Environmental and Natural Resources Law Center

ALLOCATING IN SITU GROUNDWATER RIGHTS IN OREGON TO PROTECT GROUNDWATER-DEPENDENT ECOSYSTEMS: OPPORTUNITIES AND CHALLENGES

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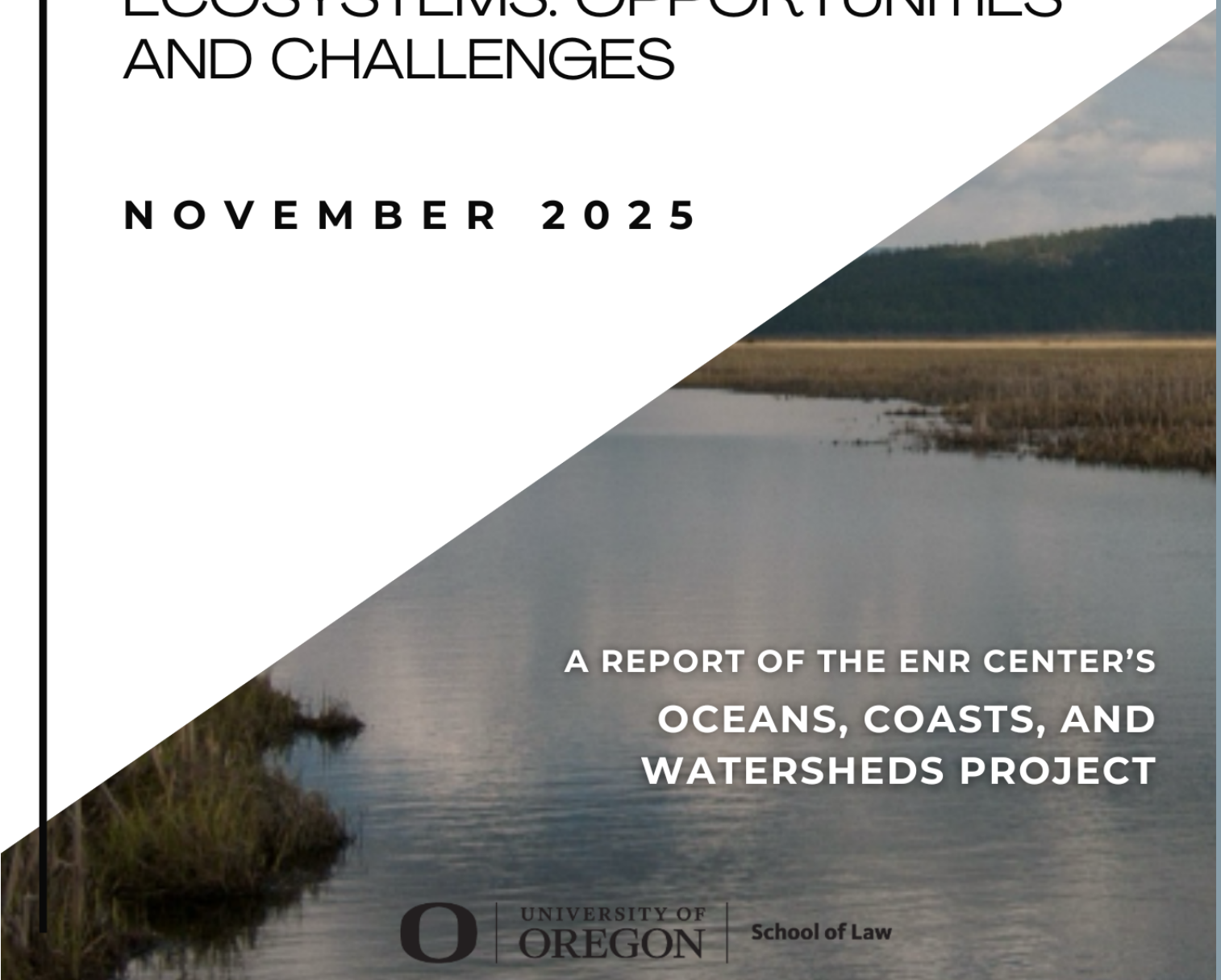

A REPORT OF THE ENR CENTER'S

OCEANS, COASTS, AND WATERSHEDS PROJECT

UNIVERSITY OF OREGON | School of Law

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ABOUT THIS REPORT
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CONTRIBUTORS
Authors: **Michelle Smith**, ENR Center Research Associate; **Andrew Archer**, OCWP Fellow; and **Max McCool**, OCWP Fellow | Faculty Advisor: **Adell L. Amos**, Clayton R. Hess Professor of Law & OCWP Co-Leader

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EXECUTIVE SUMMARY

There is growing understanding of the public values of in situ groundwater, including ecological health, water quality, and climate resilience. Ecosystems that rely on groundwater—termed groundwater-dependent ecosystems (GDEs)—are uniquely reliant on and sensitive to changes in groundwater availability. Existing legal frameworks have been insufficient to protect groundwater flows necessary to sustain GDEs and other in-place public uses of groundwater.

Oregon uses a rules-based framework to manage groundwater within the capacity of the resource, such as criteria for assessing water availability and pumping caps. These tools indirectly protect groundwater for in situ public uses by managing to prevent unsustainable groundwater-level declines, but none provide a direct mechanism to allocate groundwater for these uses.

This report builds on the 2018 report, Mechanisms for Protecting Groundwater-Dependent Ecosystems, which identified potential pathways in Oregon's water management framework, including instream water rights, to protect groundwater in situ. This report more closely assesses how Oregon could apply a water rights framework to protect groundwater for in situ uses.

This report examines two pathways under an instream water right model to secure in situ groundwater: (1) an instream water right for surface water expressions of GDEs and (2) an in situ groundwater right. The proposed models have different benefits, limitations, and challenges for securing flows for GDEs.

Many GDEs rely on both surface water and groundwater, and the protection of surface water flow is therefore an important component of protecting GDEs. However, this model provides only indirect protection for critical groundwater flows through the state's conjunctive regulation of hydraulically connected waters.

In situ groundwater rights would provide a legal mechanism to directly allocate and protect in priority the groundwater flow needed to maintain the ecological values of GDEs and other in situ public uses. The application of an instream water right framework to groundwater would be an extension of Oregon's instream water rights program, which is currently implemented for surface water rights, and may require statutory and regulatory amendments. Practical barriers related to data, quantification and measurement, and the complexity of groundwater management also pose challenges for readily translating existing administrative frameworks to groundwater rights.

Despite these obstacles, the model of an in situ groundwater right is consistent with the state's approach to protecting surface water flows, which recognizes instream uses as beneficial uses having equal value as other consumptive uses. While less visible, groundwater is equally important for maintaining in situ public uses. A water rights approach would provide significant benefits for protecting the public values of in place groundwater: durable flow protection enforceable within the water rights framework, ability to tailor protections for individual locations and flow needs, mechanism to protect existing water rights for in situ uses, and the opportunity to use voluntary transactions to restore groundwater.

INTRODUCTION

Groundwater is a critical water source for communities and ecosystems. As with surface water, many of the environmental and ecological benefits of groundwater are realized from preserving groundwater in place, termed in situ. Protecting groundwater in situ can increase water security for household uses, buffer against the impacts of drought, and reduce or prevent the impacts of pumping on nearby rivers and streams. Ecosystems that rely on groundwater—termed groundwater-dependent ecosystems (GDEs)—are uniquely reliant on and sensitive to changes in groundwater availability. While there is a growing understanding of the in situ benefits of groundwater, legal frameworks have been slow to evolve to protect these public uses.

To date, most legal frameworks that protect in situ public uses of water have addressed surface water and do not directly protect groundwater, which is the cornerstone of many ecosystems. The issuance of instream surface water rights is the most common mechanism in western states to protect in-place public uses. This legal framework integrates instream uses within the state's water allocation framework—situating in situ public uses in parity with other water uses. State administrative frameworks may also protect instream flows through restrictions on use.

In contrast, most groundwater management frameworks do not have a water right mechanism to protect groundwater for in situ values. Instead, regulatory frameworks broadly establish administrative tools to manage groundwater within the capacity of the resource, including criteria for assessing water availability and withdrawal caps. These frameworks indirectly protect in situ values by limiting groundwater use to maintain stable groundwater levels.

While sustainable groundwater management frameworks offer some protections for GDEs, they have been insufficient alone to protect ecosystem values. The instream water rights approach used for surface water provides several unique management benefits that could complement administrative frameworks that seek to achieve sustainable groundwater use.[1] These benefits include durable flow protection enforceable within the water rights framework, ability to tailor protections for individual locations and flow needs, mechanism to protect existing water rights for in situ uses, and the opportunity to use voluntary transactions to restore groundwater.

This report builds on the 2018 report, Mechanisms for Protecting Groundwater-Dependent Ecosystems, which identified pathways in Oregon's water management framework to protect groundwater in situ.[2] That report identifies the application of the state's instream water rights framework to groundwater as an untested but potentially viable pathway. This report more closely examines Oregon's instream water rights program to assess how the state could apply a water rights framework to protect groundwater for in situ uses. [3]

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[1] *See* Rebecca L. Nelson, Water rights for groundwater environments as an enabling condition for adaptive water governance, Ecology and Society, 27(2):28 (2022), *available at* https://doi.org/10.5751/ES-13123-270228 (discussing the role of a water rights approach in groundwater management).

[2] Adell Amos and Clinton Donegan Burke, Mechanisms for Protecting Groundwater-Dependent Ecosystems, The Environmental and Natural Resources Law Center, (Sept. 2018), *available at* https://law.uoregon.edu/sites/default/files/mechanisms_for_protecting_groundwater.pdf.

[3] This report only examines an instream water right approach. Importantly, there may be pathways to condition consumptive use rights to protect in situ groundwater values. For example, groundwater permits may require curtailment of use when static water levels fall below reference points.

This report first provides background on public benefits of in situ groundwater and Oregon's regulatory frameworks for managing groundwater and protecting instream flows. This report then describes two models for using an instream water rights framework to protect GDEs: instream water rights for surface water expressions of GDEs and in situ groundwater rights. For each model, the report identifies its benefits and limitations and legal and applied barriers to implementation.

BACKGROUND

I. GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater supports a host of ecological functions, including supplying essential water for surface and subterranean ecosystems.[4] Ecological communities that rely in whole or in part on groundwater are classified as GDEs.[5]

GDEs include ecological communities found in a range of aquatic habitats such as springs and seeps, wetlands, rivers, and lakes.[6] GDEs also include terrestrial ecosystems anchored by phreatophytes, plants that rely on shallow groundwater as a water source. Public values of GDEs include high biodiversity, unique water quality, and climate resilience.[7] Because of groundwater's relative stability to short-term variations of water availability, GDEs are often the only perennial water sources in arid climates, provide critical baseflow during summer months and drought, and are an important source of cold water for thermally stressed ecosystems.

Groundwater withdrawals are a primary stressor of GDEs in Oregon.[8] Declines in groundwater levels can disrupt the hydrologic regime, reducing groundwater discharges to surface water, capturing surface water by reversing the direction of flow, or disconnecting ecosystems from groundwater sources. Changes in precipitation patterns and increased water scarcity amplifies stresses to GDEs, reducing opportunities for groundwater recharge and increasing reliance on groundwater resources as surface water sources become more variable.

Oregon has numerous ecosystems and species that are maintained, to some degree, by groundwater. The Nature Conservancy's *Oregon Atlas of Groundwater-Dependent Ecosystems* assesses springs, wetlands, rivers, and lakes to determine whether they are groundwater dependent.[9] The assessment found that all springs, 45.4% of wetlands, 33% of rivers, and 62.9%

[4] Christian Griebler and Maria Avramov, Groundwater ecosystem services: a review, Freshwater Science 34:1 (March 2015), https://doi.org/10.1086/679903.
[5] Zach Freed, Micheal Schindel, Claire Ruffing, and Shonene Scott, Oregon Atlas of Groundwater-Dependent Ecosystems, The Nature Conservancy 11 (2022), *available at* https://www.groundwaterresourcehub.org/content/dam/tnc/nature/en/documents/groundwater-resource-hub/Oregon_Atlas_of_Groundwater_Dependent_Ecosystems_2022.pdf.
[6] *Id.* at 13.
[7] Jenny Brown, Leslie Bach, Allison Aldous, Abby Wyers, and Julia DeGagné, Groundwater-dependent ecosystems in Oregon: an assessment of their distribution and associated threats, Front. Ecol. Environ 9(2): 97-102 (2011), https://doi.org/10.1890/090108.
[8] Oregon Atlas of Groundwater-Dependent Ecosystems, *supra* note 5, at 16.
[9] *Id.* at 38, 40, and 41.

of lakes in Oregon are GDEs.[10] Oregon recognizes GDEs' ecological benefits and the need to adopt additional groundwater protections to secure those benefits.[11]

II. GROUNDWATER MANAGEMENT IN OREGON

Groundwater accounts for over 90% of Oregon's available fresh water and is a critical water source for communities and ecosystems.[12] The 1955 Groundwater Act[13] establishes state authority for managing groundwater, which broadly includes water from an underground source, and requires sustainable groundwater management.[14] To achieve sustainable groundwater management, the Act establishes a permitting framework with criteria to constrain water uses within the capacity of the resource and administrative tools to address areas of groundwater overuse. The Oregon Water Resources Department (OWRD) administers water use in the state.

State law recognizes the interconnection between groundwater and surface water and provides for the conjunctive management of hydraulically connected waters.[15] Under this framework, OWRD administers groundwater uses to protect senior surface water users from injury from the depletion of groundwater contributions to connected surface waters.

Subject to statutory exceptions, use of groundwater requires state authorization. In administering new uses of groundwater, OWRD must find that water is available, the use is legally permitted, and the use will not injure[16] other water rights.[17] OWRD's assessment of groundwater availability is linked to the availability of hydraulically connected surface water sources.

Water rights are administered in order of their date of appropriation. Functionally, the date of appropriation, termed the priority date, determines which user can access available water—older water rights are satisfied in their entirety before the water rights of junior users are satisfied.

OWRD may curtail groundwater use when it finds that localized depressions in groundwater levels from well pumping results in insufficient water to satisfy other water uses—termed

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[10] *Id.* at 5.

[11] Alyssa Mucken and Brenda Bateman (Eds), Integrated Water Resources Strategy, Oregon Water Resources Department 59 (2017), *available at* https://www.oregon.gov/owrd/wrdpublications1/2017_IWRS_Final.pdf.

[12] Groundwater Protection in Oregon, Oregon Department of Environmental Quality 6 (March 2021), *available at* https://www.oregon.gov/deq/FilterDocs/gwLegislativeReport2021.pdf.

[13] OR. REV. STAT. §§ 537.505 to .795.

[14] *Id.* at § 537.515(5) (Defining ground water as "any water, except capillary moisture, beneath the land surface or beneath the bed of any stream, lake, reservoir or other body of surface water within the boundaries of this state, whatever may be the geological formation or structure in which such water stands, flows, percolates or otherwise moves."); OR. REV. STAT. § 537.525 (state policy for managing groundwater use).

[15] OR. ADMIN. R. Ch. 690 Div. 9. OWRD rules establish a presumption that groundwater use from unconfined aquifers within one-quarter mile from surface water is hydraulically connected (*Id.* at 690-009-0060(2)). For other groundwater sources, connectivity is determined on a case-by-case basis and may consider groundwater assessments, relative elevations between groundwater and surface water, and flow between surface water and groundwater (*Id.* at (1)).

[16] Injury considers whether a water right is harmed or diminished by another water user.

[17] OR. REV. STAT. §537.621(2)(a). Administrative rules define water as available when: (1) groundwater levels are "reasonably stable," (2) the proposed use does not have the potential to deplete streamflow in surface waters where uses are not fully satisfied, and (3) the use is within the capacity of the resource. OR. ADMIN. R. 690-300-0010(57)(d)-(f).

substantial interference.[18] Prior to addressing interference between groundwater users, OWRD requires the senior user to deepen wells to reach available groundwater.[19] If OWRD finds substantial interference with a surface water source, it may curtail wells within 500 feet of the hydraulically connected surface water source based on their potential to interfere[20] with the surface water source. For more distant wells, OWRD must find regulation of the well would remediate the interference. OWRD may only manage impacts from wells over a mile from the surface water source through administrative designation. Because surface water development predates most groundwater use, surface water rights are generally senior to groundwater rights.[21]

The timescale of observable impacts to groundwater and lack of data related to groundwater quantity and quality and ground-surface interaction create challenges in managing groundwater that are unique from surface water.

III. LEGAL FRAMEWORK FOR PROTECTING INSTREAM PUBLIC USES IN OREGON

Oregon law recognizes water as a public resource and requires state authorization—either in the form of a water right or statutory exemption—to use water. State statutes and administrative rules define how and the uses for which water can be developed. Water use must be for a state-recognized beneficial use, which was historically limited to uses requiring a diversion for out-of-stream uses. The development of water for out-of-stream uses without protection for instream uses led to the depletion of streamflow and impaired ecosystem functions and other public values.

Oregon initially protected instream values by legislatively withdrawing certain waters from appropriation.[22] In 1955 the Oregon legislature directed OWRD to administratively establish and protect minimum streamflow reserved for instream uses.[23] While generally protected against impairment from new uses, the legislature authorized OWRD to disregard protections in times of water shortage and enabled OWRD to modify minimum flow requirements.

In 1987 Oregon shifted its approach to protecting instream uses from an administrative framework to the issuance of water rights. The Instream Water Right Act recognizes instream public uses as beneficial uses and authorizes the issuance of water rights without diversion from the stream.[24] OWRD is responsible for administering the Instream Water Right Act and issues instream water rights for surface waters.

While instream water rights have the same legal status as consumptive use water rights, they are subject to a distinct management framework, including the process and criteria for issuing

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[18] *Id.* at 690-008-0001(10) (defining substantial interference); -0050 (setting out groundwater controls).
[19] *Id.* at -008-0001(10) and 690-250-0110.
[20] *Id.* at 690-009-0060 (establishing criteria to determine the potential for substantial inference).
[21] *See* Marche, Jonathan L. OWRD Stream Gaging Network Evaluation for Water Distribution, State of Oregon Water Resources Department, Open File Report SW 2011-01, https://www.oregon.gov/OWRD/WRDPublications1/OWRDStreamGagingNetworkEvaluationForWaterDistribution.pdf.
[22] *See e.g.* OR. REV. STAT. § 538.110.
[23] *Id.* at § 536.325 (repealed); OR. ADMIN. R. Ch. 690 Div. 46.
[24] OR. REV. STAT. §§ 537.332 to .360 (enumerated beneficial uses include recreation, pollution abatement, fish and wildlife habitat, and other ecological values).

and administering instream water rights.[25] As with other appropriative water rights, instream water rights are protected from injury in water allocation decisions, including from new uses and transfers, and protected from injury from junior water users during water shortage. OWRD may subordinate instream water rights to certain water uses[26] and may consent to injury of instream water rights in limited circumstances.[27]

A. Establishing Instream Water Rights

The Instream Water Right Act provides three pathways to establish instream water rights: (1) the conversion of minimum perennial streamflows, which accounts for around 30% of existing instream water rights,[28] (2) the acquisition of new water rights, and (3) the transfer of existing water rights to instream purposes.

Requests for New Instream Water Rights

The Instream Water Right Act authorizes three agencies to request new instream water rights:[29]

◊ Oregon Department of Fish and Wildlife (ODFW) may request instream water rights to protect ecological and habitat values and prioritizes protecting streamflow for important or threatened species.[30]

◊ Oregon Department of Environmental Quality (ODEQ) may request instream water rights to protect and maintain water quality and prioritizes protecting streamflow in water quality impaired waters and waters specially designated for protection from long-term water quality degradation.[31]

◊ Oregon Parks and Recreation Department (OPRD) may request instream water rights to protect recreational and scenic values of the state's waters and prioritizes protecting streamflow in state scenic waterways and national wild and scenic rivers, streams with recognized recreational significance, and where instream uses are threatened by out-of-stream diversions.[32]

Each agency authorized to request instream water rights has adopted administrative rules implementing its authority. The administrative rules generally set out the following.

◊ Purposes for which the agency can request instream water rights.

◊ Priority areas for protecting instream flows.

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[25] *Id.* at § 537.350.
[26] *Id.* at § 537.352 (municipal, multipurpose storage, and municipal hydroelectric projects).
[27] OR. ADMIN. R. 690-380-5050.
[28] Because converting minimum perennial streamflow is not a pathway to protect groundwater in situ, this report does not discuss this mechanism for establishing instream water rights.
[29] OR. REV. STAT. § 537.336.
[30] OR. ADMIN. R. 635-400-0005. ODFW has a long-term goal to secure instream water rights for every waterway in Oregon that supports fish and wildlife and has an active program for identifying and securing instream water rights for Oregon's waters.
[31] *Id.* at 340-056-0200.
[32] *Id.* at 736-060-0030(11).

◊ Methodologies for quantifying flows needed to meet management objectives.

◊ Procedures for monitoring protected instream flows.

◊ Timeline and criteria for reviewing protected instream flows.

OWRD administrative rules set application requirements, review criteria, and the certification process for issuing new instream water rights.[33] Once a new water right is approved, OWRD issues a certificate in its name as trustee for the public.[34] The date of the agency request serves as the priority date for the certificate.

Changing Existing Water Rights to Instream Uses

The Instream Water Right Act authorizes OWRD to change existing out-of-stream water rights to an instream use, termed instream transfer.[35] As with other types of water right transfers, instream transfers retain the original water right's priority date. This allows for the protection of more senior water rights for instream uses, which provides stronger protection against depletion, particularly in times of water shortage, where often only the most senior water rights receive water. Because Oregon has little unallocated water, transfers are an important mechanism to protect instream public uses.

There are two administrative frameworks for changing a water right[36] to instream use: transfers and leases.[37] OWRD authorizes two types of transfers: (1) permanent transfers and (2) time-limited transfers, which change the type of use of a water right to an instream use for a set term of years (typically over five years).

Instream leases change the type of use of the water right to an instream use for no more than five years, subject to renewal.[38] A water right holder may also lease its water right for a portion of a water-use season, termed split season leasing.[39] Administrative rules expressly limit instream leasing to surface water and stored water rights.[40]

OWRD administers the change of water rights to instream uses and has adopted specific rules for instream transfers and leases—the type, timing, and place of instream use and conditions to prevent injury.[41] As with new instream water rights, OWRD holds the resulting water right as trustee for the public.

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[33] *Id.* at Ch. 690 Div. 77.
[34] OR. REV. STAT. § 537.341.
[35] *Id.* at § 537.348.
[36] "Any person," which includes state agencies, may purchase, lease, or accept as a gift an existing water right for instream use. Only ODFW (OR. ADMIN. R. 635-400-0035) and OPRD (*Id.* at 736-060-0040(1)) have adopted rules implementing the authority.
[37] *Id.* at 690-077-0065.
[38] *Id.* at -0076. The water right holder may renew the lease.
[39] *Id.* at -0079.
[40] *Id.* at -0076(1). OWRD provides expedited review of leases but retains the authority to modify an approved lease if it later finds the change injures an existing water right.
[41] In the context of transfers, injury may occur if the change depletes return flow or results in more water being used (termed enlargement).

B. Quantifying Instream Water Rights

The Instream Water Right Act limits instream water rights to the minimum quantity needed to support the instream public use.[42] OWRD determines the appropriate quantity of instream water rights considering streamflow availability and agency recommendations. Instream water rights specify the quantity of water protected for each month at a flow rate or lake elevation, the reach protected, and where the water right will be measured.

OWRD generally limits instream water rights to the average natural flow of the water source.[43] OWRD does not consider the amount of water allocated for out-of-stream uses in considering water availability for instream uses. ODFW, ODEQ, and OPRD have adopted methodologies for determining the instream flow needed to support public uses.[44] Of the three agencies, ODFW has the most developed program for identifying and quantifying instream flows.

C. Allocation of Conserved Water Program

The Allocation of Conserved Water program establishes a pathway to change a portion of an existing consumptive use right to an instream use as part of water conservation efforts.[45] The Allocation of Conserved Water program incentivizes water use efficiency by allowing water users[46] to retain up to 75% of the water conserved for another use. Without the program, the water right would be reduced by the amount of water conserved because the conserved water is no longer needed for the beneficial use.

The legislature balanced the private benefit to the water right holder with a requirement that a minimum of 25%[47] of the conserved water be "allocated to the state."[48] The Allocation of Conserved Water program directs the state to determine whether the state's portion "is necessary to support in-stream flow purposes." If water is necessary for instream purposes, the statute requires the state to convert its portion of the conserved water to an instream water right. If water is not necessary for instream purposes, the water is made available for public appropriation.

APPLICATION OF INSTREAM WATER RIGHTS FRAMEWORK TO PROTECT GROUNDWATER DEPENDENT ECOSYSTEMS

This section examines how Oregon could apply an instream water rights framework to protect the ecological values of GDEs. Oregon has recognized the ecological importance of GDEs and the role of groundwater in maintaining these ecosystems.[49] While the state recognizes the link

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[42] OR. REV. STAT. § 537.332(2).
[43] OR. ADMIN. R. 690-077-0015(4) (OWRD may issue instream water rights that exceed the natural flow when the additional flows are significant for the public use).
[44] *Id.* at 635-400-0005 (ODFW), 340-056-0200 (DEQ), 736-060-0015 (OPRD).
[45] OR. REV. STAT. § 537.470.
[46] The program is available to "[a]ny person or group of persons holding a water use subject to transfer" (*Id.* at § 537.465). This includes both groundwater rights and surface water rights.
[47] The state's share is based on the amount of state funding used to implement the conservation activities.
[48] OR. REV. STAT. § 537.470(3).
[49] Integrated Water Resources Strategy, *supra* note 11, at 59.

between groundwater use and ecosystem impacts, the state does not have a framework to directly protect groundwater in place to maintain public values.

State efforts to address groundwater declines have principally focused on administrative frameworks that increase the sustainability of groundwater use. These include ensuring new water uses do not exceed the capacity of the resource,[50] limiting the types of allowed groundwater use,[51] and curtailing groundwater use to stabilize and restore groundwater levels.[52] While these frameworks indirectly protect groundwater for in situ public uses by managing for sustainable groundwater use, none provide a direct mechanism to secure groundwater in place for specific ecosystem needs. Further, these frameworks have been insufficient to prevent groundwater level declines from groundwater pumping. An assessment of GDEs in Oregon by the Nature Conservancy found that all types of GDEs face risks related to groundwater withdrawals.[53]

A water rights approach provides several unique benefits not offered by administrative frameworks that manage for sustainable groundwater use: (1) targeted protection of groundwater for specific in situ public uses, (2) protection from modification and reduction, (3) enforceable in the priority system and against injury, (4) mechanism to change existing water rights to in situ uses, and (5) opportunity to use incentive based programs to restore groundwater.[54]

The allocation of "instream" groundwater rights would be an extension of Oregon's instream water rights program, both in its legal authorities and application. Instream water rights must be administered consistent with the Instream Water Right Act and administrative rules. The language and structure of the program statute and rules present potential barriers to OWRD issuing an in situ groundwater right under existing authorities. Practical barriers related to data, quantification and measurement, and the complexity of groundwater management also pose challenges for readily translating the existing instream water right framework to groundwater rights.

The importance of and increasing threats to GDEs require Oregon to better integrate the protection of in situ groundwater uses into its water management frameworks. The following describes two approaches for protecting groundwater flow to maintain the ecological values of GDEs: (1) an instream water right for surface water expressions of GDEs and (2) an in situ groundwater right. For each model, this report describes the framework for allocating instream water rights, the model's benefits and limitations, challenges to implementation, and examples of how the model has been implemented to protect GDEs.

I. SURFACE WATER INSTREAM RIGHTS FOR GROUNDWATER DEPENDENT ECOSYSTEMS

There is considerable opportunity to protect GDEs in naturally emergent groundwater through an instream water right for the surface water component of the habitat. Through the state's

[50] OR. ADMIN. R. 690-300-0010(57)(d)-(f)
[51] OR. REV. STAT. § 536.340.
[52] *Id.* at § 537.730.
[53] Oregon Atlas of Groundwater-Dependent Ecosystems, *supra* note 5, at 43.
[54] Contractual approaches have been used to restore instream flows. These approaches rely on private agreements between parties in which water users agree to forgo or modify water use in certain circumstances.

conjunctive management framework, instream surface water rights provide some protection against depletion of hydraulically connected groundwater. Further, many GDEs also rely on contributions of surface water, and the protection of surface water flow is therefore an important component of protecting GDEs. Despite the benefits of allocating surface flows for GDEs, the Nature Conservancy estimates that 96.4% of Oregon's groundwater-dependent streams and rivers do not have an instream water right.[55]

While an instream water right for the surface water expression of GDEs is consistent with the state's instream water rights framework, this approach can only be implemented for GDEs with measurable surface water flows and provides only indirect protection against groundwater depletion. In addition, there are gaps in data needed to identify and characterize GDEs and quantify flow needs.

A. Application of Surface Water Instream Rights for GDEs

Where GDEs have an accessible and measurable surface water expression, an instream water right can be issued for the surface water flow needed for ecosystem use. Oregon manages naturally emerging groundwater as surface water. Therefore, an instream water right for these sources is consistent with the state's implementation of the instream water rights program.

The following instream water right for a spring-fed lake provides an example of how the state can implement a surface water instream right to protect GDEs.

> **Elevational Instream Water Right for Spring-Fed Lake**
>
> Borax Lake is a 10-acre alkaline lake in southeastern Oregon. The lake is fed by geothermal springs and provides habitat for the endemic and federally endangered Borax Lake Chub. Protection of sufficient water quantity and quality is critical to protect the lake habitat. Outflows from the lake support adjacent wetlands, which provide additional habitat for the chub.
>
> As part of management efforts to protect the endangered Borax Lake Chub, ODFW requested an instream water right for a minimum surface water elevation in Borax Lake. OWRD issued an instream water right in 1991, requiring maintenance of a surface water elevation of 4,081 feet above sea level.[56]
>
> The instream water right protects the lake from diminishment below the protected surface water level from new and junior water uses, including uses of hydraulically connected groundwater. While not protected under the instream water right, ODFW has installed piezometers to monitor how lake levels interact with adjacent wetland habitat.[57]
>
> There are no surface diversions from the lake—the sole irrigation diversion ended in the 1990s. There are also no existing groundwater uses

[55] Oregon Atlas of Groundwater-Dependent Ecosystems, *supra* note 5, at 49.
[56] Water Right Certificate 75919.
[57] 2015 Borax Lake Chub Investigations, Progress Report, Oregon Department of Fish and Wildlife, *available at* https://odfwnfi.forestry.oregonstate.edu/sites/default/files/2015 Scheerer et al. ODFW - Borax Lake chub.pdf.

within the immediate area of the lake; however, groundwater development for geothermal resources remains a potential threat for the lake and endangered chub.

B. Benefits of Surface Water Instream Rights for GDEs

Instream water rights for surface water components of GDEs have several benefits: ability to implement instream water rights within the existing legal framework, protection of springs—an important GDE habitat type—and protection against injury from hydraulically connected groundwater.

◊ Consistency with Existing Instream Water Right Framework. An instream water right for surface water expressions of GDEs can be administered under the existing instream water right framework. GDEs support public benefits for which OWRD can establish an instream water right, including ecological and water quality values. Further, administrative rules permit quantification of instream water rights through flow and water elevation and by month, providing flexibility to quantify instream flows for different types of GDEs—including those with shallow water, diffuse discharge, or seasonal inundation. In addition, ODFW and OPRD rules expressly authorize instream flow requests to protect springs and wetlands.[58]

◊ Protection of Springs. The groundwater dependence of individuals GDEs varies. In some GDE types, groundwater provides the principal water source. In other cases, groundwater may support ecosystems that also utilize surface flow. Springs[59] are presumptively groundwater dependent and are abundant throughout Oregon, often contributing to perennial streams, lakes, and wetlands. Because springs are obligately groundwater dependent, targeted protection of instream flows for springs can provide important ecosystem benefits.[60]

◊ Protection of Instream Water Right Against Surface Water and Groundwater Uses. Surface water contributions can be an important component of GDEs, and surface water instream rights protect against injury from new and junior surface water users.

In addition, through the state's conjunctive management framework, surface water instream rights are protected against injury from new groundwater uses.[61] Oregon assesses new uses of groundwater to protect surface water users that depend on contributions from the same groundwater source. Functionally, the state will find groundwater unavailable for new uses when a hydraulically connected surface water source has existing uses (including instream

[58] OR. ADMIN. R. 635-400-0020(h), (j); *Id.* at 660-070-0005, -0010 (17).

[59] OR. REV. STAT. § 537.800 (defining spring as "point where water naturally emerges from the earth as a result of gravity flow or artesian pressure.").

[60] Landowners can use water from springs that under natural conditions does not flow off the property without a state permit (OR. REV. STAT. § 537.800). While exempt uses are still subject to regulation within the priority system, it is not clear how OWRD would administer an instream water right for a spring located entirely on private land.

[61] The legal framework for regulating existing groundwater uses to protect surface water instream rights is discussed below in *Limitations of Surface Water Instream Rights for GDEs.*

uses) that are not being met, is over allocated, or is administratively restricted in the types of new uses allowed.[62]

C. Limitations of Surface Water Instream Rights for GDEs

While establishing instream water rights for surface water expressions of GDEs has numerous benefits, the approach is limited in the types of GDEs where instream water rights can be established and the protections it provides for groundwater contributions.

◊ Limited to GDEs with Surface Water Expressions. Instream water rights for surface water components of GDEs limit the types of GDEs that can be protected under the instream water rights program as implemented. Many GDEs—for example, those with diffuse groundwater discharge—do not have stable and accessible surface water points that are readily quantified in either flow or surface water elevation. An instream surface water right approach would also not reach GDEs that have no surface water expression, including groundwater-dependent vegetation and subterranean ecosystems.

◊ Limited Protection Against Impacts from Existing Groundwater Uses. OWRD has only narrow authority to regulate existing groundwater uses to address injury to senior surface water uses, including instream water rights. This authority is limited to addressing impacts to surface water availability due to localized depressions in groundwater levels from well pumping. In addition, OWRD generally must make findings of a specific well's interference with the surface water source prior to regulating water use. Administrative rules provide a limited exception for OWRD to regulate wells producing water from a hydraulically connected aquifer based on the well's potential to interfere with surface water uses.[63]

OWRD must use administrative designations to address chronic long-term impacts to senior surface water sources from existing pumping, cumulative or diffuse impacts from multiple wells with different depths and priority dates, or impacts from spatially distant wells (over one mile from the surface water source).[64]

D. Challenges Implementing Surface Water Instream Rights for GDEs

A lack of site-specific data around GDEs is a primary challenge to establishing instream water rights for their ecosystem values.

◊ Identifying GDEs for Protection. The state has not adequately identified and characterized GDEs and does not have data around minimum streamflow and water levels needed to maintain GDEs.[65] Existing prioritizations for instream flow protection and data to quantify instream flow needs have focused on streams, rivers and lakes, which excludes many GDE types.[66] In addition, models used by the state to quantify instream flow needs may not be well suited for GDEs with shallow or seasonal water.

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[62] OR. ADMIN. R. 690-008-0001(10)(a)(A)-(E) (termed "substantial interference").
[63] Administrative rules establish criteria for determining hydraulic connection and the potential to interfere with a surface water source. OR. ADMIN. R. 690-009-0060(4)-(5).
[64] *Id.* at 690-009-0060; *Brooks v. Byler et al.*, Marion County Circuit Court Case NO. 19CV27798 (March 10, 2020).
[65] *See* Oregon Integrated Water Resources Strategy, *supra* note 11, at 59.
[66] *See e.g.*, Stream Flow Maps, Oregon Department of Fish and Wildlife, https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps.

E. Advancing Surface Water Instream Rights for GDEs

The following would address barriers to and accelerate the appropriation of surface water instream rights to protect the ecological values of GDEs.

◊ Develop data to identify GDEs, characterize groundwater dependence, and quantify water needs.

◊ Categorize existing data sets that identify and prioritize GDEs for flow protection, including OWRD streamflow and groundwater monitoring data and ODFW habitat data, such as cold water refugia mapping.

◊ Expand stream gaging to support conjunctive use management.[67]

◊ Develop prioritization for requesting instream flows for GDEs.

◊ Identify methodologies to determine instream flow needs for GDEs, including groundwater thresholds.

◊ Support place-based planning efforts in identifying GDEs and understanding water needs. Place-based water planning provides an opportunity to develop site-specific data about GDEs and their flow needs. Oregon's guidance for place-based water planning provides that communities should understand the status of ecosystems, including how groundwater contributes to ecological functions.[68] The Harney Basin Place Based Planning Collaborative provides an example of how the planning process can be used to identify and characterize GDEs.[69] California's Sustainable Groundwater Management Act provides an example of formalized requirements for incorporating ecological protection into groundwater management planning.[70]

II. IN SITU GROUNDWATER RIGHTS FOR GROUNDWATER DEPENDENT ECOSYSTEMS

The Instream Water Right Act establishes a framework for issuing water rights for instream public uses. In situ groundwater rights would apply the instream water right framework to allocate and protect in priority the groundwater flow needed to maintain the ecological values of GDEs.

In situ groundwater rights would expand the existing instream water right framework, which has only been applied to surface water rights. As a result, administering in situ groundwater

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[67] *See* OWRD Stream Gaging Network Evaluation for Water Distribution, *supra* note 20.
[68] Planning Toolbox, Appendix E: Instream Water Rights Needs Assessment Toolbox (Feb. 2, 2018) https://www.oregon.gov/owrd/programs/Planning/PlaceBasedPlanning/Documents/water_needs_assessment_toolbox.pdf.
[69] *See, e.g.*, Harney County Watershed Council, Community Water Based Planning--Groundwater Planning, Groundwater Dependent Ecosystems Report, http://hcwatershedcouncil.com/cbwp-document-clearinghouse-groundwater/.
[70] Cal. Water Code § 10723.2 (requiring the consideration of environmental uses in developing Groundwater Sustainability Plans); 23 CCR § 351(m) (defining GDEs under SGMA).

rights will require changes to the legal framework and methodologies for administering the instream water right program.

An instream water rights model could provide significant benefits for groundwater management and protecting the public values of in situ groundwater: in priority protection of groundwater rights for a full range of in situ public values, ability to tailor protections for individual locations and flow needs, and a mechanism to transfer existing groundwater rights to in situ uses and to utilize voluntary transactions to restore groundwater.

A. Application of In Situ Groundwater Rights for GDEs

Applying the Instream Water Right Act to groundwater would authorize the allocation of groundwater rights for in-place public uses. This type of water right would be analogous to an instream water right for surface waters, allocating a defined quantity of groundwater for an in-place beneficial use enforceable in priority against other water rights. The place of use of an in situ groundwater right may be in the aquifer or in surface water where the water right maintains groundwater discharge that supports the instream public uses.[71]

The application of an instream water rights model to groundwater rights is novel; however, both Colorado and Texas provide examples of how a state could administer an in situ groundwater right.

Great Sand Dunes National Park

The Great Sand Dunes National Park (GSDNP), located in Colorado, holds a state decreed In-Place Ground Water Right to maintain the purposes of the national park and protect park resources, which are uniquely dependent on groundwater.[72] The decree recognizes the in-place groundwater right as comparable to an instream water right for surface water sources.

To protect the park resources, Congress directed GSDNP to acquire a state water right to maintain groundwater levels, surface water levels, and stream flows within the park. While the water right is appropriated under state law, the federal legislation prescribes the beneficial uses and quantifies the water right.[73]

Despite the unique backdrop of the water right, the elements of the decree provide an example of how an in situ groundwater right can be structured within an appropriative water rights framework.

[71] For surface water instream rights, the place of use is typically the same as the water source. While in situ groundwater rights may have a distinct place of use from the water source, this should be permissible under the Instream Water Right Act because the beneficial use does not require diversion or control of the groundwater. Instream water rights for stored water are conceptually similar because the water source is technically distinct from the place of instream use. OR. REV. STAT. § 537.336(4).

[72] In the Water Rights Matter of the Application for Water Rights of the United States of America, 2004CW35 (Dist. Ct. Water Div. No. 3, Aug. 4, 2008).

[73] This type of federal water right is unique from a federal reserved water right, which is water right reserved either expressly or implicitly as part of the federal government's reservation of land for a particular purpose.

Source. The source of the water right is the groundwater in the unconfined aquifer under the park and discharges that maintain surface water levels and streamflow in the park.

Beneficial Uses. The water right is for the maintenance of park resources for ecological and recreational uses, including associated with streams, wetlands, marshes, and ponds.

Quantity. The water right is for "all water within the unconfined aquifer underlying the Park sufficient to maintain water table elevations," subject to water rights that predate the park's enabling legislation. The water right is quantified as the maximum water table elevations at the time of the establishment of the park measured at ten point using piezometers.

Enforcement. When water levels are at or above the decreed water table elevation, the water right is satisfied. The decree conditions the water right on "pressure fluctuation as artesian pressures increase during periods of greater water supply and decline during periods of lower water supply," as have historically occurred in the aquifer. These fluctuations, even if they lower groundwater below the decreed water table elevation, would not constitute injury to the water right.

Barton Springs-Edwards Aquifer Conservation District

The Barton Springs-Edwards Aquifer Conservation District[74] administers groundwater use in two aquifer systems in central Texas.[75] The Edwards Aquifer system supports Barton Springs, a renowned natural spring system in Austin, Texas, which is habitat for a federally endangered salamander. Groundwater uses within the district are regulated—existing and new exempt uses must be registered; new non-exempt uses must apply for a permit.[76]

The district manages water use to maintain minimum water levels in Barton Springs needed to protect habitat for the endangered salamander. Existing groundwater uses had already exceeded the sustainable yield of the aquifer, requiring the district to develop a mechanism to permanently retire existing groundwater rights to meet minimum flow requirements.

The district established the Conservation Permit to hold retired groundwater rights for ecosystem use in Barton Springs. The Conservation Permit is an accumulative water use permit, quantified as a discharge rate measured in cubic feet per second in Barton Springs, which

[74] While landowners in Texas generally have the right to use groundwater underlying their property, the Texas legislature has established Groundwater Conservation Districts to administer groundwater use in some areas of the state. Tex. Water Code Ann. Ch. 36.

[75] Barton Springs-Edwards Aquifer Conservation District, https://bseacd.org.

[76] The Barton Springs-Edwards Aquifer Conservation District, Rules and Bylaws provide the rules for administering groundwater use in the district, *available at* https://bseacd.org/uploads/RULES-and-BYLAWS-Final.pdf.

holds converted consumptive use rights. The water protected in the permit is dedicated to ecological flows for the spring.

B. Benefits of In Situ Groundwater Rights for GDEs

An in situ groundwater right provides unique benefits for protecting groundwater for in-place public uses. These include a permanent and enforceable right to groundwater for the protected in situ uses that can address instream flow needs for all types of GDEs. In situ groundwater rights would also allow for the utilization of existing regulatory tools and incentives that support reallocation of water for environmental flows.

◊ Permanent Protected Water Right. The appropriation of groundwater within the state's water rights system provides a perpetual right to use water in priority and protects the water use from injury from new uses and changes to existing uses.

◊ Tailored Flow Protection. Instream water rights allow for the protection of flow in specific locations and for discrete beneficial uses. In contrast, administrative designations generally operate at a basin or aquifer scale and are not responsive to site specific conditions or threats. In addition, administrative designations require the adoptions of rules, which can have longer timelines and require more agency resources to develop than individual permitting decisions.[77]

◊ Protection for All GDE Types. In contrast to a surface water instream right, an in situ groundwater right can protect flows for all GDE types, including those that do not have measurable surface water components.

◊ Mechanism to Protect Groundwater Through the Allocation of Conserved Water Program. Due to the lack of in situ groundwater rights, the state has not protected its portion of groundwater conserved as part of the Allocation of Conserved Water program for in situ public uses.

Groundwater rights are eligible to participate in the Allocation of Conserved Water program, which enables a water right holder to keep up to 75% of the water saved through efficiency practices. The program dedicates a minimum of 25% of conserved water to the state and requires the state to assess whether the state's portion of the conserved water is needed for instream use. Because there is no framework to allocate in situ groundwater rights, the state does not assess groundwater rights participating in the program for permanent protection for public uses. Instead, the state's portion of conserved water is returned to the aquifer for appropriation.

An in situ groundwater right would provide a mechanism to protect conserved groundwater rights for in-place public uses, aligning the implementation of the program with the clear legislative intent to balance the private benefit of the program with the need to rebalance water use to protect the public values of maintaining water in place.

[77] Protests of agency permitting decisions can increase both the time and resources for issuing water rights.

◊ Mechanism to Use Voluntary Transactions to Restore Flow. A water right model facilitates the use of voluntary transactions to protect water for GDEs by providing a legal mechanism to transfer consumptive use groundwater rights to in situ uses. Voluntary transactions through which water right holders convert water rights—typically with compensation for the value of the water right—to instream flow have been an important component of streamflow restoration. However, these frameworks rely on a mechanism to protect the converted water right for public uses.[78]

Harney Basin Conservation Reserve Enhancement Program

The state has over allocated water resources in the Harney Basin, located in southeastern Oregon and is using administrative tools to close the basin to new appropriations and curtail existing uses to restabilize water levels. In partnership with the U.S. Department of Agriculture, the state is funding landowners to voluntarily cancel groundwater rights.[79] Canceled groundwater rights are de facto protected from new appropriation due to the administrative designation of the basin, which restricts new groundwater development.[80]

The efficacy of a voluntary transaction approach for groundwater rights is currently limited to basins with an administrative withdrawal preventing new groundwater uses, which generally requires existing impacts from overuse. An in situ groundwater right approach would allow for the use of voluntary transactions in other areas of the state and would provide more durable protection not tied to administrative designations, which could be withdrawn if aquifer conditions were restored.

C. Limitations of In Situ Groundwater Rights for GDEs

The state's framework for regulating groundwater use limits the protections in situ groundwater rights would provide against impacts from junior groundwater uses.

◊ Limited In Priority Protection. OWRD's regulation of interference between groundwater users may not be readily applied to address impacts to non-consumptive in situ groundwater rights. Administrative rules regulating well interference authorize curtailment of junior groundwater users only to address impacts from localized lowering of the water table from groundwater pumping.[81] Importantly, the regulation of individual wells cannot address

[78] Private contractual agreements have been used to provide for voluntary curtailment of water use. While these types of forbearance agreements are not reliant on administrative frameworks to restore flows, the restored flows are not enforceable within the water rights framework, and state law forfeiture provisions, which require water use a minimum of every five years, limit the duration of the agreements.

[79] The CREP program, administered by U.S. Department of Agriculture (USDA), enrolls landowners in long-term conservation contracts to remove land from agricultural production and implement conservation practices that benefit native plants and wildlife, improve water quality, and reduce water use. Landowners receive payments for enrollment in the program. Oregon is providing additional funds to landowners to cancel groundwater rights on enrolled properties. *See generally*, USDA, Conservation Reserve Enhancement Program, *available at* https://www.oregon.gov/owrd/Documents/CREP Handout.pdf.

[80] OR. ADMIN. R. 690-512-0020. Exempt uses do not require a state permit.

[81] *See Id.* at 690-250-0110 (providing for the regulation of groundwater) and 690-008-0010 (defining substantial interference).

general groundwater level declines, which is a primary stressor to GDEs.[82] Further, administrative rules generally require senior groundwater users to deepen wells before OWRD will find substantial interference with groundwater uses.[83] This requirement may limit OWRD's ability to find interference with in situ uses established to protect minimum water table elevations.

D. Challenges Implementing In Situ Groundwater Rights for GDEs

There are several legal and practical challenges to establishing an in situ groundwater right within the state's current instream water rights program. These include ambiguity about the state's legal authority to issue instream groundwater rights and challenges in applying existing methodologies for administering instream water rights to groundwater sources.

◊ Legal Framework. State agencies must administer instream water rights consistent with the Instream Water Right Act and implementing administrative rules. The language and structure of these legal frameworks impose potential barriers to OWRD issuing in situ groundwater rights under existing authorities.

  ◊ Instream Water Right Act. While the Instream Water Right Act's definition of "instream" could support its application to groundwater rights, other elements of the statutory framework suggest the legislature did not consider groundwater rights when authorizing the instream water rights program.

  The Instream Water Right Act defines "instream water right" broadly as a "water right held in trust by [OWRD] . . . to maintain water in-stream for public use" that "does not require a diversion of any other means of physical control over the water."[84] Importantly, the definition does not distinguish between surface and groundwater rights.

  Similarly, the term "instream" is defined as "within the natural stream channel or lake bed *or place where water naturally flows or occurs*,"[85] which could describe a location where groundwater occurs. In addition, "instream" describes where flows are maintained to protect public uses and arguably does not prescribe the source of the allocated flow (e.g., surface or groundwater). Therefore, even if "instream" were interpreted to describe only surface waters, it would not preclude in situ groundwater rights because groundwater can support instream uses in surface water locations. For example, groundwater is a primary water source in springs and provides critical baseflow in streams.[86]

  Alternatively, the ordinary usage of the term instream, common statutory interpretation principles, internal statutory citations, and absence of references to groundwater suggest the legislature did not consider applying the instream water

[82] OWRD addresses area groundwater level declines through an administrative critical groundwater area designation, which then provides authority to regulate wells to protect groundwater resources and water users.
[83] OR. ADMIN. R. 690-008-0010(c) (defining substantial interference).
[84] OR. REV. STAT. § 537.332(3).
[85] *Id.* at (1) (emphasis added).
[86] This interpretation would preclude the application of the instream water right framework to protect GDEs that are not found in surface water expressions.

rights framework to groundwater. In common usage, the word instream describes surface water locations. Further, courts typically follow a presumption that statutory lists ending with a general phrase are intended to include things of the same character to the specifically listed items. As a result, the definition of "instream" may be read to only include locations like stream channels or lake beds (i.e., where surface waters are found). Lastly, because "instream" modifies both the terms "water right" and "flow,"[87] "instream" could be read to limit the source of water for instream water rights to surface waters.

In addition, the Instream Water Right Act directs OWRD to process new instream flow requests according to statutory provisions for the appropriation of surface water.[88] Lastly, given differences in how the state manages groundwater and surface water uses, the absence of references to groundwater in either the statutory language or legislative history could suggest the legislature did not intend to apply the instream water right framework to groundwater rights. This aligns with OWRD's implementation of the statute, which it has only applied to surface water rights.

◊ Administrative Rules. Administrative rules and agency guidance and program materials implementing the instream water rights program are drafted to apply to surface water rights. As a result, the rules use phrasing that links instream water rights to surface water sources, which creates barriers to issuing in situ groundwater rights.

RULE	BARRIER
OAR Ch. 690 Div. 77 (OWRD Instream Water Rights)	◊ Requires public notice to contain the "common name of surface water source" and stream reach by miles. ◊ For sources of instream water rights that are from natural flow, rules describe the source as "natural streamflow or natural lake level." ◊ Rules for new instream rights discuss identifying the source as a "stream or lake." ◊ Instream leases are expressly limited to surface water or storage rights.
OAR Ch. 635 Div. 400 (ODFW)	◊ Defines instream flow requirements as "flow, such as in a stream or river, or water surface elevation in a standing waterway."
OAR Ch. 340 Div 56 (DEQ)	◊ References the protection of "streamflows" and "stream segments" in setting instream flow.

[87] OR. REV. STAT. § 537.332(2), (3).
[88] *See* OR. REV. STAT. § 537.349 (referencing allocation framework under for surface water rights). Provisions for appropriating groundwater are provided in different statutory sections.

OAR Ch. 736 Div. 60 (OPRD)	◊ References establishing "surface water elevations" for recreation and scenic values. ◊ Directs the establishment of instream water rights for "streams, rivers, lakes, and wetlands."

◊ Management. Instream water rights require assessment of the amount of water needed to meet the instream use, quantification, and measuring and monitoring methods to manage the water right. The existing instream flow program relies on methodologies designed for surface waters. Differences in groundwater characteristics and management impose barriers to applying the existing methodologies to groundwater rights.

While the implementation of an in situ groundwater right will require methodologies specific to groundwater, methods and technology exist for assessing, quantifying, and measuring groundwater for in situ uses, particularly for GDEs. For example, to implement the Sustainable Groundwater Management Act, the California Department of Water Resources and partners have developed protocols for assessing and monitoring groundwater requirements for GDEs.[89] The Colorado In-Situ Groundwater Right and Barton Springs-Edwards Aquifer Conservation Permit provide examples of methods to translate data about ecological thresholds for GDEs into a water rights framework, including quantification and measurement.

◊ Data. Applying the instream water rights framework to groundwater requires information to identify and characterize GDEs. The scarcity of groundwater data continues to be a significant challenge for the state in managing groundwater. The state has made recent investments in developing data around aquifers and groundwater use, but information remains limited. Even less data exists to understand ecological thresholds for GDEs, including quantifying minimum groundwater contributions needed to maintain GDEs.[90] In addition, many GDEs are in shallow or perched groundwater systems, which are less commonly monitored.

◊ Resource Complexity. The complexity of groundwater systems—including the timescale of impacts, interaction with surface water, and hidden nature—make it uniquely difficult to manage. In the context of an instream water right model, these characteristics, particularly natural fluctuation in groundwater levels and seasonal impacts from groundwater use, challenge the management and enforcement of in situ groundwater rights. Colorado's in-

[89] *See e.g.*, California Department of Water Resources, Groundwater Dependent Ecosystems Monitoring Method (MM-10), Sustainable Groundwater Management Program, *available at* https://water.ca.gov/-/media/DWR-Website/Web-Pages/Work-With-Us/Grants-And-Loans/Sustainable-Groundwater/Monitoring-Method-Docs/10_Grant_MM_GDEs.pdf. The Nature Conservancy, Groundwater Dependent Ecosystems Under the Sustainable Groundwater Management Act: Guidance for Preparing Sustainable Ground Sustainability Plans (Jan. 2018), *available at* https://www.groundwaterresourcehub.org/content/dam/tnc/nature/en/documents/GWR_Hub_GDE_Guidance_Doc_1-31-18.pdf.

[90] Oregon's Integrated Water Resources Strategy identifies the need for groundwater investigations to understand groundwater contributions to surface water and to identify where groundwater provides cold-water refugia. Oregon's Integrated Water Resources Strategy, *supra* note 11, at 18.

place groundwater right addresses these complexities by conditioning the water right on natural and seasonal variations in water levels.

E. Advancing In Situ Groundwater Rights for GDEs

The following steps would address legal barriers to establishing an in situ groundwater right within the state's instream water right framework and develop the methodologies and data needed to administer in situ groundwater rights.

◊ Amend the Instream Water Right Act to expressly authorize in situ groundwater rights. A statutory amendment would foreclose legal challenges to OWRD issuing in situ groundwater rights under existing authorities. It would also provide clear direction to state agencies to apply the instream water rights framework to groundwater. However, statutory changes raise political considerations, which must be weighed against the likelihood of legal challenges.

◊ Develop administrative rules and an implementation framework for in situ groundwater rights. These rules should address the unique management issues with groundwater rights, such as quantification, measurement, and enforcement. Rules should also remove barriers to issuing in situ groundwater rights in the existing instream water rights framework. Changes to OWRD's general instream water right program rules as well as agency specific rules for requesting new instream flow rights may be needed.

◊ Develop data to support the identification and characterization of GDEs, including quantifying groundwater needs and ecological thresholds.

CONCLUSION

As with surface water systems, Oregon's groundwater has been disproportionately allocated for consumptive uses, leaving groundwater for in situ public uses unprotected. Among the public uses that groundwater supports, GDEs provide unique ecological benefits—including as critical habitat for endemic and threatened species and as climate-resilient refugia.

Oregon's instream water right framework provides a potential mechanism to secure water rights for in-place public uses that are reliant on groundwater. This report highlights two models that can allocate flows for GDEs: (1) an instream water right for surface water expressions of GDEs and (2) an in situ groundwater right.

The proposed models have different benefits, limitations, and challenges for securing flows for GDEs. Instream water rights for surface water expressions of GDEs can be administered within the existing instream water right program. However, this approach would provide only indirect protection of critical groundwater flow through the state's conjunctive management framework.

In contrast, an in situ groundwater right would be an expansion of how the state currently administers the instream water right program and may require both statutory and regulatory changes. However, this model would provide a mechanism within the water rights framework to directly allocate groundwater for in situ public uses.

Oregon's existing legal frameworks have been insufficient to protect the ecological and other public values from maintaining groundwater in place. With the Instream Water Right Act, the Oregon Legislature recognized instream uses as beneficial uses commensurate with consumptive uses. While less visible, groundwater is equally important for maintaining in situ public uses. Confirming in situ groundwater uses as beneficial would align the state's water code with our understanding of the importance of groundwater and allow Oregon to use the full suite of its regulatory and voluntary tools to allocate groundwater for in place public values.