

OREGON



WATER RESOURCES
DEPARTMENT

Groundwater Allocation Process Rulemaking

Oregon Water Resources Department

Rules Advisory Committee Meeting

May 31, 2023



Welcome & Agenda

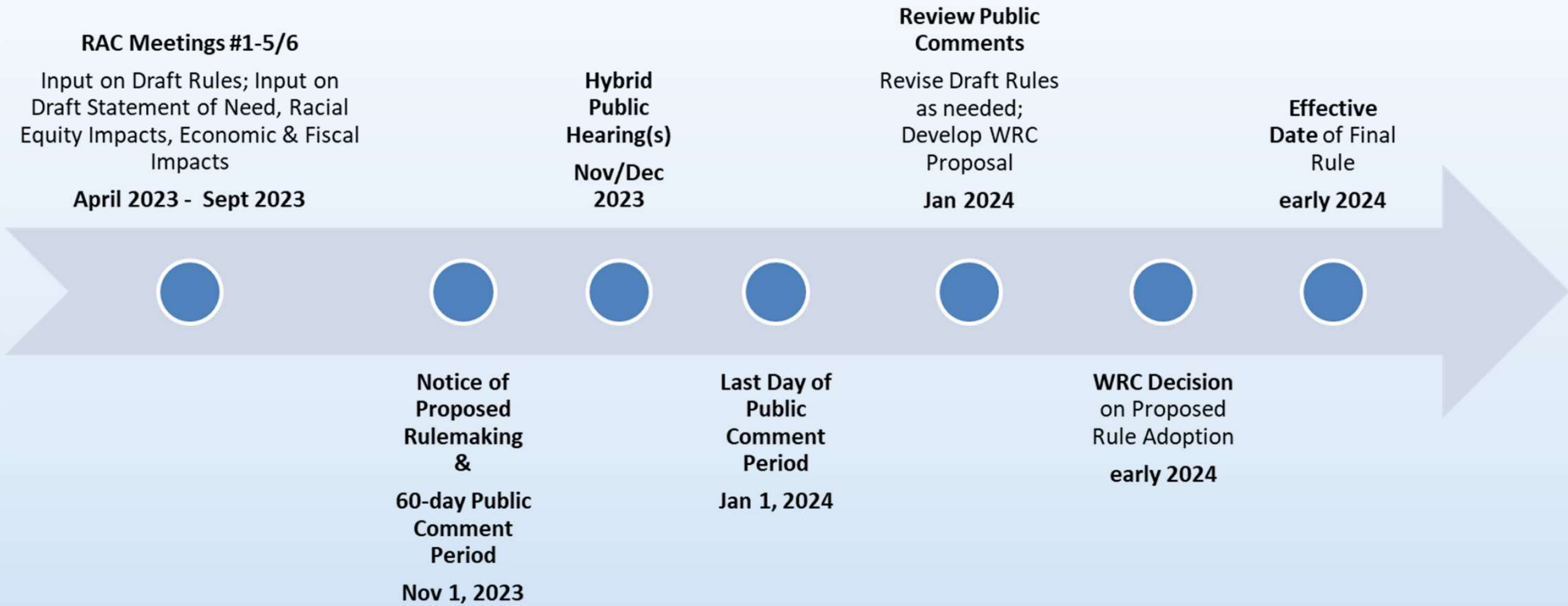
Meeting Agenda

Schedule	Topic	Lead/Presenter
8:30 am	Welcome & Agenda	Annette Liebe
	Timeline – Update	Laura Hartt
	<ul style="list-style-type: none"> • Meetings 5 & 6 	
	RAC Meeting #2 Recap	Laura Hartt
	<ul style="list-style-type: none"> • Meeting Summary 	
	Surface Water Availability Determination	Ryan Andrews
	Draft Rules – Discussion	Travis Brown
	<ul style="list-style-type: none"> • Division 410 	
Break (as needed)		
	Streamflow Depletion	Travis Brown
	Draft Rules – Discussion	Travis Brown
	<ul style="list-style-type: none"> • Division 9 	
	RAC Roundtable – Discussion	Annette Liebe
Break (as needed)		
11:30 am	Public Comment	Laura Hartt
By noon	Wrap-up & Next Steps	Annette Liebe



Timeline Update

Rulemaking Timeline





RAC Meeting #2 ReCap

RAC Meeting # 2 - Summary

Any questions, comments or corrections to the draft meeting summary?



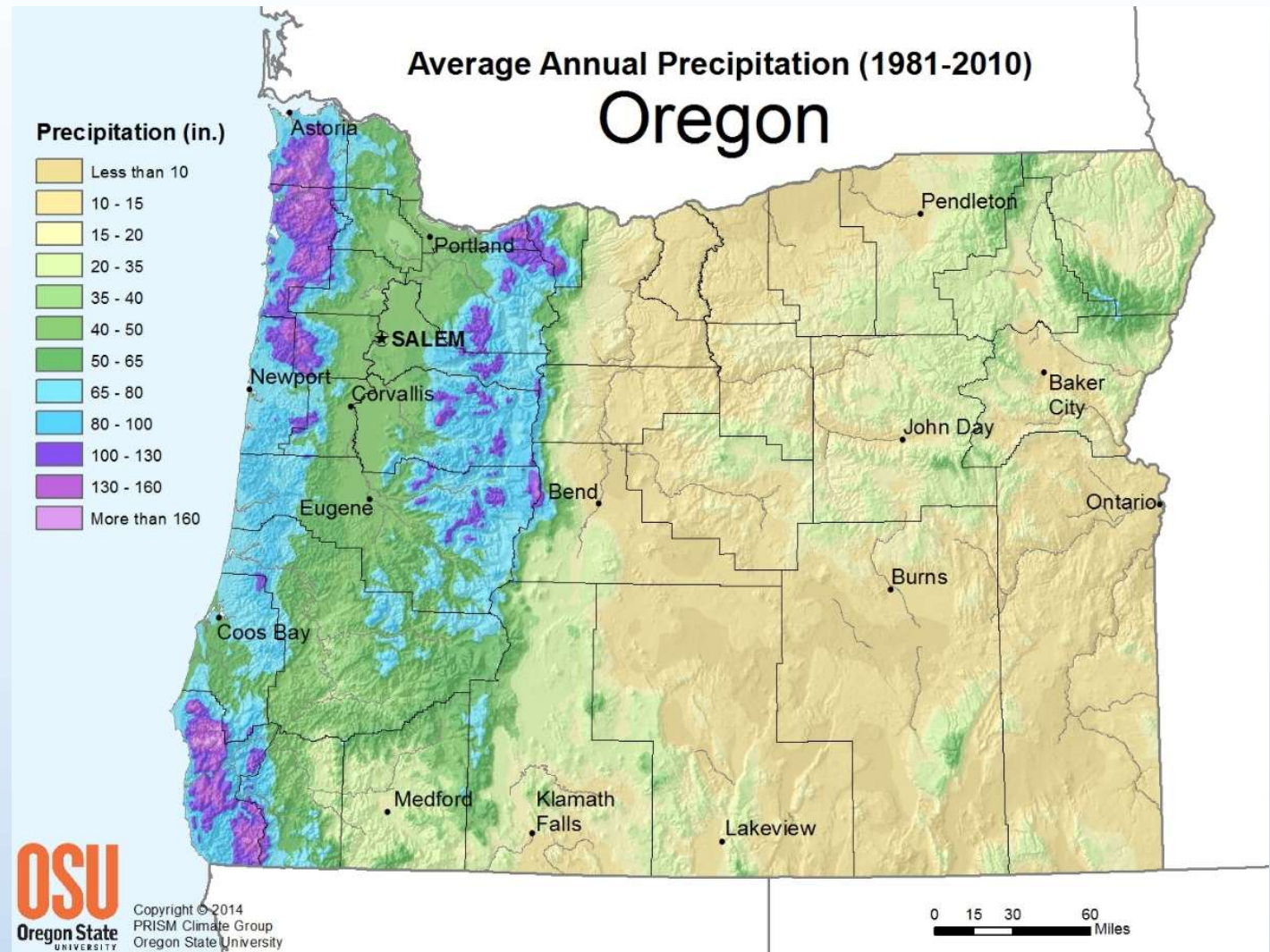
Surface Water Availability Determination

Purpose

- Provide overview of the need for the Water Availability Reporting System
- Describe technical methods to derive water availability statewide
- Provide example of web-based interface

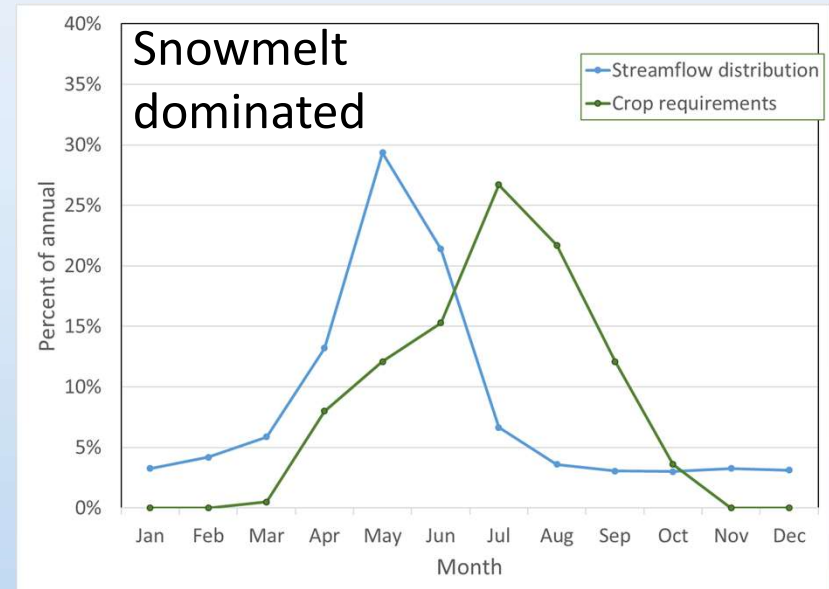
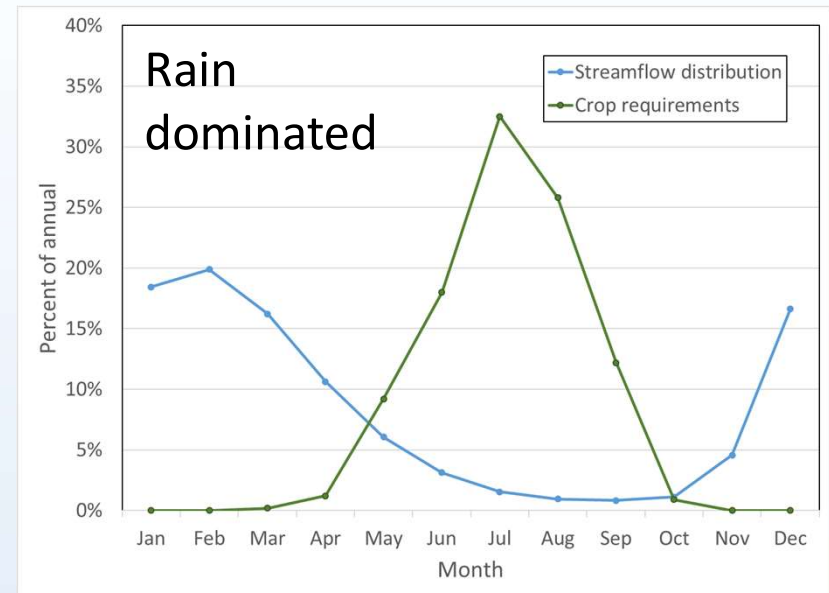
Geographic Variability

- Water is a finite resource, but its availability varies
- Variation in average annual precipitation across Oregon



Streamflow vs. Surface Water Demand

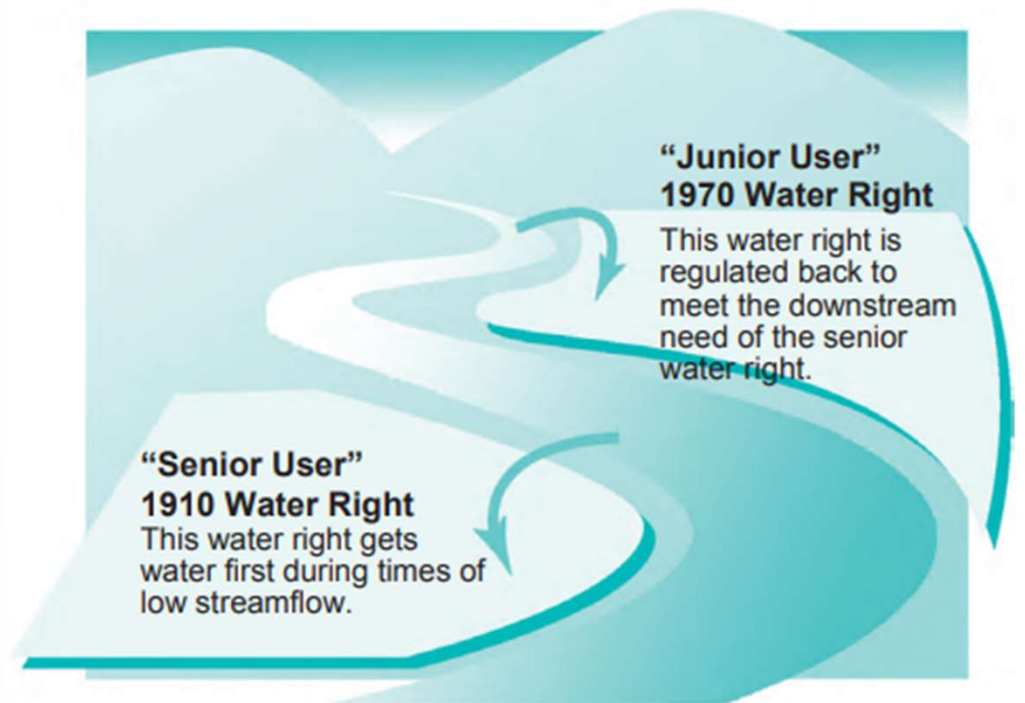
- Streamflow regimes are driven by climatological and hydrogeological processes
- Processes drive typical patterns of streamflow distribution over time
- Also influence demand for surface water



Prior Appropriation

- Prior Appropriation Doctrine: first in time, first in right
 - Having a water right does not guarantee ability to use it every year
- Supply shortfalls are not shared equally

Prior Appropriation: an example "First in time, first in right"



An example of prior appropriation at work

Surface Water Allocation Policy

Starting in 1989,

- Provides basis for calculating surface water availability
 - Based on definition of over-appropriation
- Set standards for evaluating whether water is available for in-stream and out-of-stream uses
- Allocate surface water among broad range of beneficial uses
 - Environmental, economic, and social benefits
- Surface water shall not be allocated if the proposed use would injure the exercise of existing water rights or permits

Purposes of Water Availability Program

- Limit new appropriations of water to situations where applicant can expect use of water a reasonable amount of time
- Limit situations where the Department will have to regulate water use

Surface Water Over-Appropriation

- Over-appropriated: the quantity of *surface water* available during a specified period is not sufficient to meet the expected demands from all water rights at least 80% of the time during that period
- Limits water available for allocation such that *expected demands* will be met at least 80% of the time
- Most junior user could expect full appropriation of water right 80% of time

- Water Availability Reporting System (WARS) was developed as systematic approach to calculate water availability for Oregon surface waters
 - Statewide, data-driven, statistical approach
- Quantifies natural streamflow and water available for instream and out-of-stream appropriations

Determining Surface Water Availability in Oregon

Open File Report SW 02-002



Surface Water Availability Standards

- Surface water availability derived by subtracting existing uses from natural streamflow
- Calculated on a monthly basis, by watershed
- Calculated at two exceedances:
 - 80% for out-of-stream consumptive uses
 - 50% for in-stream demands and storage

Calculating Surface Water Availability

$$WA = Q_{NSF} - ST - CU - IS$$

- Existing uses accounted for and debited from natural streamflow (NSF)
- Full amount of reservoir storage (ST)
- Full amount of instream demands (IS)
- Consumptive portion of out-of-stream demands (CU)
 - Includes groundwater rights with potential for substantial interference with surface water
 - Unconsumed water assumed to return to stream in same watershed it was withdrawn

What is Natural Streamflow?



- Streamflow that arises from natural hydrologic processes
- Unaffected by consumptive use or reservoir storage

Why Natural Streamflow?

- Provides reference point for calculating surface water supply for allocation
- Establish expected conditions of stream operating without human influences
- Then, factoring in expected demands leads to water availability
- Allows for estimation in situations where measurements are unavailable



Accounting for Existing Uses



Out-of-stream (consumptive use)



In-stream needs (full amount)



Reservoir storage (full amount)

Where is Surface Water Availability Calculated?

- Surface water availability is calculated for approximately 2,300 pre-defined watersheds throughout the state
 - Referred to as water availability basins (WABs)
- WABs were originally delineated based on locations of:
 - Select gaging stations
 - Instream water rights
 - Physiography of streams
 - Mouths of significant tributaries
 - Main channels above significant tributaries

Nested Basins (WABs)



Figure: Nested Water Availability Basins (Cooper, 2002).

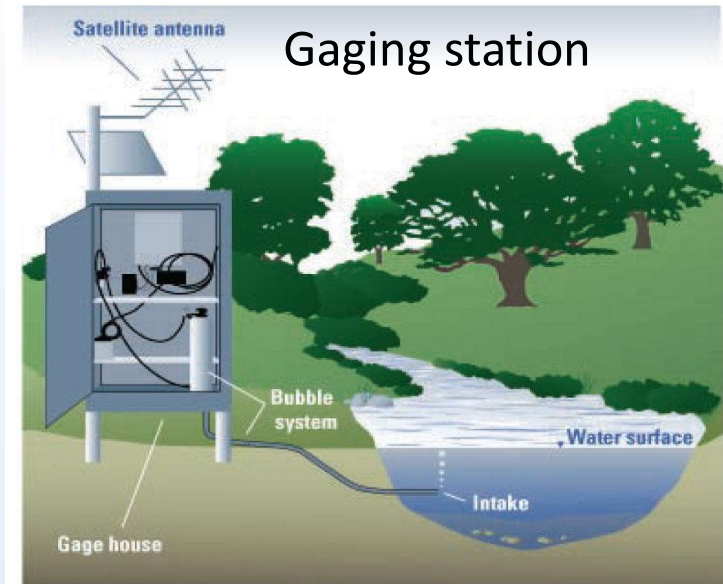
- Surface water availability is calculated at the pour point of each WAB
- WABs are nested – upstream WABs are included in downstream WABs
- Calculation for a nested WAB considers spatial relation to other WABs in the same stream network
 - Upstream use diminishes water availability of both upstream and downstream WABs
- For surface water to be available at any upstream point, it must be available at all points of calculation downstream

Stream Gage Data Collection

Streamflow measurement

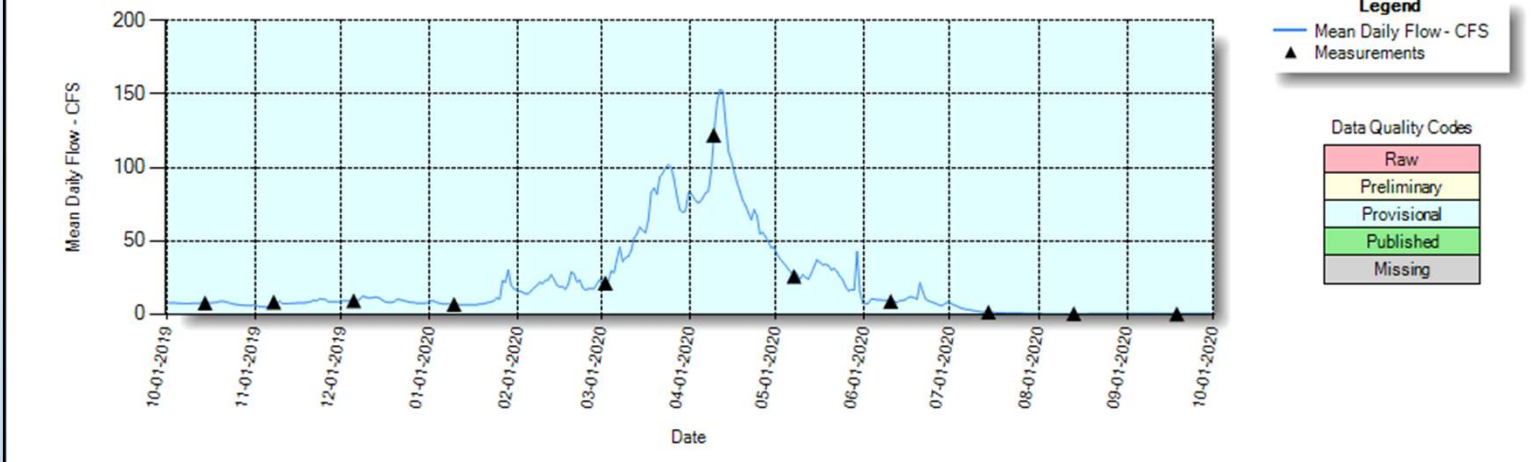


Gaging station



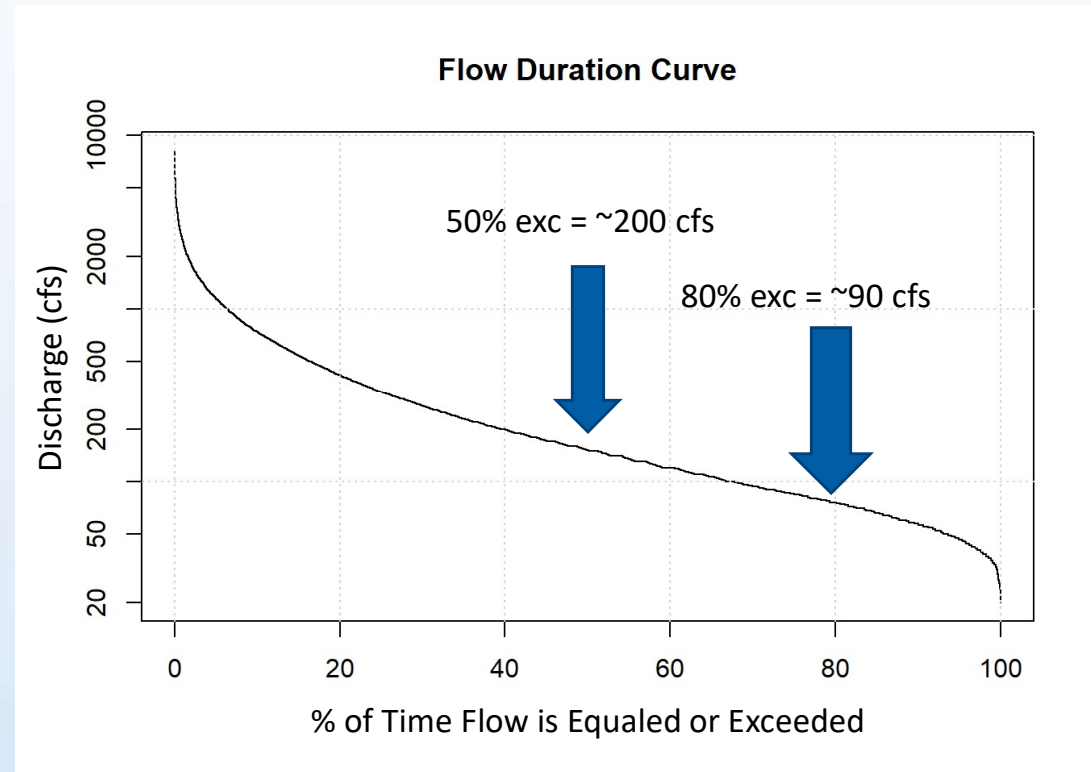
Streamflow hydrograph

Mean Daily Flow

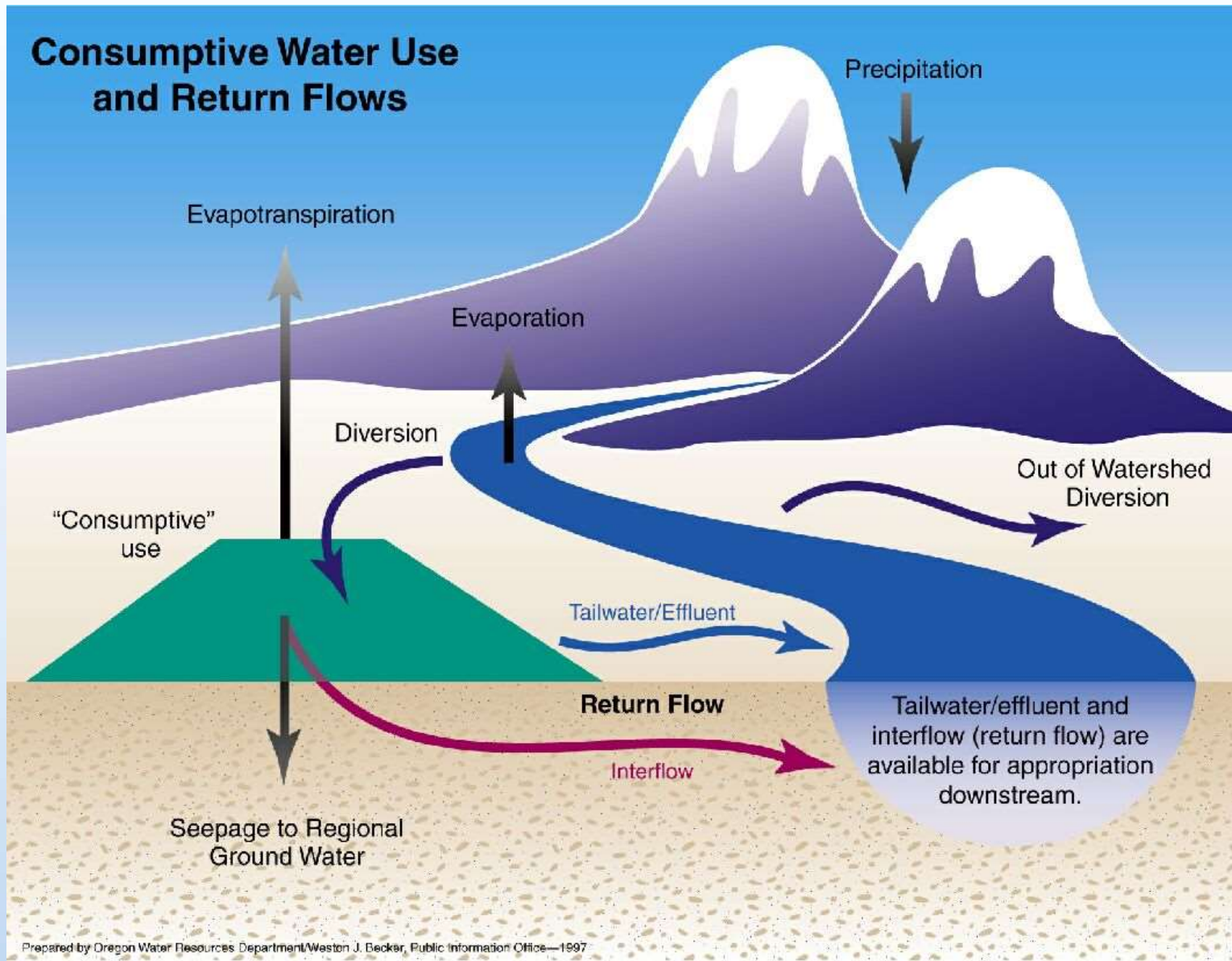


Quantifying Streamflow

- Need to reliably estimate *how often* a rate of flow is present in a stream, under natural conditions
- A **flow duration curve** (FDC) shows the percentage of time a given discharge was present or exceeded during a specific period of time [Searcy, 1959]
 - **Exceedance flows** indicate *how often* a specified discharge is present in the stream
 - Useful for calculating water availability as defined by rule and statute
- Exceedance flows must be calculated to represent the same long period of time to account for natural variability of streamflow
 - Referred to as a **base period**
 - Would ideally capture range of wet and dry periods



Consumptive Use



Consumptive Use

- Causes a net reduction in streamflow
- Usually associated with an evaporative or transpirative loss
- Three major categories of Consumptive Use:
 - Irrigation (>80% of use in Oregon)
 - Municipal
 - All others (e.g., domestic, livestock)
 - These uses are usually small in comparison with stream flow

Water Availability Reporting System

Water Availability Analysis Detailed Reports

W FK HOOD R > HOOD R - AT MOUTH
HOOD BASIN

Water Availability as of 5/18/2023

Watershed ID #: 72076 ([Map](#))

Date: 5/18/2023

Exceedance Level: 80%

Time: 12:18 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

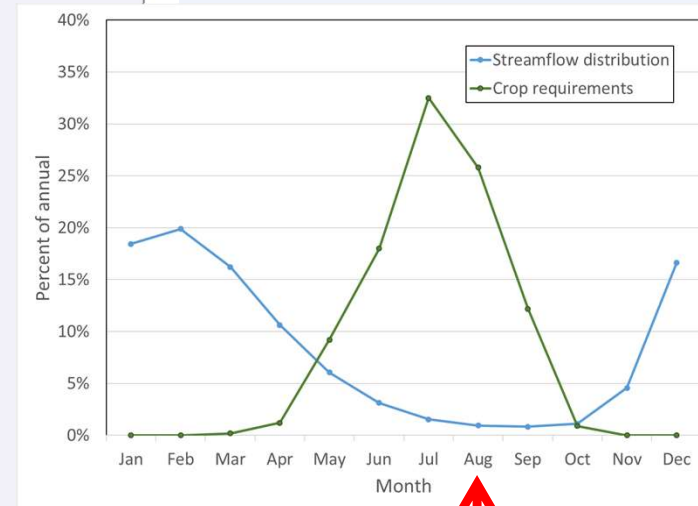
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	353.00	25.80	327.00	39.50	150.00	138.00
FEB	409.00	26.00	383.00	43.00	250.00	90.00
MAR	437.00	27.30	410.00	36.00	250.00	124.00
APR	484.00	40.20	444.00	0.18	255.00	189.00
MAY	469.00	46.90	422.00	0.00	255.00	167.00
JUN	294.00	53.20	241.00	0.00	255.00	-14.20
JUL	201.00	62.10	139.00	0.00	150.00	-11.10
AUG	159.00	54.10	105.00	0.00	180.00	-75.10
SEP	146.00	44.30	102.00	0.00	176.00	-74.30
OCT	148.00	31.10	117.00	0.00	195.00	-78.10
NOV	256.00	25.40	231.00	0.00	255.00	-24.40
DEC	371.00	25.70	345.00	31.60	190.00	124.00
ANN	325,000.00	27,900.00	298,000.00	9,000.00	154,000.00	142,000.00

Download Data ([Text - Formatted](#), [Text - Tab Delimited](#), [Excel](#))

- WARS online interface shows water availability analysis for both 80% and 50% exceedance
- Evaluate availability for out-of-stream appropriations at 80% and instreams at 50%

Summer Surface Water Availability



The background features a stylized landscape. The top portion shows brown mountains with white snow-capped peaks and white, fluffy clouds against a light blue sky. Below the mountains is a solid blue horizontal band. At the bottom, there are rolling green hills with light tan borders between them.

Division 410 Draft Rules

Objective Reminder

Update groundwater allocation rules to be more sustainable and protective of existing water right holders, both instream and out-of-stream.



690-410-0060(1), 690-410-0070(1) - Overview of Proposed Changes

Division 410

Rule:

-0060(1)

**Conservation
and Efficient
Water Use**

-0070 (1)

**Water
Allocation**

Revision:

Aligned with approach of “over-appropriation” applying to surface water and “overdrawn” applying to groundwater.

Aligned with approach of “over-appropriation” applying to surface water and “overdrawn” applying to groundwater.

OAR 690-410-0060(1) – Proposed Changes

- (1) Policy — The elimination of waste and improving the efficiency of water use are high priorities. Use of water without waste is required by state statute and the prior appropriation doctrine. Programs to eliminate waste shall be implemented. In addition, improving the efficiency of water use through implementation of voluntary conservation measures can help restore instream flows and provide for future needs including public uses and continued economic development. Priority shall be given to developing subbasin conservation plans and providing public assistance in areas of known over-appropriation of surface water, and overdrawn groundwater, and of water quality problems.

OAR 690-410-0070(1) – Proposed Changes

- (1) Policy. The waters of the state shall be allocated within the capacity of the resource and consistent with the principle that water belongs to the public to be used beneficially without waste. Water shall be allocated among a broad range of beneficial uses to provide environmental, economic, and social benefits. The waters of the state shall be protected from over-appropriation by new out-of-stream uses of surface water or from being overdrawn by new uses of groundwater.

690-410-0070(2)(b) - Overview of Proposed Changes

Division 410

Rule:

-0070 (2)(b)

Water

Allocation

Revision:

Reiterated positive finding of water is available as per definitions in Divisions 300, 400, and 8

- Not overdrawn
- Within the capacity of the resource

OAR 690-410-0070(2)(b) – Proposed Changes

- (2) Principles. Programs to achieve the policy in section (1) of this rule shall be guided by the following principles:
- (a) The surface waters of the state shall be allocated to new out-of-stream uses only during months or half-month periods when the allocations will not contribute to over-appropriation. However, when a stream is over-appropriated, some additional uses may be allowed where public interest in those uses is high and uses are conditioned to protect instream values;
 - (b) The groundwater of the state shall be allocated to new beneficial uses when water is available for a proposed use as per the definitions in OAR 690-300-0010, OAR 690-400-0010, and OAR 690-008-0001 ~~the allocations will not contribute to the over-appropriation of groundwater sources.~~ Restrictions on allocations of water for exempt groundwater uses may be considered when a groundwater source is over-appropriated drawn;



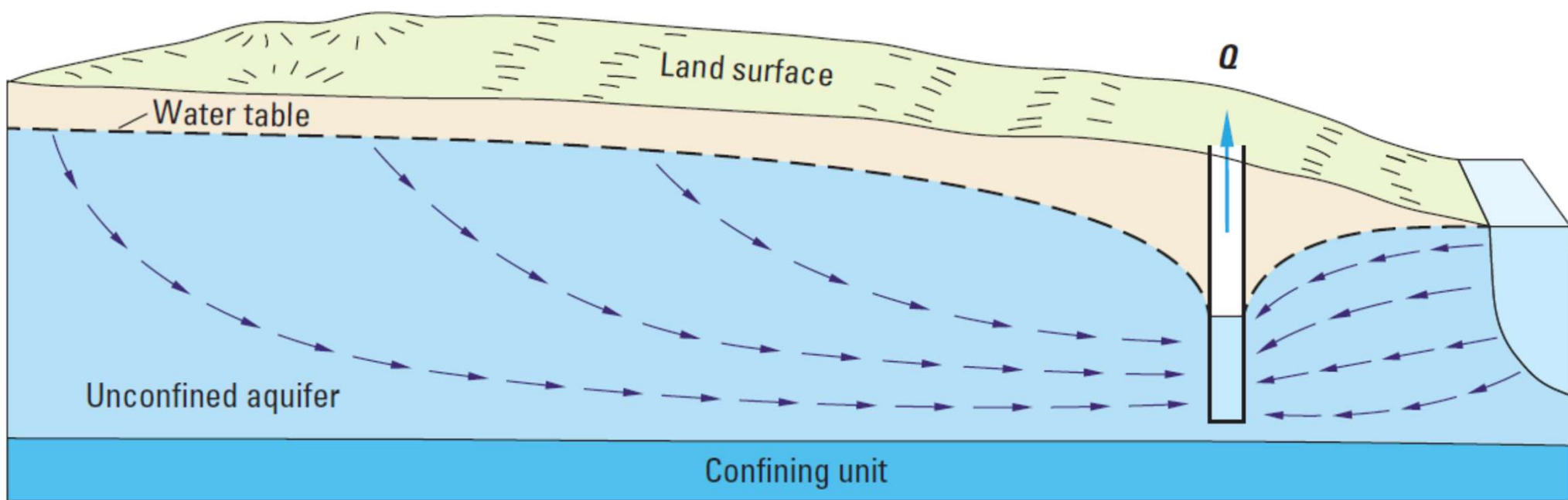
Break





Streamflow Depletion

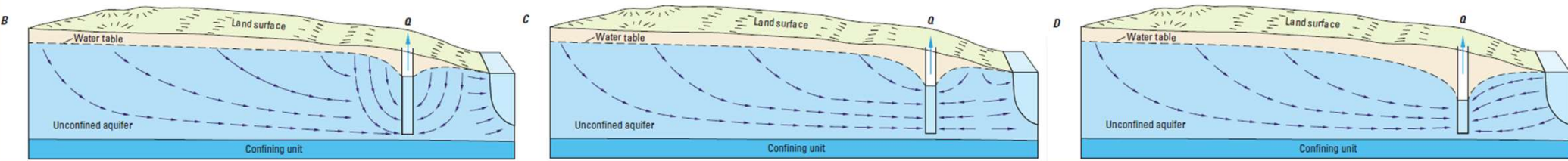
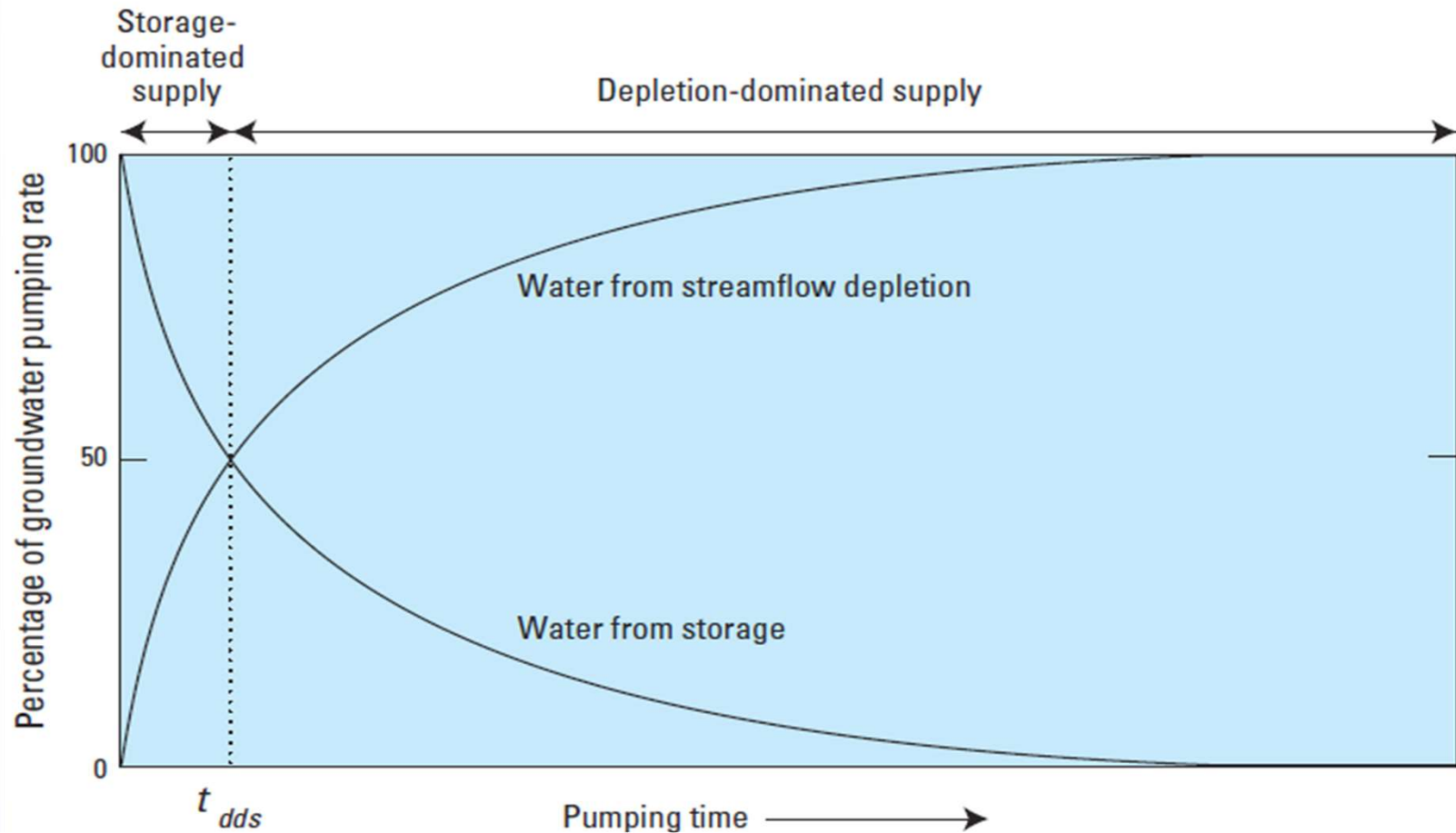
Streamflow Depletion by Wells



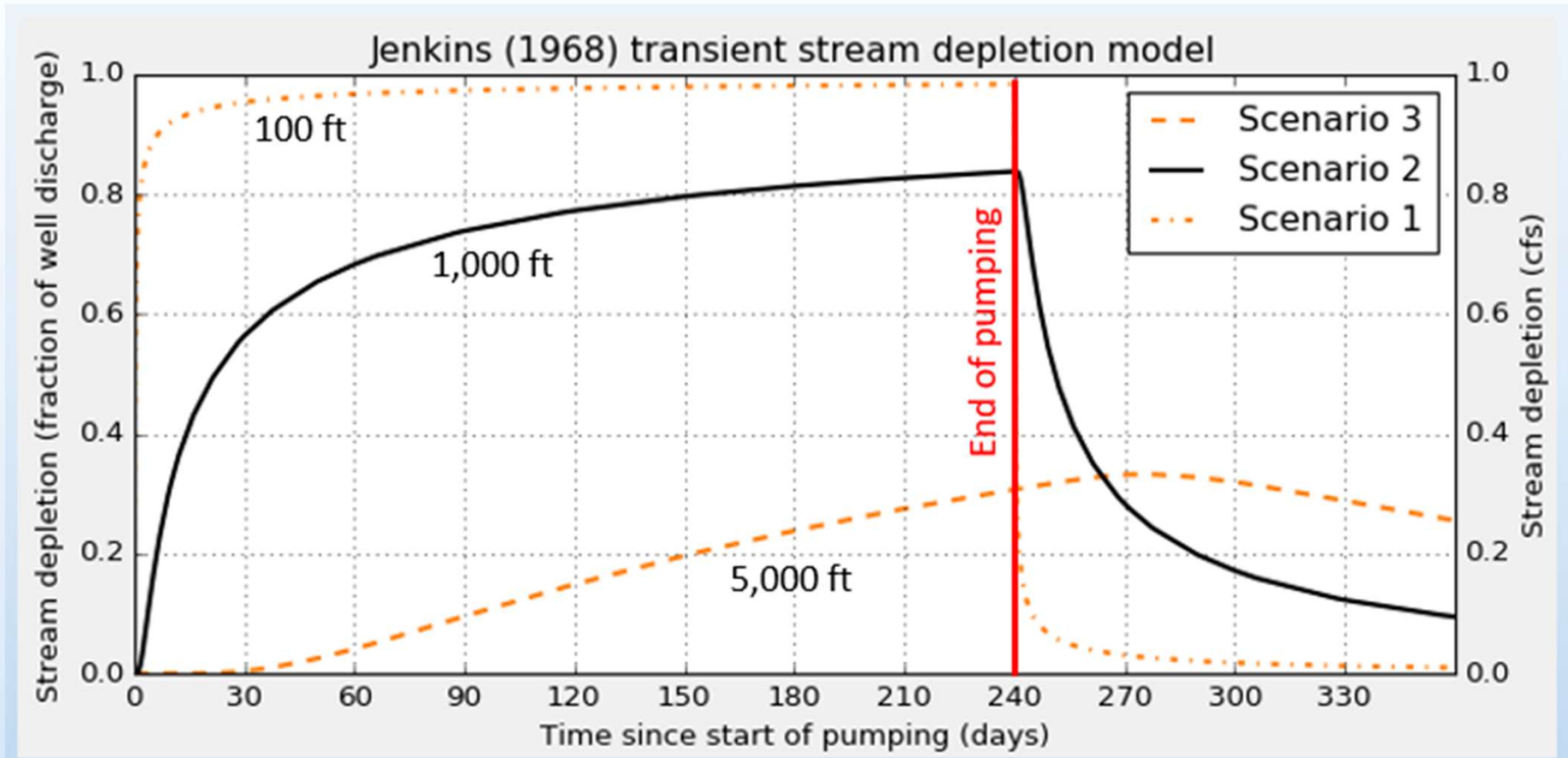
Intercept flow

Induce recharge

Source of Groundwater From Wells



Groundwater Regulation Under Prior Appropriation



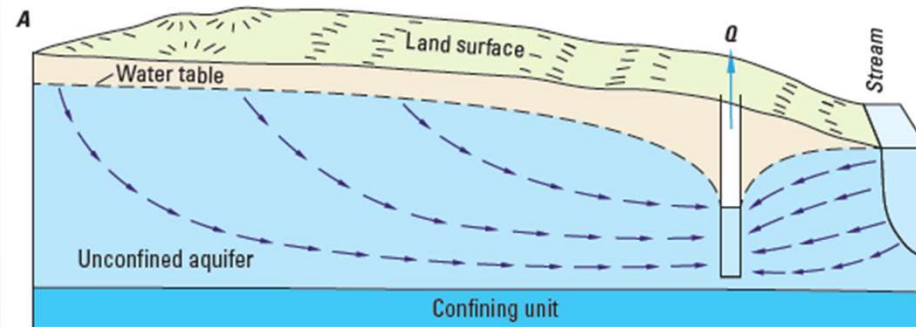
End of pumping \neq End of depletion
Volume depleted = Volume pumped

Streamflow Depletion After Pumping

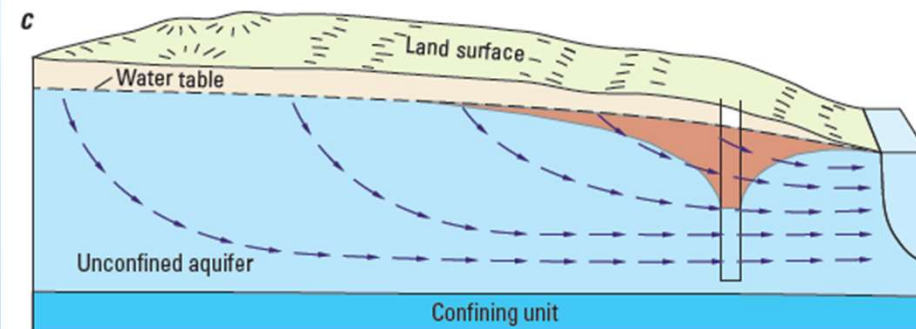
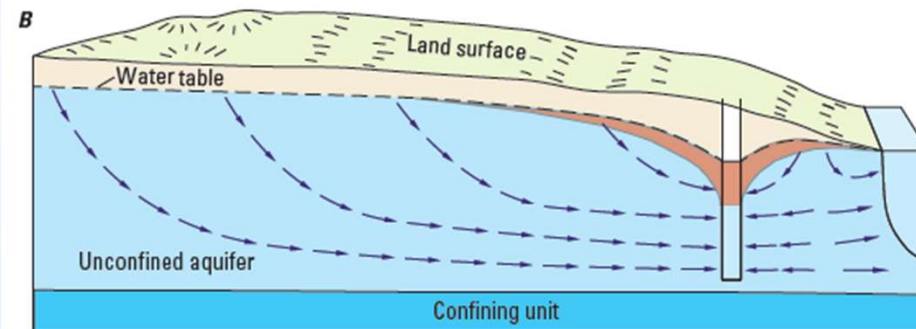
Pumping

Short time after
pumping stops

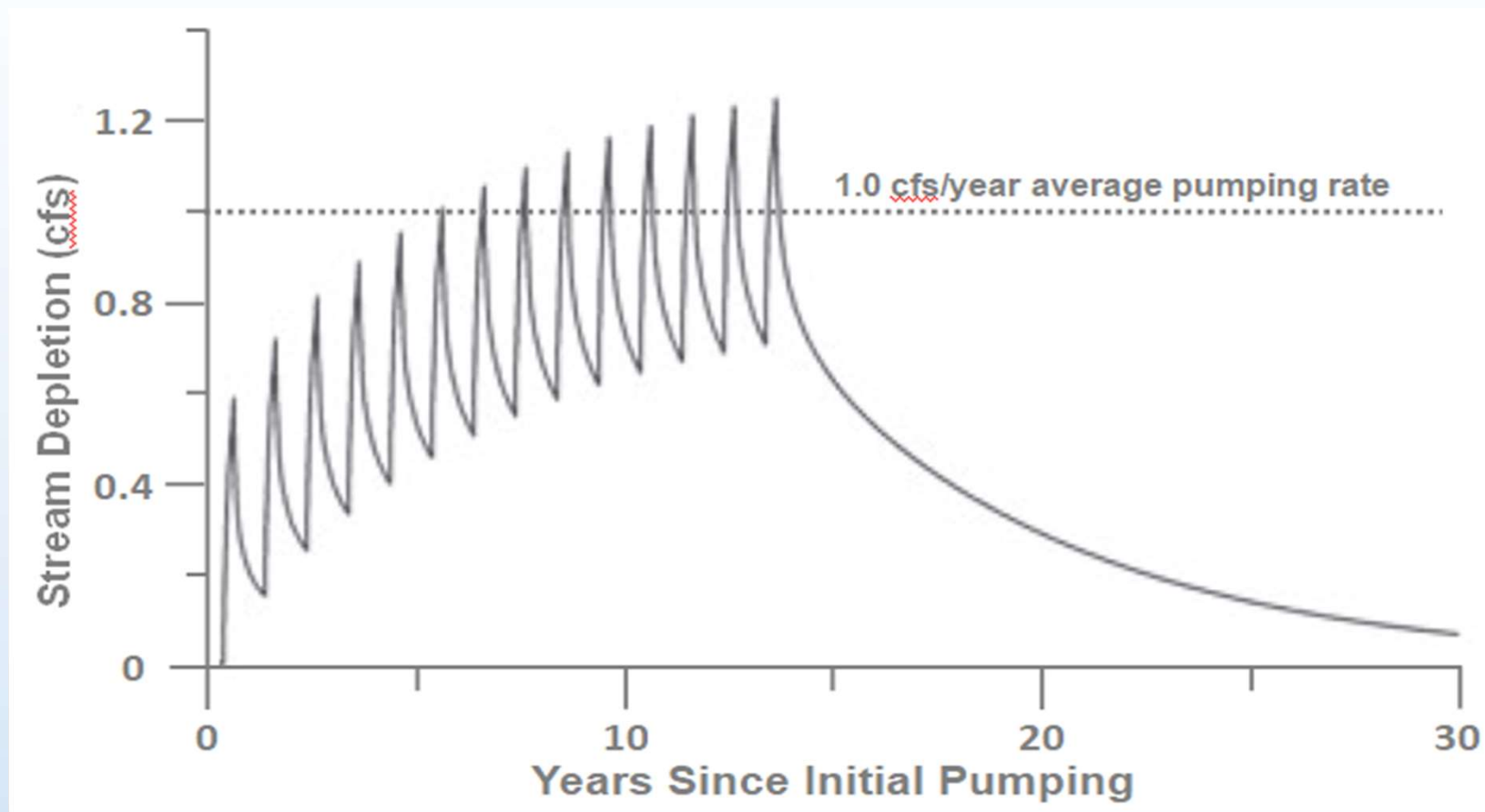
Long time after
pumping stops



EXPLANATION
 Volume of cone of depression refilled since pumping stopped



Multiple Pumping Cycles



Stream depletion builds over multiple cycles

Long time to max depletion = Long time to no depletion

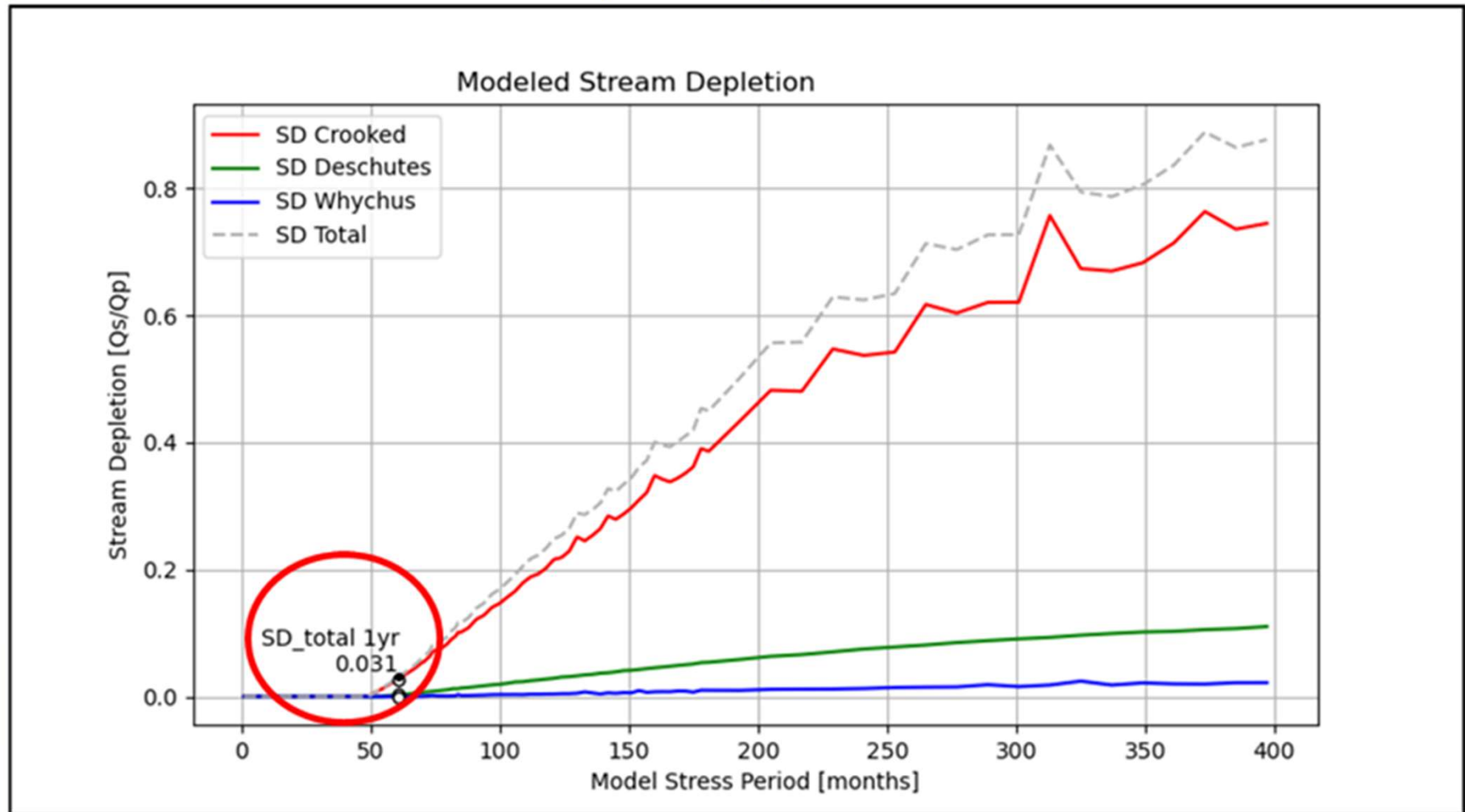


Current Division 9
Rules & Policy Shortcomings

Long Term Impacts

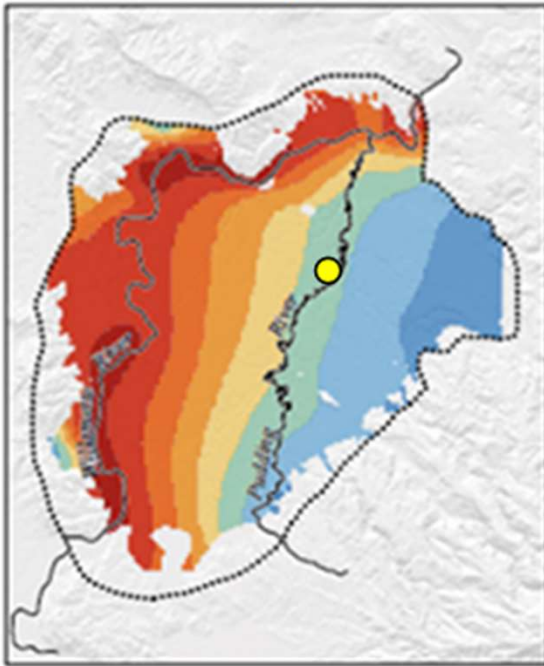
Figure 1: Stream-depletion curve, pumping starts at month 49 and continues at a constant rate for 29 years until the end of the model scenario (month 397).

SBP*W0

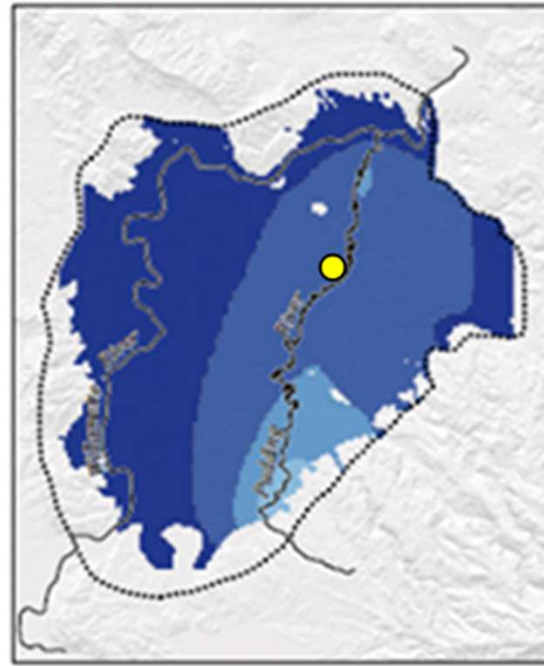


Long Distance Impacts

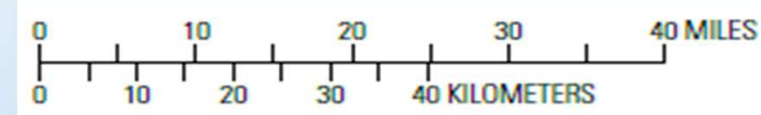
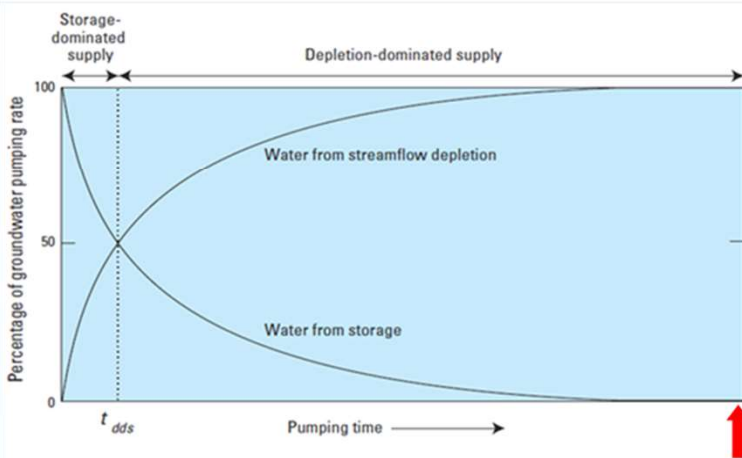
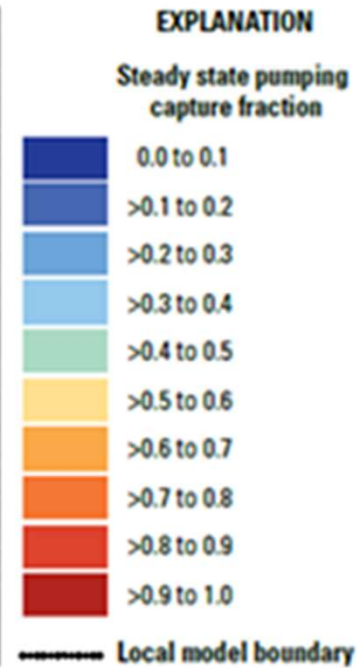
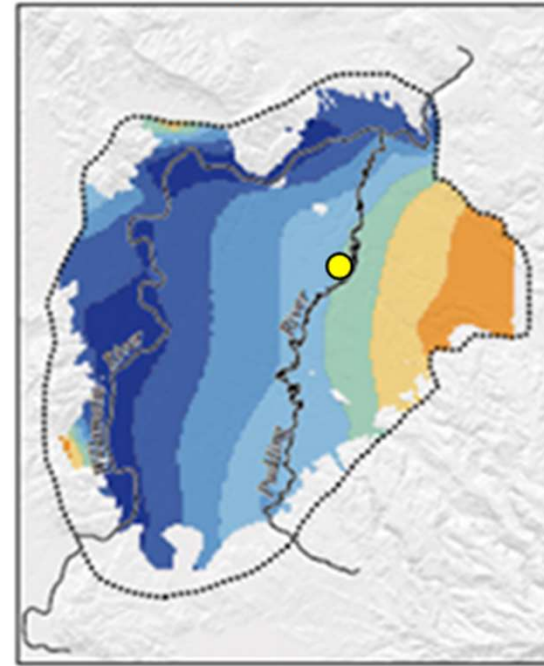
Willamette River—Layer 4



Pudding River—Layer 4



Other rivers—Layer 4



- 40-50% from Willamette River (~7 miles away)
- 10-20% from Pudding River (<1 mile away)
- 40-50% from other rivers (Molalla River and others)



Cumulative Impacts

OAR 690-009-0040(4)(c)

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN

Water Availability as of 5/24/2023

Watershed ID #: 182 ([Map](#))

Date: 5/24/2023

Exceedance Level: 80% ▾

Time: 7:00 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

1% = 38.3 cfs

1% = 15 cfs

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00

OAR 690-009-0040(4)(b)

≤ 5 cfs



No Potential
for Substantial
Interference
(PSI)

- Surface water cumulative impacts tracked in WARS → can only issue fixed amount of consumptive use
- Non-PSI groundwater rights not tracked cumulatively → can be issued without limit

The background features a stylized landscape. The top portion shows a range of mountains in shades of brown and tan, with white snow-capped peaks. A large, white, fluffy cloud is positioned in the upper right. Below the mountains is a solid blue horizontal band. At the bottom, there are rolling green hills with light tan outlines, suggesting a valley or a path.

Division 9 Draft Rules

690-009-0010; 690-009-0030 – Overview of Proposed Changes

Division 009

Rule:

Revision:

-0010

**Basis for
Regulatory
Authority,
Purposes, and
Applicability**

Updated rule name and statutory authority citation. Combined -0010 and -0030 into this section.

-0030

General Policy

Deleted (see above).



690-009-0010(1), (2) – Proposed Changes

Basis for Regulatory Authority, ~~and Purpose~~, and Applicability

- (1) The right to reasonable control of the ground waters of the State of Oregon has been declared to belong to the public. Through the provisions of the Ground Water Act of 1955, ORS 537.505 to 537.795, the Water Resources Commission has been charged with administration of the rights of appropriation and use of the ground water resources of the state. ~~These rules govern the use of ground waters, pursuant to 537.730 and 537.775, where the ground water is hydraulically connected to, and the use interferes with, surface waters.~~
- (2) These rules establish criteria to guide the Department in determining whether a proposed or existing groundwater use will impair, substantially interfere, or unduly interfere with a surface water source. These rules apply to all wells, as defined in ORS 537.515 (9), and to all proposed and existing appropriations of groundwater except the exempt uses under ORS 537.545. The authority under these rules may be locally superseded where more specific direction is provided by the Commission after the effective date of adoption of these rules.

690-009-0030 – Proposed Deletion

General Policy

~~The following rules establish criteria to guide the Department in making determinations whether wells have the potential to cause substantial interference with surface water supplies and in controlling such interference. The rules apply to all wells, as defined in ORS 537.515 (7), and to all existing and proposed appropriations of ground water except the exempt uses under 537.545. The authority under these rules may be locally superseded where more specific direction is provided by the Commission after the effective date of adoption of these rules.~~

690-009-0020(1), (2) – Overview of Proposed Changes

Division 009

LW0

Rule:

-0020(1), (2)

Revision:

Deleted “Confined Aquifer,”
“Commission,” “Confining Bed,” and
“Director” because no longer
referenced in Div 9/not consistent
with hydrogeologic principles.
Simplified definition of “Department.”
Defined “Effective and timely” to
support -0050.

690-009-0020(1), (2) – Proposed Deletions/Changes

Definitions

Unless the context requires otherwise, as used in these rules:

- ~~(1) “Confined Aquifer” means an aquifer in which ground water is under sufficient hydrostatic head to rise above the bottom of the overlying confining bed, whether or not the water rises above land surface.~~
- ~~(2) “Commission” means the Water Resources Commission.~~
- ~~(3) “Confining Bed”: means a layer of low permeability material immediately overlying a confined aquifer.~~
- (4~~1~~) “Department” means the Water Resources Department, its Director, and all personnel employed by the Department and consists of the Director of the Department and all personnel employed in the Department including but not limited to all watermasters appointed under ORS 540.020 (536.039).**
- (2) “Effective and timely manner” is a determination made on a case-by-case basis considering the best available information and reasonably accepted hydrogeologic methods and taking into consideration whether regulation will result in the addition of any water to the surface water source during the relevant time period.**
- ~~(5) “Director” means the Water Resources Director.~~

690-009-0020(3), (4) - Overview of Proposed Changes

Division 009

Rule:

Revision:

-0020(3)

Saturated conditions exist –
allow flow between sources.

Hydraulic

Connection (HC)

-0020 (4)

Substantial evidence exists to
determine that streamflow
depletion (capture) will be a
source of water to the well.

Potential for

Substantial

Interference (PSI)

690-009-0020(3), (4) – Proposed Changes

Unless the context requires otherwise, as used in these rules:

- (~~3~~) “Hydraulic Connection” or “Hydraulic Interconnection” means saturated conditions exist that allow water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources. ~~means that water can move between a surface water source and an adjacent aquifer.~~
- (4) “Potential for Substantial Interference”, or “PSI”, means that substantial evidence exists to determine that a groundwater use will cause streamflow depletion based on the assessments described in OAR 690-009-0040, and therefore may cause or has caused impairment to, substantial interference with, or undue interference with a surface water source, based on the definitions in OAR 690-008-0001.



690-009-0020(5)-(7) - Overview of Proposed Changes

Division 009

Rule:

Revision:

-0020(5)

**Proposed
groundwater use**

Define to support -0040(5) regarding water availability finding and Potential for Substantial Interference.

-0020(6)

**Streamflow
depletion**

Streamflow depletion as defined in Barlow and Leake, 2012. Captured groundwater discharge to streams and/or induced infiltration from streams.

-0020(7)

Unconfined aquifer

Deleted because no longer referenced in Div 9/not consistent with hydrogeologic principles.

690-009-0020(5), (6) – Proposed Changes/Deletion

- (5) “Proposed groundwater use” means an application to appropriate groundwater pursuant to ORS 537.621 that is under consideration with the Department.
- (6) “Streamflow depletion” means a reduction in the flow of a surface water source due to pumping a hydraulically connected groundwater source. Streamflow depletion encompasses both:
 - (a) captured groundwater that would otherwise discharge to a surface water source; and,
 - (b) induced infiltration from a surface water source to recharge the hydraulically connected groundwater source.
- ~~(7) “Unconfined Aquifer” means an aquifer in which the hydrostatic head at the upper surface of the ground water is atmospheric.~~

690-009-0040 – Overview of Proposed Changes

Division 009

Rule:

-0040

**Hydraulic
Connection
and Potential
for Substantial
Interference
(PSI)**

Revision:

Significant revisions to align Potential for Substantial Interference with the definition of Impairment/Substantial Interference/Undue Interference in Division 8, hydrogeologic principles, and water availability determination per Divisions 300 and 400.

690-009-0040(1)-(6) – Proposed Deletions

Division 009

Rule:

-0040(1)-(6)

**Hydraulic
Connection
and Potential
for Substantial
Interference
(PSI)**

Revision:

Deleted to rewrite based on generally accepted hydrogeologic principles and be more protective of existing water right holders.

690-009-0040(1) – Proposed Deletion

~~For the purposes of permitting and distributing ground water, the potential for substantial interference with surface water supplies shall be determined by the Department.~~

~~(1) The Department shall determine whether wells produce water from an unconfined or confined aquifer. Except for wells that satisfy the conditions in section (2) of this rule the Department shall further determine whether the aquifer is hydraulically connected to the surface water source. The basis of the determination shall be information provided on the Water Well Report for any well in question. If there is no Water Well Report available or if the information provided is inadequate, the Department shall make the determination on the basis of the best available information. Such information may include other Water Well Reports, topographic maps, hydrogeologic maps or reports, water level and other pertinent data collected during a field inspection, or any other available data or information that is appropriate, including any that is provided by potentially affected parties.~~

690-009-0040(2), (3) – Proposed Deletion

- ~~(2) All wells located a horizontal distance less than one-fourth mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source, unless the applicant or appropriator provides satisfactory information or demonstration to the contrary. Department staff may provide reasonable assistance to the applicant or appropriator in acquiring the satisfactory information.~~
- ~~(3) The Department shall determine the horizontal distance between any well in question and the nearest surface water source on the basis of the edge of the surface water source as also determined by the Department.~~

690-009-0040(4)(a)-(c) – Propose Deletion

- ~~(4) All wells that produce water from an aquifer that is determined to be hydraulically connected to a surface water source shall be assumed to have the potential to cause substantial interference with the surface water source if the existing or proposed ground water appropriation is within one of the following categories:—~~
- ~~(a) The point of appropriation is a horizontal distance less than one-fourth mile from the surface water source; or—~~
 - ~~(b) The rate of appropriation is greater than five cubic feet per second, if the point of appropriation is a horizontal distance less than one mile from the surface water source; or—~~
 - ~~(c) The rate of appropriation is greater than one percent of the pertinent adopted minimum perennial streamflow or instream water right with a senior priority date, if one is applicable, or of the discharge that is equaled or exceeded 80 percent of time, as determined or estimated by the Department, and if the point of appropriation is a horizontal distance less than one mile from the surface water source; or—~~

690-009-0040(4)(d) – Proposed Deletion

- ~~(d) The ground water appropriation, if continued for a period of 30 days, would result in stream depletion greater than 25 percent of the rate of appropriation, if the point of appropriation is a horizontal distance less than one mile from the surface water source. Using the best available information, stream depletion shall be determined or estimated by the Department, employing at least one of the following methods:~~
- ~~(A) Suitable equations and graphical techniques that are described in pertinent publications (such as “Computation of Rate and Volume of Stream Depletion by Wells,” by C.T. Jenkins, in Techniques of Water Resources Investigations of the United States Geological Survey: Book 4, Chapter D1);~~
 - ~~(B) A computer program or ground water model that is based on such or similar equations or techniques.~~

690-009-0040(5), (6) – Proposed Deletion

- ~~(5) Any wells, other than those covered in section (4) of this rule, that produce water from an aquifer that is determined to be hydraulically connected to the surface water source may be determined by the Department to have the potential to cause substantial interference with the surface water source. In making this determination, the Department shall consider at least the following factors:~~
- ~~(a) The potential for a reduction in streamflow or surface water supply; or~~
 - ~~(b) The potential to impair or detrimentally affect the public interest as expressed by an applicable closure on surface water appropriation, minimum perennial streamflow, or instream water right with a senior priority date; or~~
 - ~~(c) The percentage of the ground water appropriation that was, or would have become, surface water; or~~
 - ~~(d) Whether the potential interference would be immediate or delayed; or~~
 - ~~(e) The potential for a cumulative adverse impact on streamflow or surface water supply.~~
- ~~(6) All wells that produce water from an aquifer that is not hydraulically connected to a surface water source shall be assumed not to interfere with the surface water source.~~

690-009-0040(1) – Overview of Proposed Changes

Division 009

Rule:

-0040(1)

Best Available Information

Revision:

Determination of Hydraulic Connection and Potential for Substantial Interference will be made by the Department based on best available information. Information from potentially affected parties will be assessed.

Determination of Hydraulic Connection and Potential for Substantial Interference

- (1) Hydraulic connection and the potential for substantial interference with a surface water source shall be determined by the Department according to these rules. These determinations shall be based upon the application of generally accepted hydrogeologic principals using best available information concerning the hydrologic system of interest and the well(s) under consideration.
- (a) Any information that is provided by potentially affected parties shall be considered in the process of making these determinations.
- (b) Best available information includes, but is not limited to, pertinent water well reports, aquifer test analyses, hydrologic and geologic studies and reports, groundwater and surface water elevation data, available numerical and analytical groundwater flow models, and any other information that is used in applying generally accepted hydrogeologic principals and methodologies.

690-009-0040(2) - Overview of Proposed Changes

Division 009

Rule:

-0040 (2)

**Hydraulic
Connection
and Potential
for Substantial
Interference
(PSI)**

Revision:

Hydraulic Connection is a prerequisite of Potential for Substantial Interference (e.g., no Potential for Substantial Interference with ephemeral streams)

690-000-0040(2) – Proposed Changes

(2) A determination of hydraulic connection is a prerequisite for a determination of the potential for substantial interference.

690-009-0040(3) - Proposed Changes

Division 009

Rule:

-0040(3)

Generally

Accepted

Hydrogeologic

Principles

Revision:

Determination Potential for
Substantial Interference will include
application of:

- Theis, 1940
- Barlow and Leake, 2012

690-009-0040(3) – Proposed Changes

(3) A determination of the potential for substantial interference with a surface water source shall at a minimum include application of the generally accepted hydrogeological principles described in the following subsections to the specific use and wells under consideration:

(a) “The Source of Water Derived from Wells: Essential Factors Controlling the Response of an Aquifer to Development” by C. V. Theis, 1940; and,

(b) Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow” by P. M. Barlow and S. A. Leake, 2012.

690-009-0040(4) - Overview of Proposed Changes

Division 009

Rule:

-0040 (4)

**Potential for
Substantial
Interference
(PSI)**

Revision:

Potential for Substantial Interference exists if the source of water to wells ultimately includes streamflow depletion.

(4) The potential for substantial interference with a surface water source exists if substantial evidence indicates the well(s) under consideration will, over the full term of the proposed or authorized groundwater use, obtain water from streamflow depletion.

690-009-0040(5) - Overview of Proposed Changes

Division 009

Rule:

-0040(5)

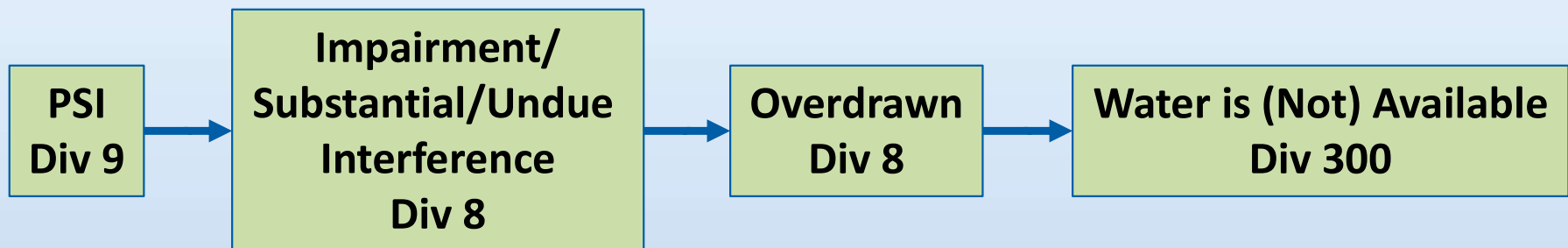
**Potential for
Substantial
Interference
(PSI) &
Groundwater
Allocation**

Revision:

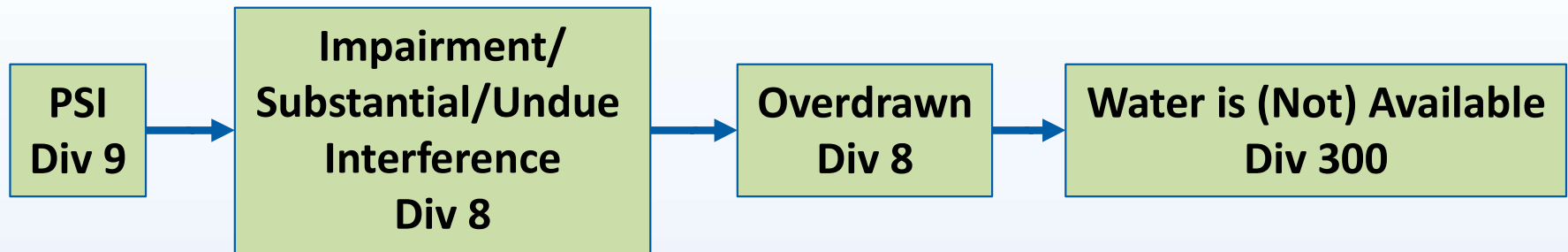
If Potential for Substantial Interference, then assess for Impairment/Substantial Interference/Undue Interference as per definition in Division 8 and water availability decisions in Divisions 8, 300, and 400.

OAR 690-009-0040 (5) – Proposed Changes

(5) For the purposes of issuing a permit for a proposed groundwater use, a finding of potential for substantial interference with a surface water source may mean that water is not available for the proposed groundwater use if the use will impair, substantially interfere, or unduly interfere with a surface water source as per the definitions in OAR 690-008-0001, OAR 690-300-0010, and OAR 690-400-0010.



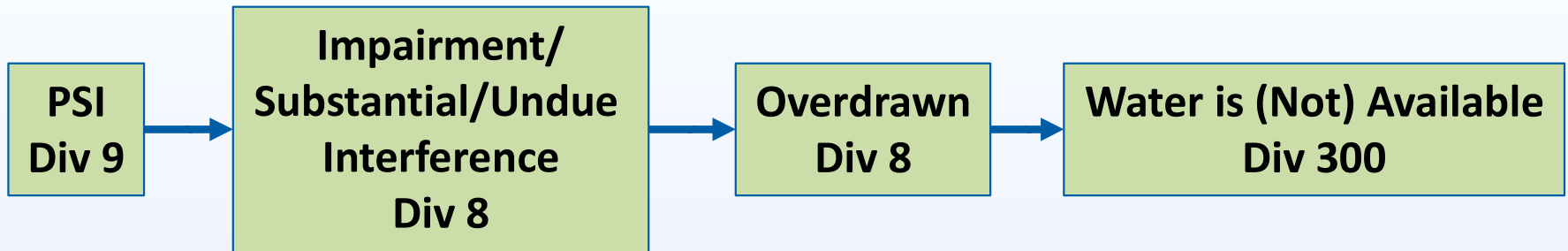
PSI → Water Availability



**Impairment/
Substantial/Undue
Interference
-008-0001(8)(a)**

- a. Depletion of a surface water source that:
 - A. is already over-appropriated during any period of the year; or
 - B. is administratively or statutorily withdrawn; or
 - C. is restrictively classified; or
 - D. is the source for one or more existing surface water rights that have been regulated off due to insufficient supply to satisfy senior surface water rights or is subject to a rotation agreement to address limited surface water supplies; or
 - E. has a minimum perennial streamflow or instream water right that is unmet during any period of the year.

PSI → Water Availability



**Overdrawn
-008-0001(9)(b)**

... to pump or otherwise extract groundwater from an aquifer, groundwater reservoir, or part thereof when:

- (a) One or more representative wells exhibit declining groundwater levels as per OAR 690-008-0001(5); or,
- (b) The use of groundwater under existing water rights already substantially interferes with surface water sources as per OAR 690-008-0001(8)(a)**

690-009-0040(6) - Overview of Proposed Changes

Division 009

Rule:

-0040(6)

**Potential for
Substantial
Interference
(PSI) &
Groundwater
Controls**

Revision:

Finding of Potential for Substantial Interference before controlling groundwater per -0050

690-009-0040(6) – Proposed Changes

- (6) For the purposes of groundwater controls in OAR 690-009-0050, a finding of potential for substantial interference with a surface water source may precede the control actions described in that rule.

690-009-0050(1)-(3) – Overview of Proposed Changes

Division 009

Rule:

-0050(1)-(3)

**Groundwater
Controls**

Revision:

Preamble to connect -0040 to -0050.

Copied referenced items deleted from -0040 to -0050 as needed:

- analytical models to quantify magnitude and timing of impacts
- distance from a well to hydraulically connected surface water determined by Department

Ground Water Controls

These rules apply to the control or regulation of groundwater where it is determined that an existing groundwater appropriation will cause or has caused substantial or undue interference with a surface water source as described in OAR 690-009-0040.

- (1) The Department shall review existing ground water appropriations to determine the potential to cause substantial interference with a surface water source on a case-by-case basis, in accordance with OAR 690-009-0040, whenever the Department has cause to believe that substantial interference with a surface water source ~~is suspected to exist by the Department~~ may exist.

- (2) Whenever the Department determines that substantial interference with a surface water supply exists, the Department shall control those groundwater appropriations that have been determined under section (1) of this rule to have the potential to cause substantial interference. The controls shall be similar to or compatible with, but not more restrictive than controls on the affected surface water source, in accordance with the relative dates of priorities of the ground water and surface water appropriations:
- (a) Prior to controlling the use of any well greater than 500 feet from a surface water source, the Department shall determine whether any control would provide relief to the surface water supply in an effective and timely manner. The Department shall make the determination on the basis of the best available information, employing at least one of the following methods: ~~set forth in OAR 690-009-0040(4)(d);~~
- (A) Suitable equations and graphical techniques that are described in pertinent publications (such as “Computation of Rate and Volume of Stream Depletion by Wells,” by C.T. Jenkins, in Techniques of Water-Resources Investigations of the United States Geological Survey: Book 4, Chapter D1);
- (B) A computer program or ground water model that is based on such or similar equations or techniques
- (b) The Department shall control the use of wells greater than one mile from a surface water source only through a critical ground water area determination in accordance with ORS 537.730 through 537.740.

(3) As necessary, the Department shall determine the horizontal distance between any well in question and the nearest surface water source on the basis of the edge of the surface water source as also determined by the Department.



RAC Roundtable



Public Comment



Wrap Up/Next Steps

Wrap Up/Next Steps

Email Rules Coordinator (laura.a.hartt@water.oregon.gov)

- Any additional input regarding today's draft rules by June 7, 2023
- Suggestions on how to improve meeting logistics

Next RAC Meeting

- **When:** June 21, 2023, from 8:30 am - noon
- **Where:** Rogue Conference Room, 3rd Floor, OWRD, Salem & via Zoom
- **What:** Division 410, Division 9

OREGON



WATER RESOURCES
DEPARTMENT