

DEQ Water Right Review

Basin & Subbasin: *Deschutes Basin, Upper Crooked Subbasin*

What are the names of the surface water source and the nearest receiving waterbody? *Davis Creek, tributary to Camp Creek*

Requested water amount: *195 AF* Requested time period: *1/1-12/31*

The purpose of OAR Chapter 690, Division 33 is to aid the Oregon Water Resources Department (OWRD) in determining whether a proposed use will impair or be detrimental to the public interest with regard to listed sensitive, threatened, or endangered (ST&E) fish species. Oregon’s stream temperature, dissolved oxygen, pH and several other standards are based on the life cycle needs of salmonids and other resident fish and aquatic life. Exceedances of the standards can disrupt the life cycle of a ST&E fish species and may even cause death. Refer to DEQ’s Water Right Application Review Procedures document for additional information. In addition, OWRD must consider water quality impacts as part of a public interest review, OAR 690-310-0120. Note: Water quality impacts and conditions unrelated to ST&E species should be noted as “Division 310” in the recommendations to OWRD.

For Proposed Uses in the Columbia River Basin, reviews must determine whether a proposed use complies with existing state and federal water quality standards. Upper Columbia applications require applicants to provide evidence, when they apply, that the proposed use complies with existing state and federal water quality standards. Geographic scope: Columbia River Basin and any waterbody that ultimately drains into the Columbia River.

For Proposed Uses outside of the Columbia River Basin, reviews must determine whether a proposed use may affect

ST&E fish species habitat. Geographic scope: all other areas outside the Columbia River Basin geographic scope where OWRD determines ST&E fish species are present.

Upper and Lower Columbia

Based on the review completed below, does the proposed use comply with existing state and federal water quality standards or may conditions be applied to bring the use into compliance? No Yes

List the conditions, mitigation or restrictions required for the proposed use to comply with existing state and federal water quality standards whenever possible; if no conditions can be recommended to meet the standards, write “none”:

- 1) *Period of use: Water withdrawal is limited to November 1st to March 31st.*
- 2) *An outlet pipe shall be constructed at the bottom of the dam to allow releases. Releases shall not be made unless ordered by OWRD or other government entity.*
- 3) *A bypass shall be constructed to bypass live flow outside of the storage season. The bypass channel must include a headgate and weir or other appropriate flow management and measurement devices.*
- 4) *Best management practice recommendation: The applicant proposes to use the reservoir for recreation uses. Therefore, it is recommended that when algae blooms occur, the water should be tested for algal toxins.*

Statewide

Will the proposed use result in water quality impacts that will cause either “loss” or “net loss” of essential habitat of ST&E fish species? No Yes

What conditions are recommended so that the proposed use will not result in “loss” or “net loss” of essential habitat of ST&E fish species? If conditions cannot be recommended to protect water quality to meet the standards of either “loss” or “net loss”, write “none”.

DEQ review prepared by: *Smita Mehta* Date prepared: *6/25/18*

ODA review requested: No Yes Date review sent to ODA:

ODA reviewer: ODA review date: Comments:

THE SECTION BELOW IS FOR DEQ INTERNAL USE ONLY

1. DEQ’s antidegradation policy (OAR 340-041-0004) is designed to protect water from further degradation from new or increased sources of pollution and protects, maintains, and enhances surface water quality to protect existing beneficial uses. Oregon’s Antidegradation rule states that certain uses are allowed without an antidegradation review.

Is the proposed activity a temporary use in response to an emergency, a restoration activity that the Department of Environmental Quality has determined provides a net ecological benefit, or a temporary use to protect human health and welfare (less than six months), for which the applicant has demonstrated that they will minimize adverse effects to threatened and endangered species?

No. Yes. Approve application and identify conditions necessary to protect the water quality for the habitat of ST&E fish species.

2. Will the proposed activity result in a permanent withdrawal directly from the **Outstanding Resource Water** with critical habitat for ST&E fish species?

No. Yes. Describe how the use does or does not comply with existing state and federal water quality standards and how the use may affect ST&E fish species habitat. Consider if water quality can be protected by modifying the use volume, season of use, or other permit conditions. Select appropriate condition from the conditions list. Flow mitigation is likely needed to maintain ORW.

3. Is this source **Water Quality Limited** water or tributary to a water quality limited water (limit downstream review to 6th field HUC) for parameters that are commonly affected by flow (temperature, dissolved oxygen, pH, etc.)?

No Yes. Describe how the use does or does not comply with existing state and federal water quality standards and how the use may affect ST&E fish species habitat. Consider if water quality can be protected by modifying the use volume, season of use, or other permit conditions. Select appropriate condition from the conditions list. Flow mitigation is likely needed to maintain water quality conditions during season of impairment.

Table 1: Integrated Report/ 303(d) listings

Water Body (Stream/Lake)	River Miles	Parameter	Season	Criteria	Beneficial Uses	Status

To determine, select the effective Integrated Report at: <http://www.oregon.gov/deq/wq/Pages/2012-Integrated-Report.aspx> and under Listing Status, select “Water Quality Limited – All (Categories 3B, 4, and 5)”. May also document existing water quality data that may not be included in the integrated report.

4. Is a **Total Maximum Daily Load** established for parameters identified as being affected by hydromodification?

No Yes. *List TMDL and identify the load allocation and if hydromodification is a limiting factor.*

Describe how the use does or does not comply with existing state and federal water quality standards and how the use may affect ST&E fish species habitat. Consider if water quality can be protected by modifying the use volume, season of use, or other permit conditions. Select appropriate condition from the conditions list. Flow mitigation is likely needed to maintain water quality conditions during season of impairment.

5. Is it likely that the cumulative withdrawals in the Water Availability Basins (WAB), including the proposed activity, will result in a lowering of water quality that will impair ST&E species habitat?

No Yes. Describe how the use does or does not comply with existing state and federal water quality standards and how the use may affect ST&E fish species habitat. Consider if water quality can be protected by modifying the use volume, season of use, or other permit conditions. Select appropriate condition from the conditions list. Flow mitigation may be considered. *Table 2 shows that given the current water allocation in the Water Availability Basin, streamflow is significantly diminished April through October. During these months, the percent of natural flow that remains instream is diminished to the extent that ecological harm is likely occurring. Any additional reduction in streamflow in November through March may exacerbate the ecological harm caused by the diminished flows.*

Consider the cumulative impact of consumptive withdrawals in the [OWRD WAB](#).

- Open OWRD’s Water Availability Reporting System.
- Search for the water availability basin of interest. Select 50% exceedance, this represents that the calculated mean monthly flow, “natural flow”, will be available 50% of the time.
- After the water availability report is generated, select the highest nesting order WAB that contains the POD.
- Download to Excel. To calculate “percent of flow” divide the “consumptive use” by the “natural stream flow” and multiply by 100. You may choose to add the consumptive portion or storage amount of the proposed use.

Table 2. Percent of natural flow. Monthly flow in Cubic Feet per Second (CFS). Annual flow in Acre Feet (AF). Camp Creek > Crooked River at mouth, Deschutes Basin

Month	Natural Stream Flow (cfs)	Consumptive Uses and Storages (cfs)	Expected Stream Flow (cfs)	% of Flow Withdrawn
JAN	10.3	1.75	8.55	17%
FEB	21.6	3.66	17.94	17%
MAR	29.5	8.56	20.94	29%
APR	23.2	11.1	12.1	48%
MAY	9.61	18	-8.39	187%
JUN	5.06	14.2	-9.14	281%
JUL	2.67	4.29	-1.62	161%
AUG	1.84	2.26	-0.42	123%

SEP	2.77	2.48	0.29	90%
OCT	5	1.81	3.19	36%
NOV	7.09	1.21	5.88	17%
DEC	9.34	1.59	7.75	17%

In making the determination, all water withdrawals in a water availability basin should be considered. Consider the percent of natural flow left instream in each month (see right-most column in Table 1). Based on best professional judgment, evaluate if the cumulative withdrawal is likely to cause impairment to aquatic life or water quality. Water quality standards are established to protect aquatic life.

Antidegradation rule applies, 340-041-0004: Withdrawals cannot cumulatively increase a waterbody's temperature by more than 0.5 degrees Fahrenheit or cause a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach so long as it has no adverse effects on threatened and endangered species. See OAR [340-041-0004\(3\)-\(5\)](#) for a description in rule of activities that do not result in lowering of water quality.

In scientific literature, researchers have identified ecological harm occurring when flows are reduced by **>6-35% of daily flow**¹. Consider the seasonality of any listings and season of withdrawal to determine impact for each month of the year.

Consider if hydromodification, due to cumulative withdrawals, is likely a limiting factor in the waterbody at certain times of the year. Temperature and dissolved oxygen are flow-related parameters. When streamflow is reduced, assimilative capacity is reduced. As a waterbody heats up, dissolved oxygen concentrations decline. By reducing stream flows (or groundwater recharge and resulting streamflow), it is likely to exacerbate the temperature and/or dissolved oxygen impairments.

Increases in temperature or a reduction in dissolved oxygen adversely impacts ST&E fish. Fish require different temperature and concentrations of dissolved oxygen based on species and life history stage. Oregon's temperature and dissolved oxygen limits are based on the most sensitive species and the life history stage of those species at the location and season of concern. Additional heat or reduction in dissolved oxygen concentrations will further impact these species habitat. Reduced flows can also increase the concentrations of phosphorous, bacteria, pesticides and metals.

6. Is the use in compliance or can compliance with state and federal water quality standards be assured and ST&E habitat loss prevented by modifying the amount diverted, season of use, or by imposing permit condition(s)?

No. Yes. Select appropriate condition from the conditions list. *Period of use: Water withdrawal is limited to November 1st to March 31st.*

If no, can flow mitigation be implemented to ensure compliance with state and federal water quality standards and prevent loss of ST&E habitat?

No. Yes.

¹ Richter BD, Davis MM, Apse C, Konrad C. 2011. *Short Communication, A Presumptive Standard For Environmental Flow Protection*. River Research and Applications. Published online in Wiley Online Library (wileyonlinelibrary.com), DOI: 10.002/rra.1551

7. ORS 468B.025 prohibits pollution of waters of the state. Is there potential that the post diversion use (handling or water management) will degrade surface water or groundwater quality? (Example: release of thermally degraded stored water.) Or are there additional water-quality impairments that would result from this proposed use?

No Yes. Provide basis for conclusion and note if the impacts would impact fish habitat: *The applicant intends to use the reservoir for fish culture and wildlife uses. Exposed stagnant water has the potential to warm significantly, resulting in temperatures and dissolved oxygen levels that do not support fish use. Potentially harmful algal blooms may also occur. Any warm season release from the reservoir into Davis Creek or Camp Creek could result in warm, low dissolved oxygen water instream which would degrade fish habitat.*

8. Can permit conditions be implemented to prevent water quality degradation?

Yes. Select conditions from the conditions list. Send review to ODA if conditions are recommended for agricultural use.

- 5) *An outlet pipe shall be constructed at the bottom of the dam to allow releases. Releases shall not be made unless ordered by OWRD or other government entity.*
- 6) *A bypass shall be constructed to bypass live flow outside of the storage season. The bypass channel must include a headgate and weir or other appropriate flow management and measurement devices.*
- 7) *Best management practice recommendation: The applicant proposes to use the reservoir for recreation uses. Therefore, it is recommended that when algae blooms occur, the water should be tested for algal toxins.*

No. Provide basis for conclusion:

CONDITIONS

Reviewer may modify stock condition language to meet site and project needs.

Flow Mitigation. DEQ recommends that the applicant shall mitigate anticipated impacts to water quality for the habitat of ST&E fish species by providing suitable replacement water. Additional mitigation may be required from other IRT members (example: OWRD may require mitigation for periods when water is not available). Surface flow mitigation is unlikely to provide the same benefit groundwater provides to gaining stream reaches. However, if groundwater mitigation is unavailable within the same aquifer, surface water mitigation will provide suitable mitigation.

Mitigation obligation: Prior to water use under this permit, the applicant shall provide mitigation water that is of no less volume than the permitted use. Mitigation water shall be sourced upstream of the point of appropriation, or the uppermost point on the stream at which Potential for Surface water Interference occurs. If surface water is used for mitigation, it shall be instream for the *month - month time period* and of similar water quality. The applicant should contact their OWRD caseworker to discuss flow mitigation options.

Reduced Withdrawal: Water withdrawal is limited to *Enter CFS or AF for the defined period, or a month by month rate or volume.*

Period of Use: Water withdrawal is limited to the period: *start date through end date.*

Limit Withdrawal: No water shall be diverted under this right unless the flow in the *waterbody name* is at or above *CFS* cubic foot per second, as determined at Gaging Station ID *.*

Riparian If the riparian area is disturbed in the process of developing a point of diversion, the permittee shall be responsible for restoration and enhancement of such riparian area in accordance with the Oregon Department of Fish and Wildlife's Fish and Wildlife Habitat Mitigation Policy OAR 635-415. Prior to diversion of water, the permittee shall submit a Riparian Mitigation Plan approved in writing by ODFW unless ODFW provides documentation that riparian mitigation is not necessary. The permittee is hereby directed to contact the local ODFW Fish Biologist prior to diverting water.

Pond releases: Permittee shall not release polluted off-channel stored water into waters of the state, unless under emergency situations. For routine maintenance, the Permittee shall land apply stored water or provide treatment prior to releasing it *include dates when releases are allowed*. Permittee shall comply with OAR 340-041 and ensure that water-quality standards are not violated by releases from storage.

Pond construction: Permittee must construct pond off channel, *identify waterbody and set back to prevent stream capture and justification for distance selected*.

Reservoir Flow Releases: To prevent pollution downstream the permittee shall not discharge water from the reservoir when the flow at Gaging Station ID _____ (*gage name*) is below Mean Daily Discharge of *CFS* (discharge which was equaled or exceeded for 90% percent of the time) except when release is directed by the State Engineer to prevent dam failure.

Lining: Permittee must line the pond with *include material or allowable infiltration rate* to minimize seepage and protect groundwater quality per OAR 340-040. The liner is to be in place and inspected and approved in writing by the DEQ prior to storage of water.* If the liner fails, it must be replaced within one calendar year.

Water Quality: The use may be restricted if the quality of the source stream or downstream waters decreases to the point that those waters no longer meet existing state or federal water-quality standards.

Prohibited Activities: Permittee may not cause pollution of any waters of the state, or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means, per ORS 468B.025(1). If the Department of Environmental Quality determines that pollution of waters of the state is occurring, the permit holder is not in compliance with ORS 468B.025(1), DEQ shall notify OWRD of the violation.

Agricultural Water Quality Management Area Rules: Permittee must comply with basin-specific Agricultural Water Quality Management Area Rules in OAR 603-095. Livestock management and cropping must protect riparian areas on the property, allowing site capable vegetation along streams to establish and grow to provide the following functions: shade (on perennial and some intermittent streams), bank stability, and infiltration or filtration of overland runoff. Active management of livestock and/or a livestock exclusion fence is needed to protect riparian areas and provide the required functions.

Live Flow: Once the allocated volume has been stored, all live flow must be passed downstream at a rate equal to that of the inflow in a method that protects instream water quality.

Site-Specific Condition:

* OAR 690-410-0010(2)(a), OAR 690-310-0120, OAR 690-310-0140