary to maintain ecological processes and public benefits in a water-limited region. Wetlands include all areas meeting federal wetland delineation criteria, seasonal and permanent wetlands, riparian wetlands, depressional wetlands, and wetland management zones areas. Protection and management of wetlands must include approaches based on Best Available Science under RCW 36.70A.172, assessment of climate impacts on wetland hydrology, avoidance and minimization of impacts, compensatory mitigation achieving no net loss of functions, and adaptive management ensuring long-term wetland persistence for implementation

GOAL NS 18:	Provide for long-term protection and no net loss of wetland functions and values.
POLICIES:	
NS 18.1	Preserve, protect, manage, and regulate wetlands for purposes of promoting public health, safety and general welfare by:
1.	Conserving fish, wildlife, and other natural resources of Yakima County;
2.	Regulating property use and development to maintain the natural and economic benefits provided by wetlands, consistent with the general welfare of the County;
3.	Protecting private property rights consistent with the public interest; and
4.	Require wetland buffer <u>management</u> s <u>zones</u> and building setbacks around regulated -wetlands to preserve vital wetland functions and values.
NS 18.2	Adopt a clear definition of a regulated wetland and a method for delineating regulatory wetland boundaries.
NS 18.3	Classify regulated wetland areas to reflect their relative function, value and uniqueness.
NS 18.4	Develop a wetlands data base <u>using BAS and other modeling techniques where existing geographical data are lacking in detail, contemporary data, accuracy, or are absent</u> .

Commented [KW59]: This is very general and could be a p/g everywhere. Why state this here, if we have an overarching policy already to do this.

Commented [KW60]: Yes, but this should not imply that YC will develop definitions. We will use the BAS def. and or best regulatory defs. from DOE, EPA etc. "Adopt" is the right term. No change.

Commented [KW61]: In this case, this implies that YC will "classify" We will adopt a classification system based on the best available classification available. Reword. "Adopt classification standards for regulated wetlands....."

NS 18.5	Manage and mitigate human activities or actions which would have probable adverse impacts on the existing conditions of regulated wetlands or their <u>buffer management zones</u> .
NS 18.6	Require mitigation for any regulated activity which alters regulated wetlands and their <u>buffer management zones</u> . Develop ratios, performance standards, monitoring, and long-term protection.
NS 18.7	<u>Encourage long-term hydroperiod monitoring for compensatory mitigation wetlands to verify that created or enhanced wetlands maintain intended functions despite changing precipitation patterns and temperature regimes.</u> <u>Establish adaptive management triggers for corrective action if mitigation wetlands fail to meet performance standards due to climate-driven hydrologic changes.</u>
NS 18.8	<u>Develop and implement protection for wetlands that demonstrate drought resilience, serve as drought refugia for wildlife, or provide critical water storage and aquifer recharge functions during dry periods. Prohibit impacts to Category I and II wetlands in areas identified as high drought vulnerability.</u>
NS 18.9	<u>Update the National Wetland Inventory and update potential and delineated wetland GIS layers in Yakima County.</u>
NS 18.10	<u>Climate-Informed Wetland Mitigation</u> <u>Require compensatory wetland mitigation to account for climate uncertainty by:</u> <ul style="list-style-type: none"> <u>Locating mitigation wetlands in areas with hydrogeologic conditions likely to remain suitable under projected climate scenarios</u> <u>Selecting native plant species adapted to projected future temperature and moisture conditions</u> <u>Including climate change contingency planning in mitigation monitoring and adaptive management plans</u>
NS 18.11	<u>Wetland-Stream Connectivity.</u> <u>Protect hydrologic and biological connectivity between wetlands and streams, recognizing that wetlands:</u> <ul style="list-style-type: none"> <u>Provide flood storage that attenuates storm peaks and reduces downstream flooding</u> <u>Release stored water gradually to maintain base flows during dry periods</u> <u>Filter sediment and nutrients protecting downstream water quality</u> <u>Provide thermal refugia and rearing habitat for fish and amphibians</u> <u>Support riparian vegetation that shades and stabilizes stream corridors</u> <u>Require enhanced management zones (minimum 150 feet) for wetlands with surface water connections to fish-bearing streams.</u>
NS 18.12	<u>Wetland Hydroperiod Protection</u> <u>Protect wetland hydroperiods (timing, duration, and depth of inundation) essential to wetland functions.</u> <u>Development shall not:</u> <ul style="list-style-type: none"> <u>Alter surface water or shallow groundwater inflows that sustain wetland hydrology</u> <u>Block or divert overland sheet flow to wetlands</u>

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	<ul style="list-style-type: none"> <u>Increase erosion or sedimentation that degrades wetland basins</u> <u>Remove vegetation that intercepts and slowly releases precipitation to wetlands</u> <u>Compact soils in contributing areas reducing infiltration and runoff to wetlands</u> <p>Climate change is altering wetland hydroperiods through changes in precipitation timing and snowmelt, making protection of existing hydrologic inputs increasingly critical.</p>
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2 *Critical Areas: Geologic Hazards*

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4 PURPOSE STATEMENT NS 19

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~~Geologic hazards pose a threat to the health and safety of County citizens when incompatible commercial, residential, or industrial development and associated infrastructure is sited in areas of significant hazard. The following goal and policies address the risk associated with these areas by encouraging engineering designs or modified construction practices that will mitigate problems and prohibiting building where problems cannot be mitigated.~~

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Geologically hazardous areas present significant risks to public health, safety, and property when incompatible development is sited in areas of slope instability, erosion, or seismic activity. Designation and protection of geologically hazardous areas is required by the Growth Management Act under RCW 36.70A.060 and necessary to prevent loss of life, property damage, and infrastructure failure. Geologically hazardous areas include landslide hazard areas, erosion hazard areas, drainage, seismic hazard areas, mine hazard areas, volcanic hazard areas, post-wildfire slope instability areas, unstable slopes, and alluvial fan hazard areas. Protection and management of geologically hazardous areas must include approaches based on Best Available Science under RCW 36.70A.172, climate considerations affecting slope stability and erosion, site-specific geotechnical analysis, avoidance of high-hazard areas, engineering designs and modified construction practices that mitigate identified risks, and prohibition of development where hazards cannot be adequately mitigated for implementation

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GOAL NS 19:	Protect the public from personal injury, loss of life or property damage from geologic hazards.
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POLICIES:

NS 19.1	Ensure that land use practices in geologically hazardous areas do not cause or exacerbate natural processes which endanger lives, property, or resources.
NS 19.2	Locate development within the most environmentally suitable and naturally stable portions of the site.
NS 19.3	Classify and designate areas on which development should be prohibited, conditioned, or otherwise controlled because of danger from geological hazards. IN: <u>YCC-22 (3)(4)(2)</u>

NS 19.4	Prevent the subdividing and development of known or suspected landslide hazard areas, side slopes of stream ravines, or slopes 40 percent or greater for development purposes <u>or as BAS indicates.</u>
NS 19.5	<u>Climate-Intensified Geologic Hazard Assessment</u> <u>Require geotechnical reports for development in or adjacent to geologically hazardous areas to evaluate climate-intensified risks including:</u> <ul style="list-style-type: none"> • <u>Landslide and debris flow potential under intensified precipitation scenarios (precipitation events 20-40% more intense than historical records)</u> • <u>Post-wildfire slope stability in areas with moderate to high wildfire risk</u> • <u>Altered groundwater conditions and pore pressure from changing precipitation patterns and snowmelt timing</u> • <u>Cumulative effects of repeated freeze-thaw cycles in transitional elevation zones</u>
NS 19.6	<u>Post-Wildfire Geologic Hazard Areas:</u> Designate burned areas with slopes greater than 15%, or as BAS indicates, as geologically hazardous areas for a minimum of 5 years following fire events. Require comprehensive geotechnical analysis and slope stabilization measures for any development proposed in post-wildfire geologic hazard areas. <u>Increase management zones from geologically hazardous areas by a minimum of 25%, or as BAS indicates, baseline standards to account for increased landslide runout distances and debris flow travel distances under intensified precipitation scenarios and post-wildfire conditions.</u>
19.7	<u>DELETED</u>

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2 **Critical Areas: Fire Hazards and Wildfire**3 **PURPOSE STATEMENT NS 21**

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Commented [KW62]: In Chapter 3 and expanded – under review by Yakima County Fire Marshal.

GOAL NS 21:	Protect life and property in rural Yakima County from fire hazards.
POLICIES:	
NS 21.1	Encourage the development of adequate water supply/storage for new development which is not connected to a community water/hydrant system. A storage facility/fire well should be accessible by standard firefighting equipment and adequate for the needs of the structure(s) and people being protected.
NS 21.2	Roofing used in the construction of residential development shall be of a Class "A" fire retardant material when located outside of 5 road miles of a full service fire station.
NS 21.3	Encourage, where feasible, the undergrounding of electrical utilities to reduce their exposure to fire.

NS 21.4	Require new residential construction to provide for a fuel break around structures.
NS 21.5	Require proposed developments to provide sufficient access for heavy-duty firefighting equipment.
NS 21.6	Bridges, culverts, road drains and other structures shall be constructed and maintained in a manner to accommodate firefighting apparatus on a year around basis.
NS 21.7	Residences and driveways shall be clearly marked and visible with the appropriate address assigned by Yakima County.

1 **Critical Areas: Drought**

Commented [KW63]: In Chapter 3 (Natural Hazards) and expanded

2 **PURPOSE STATEMENT NS 22**

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7 **Critical Areas: Extreme Heat**

Commented [KW64]: In Chapter 3 (Natural Hazards) and expanded

8 **PURPOSE STATEMENT NS 23**

9 **Areas of Yakima County are highly susceptible to.....**

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NS 21-23: FIRE HAZARDS, DROUGHT, AND EXTREME HEAT (SEE CH 3 – ADOPTED IN CH 2 BY

REF)

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Purpose Statement: NOTE: NOTE: NS 21 (Fire Hazards and Wildfire), NS 22 (Drought), and NS 23 (Extreme Heat) have been moved to Chapter 3 (Natural Hazards) and expanded. Policies for these critical areas are under review by the Yakima County Fire Marshal and will be incorporated into the Natural Hazards Element.

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GOAL NS 21-23: See Chapter 3 - Natural Hazards Element for comprehensive fire hazard, drought, and extreme heat policies are part of Yakima County's planning to implement resiliency

and sustainability measures pursuant to HB 1181 and for protection of public health and safety, infrastructure, the environment, and the regional economy.

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NS 21-23: Adopt by ref:

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1 **PURPOSE STATEMENT NS 24**

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3 **Best Available Science**

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5 *Best Available Science (BAS) is a statutory requirement under Washington State's Growth*
 6 *Management Act (GMA) that mandates local governments to use current, scientifically valid*
 7 *information when designating and protecting critical areas. This requirement, codified in RCW*
 8 *36.70A.172, ensures that environmental regulations are grounded in empirical evidence rather*
 9 *than speculation, protecting ecological functions while allowing for informed policy decisions that*
 10 *balance environmental protection with economic viability. BAS requirements must be coordinated*
 11 *with shoreline management under the Shoreline Management Act (RCW 90.58), which specifically*
 12 *requires BAS for shoreline master programs through WAC 173-26-201(3)(d)(i). Integration is*
 13 *required with the State Environmental Policy Act (SEPA) to ensure environmental impacts are*
 14 *properly assessed and mitigated based on sound scientific information.*

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<u>GOAL NS 24</u>	Update the 2004 Best Available Science Report. Use the update to ensure that Critical Areas Ordinances, Shoreline, Resilience, Sustainability and Hazard Management actions meet defined standards and incorporate significant scientific advances since the 2004 baseline report.
<u>POLICIES:</u>	
<u>NS 24.1</u>	Tribal treaty rights must be considered and protected in all BAS applications, requiring coordination and consultation with the Yakama Nation and other treaty tribes.
<u>NS 24.2</u>	Integrate BAS requirements with flood control districts, federal regulations under the Code of Federal Regulations (CFR), and the National Flood Insurance Program standards.
<u>NS 24.3</u>	<p><u>State House Bill 1181 and other mandates, which must be integrated into BAS applications and will:</u></p> <ul style="list-style-type: none"> • Use valid, current scientific information from qualified sources • Document the scientific information used and the reasoning process • Consider competing scientific viewpoints through a reasoned process • If departing from BAS recommendations, provide clear justification and identify other GMA goals • Balance critical areas protection with agricultural viability following Swinomish principles • Establish monitoring and adaptive management when less precautionary approaches are adopted
<u>NS 24.4</u>	<p><u>The BAS update will develop a process to ensure scientific principles are used in the Update. This process will establish, at a minimum, a Science Advisory Group consisting of:</u></p> <ul style="list-style-type: none"> • Environmental experts from Yakima County Planning • The Washington Department of Fish and Wildlife • The Washington State Department of Ecology

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	<ul style="list-style-type: none"> • The Yakama Nation • The US Fish and Wildlife Service • NOAA Fisheries • The US Bureau of Reclamation • The US Forest Service • Members of the Voluntary Stewardship Program • Members of the Yakima Basin Integrated Plan and its subcommittees
NS 24.5	The BAS update will develop a process to ensure scientific principles are used in the Update. This process will identify and invite subject matter experts endorsed by the SAG, to participate in the update.
NS 24.6	<p>The BAS update will develop a process to ensure Yakima Basin stakeholders are invited to participate in the update. This should include, at a minimum:</p> <ul style="list-style-type: none"> • Yakima Basin Irrigation Districts • Conservation Districts • Cities and Towns • The Yakima Valley Conference of Governments
NS 24.7	<p>The BAS will utilize a Source Quality Hierarchy to validate and prioritize information. The following shall apply:</p> <p>Tier 1: Peer-Reviewed Sources (Highest Quality)</p> <ul style="list-style-type: none"> • Academic journals with rigorous editorial review process • Government peer-reviewed reports (USGS, NOAA, EPA) • University research publications and dissertations <p>Tier 2: Professional/Technical Sources (High Quality)</p> <ul style="list-style-type: none"> • Professional association publications and standards • Government technical reports and guidance documents • Certified professional consultant studies following standard methods <p>Tier 3: Grey Literature (Variable Quality - Requires Evaluation)</p> <ul style="list-style-type: none"> • Conference proceedings and presentations • Technical white papers and position statements • Thesis and dissertation research (pre-publication) <p>Tier 4: Local/Regional Sources (Context-Specific Value)</p> <ul style="list-style-type: none"> • Local monitoring data and observational records • Regional studies and technical analyses • Historical records and documentation • Traditional ecological knowledge from tribes and long-term land managers
NS 24.8	<p>The BAS update shall, at a minimum, address the following areas:</p> <ul style="list-style-type: none"> • perennial, ephemeral and intermittent streams, lakes, ponds, and flood zones • shorelines and channel migration zones

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	<ul style="list-style-type: none"> • riparian management zones • wetland delineation, ratings and protection • groundwater quantity and quality • fish and wildlife habitat • anadromous fish and fisheries and their habitat • hydrologically related critical areas • climate change adaptation, sustainability, and resilience, • geologically hazardous areas, • natural resource areas • monitoring and adaptive management frameworks. • geographical data sets and analytical frameworks • expert models • traditional knowledge • ecological functions and values • criteria and threshold systems and values • statistical analysis • natural and other environmental hazards • data management, maintenance, updates and reporting • outreach and accessibility to BAS by interested parties • GMA, SMA and other state, federal and local legislation, and their updates, requiring BAS and or other analysis
NS 24.9	Establish criteria for critical area exceptions, variances, and reasonable use determinations that account for climate change by: Prohibiting variances that would increase vulnerability to climate hazards or compromise long-term critical area function; Requiring demonstration that proposed development can withstand projected climate conditions without requiring future modifications that would further impact critical areas; Prioritizing clustered development and conservation design approaches that minimize critical area impacts while accommodating reasonable economic use
NS 24.10	Develop and maintain public education materials and technical assistance programs that: Explain resiliency and sustainability impacts to critical areas and rationale for updated regulations; Provide guidance on climate-resilient site design and development practices; Identify incentive programs and funding sources for voluntary critical area enhancement; Support agricultural and rural landowners in implementing climate-smart stewardship practices
NS 24.11	Prepare progress reports on implementation of Resiliency and Sustainability Element policies and actions
NS 24.12	Establish baseline environmental monitoring including temperature, precipitation, flooding, drought, snowpack, streamflow, and other environmental factors and ecosystem effects of changing environmental conditions

