



MEMORANDUM

TO: Andy McEvoy, Oregon State University, College of Forestry

FROM: Kyle Collins, Associate Planner
Kevin Moriarty, County Forester

DATE: June 28, 2024

SUBJECT: Senate Bill 80 – Review of the Draft Wildfire Hazard Map for Anomalies and Spatial Data Updates

I. BACKGROUND

In April 2024, Oregon State University (OSU) made two requests from county planning directors and their staff. OSU staff requested that by June 28, 2024, counties should:

- 1) Review the current draft of the Statewide Wildfire Hazard Map for anomalies in property-level hazard classifications.
- 2) Provide spatial data which will help OSU fully map the wildland-urban interface (WUI) in Oregon according to OAR 629-044-1011.

According to the initial request from OSU:

Anomalies are property-level hazard classifications that appear arbitrarily different to county planners when compared to neighboring areas. An example of a potential anomaly is a single taxlot classified as high hazard but surrounded by a large area assessed as entirely moderate hazard taxlots.

Another example of an anomalous hazard classification might be a newly created gravel pit that is classified as high hazard based on previous vegetation conditions. While previous vegetation referenced during simulations may have been highly flammable, the gravel pit is essentially unburnable and does not warrant a high hazard designation.

OSU further clarified the types of spatial data relevant to WUI designation which should be provided if available:

- 1) Planned development which has been approved for development and which meets the criteria of the WUI in OAR 629-044-1011, but was not originally mapped as part of the WUI; or
- 2) Completed development which meets the criteria for the WUI in OAR 629-044-1011, but that was not originally mapped as part of the WUI.

Finally, OSU staff noted that they will evaluate all provided responses and, where appropriate and permissible, incorporate the counties' data into an updated hazard map. As noted under Senate Bills (SBs) 762 and 80, a final version of the hazard map (which is currently in draft form), will identify the hazard classification of individual properties and the location of WUI boundaries on the landscape. Structures included within **both** a high hazard classification and a designated WUI will be subject to defensible space and fire hardening codes, to be determined by the Oregon State Fire Marshal and the Department of Business and Consumer Services Building Codes Division respectively.

II. LIMITATIONS

The Deschutes County Community Development Department (CDD), which includes the Planning Division, and the Deschutes County Forester greatly appreciate the opportunity to review the draft hazard map to provide local knowledge and help ensure the greatest level of accuracy possible for an incredibly complex spatial analysis. County staff acknowledge the difficulty of completing a project of this scale and anticipated impact across a variety of jurisdictions and landscapes.

However, OSU staff should be aware that Deschutes County has numerous limitations in its ability to respond to the requests outlined above. These limitations fall broadly into the following categories:

- 1) While OSU has attempted to provide a succinct description of what may constitute "anomalies" in hazard classification, without a formal definition and framework it is difficult or impossible to capture all possible issues within the draft hazard classifications.
- 2) The number of properties which county staff would likely consider "anomalies" measures in the hundreds. Evaluating the sheer number of properties with potentially inconsistent hazard classifications on a case-by-case basis would necessitate a much greater dedication of resources than county staff was able to provide in the time allotted. This is especially true given the specific limitations for identifying "anomalies" provided by OSU staff and discussed in greater detail below.
- 3) OSU staff utilized building footprint spatial data to identify WUI boundaries on the draft hazard map. County staff understands that this data was current as of approximately 2018-2019, and thus the updated spatial data request would need to cover approximately the last 4-5 years to provide current results. However, CDD does not capture specific spatial data which identifies planned developments or building footprints in Deschutes County. Given this limitation, county staff is unable to provide this level of analysis for development which may have occurred in the previous 4-5 years. However, county staff has attempted to provide some spatial data which may be useful for future iterations of the hazard map.

III. REVIEW FOR ANOMALIES

OSU staff provided the following parameters for verifying “anomalies” and whether adjustments to the draft hazard classification would be undertaken:

For OSU to review potential anomalies and consider adjusting, evidence of a potentially incorrect property-level hazard designation needs to [*sic*] objective, verifiable, and address the four mapping criteria in the directing legislation: “weather, climate, topography and vegetation.” Examples of evidence that will not be considered support for claim of an anomaly includes:

- Personal anecdotes unaccompanied by verifiable evidence
- Evidence premised on factors outside of the four mapping criteria. For example, defensible space and home hardening characteristics are outside the mapping criteria and so a potential anomaly cannot be premised on the fact that the property has significantly mitigated hazard with defensible space (e.g., sprinklers, fire safe landscaping, etc.) or fire hardening (e.g., cement siding, metal roof, etc.)

Given the hazard map development language included in SBs 762 and 80, county staff understands the need for these limitations. However, as noted above, the number of individual properties throughout Deschutes County which appear to have an anomalous hazard classification would require significant and sustained effort by staff to review on a case-by-case basis and provide evidence to justify a classification change. This expected effort is particularly pronounced when tools such as standard aerial imagery may not accurately reflect concerns encountered through site visits and on-the-ground experience from experts such as the Deschutes County Forester. Additionally, both planning staff and the Deschutes County Forester have concerns that entire regions of the county may in fact have anomalous hazard classifications based on local knowledge, recent fire history, the discrepancy between fuel treatments on federal versus private lands, and the expected increase in fire activity for Central Oregon for the coming decades¹.

As county staff is unable to provide the level of detailed analysis requested by OSU in the time allotted, the Deschutes County Forester and planning staff have provided the following themes which we believe should be addressed in future iterations of the hazard map:

Theme 1: Communities appear to have been given moderate or low hazard classifications due to adjacent USDA Forest Service fuel treatments.

The communities of primary concern are: Black Butte Ranch, Crosswater, Seventh Mountain/Widgi Creek, River Canyon Estates, Sunriver, Three Creek Communities, and Woodside Ranch.

Most of these communities are forested, have high tree density, and variable homeowner compliance of adequate defensible space. However, it appears that hazard classifications within these communities have been influenced by fuel treatment projects on adjacent USDA Forest Service land,

¹ <https://www.climatehubs.usda.gov/hubs/northwest/topic/climate-change-and-wildfire-idaho-oregon-and-washington>

causing a majority of taxlots to be classified as moderate hazard. The hazard map analysis does not appear to anticipate that wildfires could potentially start from within the communities themselves and not necessarily within adjacent USDA Forest Service land. Additionally, available ladder fuels within these communities are not adequately captured on the taxlots of concern.

Theme 2: Lack of representation of non-federal fuel treatments creates an inequitable approach to determining wildfire hazard on a County-wide scale

As stated above, based on review of the draft hazard map, it appears that USDA Forest Service fuel treatments have been captured as part of the hazard classification methodology. However, numerous State, county, local, and private fuel treatments have not been represented in a similar manner. If it is accurate that Forest Service fuel treatments have been included as part of the hazard classification analysis, it is unclear why a discrepancy has been drawn between federal actions and those undertaken by others.

To provide two examples:

- 1) The Bend Park and Recreation District and Tree Farm LLC fuel treatment areas on the City of Bend's western boundary are currently classified as high hazard, but these areas appear to meet the same ruleset and conditions as the Theme 1 communities of Black Butte Ranch, Crosswater, Seventh Mountain/Widgi Creek, River Canyon Estates, Sunriver, Three Creek Communities, and Woodside Ranch. Tree Farm and other homeowner associations in the Westside Transect Zone on Bend's western edge have strict defensible space standards in their architectural guidelines which must be maintained in perpetuity.
- 2) Numerous taxlots within the Tetherow Golf Course (part of the Tetherow Destination Resort) which have been converted to golf courses, agricultural pastures, parks, or other cleared features are currently classified as high hazard.

Theme 3: Flame length is not a good metric to determine fire intensity

Fire intensity in wildfire modeling is generally defined as the amount of BTU's per meter cubed. Two fires can have the same flame lengths with very different intensities. Flame length is defined as the average flame length of a flaming front.

Grass fuel models (GR4) and shrub models (GS2) appear to be used for the eastern portion of Deschutes County. Whereas timber models (FM10, etc.) appear to be used on the western portion of Deschutes County. Although flame lengths from grass and light shrub can exceed 8 feet, the resistance to control is much lower than timber fires for the following reasons:

- Grass fires are limited in duration and have a low chance of producing lofted embers.
- Shrubs and juniper woodlands generally produce short-range to mid-range spot fires (less than ¼ mile).

- Croplands will generally produce short duration fires with limited to no spot fires if crops are available to burn.
- The Rothermel fire spread model² is only a surface fire behavior model. Within the draft hazard map, forested canopy fire does not seem to be a consideration when determining fire intensity analysis.

Given these concerns, large numbers of taxlots in rangelands and farmlands have been classified as high hazard and appear to show greater hazard than taxlots located in or near mature forest, contrary to the available evidence regarding wildfire risk within forested landscapes.

Theme 4: The spatial datasets used in the draft map are outdated by several years

County staff notes that the draft hazard map identifies 102,451 taxlots within Deschutes County. As of the date of this report, Deschutes County has 106,838 taxlots on record. It is unclear how the remaining 4,387 taxlots will be assigned hazard classifications in the final version of the hazard map slated for issuance in October 2024.

Theme 5: The hazard map appears broadly inconsistent based on previous fire history and on-site knowledge

The draft map currently presented is inadequate in determining priority areas within Deschutes County for hazardous fuel mitigation. Some of the communities classified as moderate hazard in Theme 1 have the highest fire risk in Deschutes County deemed by the County Forester and other fire experts from federal, state, and local fire protection organizations. For example, many homeowners in Black Butte Ranch are currently unable to find fire insurance because insurance companies have deemed this area as having extreme fire risk, however a majority of Black Butte Ranch is currently classified as moderate hazard in the draft map.

Additionally, in areas containing juniper woodlands and rangelands, the draft map shows a checkerboard type pattern between moderate and high hazard. Neighbors with similar landscapes frequently have dissimilar classifications. Some taxlots have been completely converted from original native vegetation and are not adequately captured in the hazard map.

Some examples of this general irregularity are demonstrated in the figures below. These examples are not exhaustive but are intended to provide a snapshot of numerous inconsistencies within the hazard map, both at a taxlot scale and at a regional level. These examples are spread across a wide geographic area and appear to show:

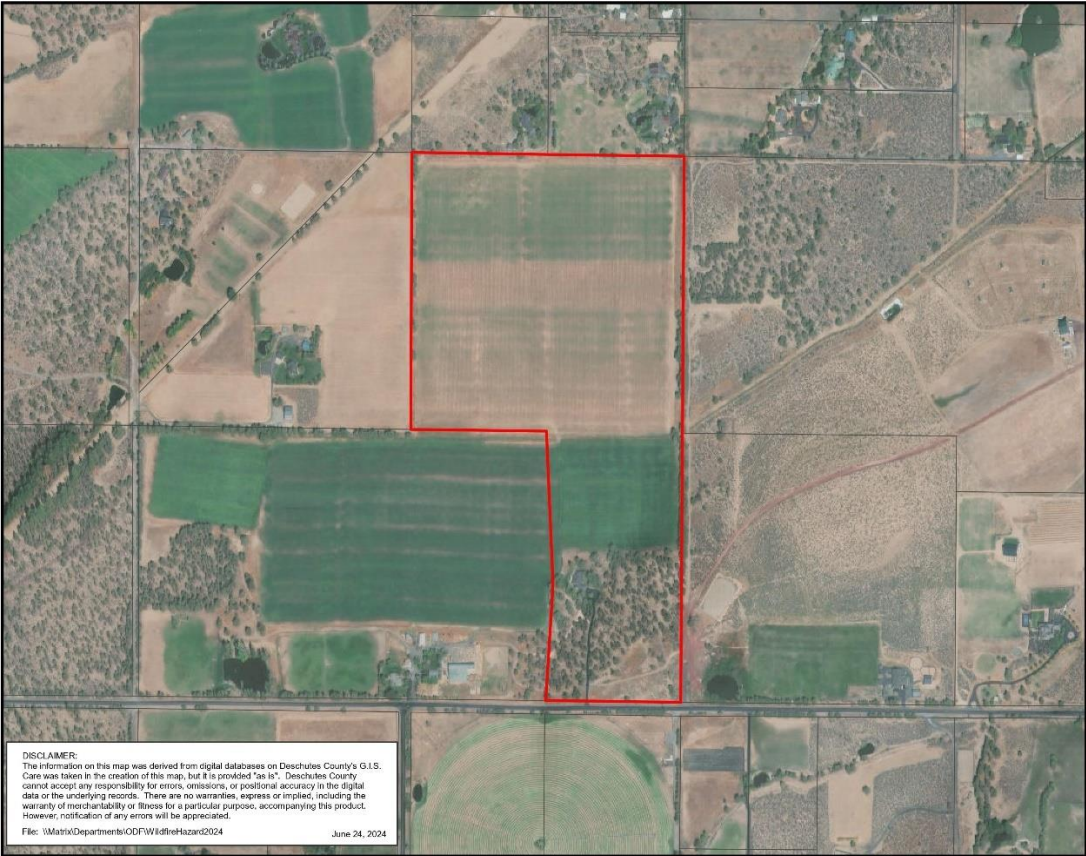
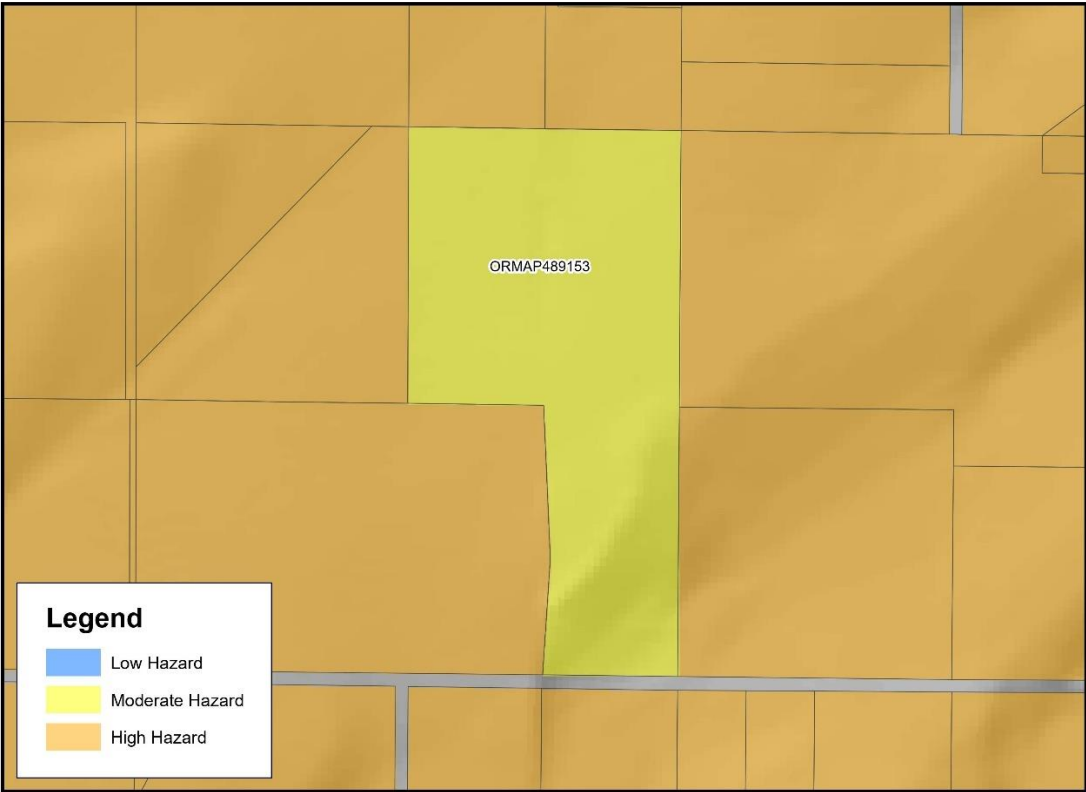
- Moderate (or low) classification taxlots with identical vegetation and topography patterns to surrounding areas composed mostly or entirely of high hazard classification taxlots.

² <https://www.fs.usda.gov/research/treesearch/55928>

- Irrigated parcels which are classified as moderate hazard adjacent to irrigated parcels which are classed as high hazard. Curiously, in several of these instances, aerial imagery appears to show taxlots with recent and/or frequent irrigation receiving a high hazard classification adjacent to parcels that appear to have similar or less irrigation activity with a moderate hazard classification.

Example 1

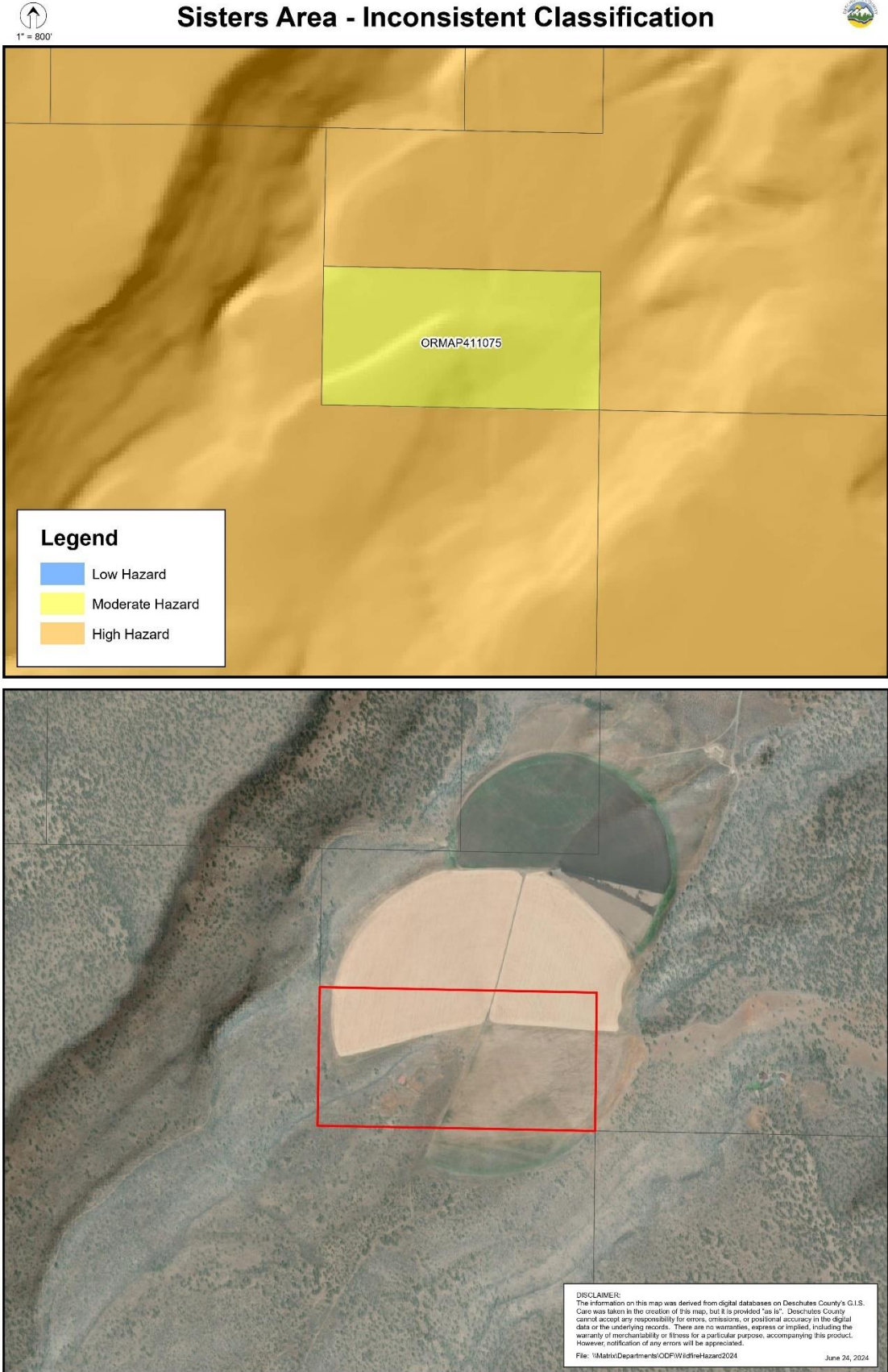
Tumalo - Inconsistent Classification



DISCLAIMER:
The information on this map was derived from digital databases on Deschutes County's G.I.S. Care was taken in the creation of this map, but it is provided "as is". Deschutes County cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or the underlying records. There are no warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this product. However, notification of any errors will be appreciated.
File: \\Math\Departments\ODFW\kdfre\Hazard2024 June 24, 2024

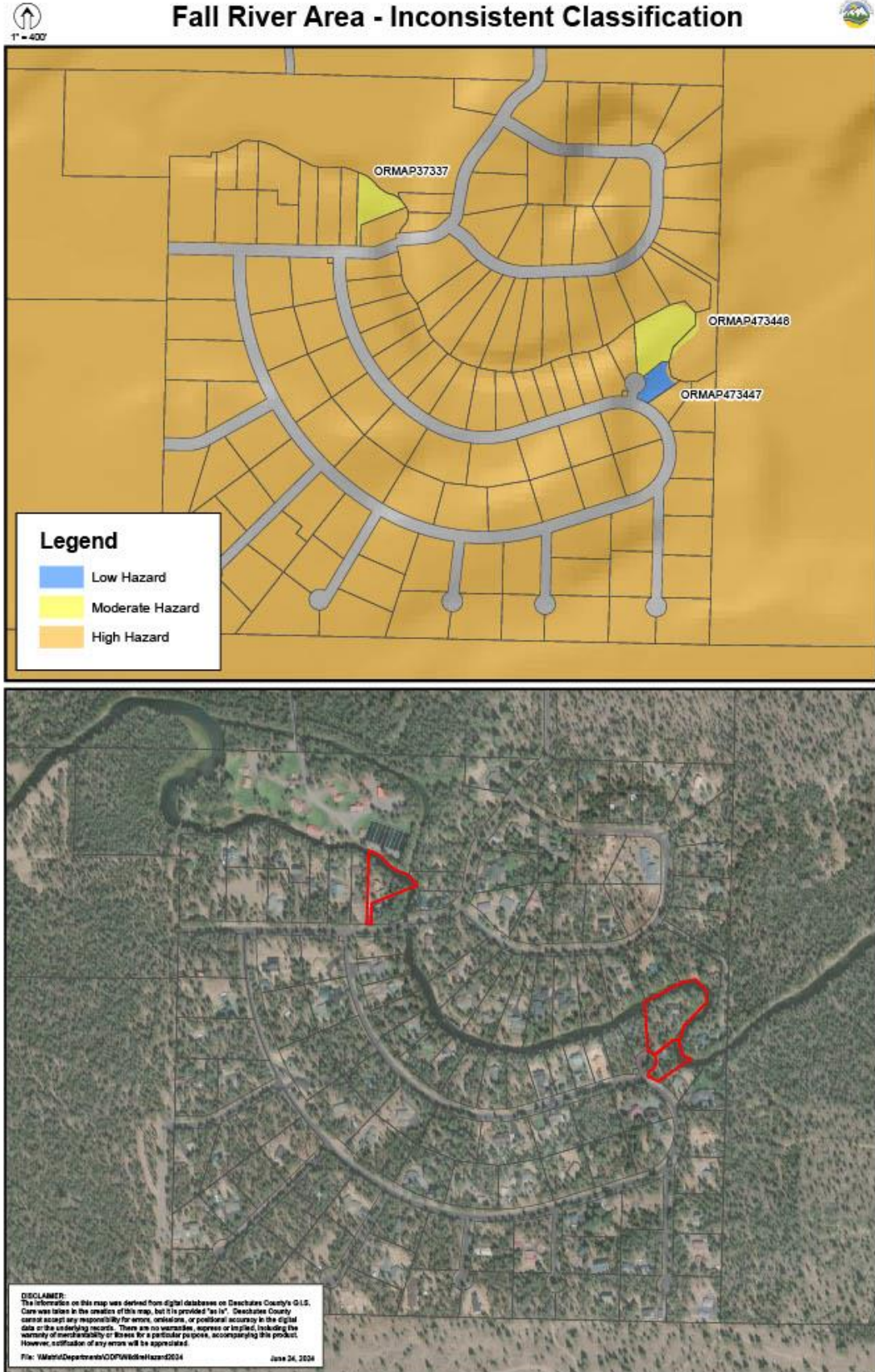
Example 2

Sisters Area - Inconsistent Classification



Example 3

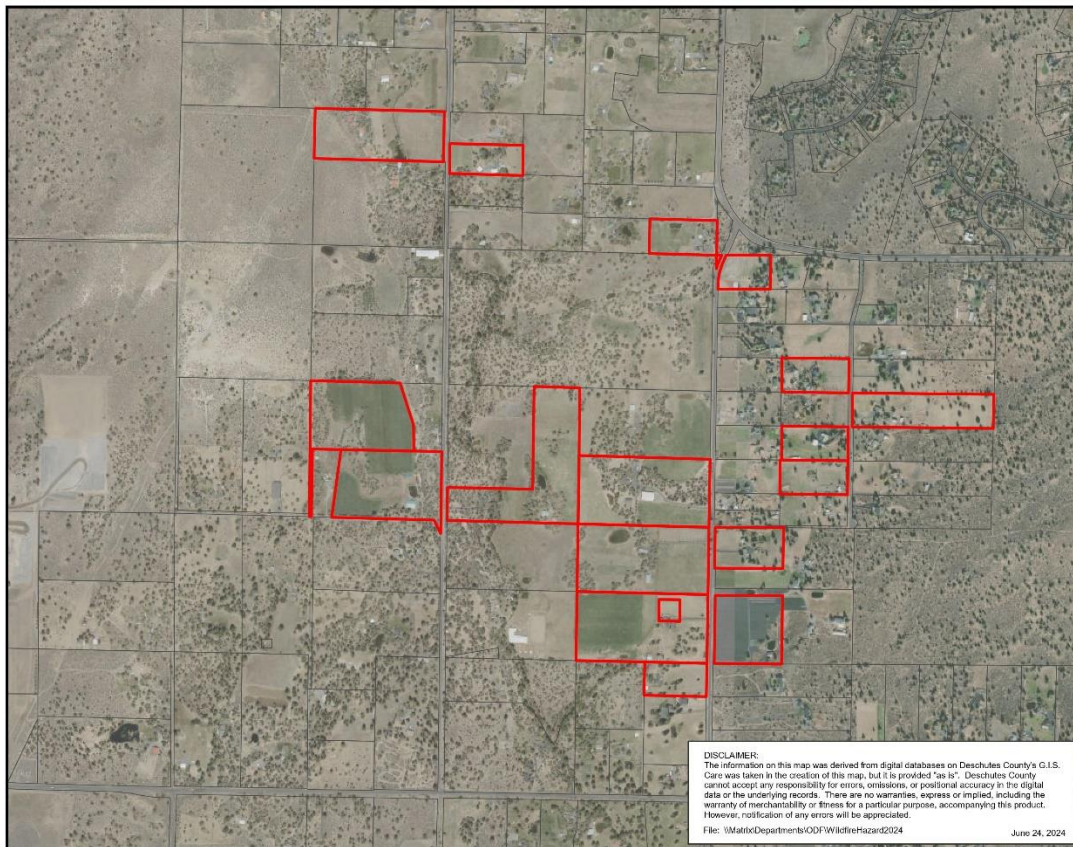
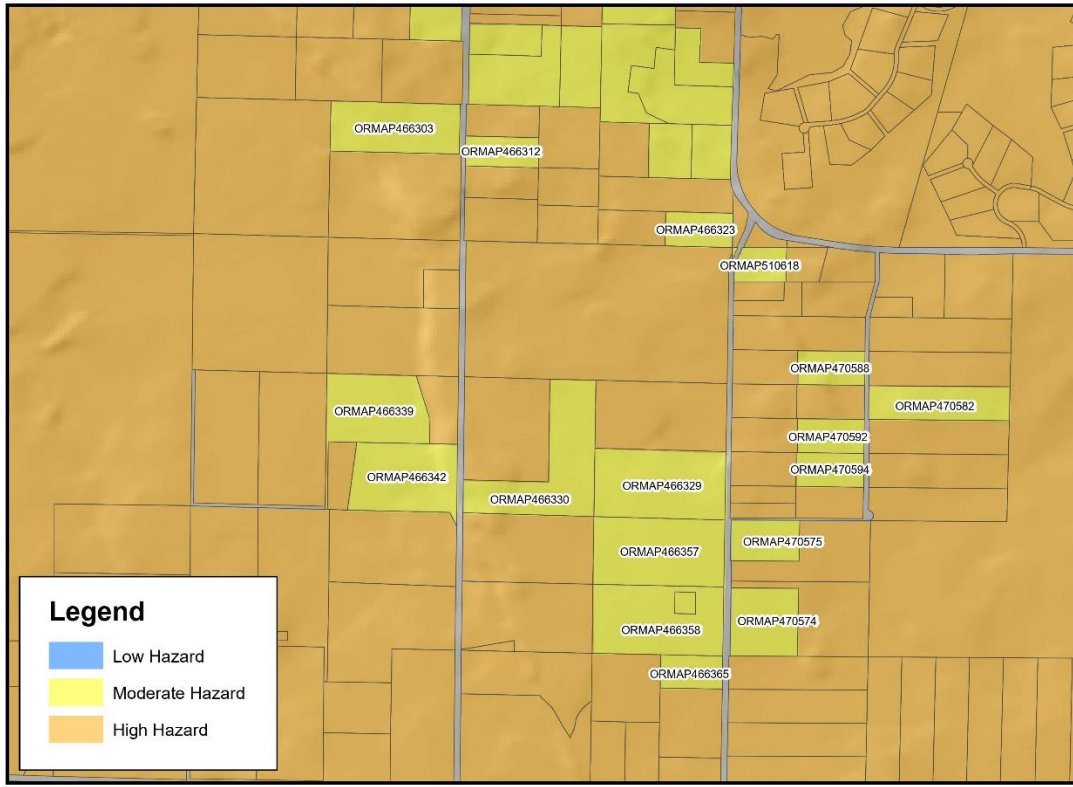
Fall River Area - Inconsistent Classification



Example 4

SE Bend Area - Inconsistent Classification

1" = 1,000'



Theme 6: Impacts to local fuel treatment programs

State-level hazard classifications may also drive prioritization for fuel treatments and funding opportunities to create defensible space in rural communities throughout Deschutes County. It is unclear if these hazard classifications will align with areas that have been prioritized by county staff and local communities for future fuel treatment efforts.

Theme 7: LandFire³ was never intended to be used to determine Wildfire Hazard on a taxlot level

LandFire data products consist of over 50 spatial data layers in the form of maps and other data that support a range of land management analysis and modeling. For example, specific data layer products include: Existing Vegetation Type, Canopy, and Height; Bio-physical Settings; Environmental Site Potential; Fire Behavior Fuel Models; Fire Regime Classes; and Fire Effects layers.

The following links describe in greater detail the applicability and limitations of utilizing LandFire data products for determining wildfire risk at a taxlot level:

- https://www.natureserve.org/sites/default/files/lf_fact_sheet.pdf
- https://landfire.gov/sites/default/files/documents/The_LANDFIRE_Project_TNC_pub.pdf

As a general summary, the LandFire factsheet states the following:

LandFire products are designed to be used at a landscape-scale in support of strategic vegetation, fire, and fuels management planning to evaluate management alternatives across boundaries.

LandFire National products are delivered at a 30-meter pixel resolution. The most effective use of the products is at the landscape scale. Thus, applying LandFire data at an individual pixel level or in small groups of pixels is not recommended.

It is county staff's understanding that certain data layers utilized within the draft hazard mapping process are LandFire products or similar spatial datasets. Given the requirements from SBs 762 and 80 that individual taxlots be given hazard classifications, use of these datasets may produce unintended or inaccurate results.

IV. WILDLAND URBAN INTERFACE (WUI) SPATIAL DATA

As noted above, Deschutes County does not compile or maintain spatial data associated with building footprints and/or planned developments. However, county staff understands the general request to provide additional data that may help fill in gaps regarding development activity which has occurred since approximately 2019. As an intermediate step, staff has compiled spatial data for all properties which have received development permits (i.e. – building permits) since 2019. This data does not contain details such as the location of individual structures, but provides an overview of developed

³ <https://landfire.gov/>

properties which may have not been captured in the original WUI analysis performed by OSU staff. This data is included as an attachment to this memorandum.

Attachment:

1. Deschutes County – Spatial Data for Structures Developed Between 2019 and 2024