



## Department of Energy

Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT PROGRAM

June 30, 2022

In reply refer to: FOIA #BPA-2021-01013-F

**SENT VIA EMAIL ONLY TO:** [aschick@opb.org](mailto:aschick@opb.org)

Tony Schick  
Oregon Public Broadcasting  
7140 SW Macadam Ave  
Portland, OR 97219

Dear Mr. Schick,

This communication concerns your request for agency records submitted to the Bonneville Power Administration (BPA) and made via the Freedom of Information Act, 5 U.S.C. § 552 (FOIA). Your request was received on August 16, 2021, and formally acknowledged on August 25, 2021.

### Request

“...any records of communication with members of the Confederated Tribes of the Colville Reservation or Upper Columbia United Tribes regarding efforts to establish anadromous fish above Grand Coulee Dam[; and] ...any internal communications that include "Colville" or "tribe" along with all of the following keywords: "Grand Coulee", "salmon", "accord"[; and] ...any assessments, studies, reports or memos the agency has regarding salmon viability and/or anadromous fish habitat above Grand Coulee dam.”

### Scope Clarification

On August 19, 2021, via emails exchanged with the agency, you agreed to limit the scope of your request to records dated from 2019 to August 19, 2021. On September 14 through 17, 2021, via telephone conversations with the agency regarding the 11,000 records gathered in response to the request, you agreed to limit the scope of the request with the following search terms: “Internal communications that include "Colville" along with all of the following keywords: "Grand Coulee", "salmon,"; and ["reintroduce" or “reestablish”].

### **First Partial Response**

In an effort to both accommodate the review of the large volume of responsive records, and to provide the records expediently within the limitations of available agency resources, BPA is releasing responsive records to you in installments, as permitted by the FOIA. A first partial release of responsive records accompanies this communication.

BPA gathered records responsive to your FOIA request from the following agency offices:

- Environment, Fish, and Wildlife
- Fish & Wildlife Division
- Fish Operations Policy and Planning
- Intergovernmental Affairs
- National Relations
- Office of General Counsel – Natural Resources
- Tribal Affairs

BPA's first partial response comprises 612 pages of agency records. Those pages accompany this communication, with the following redactions:

- Four pages with redactions applied under 5 U.S.C. § 552(b)(2) (Exemption 2);
- 200 pages with redactions applied under 5 U.S.C. § 552(b)(5) (Exemption 5);
- 84 pages with redactions applied under 5 U.S.C. § 552(b)(6) (Exemption 6).

A detailed explanation of the applied exemptions follows.

### **Explanation of Exemptions**

The FOIA generally requires the release of all agency records upon request. However, the FOIA permits or requires withholding certain limited information that falls under one or more of nine statutory exemptions (5 U.S.C. §§ 552(b)(1-9)). Further, section (b) of the FOIA, which contains the FOIA's nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

#### Exemption 2

Exemption 2 permits withholding of material "related solely to the internal personnel rules and practices of an agency" (5 U.S.C. § 552(b)(2)). BPA relies on Exemption 2 here to protect telephonic meeting call-in numbers and related passwords and passcodes found on the subject responsive records. BPA has considered a discretionary release of this information, as encouraged by the FOIA. The agency declines to discretionarily release this information, relying on the harm that might redound to the agency were this information to be released publicly.

#### Exemption 5 – the deliberative process privilege

Exemption 5 protects "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency" (5 U.S.C. § 552(b)(5)). In plain language, the exemption protects privileged records.

The FOIA's Exemption 5 deliberative process privilege protects records showing the deliberative or decision-making processes of government agencies. Records protected under this privilege must be both pre-decisional and deliberative. A record is pre-decisional if it is generated before the adoption of an agency policy. A record is deliberative if it reflects the give-and-take of the consultative process, either by assessing the merits of a particular viewpoint, or by articulating

the process used by the agency to formulate a decision. BPA relies on Exemption 5 here to protect agency discussions regarding legislation and formulation of policy concerning fish hatchery operations with Tribal entities. BPA has considered a discretionary release of this information, as encouraged by the FOIA. The agency declines to discretionarily release this information, relying on the harm that might redound to the agency were this information to be released publicly.

#### Exemption 5 – the attorney-client privilege

Exemption 5's attorney-client privilege protects confidential communications between an attorney and a client relating to a legal matter for which the client has sought professional advice. The privilege encompasses facts provided by the client and opinions provided by the attorney. BPA relies on Exemption 5 here to protect passages of legal advice provided to BPA from the agency's Office of General Counsel. BPA has considered a discretionary release of this information, as encouraged by the FOIA. The agency declines to discretionarily release this information, relying on the harm that might redound to the agency were this information to be released publicly.

#### Exemption 6

Exemption 6 serves to protect Personally Identifiable Information (PII) contained in agency records when no overriding public interest in the information exists. BPA does not find an overriding public interest in a release of the information redacted under Exemption 6—specifically, individuals' mobile phone numbers and signatures. BPA cannot waive these PII redactions, as the protections afforded by Exemption 6 belong to individuals and not to the agency.

Further, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

#### **Certification**

Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search, redaction decisions, and partial records release described above.

#### **Appeal**

Note that the records release certified above is partial. Additional records releases will be forthcoming as agency resources and records volumes permit. Pursuant to 10 C.F.R. § 1004.8, you may appeal the adequacy of the records search, and the completeness of this partial records release, within 90 calendar days from the date of this communication. Appeals should be addressed to:

Director, Office of Hearings and Appeals  
HG-1, L'Enfant Plaza  
U.S. Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to [OHA.filings@hq.doe.gov](mailto:OHA.filings@hq.doe.gov), including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services  
National Archives and Records Administration  
8601 Adelphi Road-OGIS  
College Park, Maryland 20740-6001  
E-mail: [ogis@nara.gov](mailto:ogis@nara.gov)  
Phone: 202-741-5770  
Toll-free: 1-877-684-6448  
Fax: 202-741-5769

#### **Next Partial Release Target Date**

BPA continues to review and process records collected in response to your request. Those records are potentially subject to the application of 5 U.S.C. § 552(b).

#### Exemption 4

As described in prior communications with you, BPA gathered responsive agency records and identified information in the records set which belongs to the Confederated Tribes of the Colville Indian Reservation, the Coeur d'Alene Tribe, the Spokane Tribe of Indians, the Upper Columbia United Tribes, and attorneys who represent those Tribes. Prior to publicly releasing those records, BPA is required by 5 U.S.C. § 552(b)(4) (Exemption 4) to solicit those third parties' objections to a public release of their respective confidential commercial information contained in the responsive records. Those review efforts are ongoing.

#### Federal Agency Consults

BPA gathered responsive agency records and identified information in the records set which belongs to Bureau of Reclamation, the U.S. Army Corps of Engineers, the U.S. Geological Survey, and the National Atmospheric and Oceanic Administration. BPA is required to provide

those agencies the responsive records for possible exemptions under Exemption 5. Those review efforts are ongoing.

The estimated target date, as communicated previously, stands at August 19, 2022. BPA invites you to contact us to narrow the scope of your request, if desirable, or discuss this estimated completion date.

Questions about this communication or the status of your FOIA request may be directed to the FOIA Public Liaison Jason Taylor at [jetaylor@bpa.gov](mailto:jetaylor@bpa.gov) or 503-230-3537.

Sincerely,

Candice D. Palen  
Freedom of Information/Privacy Act Officer

From: Key,Philip S (BPA) - LN-7

Sent: Mon Jun 22 11:45:47 2020

To: Donahue,Scott L (BPA) - EWP-4

Subject: RE: Cover Ltr and Comments 6.22.2020

Importance: Normal

This is great insight for me, Scott. Thank you for digging it out and sharing it. I suspect I've seen it before, but maybe because it's so tepid I forgot!

-----Original Message-----

From: Donahue,Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

Sent: Monday, June 22, 2020 11:43 AM

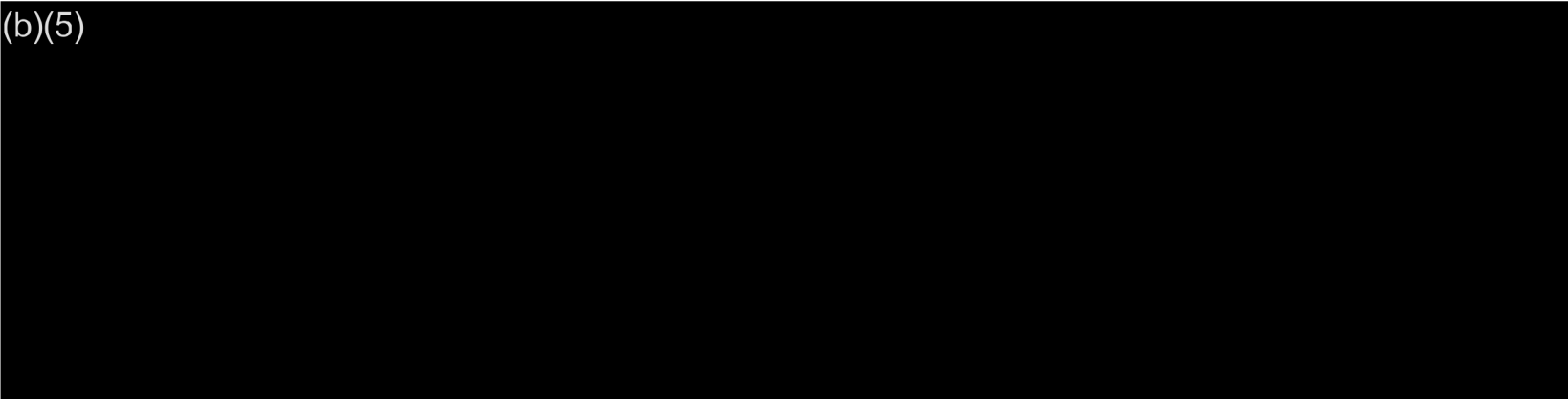
To: Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

Subject: RE: Cover Ltr and Comments 6.22.2020

CONFIDENTIAL

Hi Philip,

(b)(5)



(b)(5)

Cheers,

Scott

-----Original Message-----

From: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

Sent: Monday, June 22, 2020 11:00 AM

To: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

(b)(5)

Philip

-----Original Message-----

From: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

Sent: Monday, June 22, 2020 9:20 AM

To: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Did you see the clearing up article on the 5 million fish change? Scott

SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife, SES | E-4 BONNEVILLE POWER ADMINISTRATION bpa.gov | P 503-230-3076

IC (b)(6)

-----Original Message-----

From: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

Sent: Monday, June 22, 2020 9:02 AM

To: Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Let me know if any of y'all have questions or concerns on the letter as I'm covering for Tucker today and worked on it with him.

-----Original Message-----

From: Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>

Sent: Friday, June 19, 2020 2:09 PM

To: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

Subject: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Hi Scott, (Armentrout)



Please find the attached letter for your final review prior to signature. It has been vetted through EWP, EW, LN, and DI. Peter Cogswell (Out today) would like one more final review, but won't be able to look at until Monday. The letter is due to Council on Monday. Once you approve as written, I will PDF, combine the documents and prepare for your electronic signature. I know you would probably like to see this after Cogswell, but I really want to make sure you don't have any big flags that need addressing or specific heartburn with anything since this is DUE MONDAY.

Please reach out to Peter, John, and Scott with any questions or concerns you may have.

Thanks!

Marcella

Your message is ready to be sent with the following file or link attachments:

Final Bonneville Comments on Draft Council Addendum 2019.10.18 Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

From: Key, Philip S (BPA) - LN-7

Sent: Wed Jun 30 13:57:08 2021

To: Senters, Anne E (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

Subject: FW: Next Steps on CJH Fish

Importance: Normal

Attachments: Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas\_6.30.21.docx

Anne,

Tucker and I will discuss and then get back to you.

PK

**Attorney Client/Work Product/Deliberative Process Document: Not subject to release under FOIA**

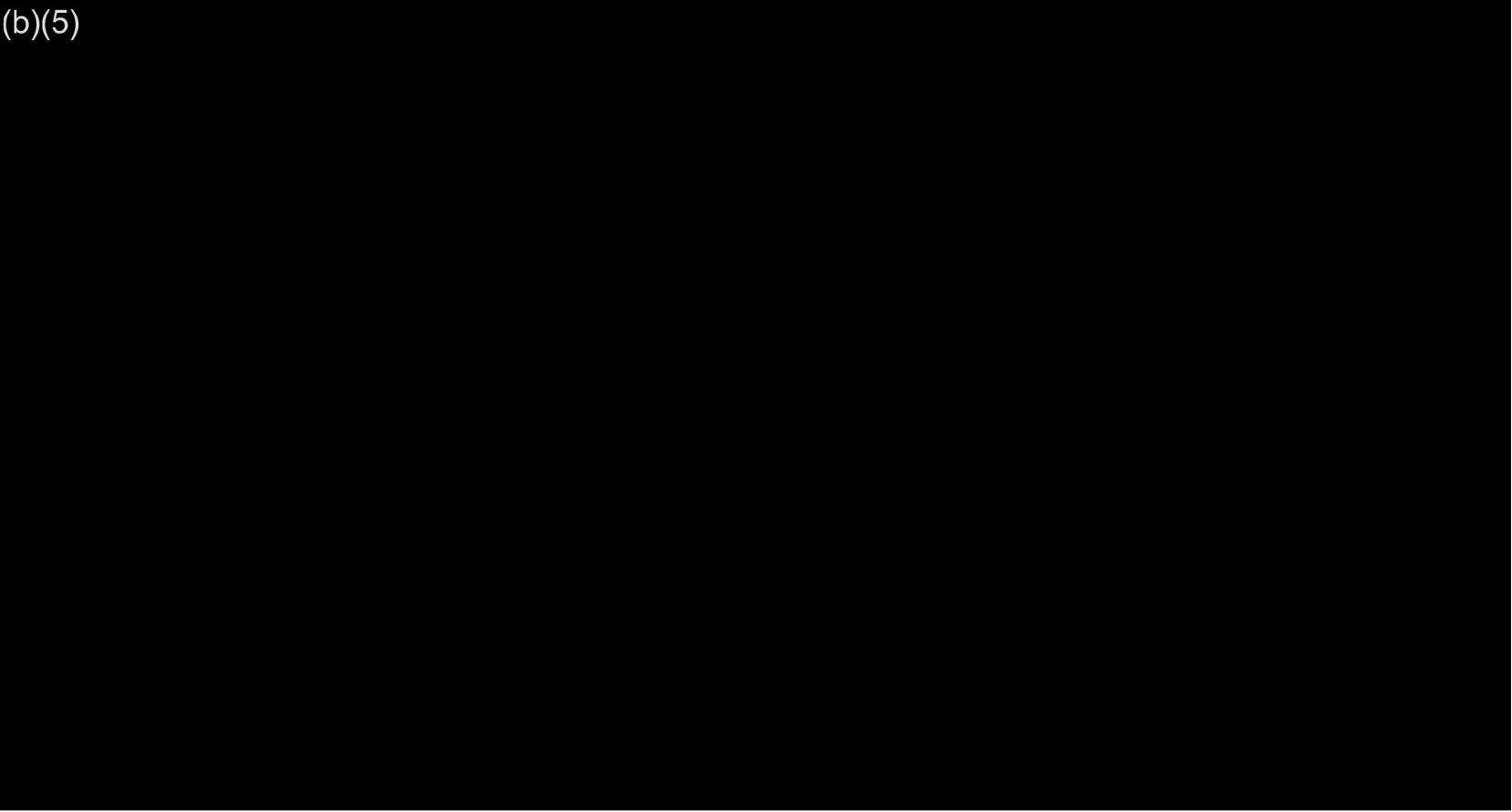
Ben,

(b)(5)

(b)(5)

(b)(5)

(b)(5)



Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Senters, Anne E (BPA) - LN-7

<aesenters@bpa.gov>; Connolly,Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>; Sweet,Jason C (BPA) - PGB-5 <jcsweet@bpa.gov>; James,Eve A L (BPA) - PG-5 <eajames@bpa.gov>; Ball,Crystal A (BPA) - EW-4 <caball@bpa.gov>; Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>; Foster,Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Kavanagh,Maureen A (BPA) - EWP-4 <makavanagh@bpa.gov>; Godwin,Mary E (BPA) - LN-7 <megodwin@bpa.gov>; Baskerville,Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>  
**Cc:** Pruder Scruggs,Kathryn M (BPA) - E-4 <kpruder@bpa.gov>; Gordon,Peter S (BPA) - E-4 <psgordon@bpa.gov>  
**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



(b)(5)

Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

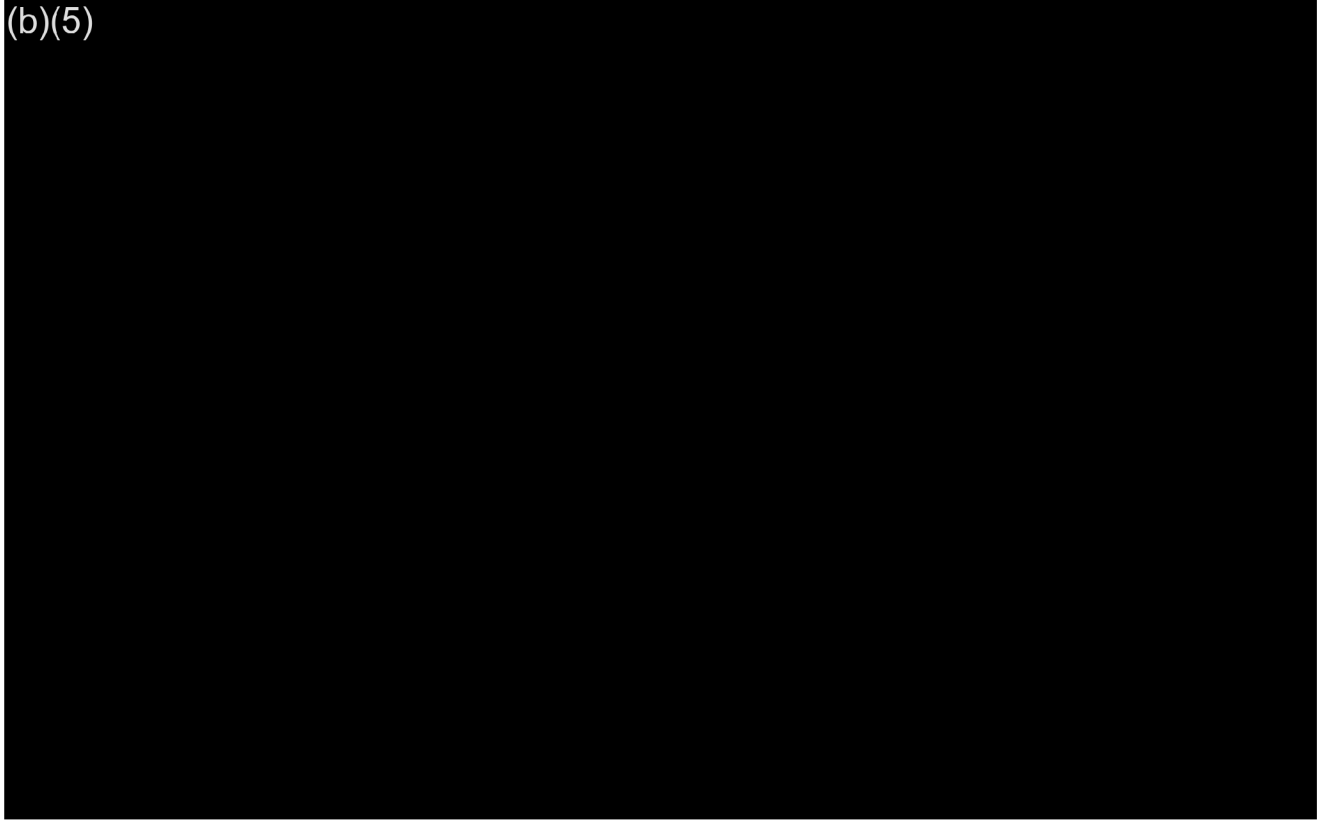
(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)



Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas

(b)(5)



**From:** Hausmann,Benjamin J (BPA) - EWL-4

**Sent:** Tue May 18 08:21:19 2021

**To:** Skidmore,John T (BPA) - EWL-4

**Subject:** RE: [EXTERNAL] [BULK EMAIL] Pacific Council News, Spring 2021

**Importance:** Normal

Copy that. Thanks.

**From:** Skidmore,John T (BPA) - EWL-4 <jtskidmore@bpa.gov>

**Sent:** Tuesday, May 18, 2021 6:36 AM

**To:** Hausmann,Benjamin J (BPA) - EWL-4 <bjhausmann@bpa.gov>

**Subject:** FW: [EXTERNAL] [BULK EMAIL] Pacific Council News, Spring 2021

Hi Ben, Please get put on this mailing list. I will be forwarding similar websites as they come in, thanks

**John T. Skidmore**

Manager | Oregon Fish and Wildlife Implementation Group, EWL-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5494 | C (b)(6)

*Please consider the environment before printing this email.*

**From:** Pacific Fishery Management Council <PacificFisheryPDX@gmail.com>  
**Sent:** Monday, May 17, 2021 4:14 PM  
**To:** Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>  
**Subject:** [EXTERNAL] [BULK EMAIL] Pacific Council News, Spring 2021

[View this email in your browser](#)

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## ***The Pacific Council News***

Reporting on the March and April Pacific Fishery Management Council meetings

This spring we have a new newsletter feature: mini-podcasts on Council topics, which we call "**Thirty Thousand Feet**." Check out our first two episodes, where Kerry Griffin updates us on what's going on with coastal pelagic species, and Robin Ehlke talks about salmon management! You will also notice other tweaks to our newsletter. [Please send us your feedback here](#).

We had two **very long** spring Council meetings. If all goes well, our June meeting **may** be our last fully-remote Council meeting, but we can't make any promises yet. Meanwhile, we have been enjoying a few funny moments during Council meetings: the ever-growing list of animals in the background of calls (including **geese, crows, songbirds, coyotes, and of course dogs and cats**); that "Jeopardy" music during the bitter end of the April Council meeting; and the many ways in which people ask, "Can you hear me?" Yes, we can hear you, and we hope to hear you again in June!

### ***Coastal Pelagic Species***

***New! [Thirty Thousand Feet, Episode 1: Kerry Griffin talks coastal pelagic species management](#). Or read the [transcript here](#).***

In April, the Council adopted [final harvest specifications and management measures](#) for the 2021-2022 Pacific sardine fishery. Because the 2020 acoustic-trawl (A-T) surveys were cancelled and there was no A-T data to inform the planned-for update stock assessment, the Southwest Fisheries Science Center (SWFSC) instead produced a catch-only biomass estimate. However, the lack of A-T data plus other factors caused the stock assessment model to produce some implausible results. Therefore, the Scientific and Statistical Committee (SSC) recommended that management reference points should be based on the previous year's stock assessment and biomass estimate developed by the SWFSC. The SSC recommended and the Council adopted a larger buffer to account for the increased uncertainty of using an older stock assessment.

The Council also approved three [exempted fishing permit proposals](#) designed to support stock assessments for

Pacific sardine, and approved moving forward with the next phase of the coastal pelagic species [essential fish habitat review](#).

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## ***Salmon***

***New! Thirty Thousand Feet, Episode 2: [Robin Ehlke talks salmon management](#). Or read the [transcript here](#).***

The Council adopted 2021 **ocean salmon management measures** in April. See the [full story](#) and [detailed management measures](#). The Council also heard an update in March on a project to [reintroduce salmon above Grand Coulee Dam](#), and sent a [letter of support](#) to the Confederated Tribes of the Colville Reservation for investigating the concept of reintroducing salmon to the upper Columbia Basin. In April, the Council approved a [list of potential topics](#) as candidates for **methodology review**. The Council will review the list again in September to see if any of the topics are ready for review. If so, work will be done in October and completed in time for the November Council meeting.

In other news, the **Klamath Dam removal** project continues on track toward removal of the four lower Klamath dams beginning in January 2023. The Klamath River Renewal Corporation, the entity charged with dam removal, recently completed and submitted its biological assessment, which is now being analyzed by National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service. [Learn more here!](#)

In a related action, in April the Council planned to discuss a letter to Secretary of Interior Deb Haaland asking her to overturn two Solicitors' Opinions that stated that **stored water in Upper Klamath Lake** should be used only for

agriculture and not for Endangered Species Act management or tribal trust purposes to support Klamath River salmon runs. About fifteen minutes after discussing the letter, the Council received news that the Secretary had just overturned the Opinions.

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### ***Marine Planning and Offshore Wind***

The Council and its Legislative Committee have been discussing and writing letters in response to President **Biden's Executive Order 14008**, [Tackling the Climate Crisis at Home and Abroad](#). Among other things, the Executive Order focuses on steps the U.S. should take to **conserve at least 30 percent of U.S. lands and waters by 2030**. The Council Coordinating Committee, which represents all eight fishery management councils, [sent a letter](#) to the Departments of the Interior and Commerce stating that the Councils have already made significant progress in achieving the goals of the Executive Order. In April, the Council sent its own [letter](#) to Interior and Commerce on the Executive Order. [A letter to NMFS](#) focused on recommendations to make fisheries and protected resources more resilient to climate change.

The Biden Administration has released a [fact sheet on offshore wind development](#). In addition, a hearing ("[Building Back Better: Reducing Pollution and Creating Jobs Through Offshore Wind](#)") was held in the House Subcommittee on Energy and Mineral Resources on April 20. A recording is available at the link.

On a state level, legislation to promote offshore wind has been introduced in Oregon and California. California's AB 525 would require agencies to craft a plan to create at least 10 GW of offshore wind installations by 2040. Oregon's HB 3375 establishes a goal of planning for development of three gigawatts of commercial-scale floating offshore wind energy projects in Federal waters off Oregon by 2030. [A hearing was held May 13](#).

For more info, please see the Council's [webpage on offshore wind activities](#).

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## ***Groundfish (whiting)***

In March, the Council discussed ways to change fishery management regulations to [improve utilization of the Pacific whiting fish stock in the mothership sector](#) of the Pacific whiting fishery. The Council discussed several ideas, including a potential **change to the existing whiting fishery season start date** for all sectors of the whiting fishery, changes to a fisherman's obligation to catch fish for a mothership processor, changes to the maximum limit a mothership processor can take from fisherman, and potentially allowing a vessel to fish as both a catcher-processor and a mothership processor in the same year. The Council adopted a [purpose and need statement and range of alternatives](#) for these issues, which will be analyzed and made available for public review. This issue will be discussed next in September 2021.

The Council also took emergency action in March to **allow an at-sea Pacific whiting processing platform to operate as both a mothership and a catcher-processor** during the 2021 Pacific whiting fishery. This would prevent disruption to the fishery if a mothership processor decides to abandon that sector due to the COVID-19 pandemic. That would leave catcher vessels in the mothership sector without a processing platform, which would result in significant economic impacts.

The Council changed how it determines **cost recovery fees for the at-sea sector**. The fees will now be based on Pacific whiting ex-vessel values rather than the value of all groundfish. The next time the Council considers

groundfish management workload planning, it will discuss whether it wants a review of trawl catch share program costs as part of the trawl catch share review scheduled for 2022, among other topics.

Finally, the Council was briefed on the **U.S./Canada Pacific Whiting Treaty** process, which did not reach a consensus on a 2021 coastwide total annual catch for whiting. NMFS published a proposed rule for a 2021 total allowable catch in early May. Meanwhile, an interim allocation of whiting was issued on May 15.

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## ***Groundfish (nonwhiting)***

[Three potential groundfish management measures](#) have been added to the Council's workload list: prohibiting directed fishing on shortbelly rockfish, a lingcod trip limit adjustment north of 40 10 in the salmon troll fishery, and a measure to [repeal the Cowcod Conservation Areas](#) (CCA).

The **shortbelly rockfish prohibition** may be discussed when the Council tackles 2023-2024 groundfish harvest specifications and management measures. Discussions will begin in September, with a range of management options selected for analysis in November.

As discussed below, the Council considered adjusting the **incidental lingcod landing limit in the salmon troll fishery** in April under their groundfish inseason agenda item. The CCA measure was not prioritized for action at this time and may be considered at a later date.



The Council reviewed the recent [humpback whale biological opinion](#) from NMFS and adopted recommendations related to **reducing whale entanglement**, reviewing Groundfish Endangered Species Workgroup membership, observer coverage, and electronic monitoring. Read more below.

In April, the Council began scoping new management measures for the **non-trawl Rockfish Conservation Area (s)** in order to allow some groundfish fishing in those areas using only gear types that minimize bottom contact. Read more below.

The Council made [inseason adjustments](#) to groundfish fisheries in April, adjusting the [incidental landing limit](#) for lingcod in the salmon troll fishery north 40° 10' N. lat. and requested NMFS correct the shoreward and seaward boundaries of the non-trawl RCA south of 34° 27' N. lat. in the trip limit tables.

The Council will discuss whether to review **trawl catch share program costs** as part of the trawl catch share review scheduled for 2022 next time they take up groundfish management workload planning.

The Council has been working to decide whether there should be a **limit on gear switching** (the use of fixed gear in the trawl individual fishing quota fishery). Some members of industry have concerns about the impacts of gear switching on trawlers' ability to harvest the full trawl quota. Specifically, there is concern that if gear switchers use sablefish quota pounds, those quota pounds would not be available to trawlers, who need them to catch other stocks that are intermixed with sablefish. Part of the process has been to identify the maximum level of gear switching that might be allowed if a limit is established. That maximum would guide further design of the gear switching limitation alternatives. In April the Council specified a maximum of 29 percent of the total trawl sablefish allocation. When the Council takes final action it might or might not decide to limit gear switching. Until that time, the 29 percent maximum could be revised. The Council plans to adopt a range of alternatives for this issue in September but has not yet scheduled a meeting for selection of a preferred alternative.

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# ***Focus: Biological Opinion on Humpback Whales***

Last September, the Council reviewed draft [conservation measures](#) that NMFS was considering as they completed work on a biological opinion (BiOp) on the effects of the groundfish fishery on humpback whales. The Council offered guidance to NMFS regarding developing these measures.

This April, NMFS returned to the Council with the completed [BiOp](#), and briefed the Council on the results. In the new BiOp, NMFS developed four non-discretionary (required) Terms and Conditions to protect humpback whales. Three of these require Council involvement.

First, NMFS, in cooperation with the Council, will investigate how pot fishing gear is currently marked and whether modifications are necessary to differentiate it from other gear types.

Second, the Council and NMFS will review the [Terms of Reference](#) of the Council's Groundfish Endangered Species Workgroup and prioritize the data needs associated with humpback bycatch.

The third term and condition is specific to NMFS and the West Coast Groundfish Observer Program regarding observer coverage.

The fourth requires NMFS, in cooperation with the Council, to consider using electronic monitoring on fishing vessels to gather information on bycatch of humpback whales.

# ***Focus: Non-Trawl Area Management Measures***

The Council began the scoping process for **Non-Trawl Rockfish Conservation Area (RCA) management measures** in April and adopted a draft [purpose and need statement](#) for public review.

The Council is developing a range of alternatives to address modifying existing Non-Trawl RCA boundaries based on recommendations from the [GAP](#). These alternatives will examine measures that could allow groundfish fishing inside the Non-Trawl RCA using select gears that minimize bottom contact. They will consider both the Open Access and the Limited Entry Fixed Gear groundfish fishery sectors in their analyses.

The Council will consider narrowing the non-trawl RCA by adjusting the seaward and/or shoreward non-trawl RCA boundaries between Point Conception, CA to 40° 10' N. lat.; from 40° 10' N. lat. to the Oregon/Washington border, and from the 100 fm seaward non-trawl RCA boundary off of Washington.

Industry asked the Council to consider the proposal for commercial salmon troll fishermen to retain shelf rockfish while fishing in the non-trawl RCA as part of this package. However, the Council decided to not address the issue at this time. Instead, they may consider it during the 2023-2024 groundfish harvest specifications and management measure process.

## ***Current Legislation***

A **new page** on the Council [website](#) provides links and updates on the bills the Council is tracking.

The Council and Legislative Committee have been focusing on President Biden's **Executive Orders** recently (see story above). Representative Don Young has [resubmitted his bill](#) to reauthorize the **Magnuson-Stevens Fishery Conservation and Management Act**, and Representative Jared Huffman has released a discussion draft for reauthorizing the Act ([see summary](#)). This is a far-ranging bill that could significantly change how fisheries are managed. The Legislative Committee discussed the draft, but the Council has not yet been asked to comment on the bill.

### ***Pacific Halibut***

As it does every year at this time, the Council **set limits on the catch of halibut in the salmon troll fishery and the fixed gear sablefish fishery**. From May 16, 2021 through the end of this year's salmon troll fishery, and then starting again on April 1, 2022 until changed by the Council, troll license holders may land no more than one Pacific halibut per two Chinook, except that one Pacific halibut may be landed without meeting the ratio requirement, and no more than 35 halibut may be landed per trip.

In the **fixed-gear sablefish fishery** north of Point Chehalis from April 1 through October 31, the 2021 incidental halibut catch limit is 225 pounds of dressed weight halibut for every 1,000 pounds dressed weight of sablefish, plus two additional halibut in excess of the ratio.

### ***Highly Migratory Species***

For several years, the Council has been working on a proposal to make **deep-set buoy gear** legal for commercial fishing. The gear was originally developed by scientists at the Pflieger Institute of Environmental Research, and fishermen have been testing it with exempted fishing permits since 2015. The gear targets

swordfish destined for high value markets and results in very little unwanted bycatch.

A **limited entry permit program for fishing in the Southern California Bight** is a big part of the Council's proposal. Because almost all the deep-set buoy gear test fishing has occurred in this area, the Council is concerned it could get too crowded if there are no limits on the number of people using the gear.

After discussions with NMFS, the Council has designed a system to determine who can get a limited entry permit once the program is implemented. It ranks people based on their experience in the commercial swordfish fishery, mainly by past use of different gear types, and puts them into "tiers" based on that experience.

In addition, the Council and NMFS have been discussing how limited entry permits will be issued. To keep things simple, NMFS has recommended a one-time application period at the beginning of the program.

It will be at least a year before the regulations to make deep-set buoy gear legal go into effect, and closer to two years before the limited entry program begins. For more details, see the Council's March decision document.

### ***Advisory Body Appointments***

**Sean Stanley**, the Deputy Special Agent in Charge of the West Coast Division, will be replacing **Michael Killary** as the NOAA Office for Law Enforcement (OLE) alternate Enforcement Consultant. West Coast Division Assistant Director **Greg Busch** will remain as OLE's primary Enforcement Consultant.

**Dr. Michele Zwartjes** was appointed to the U.S. Fish and Wildlife position on the Groundfish Endangered Species Workgroup formerly held by **Robin Bown**.

## Upcoming Meetings (all meetings held via webinar)

[Ad Hoc Climate and Communities Core Team meeting](#) to discuss the drafting of a final report for the Fishery Ecosystem Plan Climate and Communities Initiative. May 21, 2021.

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[Scientific and Statistical Committee's Economics and Groundfish Subcommittees](#) meeting to review a new Quota Share Owners' Cost Survey and do some initial planning on an upcoming review of the limited entry fixed gear sablefish program. May 26, 2021.

---

[Highly Migratory Species Management Team](#) meeting to discuss the contents and production of the HMS Stock Status and Fishery Evaluation (SAFE) document. June 3-4, 2021.

---

[Salmon Subcommittee of the Scientific and Statistical Committee](#) meeting to review the SSC's role in reviewing salmon forecast methodologies and other analyses. June 4, 2021.

---

[Groundfish Management Team](#) meeting to discuss items on the Pacific Council's June 2021 meeting agenda. June 10, 2021.

---

[Pacific Fishery Management Council meeting and advisory body meetings](#). The Council is scheduled to meet by webinar on June 22-26 and 28-30, 2021. Subcommittees may begin meeting June 22 or before.

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Sent: Wed Jul 07 14:56:08 2021

To: Key, Philip S (BPA) - LN-7


Subject: RE: Next Steps on CJH Fish

Importance: Normal

Attachments: Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas\_6.30.21\_TM.docx

***Confidential; FOIA-exempt***

(b)(5)



(b)(5)

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968 | C (b)(6)

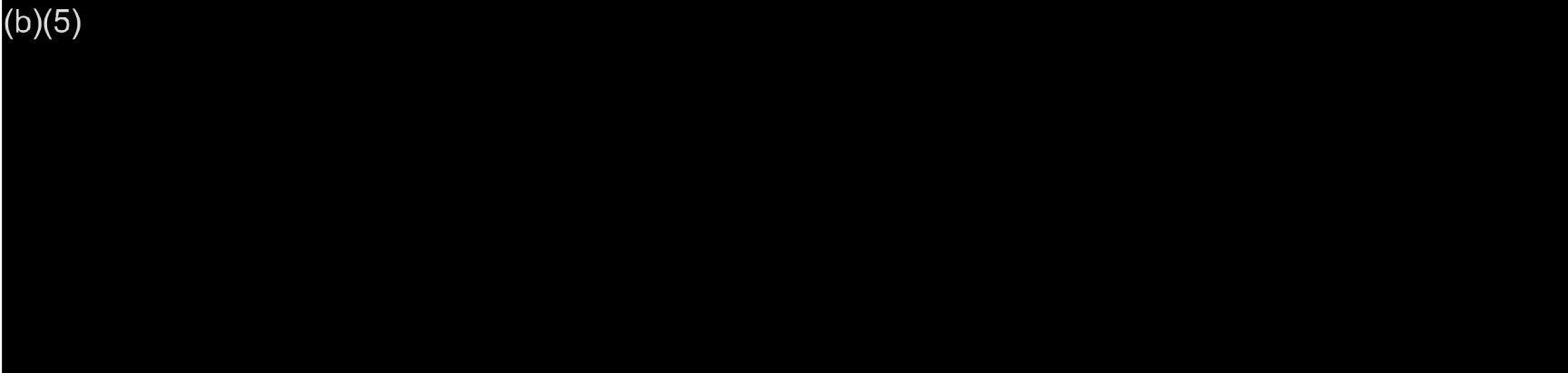
**From:** Miles, Tucker (BPA) - LN-7  
**Sent:** Friday, July 2, 2021 1:49 PM  
**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>  
**Subject:** RE: Next Steps on CJH Fish

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Yikes, this is a tough one. I copied your draft into a Word doc and have set up some time to talk because by-and-large I've raised more issues than I've resolved here.

(b)(5)

(b)(5)



Okay, this is getting kind of ramble-y, so let's talk next week. I also attached some of our collective thoughts from a few weeks ago about a strategy for getting some substantive concerns and positions staked out; they might be useful here.

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

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**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 1:57 PM

**To:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** FW: Next Steps on CJH Fish

Anne,

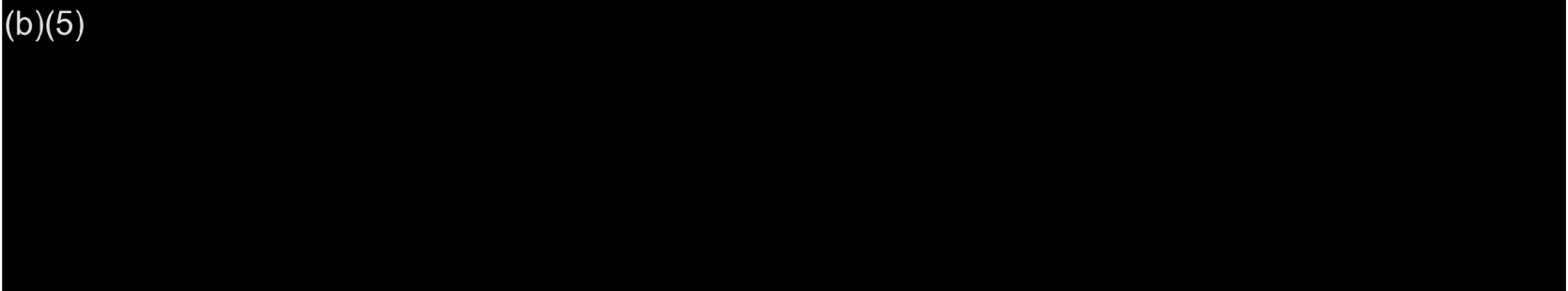
Tucker and I will discuss and then get back to you.

PK

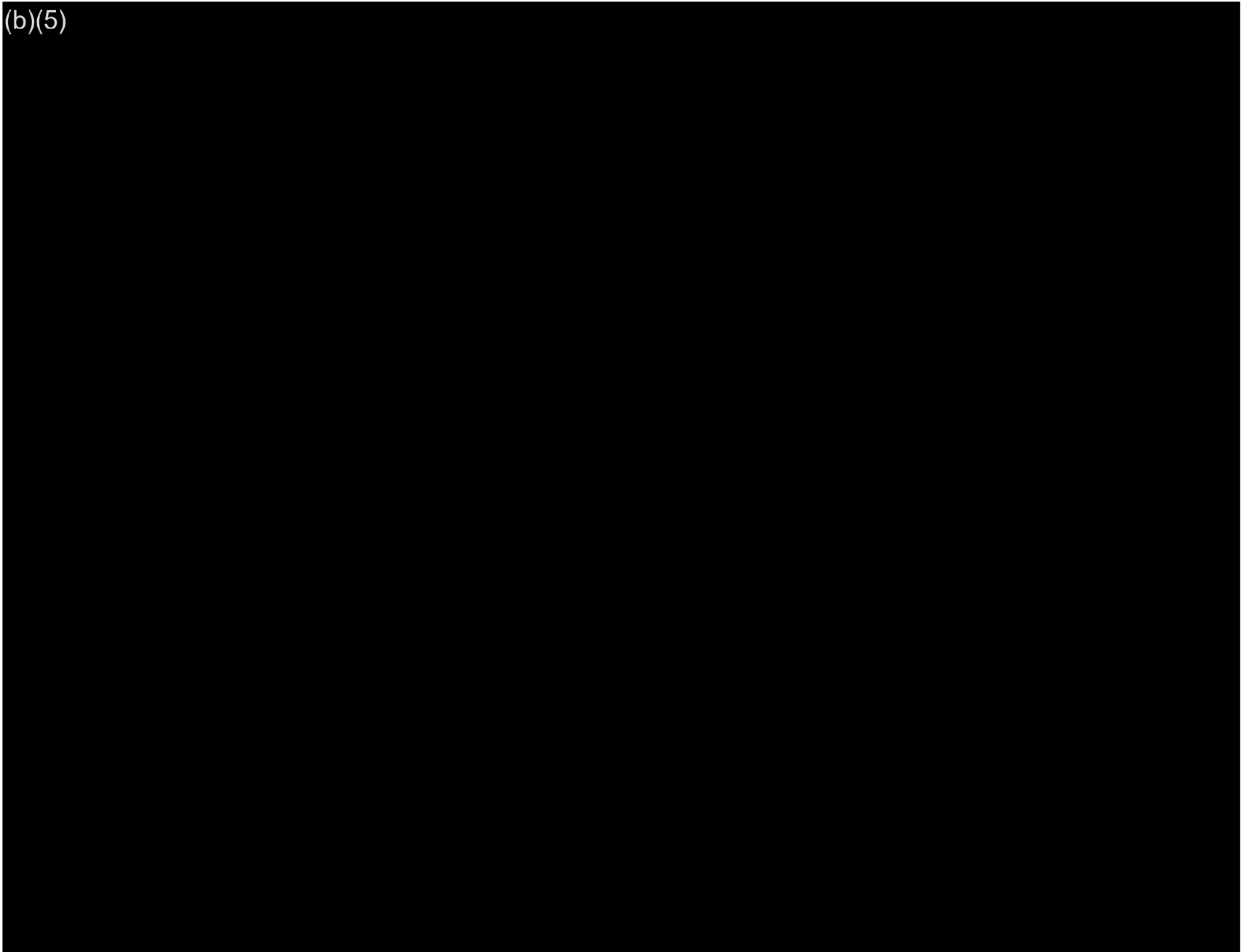
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Ben,

(b)(5)



(b)(5)





(b)(5)

(b)(5)

Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4

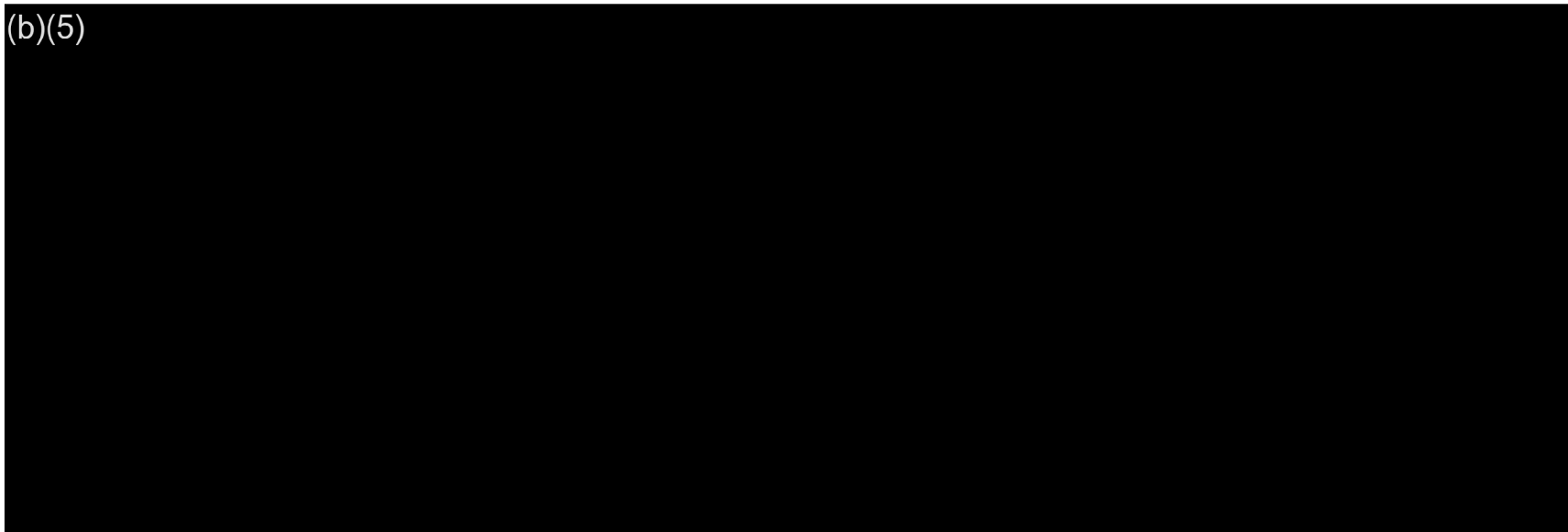
[<psgordon@bpa.gov>](mailto:psgordon@bpa.gov)

**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

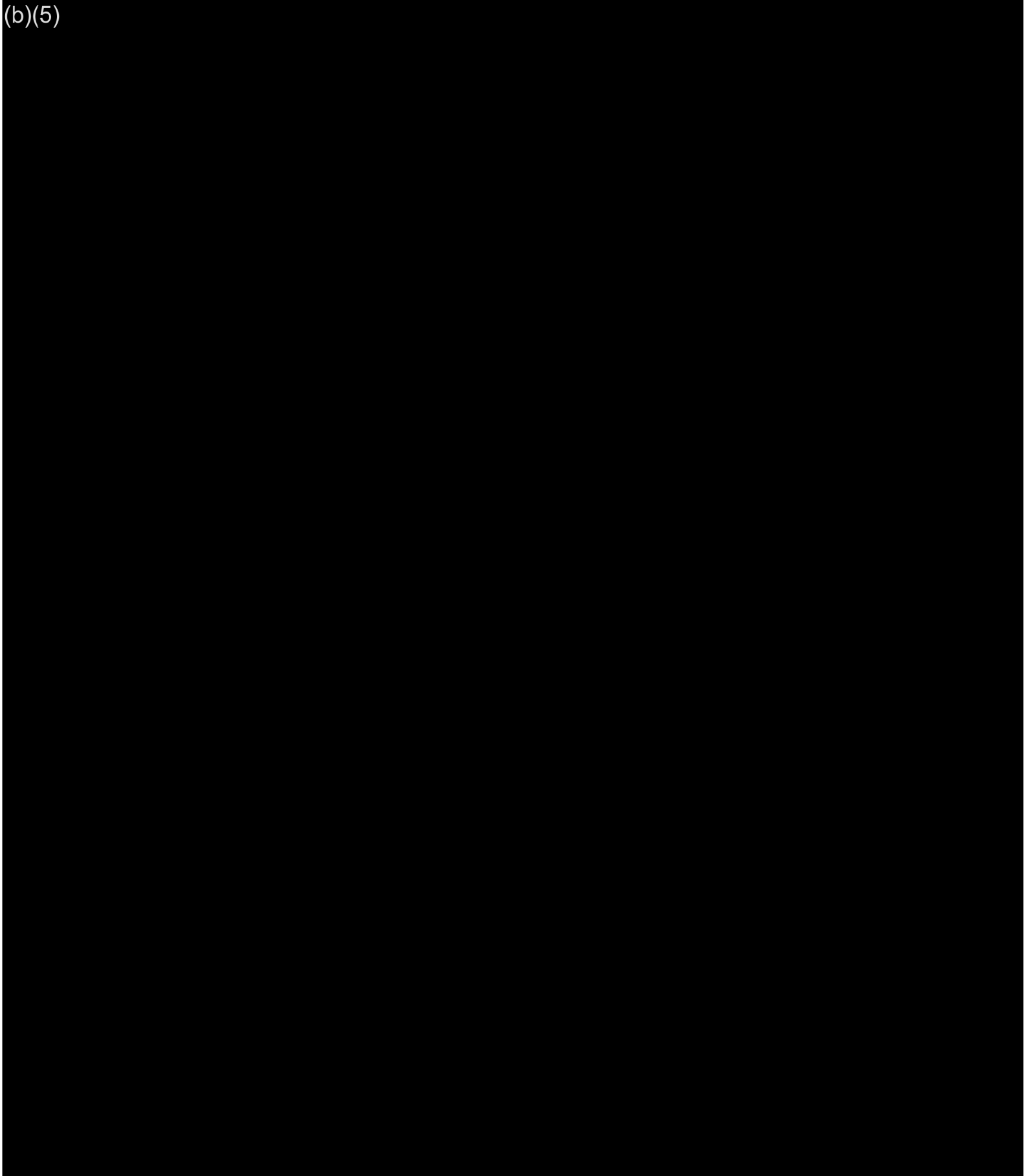
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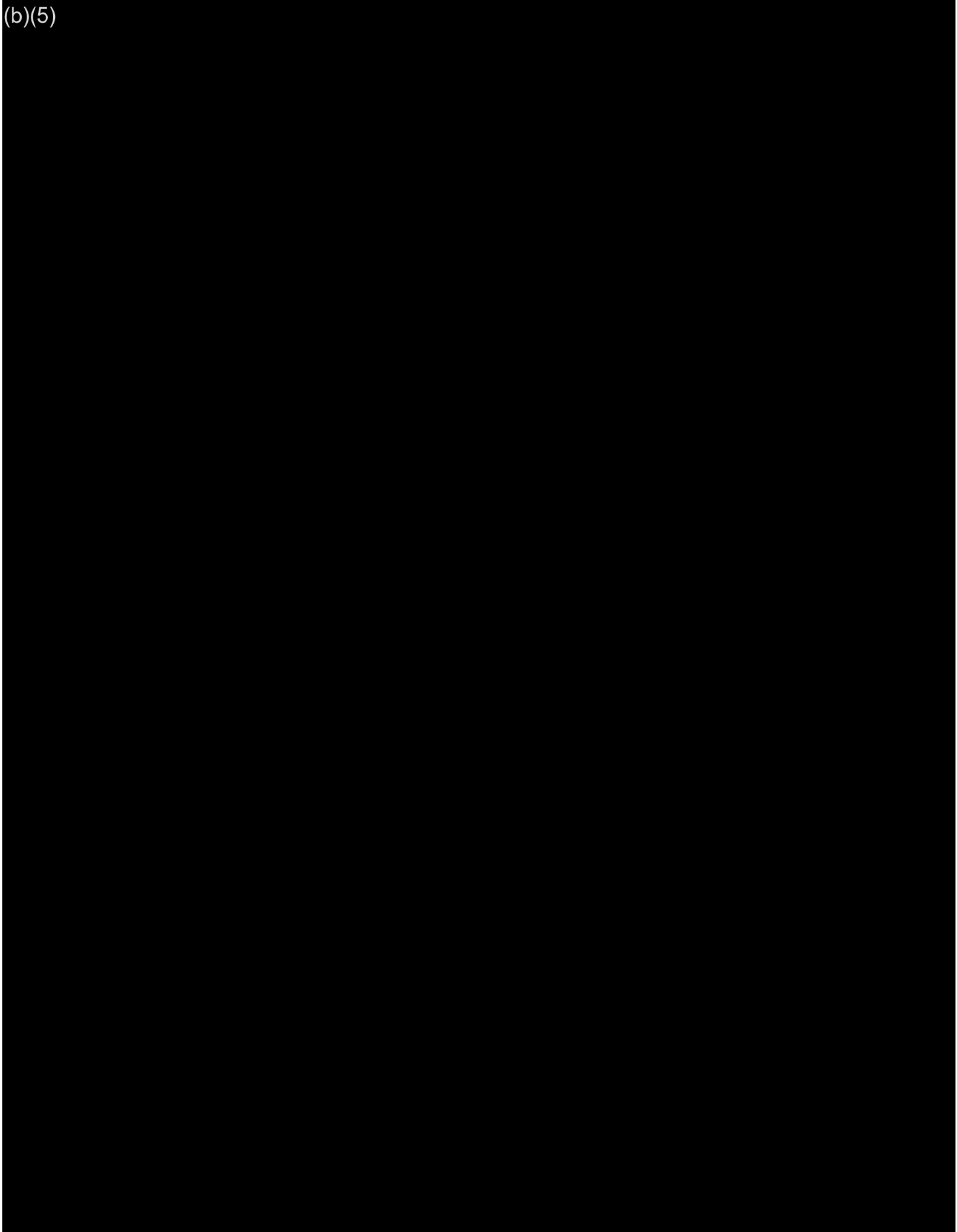
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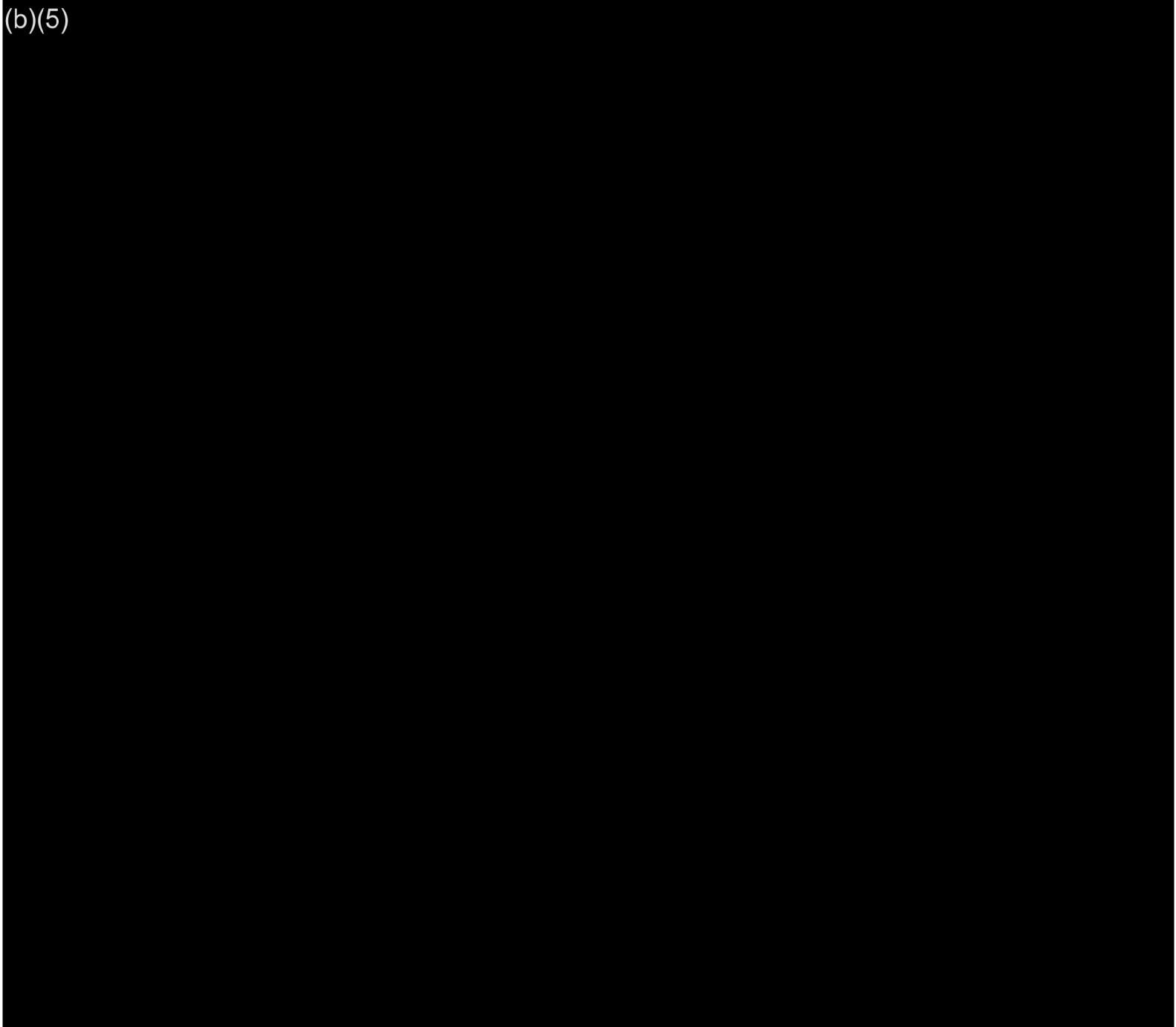
[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas

(b)(5)









From: Senters,Anne E (BPA) - LN-7

Sent: Fri Mar 15 12:29:20 2019

To: Cogswell,Peter (BPA) - DI-7

Subject: FW: [EXTERNAL] [BULK EMAIL] CBB, 03/15/2019

Importance: Normal

(b)(5)

“As a policy, we don’t fund removal,” Armentrout said. “That requires a policy change, which is not impossible. It’s not a lengthy process, but it’s not short either. It needs to go through a review process before we can fund it.”

Anne Senters

503-230-4998

**From:** Columbia Basin Bulletin [<mailto:billcrampton@bendcable.com>]

**Sent:** Friday, March 15, 2019 9:36 AM

**To:** Senters,Anne E (BPA) - LN-7

**Subject:** [EXTERNAL] [BULK EMAIL] CBB, 03/15/2019

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The Columbia Basin Bulletin:

Weekly Fish and Wildlife News

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March 15, 2019

Issue No. 901

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\* Report: Ocean Conditions Appear To Be Heading In Right Direction For Improving Salmon-Steelhead Runs

Coastal waters are cooling and attracting higher value, more fat-rich food -- a good sign for salmon, steelhead and ocean predators, such as Orcas -- after several years of unusually warm conditions (2014 – 2016), when the warm water “blob” dominated coastal conditions, according to a report released last week by NOAA Fisheries.

However, ocean conditions are still mixed.

The good news is that copepods off Newport, Ore. are mostly of cool-water, lipid rich species; krill lengths off Northern California have increased, an indicator of available forage for salmon and other species; anchovy numbers are on the rise; and several indicators of juvenile and adult salmon survival increased slightly off the Northwest Coast, especially for coho salmon, which are expected this year at average numbers after several years of low returns, according to the report.

The less than good news is there was still some evidence of unfavorable conditions during 2018: there is warmer than average subsurface water in the southern portion of the California Current; there is strong hypoxia (lack of oxygen) on the shelf in the northern areas; and pyrosomes (sea cucumbers) that moved north in high numbers during The Blob remain abundant in the northern and central waters.

Although the report forecasts low returns of chinook salmon to the Columbia River in 2019 (these are the last survivors that entered the ocean during the warm years and are now returning to the basin to spawn), there is a potential for higher returns in coming years as salmon in the ocean are now benefitting from the improved conditions.

Researchers found some of the highest numbers of juvenile coho they had ever seen off the coast, following the steep decline in marine temperatures in 2014 – 2017, leading to, perhaps, better future coho runs. Juvenile chinook salmon catches were near normal, according to the report.

The annual report given each year to the Pacific Fishery Management Council is a product of scientists from NOAA's Northwest Fisheries Science Center in Seattle and its Southwest Fisheries Science Center in La Jolla, Calif.

Climate, oceanographic and streamflow indicators were near average in 2018, "though indices suggest weakening circulation and emerging mild El Nino conditions," the report says. Ocean conditions have yet to fully return to the stable cold water pattern scientists saw prior to 2014.

“We’re coming off of some really bad conditions and returning to more normal conditions,” Dr. Toby Garfield, director of the Environmental Research Division at the Southwest Fisheries Science Center, and co-editor of the report, said on an informational conference Friday. “Although there is this potential to return to more normal conditions, we’re concerned that a change back to warmer conditions could occur sooner than would allow for species recovery.”

For this year – 2019 – the report calls for a 65 percent chance of a weak El Nino at least through spring, average coho returns and below average chinook salmon returns, and extensive hypoxia and acidified bottom waters over the shelf off Washington and Oregon.

“Is this the new normal or will we return to the conditions we saw prior to 2014?” Garfield asked about the current mixed results and uncertainty.

The report also noted an increase of 27.4 percent in West Coast fishery landings from 2016 to 2017, with revenues increasing by 12.3 percent. Most of the increase was driven by Pacific hake, Dungeness crab and market squid.

There was also a higher number and growth of sea lions along the coast and some seabirds, a result of more food along the Pacific coast.

Echoing Garfield’s comments, Chris Harvey, ecologist at the Northwest Science Center, and co-editor of the report, said “This is a time of transition in the California Current Ecosystem, and the ocean and marine life reflect that. What we don’t know yet is where the transition will take us – whether the system will stabilize, or keep

changing.”

“The annual report tracks a series of species, and climate and ocean conditions, as barometers of ocean health and productivity and also draws on economic indicators that reflect the state of West Coast communities,” NOAA Fisheries said in a blog by the agency’s Michael Milstein.

It also supports NOAA Fisheries’ shift toward ecosystem-based management, which considers interactions throughout the marine food web rather than focusing on a single species.

“Pulling all the indicators together into a picture of how the ecosystem is changing can also give us clues about what to expect going forward,” Garfield added.

The report, “California Current Integrated Ecosystem Assessment (CCIEA), California Current Ecosystem Status Report, 2019,” was delivered to the Pacific Fishery Management Council at the Council’s meeting in Vancouver, Friday, March 7, as they develop fishing seasons and limits ([https://www.pcouncil.org/wp-content/uploads/2019/02/E1a\\_IEA\\_Rpt1\\_CCIEA-Report-2019-MAR2019BB.pdf](https://www.pcouncil.org/wp-content/uploads/2019/02/E1a_IEA_Rpt1_CCIEA-Report-2019-MAR2019BB.pdf)). This is the seventh report, given annually in 2012 and 2014 – 2019.

Report editors are Garfield, Harvey, Greg Williams of PFMC and Dr. Nick Tolimieri (Northwest Science Center).

Also see:



-- CBB, July 27, 2018, "Invasion Of The Sea Pickles: Common In Warmer Waters, Now Adapting To Cooler Pacific Northwest," <http://www.cbbulletin.com/441182.aspx>

-- CBB, March 16, 2018, "Ocean Conditions Returning To Normal (Cooler), Salmon Returns Will Remain Depressed A Few Years," <http://www.cbbulletin.com/440365.aspx>

-- CBB, January 12, 2018, "Council Hears Rundown On Ocean Conditions Impact On Columbia River Salmon/Steelhead," <http://www.cbbulletin.com/440075.aspx>

--CBB, September 29, 2017, "Warmer Northwest Waters Have Fish Moving North, Spawning Earlier, Longer Off Pacific Northwest," <http://www.cbbulletin.com/439640.aspx>

--CBB, July 14, 2017, "Ocean Conditions, Sea Lions Faulted For Low Willamette Steelhead Return; Only 822 Wild Steelhead," <http://www.cbbulletin.com/439268.aspx>

--CBB, February 17, 2017, "New Research Details Forage Fish Stocks Boom-Bust Cycles For Centuries," <http://www.cbbulletin.com/438350.aspx>

--CBB, January 19, 2017, "Research: El Nino, Pacific Decadal Oscillation Correlates With Domoic Acid Shellfish Toxicity," <http://www.cbulletin.com/438200.aspx>

--CBB, October 7, 2016, "Study Connects Massive West Coast Toxic Algal Bloom In 2015 To Unusually Warm Ocean Conditions," <http://www.cbulletin.com/437700.aspx>

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\* Overall More Salmon/Steelhead Will Enter Columbia River Than Last Year, But Forecasts Mixed Among Species

NOAA Fisheries saw the lowest number of juvenile coho salmon in 21 years in offshore test nets in 2017, leading to low returns of coho to the Columbia River basin one year later in 2018 when the fish were adults.

However, in 2018 NOAA netted many more juvenile coho than in 2017 and that signals a better adult coho run in 2019, according to a briefing this week at the Northwest Power and Conservation Council in Portland.

Much of the reason is improving ocean conditions – cooler water than the ocean warmup during the 2014 – 2017 “blob” with more fat-rich food, said Brian Burke of NOAA’s Northwest Fisheries Science Center.

Burke and biologists from Washington, Oregon and Idaho briefed the Council Tuesday, March 12, on 2018 fish run results and offered forecasts for 2019.

Overall, the number of salmon and steelhead forecasted to arrive at the mouth of the Columbia River will be higher this year than in 2018, with 1.3 million chinook, coho, sockeye and steelhead expected in 2019 compared to last year's actual return of 665,000 fish, said Dan Rawding, Columbia River policy and science coordinator with the Washington Department of Fish and Wildlife. Still, that's far below the total run of salmonids of more than 3.5 million in 2014.

The upriver component of the total salmonid run is forecasted at 968,000 fish this year compared to last year's 619,400.

Leading the increase in the total number of fish is coho. Last year the forecasted run size was 286,200, but the actual run size was half that at just 147,300 fish. This year, biologists are forecasting a run size of 726,000 coho.

However, ocean conditions affect species differently, Rawding said, as the various species and runs have different timing when they both enter the ocean and when they return to the river, and each species has its own migration pattern when offshore.

As a result, predicted run sizes for the remainder of the species are simply near or below what last year's runs were, which was not a particularly good year for most Columbia River species of salmon and steelhead.

Upriver spring chinook will continue a series of years with very low returns: this year the forecast is 99,300 upriver spring chinook at the river's mouth, which is lower than last year's forecast of 166,700 fish and the actual run size of 115,000. In years before The Blob, the run size averaged about 200,000 fish, with over 300,000 in 2010 and about 140,000 in 2013.

The forecast for Upper Columbia River spring chinook, listed as endangered under the federal Endangered Species Act, is 11,200, including 2,100 wild fish. Last year's actual run was 12,844, with 1,977 wild, and the forecast last year was a bit more optimistic at 20,100, with 3,400 wild. The 2014 run was about 38,000 fish, with about 4,000 wild.

Upper Columbia summer chinook forecast is down to 35,900 fish from last year's actual return of 42,120 (the forecast in 2018 was 67,300). Upper Columbia summer chinook have been in a steady decline since 2015's run of over 120,000 fish.

According to Lance Hebdon, anadromous fishery manager at the Idaho Department of Fish and Game, of the upriver spring/summer chinook, some 6,130 natural origin spring/summer chinook will migrate into Idaho this year. That's down from last year's actual return of 6,863 (the forecast was 12,655). The 10-year average is 16,912, but the minimum abundance threshold for recovery is 31,750.

The hatchery origin spring/summer forecast, he said, is 25,701 chinook. Last year's actual run was 31,820 and the forecast was 53,218. The 10-year average is 58,393.

Fall chinook are forecasted to return this year in higher numbers than in 2018. Some 340,400 fish are expected to return to the Columbia River's mouth, with 261,100 upriver fish. The 2018 run was less at 291,100 (214,000 upriver) and the forecast was 375,700 (286,200 upriver).

Natural origin fall chinook into Idaho "really is a bright spot," Hebdon said. They are forecasted at 5,435 fish, also down from last year's actual return of 6,133 fish (forecast was 6,113), but higher than the minimum abundance threshold of 4,500. The 10-year average is 10,708.

The forecast for hatchery fall chinook into Idaho is 10,016, a little higher than last year's actual count of 9,936. The 2018 forecast was for 12,013 and the 10-year average is 28,321.

Columbia River chum, which historically did not pass Celilo Falls near The Dalles, Rawding said, will come in this year about the same as last year's actual run – 10,000 fish. That's about average for 21st century chum runs, but far below the peak run in 2016 of about 42,000 fish.

Some 42,900 Willamette River spring chinook are expected this year, according to Art Martin, Columbia River Coordination Section Manager for the Oregon Department of Fish and Wildlife. That's about half-way between last year's forecast of 55,950 fish and the actual return last year of 39,660. In 2010, about 120,000 spring chinook returned.

The upriver summer steelhead actual return at 100,483 was the lowest on record, Rawding said. The 2019 forecast is just a bit higher at 126,950. Last year's forecast was 190,350. The return in 2009 was about 600,000 fish, but the numbers have mostly declined since.

For Idaho, natural origin summer steelhead is forecasted at 17,615 fish, higher than the 2018 actual run of 10,834 fish. The forecast last year was 24,780 and the 10-year average is 29,166. However, the minimum abundance threshold at 21,767 fish is higher than the 2019 forecast. Of the total 16,950 are expected to be A-run fish and 665 B-run fish.

“The B-run (natural origin) is pretty low, but the hatchery summer steelhead performed much worse than the wild,” Hebdon said. “Last year the run was actually the worst until you go back to the 1990s.”

The 2019 run of hatchery summer steelhead is forecasted at 43,085, slightly higher than 2018 when the actual run was 38,086 fish (forecasted to be 71,300) The 10-year average is 116,426 fish. Some 38,150 will be A-run fish and 4,935 B-run.

There will be a slight uptick in wild winter steelhead, almost all which are below Bonneville Dam, Rawding said. Some 14,400 are forecasted in 2019, while last year’s forecast was 11,700 and the actual run was 11,323. The return was about 24,000 in 2016, but dropped to about 10,000 in 2017.

Columbia River sockeye are forecasted to continue the low returns experienced the last couple of years, with this year’s forecast set at 94,400 fish. Some 210,915 were forecasted last year, but just 99,000 showed up at the mouth. About 650,000 returned in 2014.

Wild Snake River sockeye, listed as endangered under the ESA, are forecasted to be a very low 43 fish. That's "because we prioritize hatchery production" as they rebuild the stock, Hebdon said. Just 36 wild fish returned last year, although the forecast was far higher at 216. The 10-year average return is 194.

The hatchery return of Snake River sockeye is also very low, he said, forecasted at 86. Last year's actual return was 240, the forecast was 162 and the 10-year average is 873.

Spring chinook anglers downstream of Bonneville Dam in 2018 kept 7,500 hatchery fish in 90,000 angler trips. 600 hatchery fish were kept from Bonneville to the Oregon/Washington border and 740 hatchery fish were kept in the Washington waters in the Snake River, according to information provided by Rawding.

Summer season: 1,000 hatchery chinook, 2,400 hatchery steelhead and 400 sockeye were kept downstream of Bonneville in 27,500 angler trips; 430 hatchery chinook and 100 sockeye were caught from Bonneville to Priest Rapids Dam; 3,000 hatchery chinook and 16,100 sockeye were kept from Priest Rapids Dam to Chief Joseph Dam.

During the fall season, Buoy 10 anglers caught 11,600 chinook and 6,800 hatchery coho in 67,300 angler trips. The catch downstream of Bonneville was 9,800 chinook, 650 hatchery coho and 1,100 hatchery steelhead in 69,600 angler trips.

Some 6,700 chinook were kept at Hanford Reach in 20,100 angler trips.

Non-tribal commercial gillnetters fishing the 2018 fall season in the mainstem river caught 8,300 fall chinook and 380 coho (spring and summer mainstem fishing was closed to them). Select Area Fisheries (SAFE) gillnetting took 8,700 chinook in the spring, 2,200 chinook in the summer and 15,000 chinook in the fall, along with 12,500 coho.

Treaty gillnetters and hook and line fishers took 10,900 spring chinook, 9,300 summer chinook, 5,400 sockeye, 1,200 summer steelhead in the spring and summer, and 5,000 summer steelhead in the fall. In fall fishing, they took 49,800 fall chinook and 3,600 coho.

Also see:

-- CBB, February 22, 2019, "Very Low Spring Chinook Forecasted Return Prompts Limits On Recreational Fishing," <http://www.cbbulletin.com/442201.aspx>

-- CBB, February 1, 2019, "For 2019 Columbia/Snake Spring Chinook, Sockeye Returns Forecasted To Be Well Below Average," <http://www.cbbulletin.com/442083.aspx>

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\* Salmon Fishing Rules Off NW Coast To Be Guided By Need To Protect Low Numbers Of Chinook



With a strong coho salmon run expected this year, but low estimates of chinook salmon, the Pacific Fishery Management Council has developed three options with quotas for fishing off the Washington coast.

The Washington Department of Fish and Wildlife has packaged the three options that include catch quotas and areas where fishing is allowed with the aim of protecting the limited number of chinook, the primary food of threatened southern resident killer whales. WDFW now wants to know what the public prefers. The agency has put the options out for public review and will host a public meeting in March.

The three options for ocean salmon fisheries were approved Tuesday, March 5, by the PFMC at its meeting in Vancouver. With input from NOAA Fisheries, Tribes, states and others, the PFMC establishes fishing seasons in ocean waters three to 200 miles off the Pacific coast.

The three alternatives are designed to protect the low numbers of chinook expected to return to the Columbia River and Washington's ocean waters this year, said Kyle Adicks, salmon fisheries policy lead for WDFW.

"With these alternatives in hand, we will work with stakeholders to develop a final fishing package for Washington's coastal and inside waters that meets our conservation objectives for wild salmon," Adicks said. "Anglers can expect improved opportunities to fish for coho salmon compared to recent years while fishing opportunities for chinook likely will be similar to last year."

Like last year, the 2019 forecast for Columbia River fall chinook is down roughly 50 percent from the 10-year

average, WDFW said. About 100,500 hatchery chinook are expected to return to the lower Columbia River. Those fish – known as "tules" – are the backbone of the recreational ocean fishery.

On the other hand, fishery managers estimate 905,800 coho will return to the Columbia River this year, up 619,600 fish from the 2018 forecast. A significant portion of the Columbia River run of coho contributes to the ocean fishery, WDFW said.

The options include the following quotas for recreational fisheries off the Washington coast:

Option 1: 32,500 chinook and 172,200 coho. Marine areas 3 (La Push) and 4 (Neah Bay) would open June 15 while marine areas 1 (Ilwaco) and 2 (Westport) would open June 22. All four areas would be open daily and La Push would have a late-season fishery under this option.

Option 2: 27,500 chinook and 159,600 coho. Marine areas 1, 3, and 4 would open daily beginning June 22 while Marine Area 2 would open daily beginning June 29. There would be no late-season fishery in Marine Area 3.

Option 3: 22,500 chinook and 94,400 coho. Marine areas 1, 3, and 4 would open daily beginning June 29 while Marine Area 2 would be open five days per week (Sunday through Thursday) beginning June 16. There would be no late-season fishery in Marine Area 3.

Fisheries may close early if quotas have been met.

Last year, the PFMC adopted recreational ocean fishing quotas of 27,500 chinook and 42,000 coho.

WDFW is working with tribal co-managers and NOAA Fisheries to take into account the dietary needs of southern resident orcas while developing salmon fishing seasons, the agency said. The declining availability of salmon and disruptions from boating traffic have been linked to a downturn in the region's orca population over the past 30 years.

"We will continue to assess the effects of fisheries on southern resident killer whales as we move towards setting our final fishing seasons in April," Adicks said.

Chinook and coho quotas approved by the PFMC will be part of a comprehensive 2019 salmon-fishing package, which includes marine and freshwater fisheries throughout Puget Sound, the Columbia River and Washington's coastal areas. State and tribal co-managers are currently developing those other fisheries.

State and tribal co-managers will complete the final 2019 salmon fisheries package in conjunction with PFMC during the PFMC's April meeting in Rohnert Park, Calif.

A public meeting is scheduled March 25 in Westport, WA. to discuss the three alternatives. The public will also soon be able to comment on the proposed salmon fisheries through WDFW's website at <https://wdfw.wa.gov/fishing/northfalcon/>

For more details about the options, visit PFMC's webpage at <https://www.pcouncil.org/blog/>

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\* Proposed Amendments To Basin Fish/Wildlife Program Stress Reintroducing Salmonids Above Blocked Areas

Providing access to areas upstream of dams in the Columbia River basin that when built blocked passage for anadromous fish is a priority in many of the amendment proposals to its basin Fish and Wildlife Program received by the Northwest Power and Conservation Council.

Not only did it receive some 13 proposals to the Program that continued to support the phased approach for reintroduction of salmonids above Grand Coulee and Chief Joseph dams, others asked for “equity” in the Council’s Program to reintroduce anadromous fish to other blocked areas in the basin.

According to a March 5 Council memorandum ([https://www.nwcouncil.org/sites/default/files/2019\\_0312\\_f1.pdf](https://www.nwcouncil.org/sites/default/files/2019_0312_f1.pdf)), four tribes and tribal groups recommended the Council provide specific language for reintroduction upstream of the Hells Canyon Complex of dams on the Snake River owned by Idaho Power.

Six commenters suggested the Program retain language for reintroduction and fish passage at U.S. Army Corps of Engineers' Willamette River projects, and the Oregon Department of Fish and Wildlife asked for more funding from the Bonneville Power Administration and Corps to be used to expand passage efforts at those dams.

Several recommended restoring and/or recognizing fish passage in other areas of the Columbia basin, such as in the Deschutes River where Portland General Electric and the Warm Springs Tribes have been reintroducing chinook and sockeye salmon and steelhead to areas upstream of their Round Butte Complex of dams.

Others suggested reintroducing anadromous fish into blocked areas of the Yakima, Grand Ronde and Umatilla river basins.

Early Fish and Wildlife Programs talked about enhancing resident fish in these blocked areas, not about reintroducing anadromous fish, according to Laura Robinson, Program Analyst and Tribal Relations Advisor with the Council's Fish and Wildlife staff. It wasn't until 2000 when the Program initially talked about reintroduction into areas blocked by dams. The 2009 Program, although staying with resident fish, did require the region to begin to investigate introduction of anadromous fish into blocked areas.

The strategy changed in the 2014 Program from resident fish (although still included in the Program) to anadromous fish as emerging priority number four, she said. "Still, the region has not made the policy call to begin reintroduction" above Coulee and Chief Joseph.

"I see this as an aspirational goal," Oregon Council member Ted Ferrioli said at the Fish and Wildlife Committee's amendment process review, Tuesday, March 12 in Portland, of reintroducing anadromous fish upstream of Coulee

and Chief Joseph dams. “We haven’t really allocated resources or considered the engineering issues, the feasibility and costs. So, we’re moving ahead on the aspirational goal, but have yet completed the hard work of determining its feasibility.”

However, that feasibility review is in process. The Spokane Tribe has completed a habitat assessment for tributaries in U.S. waters that are blocked by Grand Coulee, according to Council information. Results of the study and a final report from the Tribe are expected soon.

In addition, the Confederated Tribes of the Colville Reservation, the Upper Columbia United Tribes and the Washington Department of Fish and Wildlife are also involved in the work with the Spokane Tribe, including separate assessments and modeling to determine the viability of reintroducing anadromous fish upstream of the dams.

In addition, Robinson and others completed a review of fish passage technologies for high head dams in December 2016. See <https://www.nwcouncil.org/reports/staff-paper-review-fish-passage-technologies-high-head-dams>.

Director of the Council’s Fish and Wildlife Department, Tony Grover, said his staff has also been watching closely what’s been going on in the Willamette River where the Corps is currently exploring juvenile fish passage technologies at Detroit Dam on the North Santiam River and at Cougar Dam on the South Fork of the McKenzie River. Adult salmon have already been moved from below the dams to upstream reservoirs at several of the Corps projects, but it is still working on better juvenile passage downstream.

“There’s been a lot of understanding from those efforts, but there is still a lot left to understand,” Grover said. “In some ways, those are on-the-ground projects to test the concept” of reintroduction. A lot has to happen before the Council hits a “decision point,” he said.

“Everyone recognizes this as a complicated issue,” said Patty O’Toole, manager of Program Performance and Development of the Council’s Fish and Wildlife Department.

“Each passage project is different,” Grover said. “There are no cookie cutter approaches or costs.”

“Do we assume that all blocked areas will stay on our list?” Ferrioli asked about all the blocked area amendment recommendations received.

“Right now our program doesn’t say,” Robinson answered. “At this point there is not enough information to make that kind of decision. We need that Phase 1 report” from the Spokane Tribe. “But the tribes and their partners are really going forward on this work.”

“That’s why we’re watching the Willamette so closely,” Grover said. “In the Willamette, they’re trying to prevent extinction and that’s not the case above Joseph and Grand Coulee.”

The Willamette River has two anadromous species at risk – upper Willamette River spring chinook and upper Willamette River winter steelhead. NOAA Fisheries and the U.S. Fish and Wildlife Service completed a biological

opinion for both species in 2008 that also includes bull trout. Due to recent court action, the Corps may be required to again enter into consultation with NOAA for its Willamette projects, which could result in a new BiOp.

Grover added that the costs for reintroduction “will be not very much to incalculable.”

More specifically, some commenters recommended that more funds be directed to the upper Columbia River reintroduction processes. Two tribes recommended that 45 percent of Fish and Wildlife funding go to this area where 40 percent of the losses have occurred and where nearly 50 percent of the region’s electricity is produced. The Spokane Tribe suggested that BPA fund \$250,000 within 60 days of adopting the new amendments for the tribe’s anadromous fish program, “as well as to fund their recommended action plan within 90 days of adoption using all cost savings funds that are made available over the implementation period of the adopted amendments,” the memo says.

In the Willamette River, ODFW recommended funding by BPA and the Corps, as well as prioritizing volitional downstream passage options and a combination of structural and operational solutions to maximize safe and effective passage.

In the Snake River, some tribes recommended the Hells Canyon Complex Fish Management Program Plan as a long-term vision over the course of 20 to 30 years. The Nez Perce added lamprey to their request.

In the Deschutes River, ODFW recommended adding language in the Program that would include reintroduction upstream of the Round Butte Complex. They recommended specific emphasis on investment in flow transactions in Whychus Creek and the lower Crooked River.



Several managers recommended that the Council, BPA, and the Bureau of Reclamation support fish passage into blocked areas in the Yakima River Basin, Grand Ronde Basin in Wallowa Lake, and other areas of the Columbia basin such as the upper Snake River. OFDW also recommended that the Umatilla River Basin above McKay Creek Dam be included.

Since December 13, 2018 when the recommendation process closed, Fish and Wildlife staff have been organizing and summarizing the multiple recommendations from 51 responses. Eleven of those responses were from states or state-supported entities, 16 were from tribes or tribal entities, 4 from federal agencies, 3 from Bonneville Power Administration customers, utilities or user groups, 8 from environmental or fishing groups, 5 from program implementation entities and 4 from individuals.

The more than year-long amendment process began at the Committee's May meeting when it approved soliciting comments on the 2014 Program. At the time it set a deadline of Sept. 4, but extended the deadline to Dec. 13 after hearing from tribes, states and BPA that they needed more time to craft their messages. The recommendations were immediately posted to the Council's website, receiving comments on the proposed amendment recommendations through Feb. 8.

The process is now about half-way through, according to O'Toole at the Committee's February work session. She estimates that the Fish and Wildlife staff and Committee will release a draft Fish and Wildlife Program in mid-July, with a Final Amendment adopted in December.

The Northwest Power Act of 1980 requires the Council to periodically – at least every five years – update its basin

Fish and Wildlife Program by first soliciting from the public recommendations that would amend the Program. The Fish and Wildlife Committee is to do this before the full Council adopts its new Regional Northwest Power Plan, which it will do in 2020.

The amendment recommendations are at <https://app.nwcouncil.org/fw/program/2018amend/recs/>.

The March 12 session was the second of what could be many work sessions for the Committee focused on amending the existing 2014 Columbia Basin Fish and Wildlife Program. The next work session is in several weeks.

Also see:

-- CBB, February 22, 2019, "Council Staff Organizing, Summarizing Recommendations For Amending Basin Fish And Wildlife Program," <http://www.cbbulletin.com/442198.aspx>

-- CBB, January 18, 2019, "Not Clear What Government Shutdown Might Mean For Council's F&W Program Amendment Process Schedule." <http://www.cbbulletin.com/442030.aspx>

-- CBB, December 21, 2018, "Council Receives Proposed Amendments To Basin Fish And Wildlife Program, Comments Due Feb. 4," <http://www.cbbulletin.com/441943.aspx>

--CBB, August 24, 2018, "Columbia Basin Partnership Develops Preliminary Abundance Goals For Salmon, Steelhead," <http://www.cbbulletin.com/441382.aspx>

-- CBB, August 17, 2018, "Deadline Extended For Amendments To Columbia River Basin Fish And Wildlife Program." <http://www.cbbulletin.com/441298.aspx/>

-- CBB, July 20, 2018, "Connecting Salmon Recovery Efforts: Columbia Basin Partnership Releases Vision Statement, Goals," <http://www.cbbulletin.com/441138.aspx>

--CBB, July 20, 2018, "Connecting Salmon Recovery Efforts: Columbia Basin Partnership Releases Vision Statement, Goals," <http://www.cbbulletin.com/441138.aspx>

--CBB, January 27, 2017, "NOAA Kicks Off Columbia Basin Partnership Task Force: Can Salmon Recovery Efforts Be Integrated?" <http://www.cbbulletin.com/438254.aspx>

--CBB, May 11, 2018, "Council Releases Recommendations Letter As First Step In Amending Basin Fish And Wildlife Program," <http://www.cbbulletin.com/440702.aspx>

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\* Corps Proposal For Downstream Fish Passage At McKenzie River's Cougar Dam Out For Review: Surface Collector, Trap/Haul

A 30-day comment period began this week (March 11) on a draft environmental assessment for downstream fish passage at Cougar Dam on the south fork of Oregon's McKenzie River. The public review period will end April 10.

The draft EA assesses alternatives for meeting this purpose – including the alternatives' impacts on the physical, biological, cultural and socioeconomic environment – and presents the Corps' preferred project alternative.

The project would help the Corps meet the requirements of NOAA Fisheries' and the U.S. Fish and Wildlife Service's 2008 biological opinion which calls on the Corps to enhance downstream passage at several of their Willamette Project dams and reservoirs. Cougar Dam is one of the U.S. Army Corps of Engineers' 13 multipurpose dams and reservoirs in the Willamette River system.

The EA includes two alternatives for downstream passage. One is a no action alternative and the preferred alternative is a floating surface screen fish collector in the reservoir coupled with truck and haul transport of the juveniles downstream of the dam.

Although designed for juvenile upper Willamette River chinook salmon, listed as threatened under the federal Endangered Species Act, the facility design would also accommodate other fish species, including cutthroat trout, resident rainbow trout, and bull trout, also listed as threatened.

The “proposed action provides for a volitional swim-up facility, the ability to hold fish, and the capability for water-to-water transfer of fish from the FSS to the point of release in the river downstream of the dam,” the draft EA says (<https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll7/id/10101>). It works within the Cougar Dam authorized purposes, allows for the continued operations of the dam for temperature control, is a gravity-fed system, and meets the project objectives, the Corps said.

“Long-term effects of the project would be beneficial to fish as the action will result in improvements to the survival of fish spawned upstream of the Cougar Dam,” the draft EA says. “However, short-term negligible to moderate effects would result from construction-related activities.”

The Corps will also be holding informational public meetings to inform and listen to comments regarding the assessment. One was held yesterday, Thursday, March 14.

The next public meeting is Thursday, March 21 from 6-7 p.m. at the Springfield City Hall: 225 5th St. Springfield, OR 97477.

More information is at the Cougar Downstream Passage Project website at [www.nwp.usace.army.mil/willamette/cougar/fish-passage](http://www.nwp.usace.army.mil/willamette/cougar/fish-passage)

The Corps began its review of the downstream passage project in 2017 when it developed and assessed a range

of alternatives that would meet the requirements of the BiOp. In 2018, it completed its preferred plan, which is now out for review. Still this year, it will make available to the public its final EA and in 2020 it will complete its Finding of No Significant Impact. Construction begins in 2021.

Also in process for the Corps' Willamette Projects is providing juvenile passage at Detroit Dam on the North Santiam River. As part of its NEPA review, the Corps is considering building a \$100 to \$200 million selective water withdrawal tower in Detroit Reservoir. The tower would aid downstream juvenile passage with attractor flows in the reservoir and it would help control discharge water temperatures downstream of Detroit Dam and Big Cliff Dam, the Corps' re-regulation dam downstream, and beyond into the Santiam River system.

If it decides to move ahead with building the tower, construction wouldn't begin until 2021 and would take up to 10 months of construction, requiring an empty Detroit Reservoir to complete the construction.

The agency will review and consider public input before finalizing the environmental assessment at the end of 2019.

Also see:

-- CBB, July 20, 2018, "Corps Releases Analysis Of Public Comments For Detroit Dam Fish Passage Project Driven By BiOP," <http://www.cbbulletin.com/441145.aspx>

--CBB, February 23, 2018, "Corps Considers Mixing Tower At Detroit Dam, Would Be One Of Three In Oregon." <http://www.cbulletin.com/440264.aspx>

--CBB, December 8, 2017, "Corps Seeking Public Input On Detroit Dam Fish Passage, Temperature Control Scoping Process," <http://www.cbulletin.com/439923.aspx>

-- CBB, June 16, 2017, "Willamette BiOp For Fish: Four Subbasins Focus Of Corps' Salmon Reintroduction Programs Above Dams" <http://www.cbulletin.com/439107.aspx>

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\* Draft Report On 2018 BPA Fish/Wildlife Costs Released For Comment; Total \$480.9 Million, \$16.8 Billion Since 1981

The Bonneville Power Administration spent nearly \$260 million in direct costs for its Fish and Wildlife Program in fiscal year 2018, according to a draft report approved for public comment by the Northwest Power and Conservation Council.

Since 1981, the region has spent a total of \$16.8 billion for fish and wildlife programs, the draft report says.

The “2018 Columbia River Basin Fish and Wildlife Program Cost Report,” also known as the Governor’s report, is the 18th annual report to Northwest Governors. It will be out for public comment until April 15, according to the Council’s John Harrison, the report’s author.

In the report, the Council lists all the fish and wildlife costs associated with its and BPA’s program expenditures between Oct. 1, 2017 and Sept. 30, 2018. It is prepared solely for informational reasons, it says, and is not required by the Northwest Power Act.

Total direct expenses of the program during the fiscal year amounted to \$258.7 million. That is the amount that pays for projects such as habitat improvements, research, and some fish hatchery costs. Of that, \$5.4 million goes to capital projects, \$176 million to anadromous fish, \$55 million to resident fish, \$24 million to wildlife and \$23 million to program support.

Of the \$258.7 million, \$47 million or 18 percent goes to the Columbia Basin Fish Accords for projects that do not directly support the FCRPS biological opinion, while \$57 million (22 percent) is for Accord BiOp projects.

In addition to the direct expenses, some \$89.9 million goes to reimburse the federal Treasury for expenditures of appropriated funds by the U.S. Army Corps of Engineers, the Bureau of Reclamation and the U.S. Fish and Wildlife Service. The reimbursement is for investments in fish passage and fish production, such as the O&M expenses at federal fish hatcheries, but it also includes one-half of the Council’s \$11 million budget. The other half of the Council’s budget is assigned to BPA’s Power Business Line budget.



Debt service amounted to \$105.1 million. That includes interest, amortization, and depreciation of capital investments for hatcheries, fish passage facilities at dams and some land purchases for fish and wildlife habitat.

For BPA, spill at the dams results in lost revenue for the agency. The cost of foregone hydropower sales was \$2.9 million in FY2018.

But the agency also at times of spill or when it stores water during the winter in anticipation of increasing flows for fish later needs to supplement its power requirements with purchased power. That cost to BPA was \$24.3 million last fiscal year.

The total of these numbers -- \$480.9 million -- doesn't include borrowing from Treasury (\$83.2 million). That is repaid by BPA, so including them in the total as debt service on capital investments would double count some of the costs, according to the draft report.

The total also does not reflect a credit of \$70.1 million from the federal Treasury related to fish and wildlife costs in 2017. BPA is required to take the credit by the Northwest Power Act. Subtracting that credit reduces BPA's total fish and wildlife program cost to \$410.8 million.

The \$480.9 million total program cost comprises 19.5 percent of Bonneville's entire Power Business Line costs of \$2.450 billion. In addition, about one third of Bonneville's 2017-2019 wholesale rate of \$35.57 per megawatt hour is estimated to be associated with its fish and wildlife program.

For details of the fish and wildlife program expenses and how it impacts BPA, see [https://www.nwcouncil.org/sites/default/files/2019\\_0312\\_7report.pdf](https://www.nwcouncil.org/sites/default/files/2019_0312_7report.pdf)

Send comments on the draft “2018 Columbia River Basin Fish and Wildlife Program Cost Report” by close of business April 15 to [jharrison@nwcouncil.org](mailto:jharrison@nwcouncil.org)

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\* Registration Open For Columbia Basin Transboundary Conference In British Columbia

Online registration is open for the Columbia Basin Transboundary Conference: One River, One Future, an international conference addressing key issues related to the future of the Columbia River, its ecosystem, management, and international implications.

Co-hosted by Columbia Basin Trust and Northwest Power and Conservation Council, the conference will take place in Kimberley, B.C., from September 12 to 14, 2019. Register now at [www.transboundaryriverconference.org](http://www.transboundaryriverconference.org). The cost to attend is \$199.

“With a conference focus on collaboration, culture, and conversation, attendees will explore a wide range of contemporary topics related to the Columbia River,” said Rick Jensen, Chair, Board of Directors Columbia Basin

Trust and conference co-chair. “Our aim is for participants to have discussions and learn from one another, and advance our collective approach to being stewards of the river that binds us.”

Through break-out sessions, interactive workshops, presentations, networking events and a guided regional tour, conference participants will share perspectives and build an understanding of current issues, emerging challenges, innovations and integrated approaches with respect to the Columbia River. The conference will leverage local subject-matter experts, researchers, policy-makers and traditional knowledge keepers to deliver fresh perspectives on the Columbia River’s future. There will also be a focus on celebrating the rich and diverse arts and culture in the Columbia River Basin.

“We are excited about this conference because it will bring together not only experts in the critical issues we have identified, but also many other interested people from both sides of the border and provide all of us an opportunity to actively listen, learn, and strengthen our understanding,” said Jennifer Anders, the Council Chair and conference co-chair with Trust Chair Rick Jensen.

If you’re a scientist, policy-maker, subject-matter expert representing energy, economic, and environmental perspectives, including the perspectives of State, Provincial, Federal, U.S. Native American Tribal and Canadian First Nation governments, make plans to attend this conference and discuss:

- Renegotiation of the Columbia River Treaty;
- Reintroduction of salmon to the upper Columbia River;
- Impacts of and response to invasive species;
- Energy issues including hydropower, energy efficiency (conservation), transmission and renewable resources;

- Climate change-related impacts, and;
- International water governance issues and opportunities.

The Trust and the Council have co-hosted four previous international Transboundary Columbia River conferences, 1998 (Castlegar), 2002 (Spokane), 2006 (Castlegar) and 2014 (Spokane).

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\* B.C. Research Shows Respiratory Fitness Of Farmed West Coast Salmon Unaffected By Virus

The respiratory systems of Atlantic salmon function normally even when carrying large loads of piscine orthoreovirus (PRV), new University of British Columbia research has found.

"We didn't find significant harm to the fish's respiratory physiology despite the virus replicating to a load equal to, if not higher, than those seen naturally in wild or farmed fish" said Yangfan Zhang, a PhD student in UBC's faculty of land and food systems and lead author of the study published this week in *Frontiers in Physiology*.

PRV is present in nearly all farmed Atlantic salmon on Canada's west coast, and various strains of PRV have been detected in many salmonid species around the world. Consequently, the results are a positive step in reducing the uncertainty about the potential of infected farmed Atlantic salmon in marine pens to negatively impact migrating

wild Pacific salmon.

PRV replicates in the red blood cells that carry oxygen throughout salmon's bodies, and is sometimes associated with cardiac inflammation. If a PRV infection were to compromise salmon's respiratory fitness, fish could have trouble reaching their spawning grounds, a consequence that could be dire for a declining salmon population.

The researchers performed their 21-week experiment on groups of juvenile Atlantic salmon obtained from a commercial hatchery on Vancouver Island and recently transferred to seawater. One group was injected with a dose of PRV that was high enough to represent a worst-case infection scenario.

The scientists used respirometry--not unlike the VO<sub>2</sub> max test undertaken by elite athletes--to measure how efficiently oxygen was taken up and transported by the salmon's cardiorespiratory system. They also measured 13 other indicators, such as the fishes' ability to recover from exertion, whether they were settled or active in the testing chamber, and their ability to perform anaerobic tasks.

They found no physiological differences between the infected fish and fish from a control group, a result that highlights the distinction between a virus being prevalent and being virulent.

Prevalence refers to how widespread a virus is among a population; virulence refers to the damage it causes. While most people equate viral infection with disease, in the case of the B.C.-farmed Atlantic salmon, one did not necessarily lead to the other.

"Besides no sublethal effects of a 'full-on' PRV infection, none of our fish died and none developed severe inflammation of the heart. These data show that there is minimal risk of ensuing problems from the B.C. strain of PRV to B.C. farmed Atlantic salmon," said Tony Farrell, a professor in UBC's faculty of land and food systems and a principal investigator of the research team.

The authors have performed a similar experiment on wild sockeye salmon with similar results, which they are now compiling for publication.

The UBC researchers worked with scientists from Fisheries and Oceans Canada, which funded the study.

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\* During the 2014-16 West Coast Marine Heatwave ('Blob') Record-Breaking Number Of Species Moved Northward

During the marine heatwave of 2014-16, scientists from the University of California, Davis, noticed creatures typically seen only in places like Baja California, Mexico, showing up outside the UC Davis Bodega Marine Laboratory. These included warm-water species of jellyfish, crabs, nudibranchs, fish and even dolphins and sea turtles.

Their study, published this week in the journal *Scientific Reports*, documents an unprecedented number of southern marine species moving northward into California and as far north as Oregon. Of 67 rare, warm-water species sightings observed by the authors and citizen scientists, 37 had never been documented so far north before.

Among the 37 with new northern range limits are tropical creatures like the striated sea butterfly, which had not been found north of Baja. This is the first record of them in the state of California.

Another unexpected visitor was the pelagic red crab, normally restricted to the waters off central and southern Baja. But during 2014-16, when water temperatures were 3.5 to 7 degrees F warmer than usual, the crabs were seen as far north as Newport, Oregon.

And the molt of a spiny lobster--an important fishery species in Baja--turned up in Bodega Bay.

"Against the backdrop of climate change, we hope southern species will track northward because that's necessary for their persistence and survival," said lead author Eric Sanford, a UC Davis professor of ecology and evolution. "It's perhaps a glimpse of what Northern California's coast might look like in the future as ocean temperatures continue to warm."

"The Blob" of warm water moved from the Gulf of Alaska south along the Pacific coast, a major El Niño event worked its way from the equator north to California. Together, these events created unusually warm water conditions and one of the longest marine heatwaves on record.

Marine heatwaves temporarily open a door between lower latitudes and the northern coast. The longer that door is open, the greater the number of southern species that can step through it. The 2014-16 event was so long and warm, it allowed southern species to enter California and move northward. Current reversals, where water flowed northward from Monterey Bay, also aided the species on their journeys. This combination led to the record-breaking number of species moving northward, the study said.

Most of the visitors were ephemeral. The brightly colored nudibranchs, for instance, disappeared almost as soon as the water cooled. But some seem to have established a foothold in Northern California. These include the sunburst anemone, chocolate porcelain crab, a brittle star and some barnacle species.

Sanford said these southern species were absent or rare from Bodega Bay in the 1970s but are now fairly common in the area.

The marine ecologists and oceanographers who authored the study view such geographical shifts as an indication of how these communities may continue to respond to warming oceans, as more marine heatwaves are expected in the future.

"Before our very eyes, we're seeing the species composition shift to more warm-water southern animals in just the 14 years I have been at the Bodega Marine Laboratory," said Sanford. "That's a barometer of change for these ecosystems."



Radar data for the study were funded in part by NOAA's United States Integrated Ocean Observing System.

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\* New BPA VP Of Environment, Fish And Wildlife Addresses Council On Fish And Wildlife Issues

The Bonneville Power Administration has spent billions of dollars on Columbia River basin fish and wildlife mitigation and it continues to spend nearly \$300 million each year in direct expenses for the Columbia River Fish and Wildlife Program.

But over the last year, the agency has been forced by competitive power markets to seek cuts to its fish and wildlife budget by as much as \$30 million and to continue to manage those costs at a rate that is below inflation. In addition, BPA continues to ask tough questions surrounding one of the largest and most complex fish recovery programs in the nation.

Scott Armentrout, Vice President of Environment, Fish and Wildlife since November, spoke to Northwest Power and Conservation Council members at its meeting Wednesday, March 13 in Portland. Armentrout comes to BPA after a long stint with the U.S. Fish and Wildlife Service in Colorado. He replaces Lori Bodi, who retired last year.

According to a draft report released this week by the Council on BPA fish and wildlife costs, the agency has spent \$16.8 billion on fish and wildlife programs since 1981 and has continued to spend 19.5 percent of the Power

Business Line's costs. See <https://www.nwcouncil.org/reports/2018-columbia-river-basin-fish-and-wildlife-program-costs-report-0>.

“How do we keep doing this and still address the region’s emerging priorities?” Armentrout asked. “Is this permanent? Do we stop doing this at some point?”

He answered his own questions, saying “The fish program is never necessarily going to be complete. It will be an ongoing obligation: this is a huge commitment for BPA with few exit ramps.”

Many of the big commitments are funding hatchery operations, some of the long-term research studies and land acquisitions.

But he did add that none of this means that BPA will keep spending at the 2018 level. “We could further reduce the costs to the ratepayer,” he said. “That’s one of the challenges.”

“The greater question is how we prioritize the work and the obligation for BPA to continue to pay for it. I do look to the Council to help us with priorities, helping to tie the projects we fund to Bonneville’s obligation to pay.”

He also said that BPA is not the only organization with obligations to pay for fish recovery, pointing to the U.S. Army Corps of Engineers and the Bureau of Reclamation that operate the federal dams also having similar obligations.

“I’m encouraged by everything I hear,” said Oregon Council member Ted Ferrioli. “The issue is to connect the programs with biological effectiveness, also to tie that to the Council Amendment process. That seems to be on the same page as our staff.”

“And I expect our alignment to get better over time,” Armentrout responded, touting a newly “realigned” staff he is in bringing on that will look at “how to adapt to keep that alignment with Council staff together.”

At this point in his job, Armentrout says he is spending about one-third of his time on three things: an environmental impact statement being developed by court order that will result in a new biological opinion of the federal hydroelectric system by December 2000; the fish and wildlife program; and other issues, such as ocean conditions, increased spill, dam breaching, Columbia River Treaty, implementing the Fish Accord extension and predators in the basin.

Of the extension to the Fish Accords, he said the program has been very successful and that Eliot Mainzer, administrator of BPA, recently wrote a letter saying he’d like the Accords to extend out the full four years as initially agreed. The Accords, set for a four year term, were initially keyed to the completion of a new Columbia system BiOp, which by Presidential order will be completed one year earlier in 2020 instead of 2021. Armentrout said BPA wants the Accords to still play out over the four years as planned.

“We took on the Herculean task to change the MMPA, but we will need your help with the funding,” Jeffery Allen, Idaho Council member, said.

The MMPA is the Marine Mammal Protection Act that was changed by Congress recently to allow the lethal removal of more sea lions from the Columbia and Willamette rivers, including steller sea lions, which had previously been off limits to culling programs.

“As a policy, we don’t fund removal,” Armentrout said. “That requires a policy change, which is not impossible. It’s not a lengthy process, but it’s not short either. It needs to go through a review process before we can fund it.”

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**\* Montana Opens First Watercraft Inspection Stations To Prevent Spread Of Invasive Species**

The first watercraft inspection stations of 2019 will be opened this month in Kalispell, Ravalli and Browning. Watercraft inspection stations are Montana’s first line of defense to prevent the movement of aquatic invasive species.

The Fish, Wildlife & Parks Region 1 office in Kalispell will offer boat inspections seven days a week starting March 13. The Confederated Salish and Kootenai Tribes plan to open the Ravalli watercraft inspection station on Highway 200 on March 15. The Blackfoot Nation expects to open a station in Browning later this month.

Boat owners should ensure their watercraft and trailers are clean, drained and dry before transport and need to be

aware of Montana's inspection rules:

- All watercraft coming into Montana from out of state must be inspected prior to launching.
- All watercraft traveling west across the Continental Divide into the Columbia River Basin must be inspected prior to launching.
- All watercraft launching anywhere within the Flathead Basin that were last launched on waters outside of the Flathead Basin must be inspected.
- Anyone transporting watercraft must stop at all open watercraft inspection stations they encounter.

Snowbirds returning to Montana with a watercraft must seek out an inspection. Watercraft that have been used in mussel-infested waters in other states are of major concern. Boat owners returning to Montana must have their vessel inspected at a Montana watercraft inspection station, even if the watercraft was checked in another state.

To accommodate these rules, inspection stations are set up across Montana during the boating season. Additional inspection stations will open in April and May as the weather warms and boat traffic increases.

Watercraft can also be inspected at any Fish Wildlife & Parks area or regional office. For a full list and map along with other information, visit [cleandraindrymt.com](http://cleandraindrymt.com) or call 406-444-2440.

Also see:

-- CBB, Jan. 26, 2018, "Corps/States Effort To Prohibit Invasive Mussels Saw 49 Percent Increase In Boat Interceptions" <http://www.cbulletin.com/440139.aspx>

\*\*\*\*\*

For more information about the CBB contact:

-- Bill Crampton, Editor/Writer, [billcrampton@bendcable.com](mailto:billcrampton@bendcable.com), phone: 541-312-8860

-- Mike O'Bryant, Writer, [obryants@comcast.net](mailto:obryants@comcast.net), phone: 503-307-7487

-- Jim Mann, Writer, [jmann@cbulletin.com](mailto:jmann@cbulletin.com), phone: 406-270-5663

The stories in this e-mail newsletter are posted on the Columbia Basin Bulletin website at [www.cbulletin.com](http://www.cbulletin.com)

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Feedback comments should be sent by e-mail to the Editor at [bcrampton@cbulletin.com](mailto:bcrampton@cbulletin.com). Please put "feedback" in the subject line. We encourage comments about particular stories, complaints about inaccuracies or omissions; additional information; general views about the topic covered; or opinions that counterbalance statements

reported. The Columbia Basin Bulletin e-mail newsletter is produced by Intermountain Communications of Bend, Oregon and supported with Bonneville Power Administration fish and wildlife funds through the Northwest Power and Conservation Council's Columbia Basin Fish and Wildlife Program.

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From: Manchester, Kathleen L (CONTR) - DIT-7

Sent: Mon Nov 23 14:01:55 2020

To: Johnston, Kenneth H (BPA) - DIT-7

Subject: RE: Confederated Tribes of the Colville Reservation (CTGR) issues

Importance: Normal

Wow – this is great. I'll add this page and shoot you a copy of the materials for review.

**From:** Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Sent:** Monday, November 23, 2020 1:44 PM

**To:** Manchester, Kathleen L (CONTR) - DIT-7 <klmanchester@bpa.gov>

**Cc:** Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Subject:** Confederated Tribes of the Colville Reservation (CTGR) issues

This is my start. I am waiting to hear from Joe but it may not happen in time. Please review.

Methow Valley- Colville is made up of 14 bands (see history). The Methow band came from the Methow Valley and there are some tribal allotments there. Colville sought to purchase habitat restoration properties there a few years ago using BPA mitigation funds (a normal process). Using a land acquisition company recommended by BPA, the tribe's bid was denied by BPA for inaccuracies. Before Colville had a chance to cure the inaccuracies,

the Yakama Nation bought the properties through the Western Rivers conservancy group (also a normal process). Colville and Yakama have centuries of acrimony and this disturbed Colville deeply. Yakama claims to have rights in the Methow as well. BPA tried to broker a discussion whereby Yakama would do the restoration work and then turn the properties over to Colville. This was marginally acceptable to Colville but Yakama rejected the idea outright. And now Yakama has requested a government to government meeting with BPA to discuss the situation. Colville is very upset with BPA saying this is an affront to their sovereignty and cultural resources.

Transmission rights-of-way- BPA has been trying for a number of years to renew expired transmission rights-of-way on the Colville reservation. Discussions have been slow for many reasons but continue to occur. There are those at the tribe that see it as a bargaining chip to get more concessions from BPA. However, current leadership has not shown an interest in this line of thought.

Utility development- Colville has been evaluating the potential to start their own preference customer utility service for at least part of the reservation. Discussions lately have slowed down for many economic reasons. It is how problematic that the reservation is served by five different utilities, a mix of both private and public ownership. But this may be why the tribe has not used the expired easements as a bargaining chip yet.

Passage and reintroduction- Colville has called for this since Grand Coulee and Chief Joe were built. Recently they have become much more vocal, especially since they have been told the Council, the Columbia River Treaty, and the CRSO were not the correct forums to address the issue. They are expecting the Fish Management in Blocked Areas Forum (convened by the BOR) to provide for the information and impetus necessary to reintroduce salmon above the projects. The Upper Columbia Tribes are expressing concerns that the federal agencies are not motivated to proceed with such an outcome. (BPA is supportive of the process while trying to ensure that BOR and COE are the lead agencies for these discussions).

Chief Joe Hatchery fish- BPA mitigation funding paid for the CJ Hatchery and it is considered a huge success (Joe Peone was the manager of the Colville fish and wildlife department at the time). The Colville tribe has long sought to use the CJ brood stock for reintroduction above CJ and Grand Coulee. This request has been denied by BPA because of report language in the authorizing legislation that said no CJ fish were to be used above the CJ dam.

Cultural Resources (CR)- Colville has had long standing disagreements with the federal agencies over the definition of CR and the best way to protect them (many other tribes have similar concerns). Colville believes CR definition should include a broad interpretation based on tribal definition that would encompass many things not currently part of the definition like salmon, water, air, etc. The CRSO brought out many such disagreements between the feds and tribes and their comments have been voluminous.

TERO Employment Rights- Tribal Employment Rights Ordinance (TERO) is a national law that enables tribes the right to set up such an ordinance to provide contract labor for projects on the reservation. It does not apply to federal agencies, but it does apply to contractors of federal projects. When BPA has on-reservation projects that are contracted out, the contractors must work with the TERO office which will supply qualified labor as applicable. A prospective project on the Colville reservation for transmission access road labor to rectify damage from the summer wildfires has run into some TERO issues and may be delayed. The contractor is working through the issues and BPA is monitoring.

Fires- Summer wildfires destroyed over 100,000 acres on the reservation this year. This has been occurring yearly as the climate has gotten warmer and dryer, consuming prime wildlife and indigenous foods habitat. This has had major impacts to hunting and gathering resources, dwellings and farms, and has greatly impacted financial resources too.

**From:** Miles,Tucker (BPA) - LN-7

**Sent:** Wed Jun 30 17:20:08 2021

**To:** Senters,Anne E (BPA) - LN-7; Key,Philip S (BPA) - LN-7

**Subject:** RE: Next Steps on CJH Fish

**Importance:** Normal

I haven't gotten back to you because I've been working on some LSRCP stuff and haven't even read all of Philip's draft yet!

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>

**Sent:** Wednesday, June 30, 2021 5:13 PM

**To:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** RE: Next Steps on CJH Fish

Nobody got back to me!

FYI I shared the presentation with Marcus and he'd like a briefing. I'll set it up for the week of the 12<sup>th</sup>.

**Anne Senters** (she/her)  
Assistant General Counsel | Office of General Counsel

**Bonneville Power Administration**  
[bpa.gov](http://bpa.gov) | P 503-230-4998 | C (b)(6)

[cid:image001.jpg@01D52C3E.DF0B9390cid:image008.jpg@01D52C3E.09FCE1E0cid:image009.jpg@01D52C3E.09FCE1E0cid:image010.jpg@01D52C3E.09FCE1E0cid:image011.jpg@01D52C3E.09FCE1E0cid:image012.jpg@01D52C3E.09FCE1E0](#)

**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>  
**Sent:** Wednesday, June 30, 2021 1:57 PM  
**To:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** FW: Next Steps on CJH Fish

Anne,

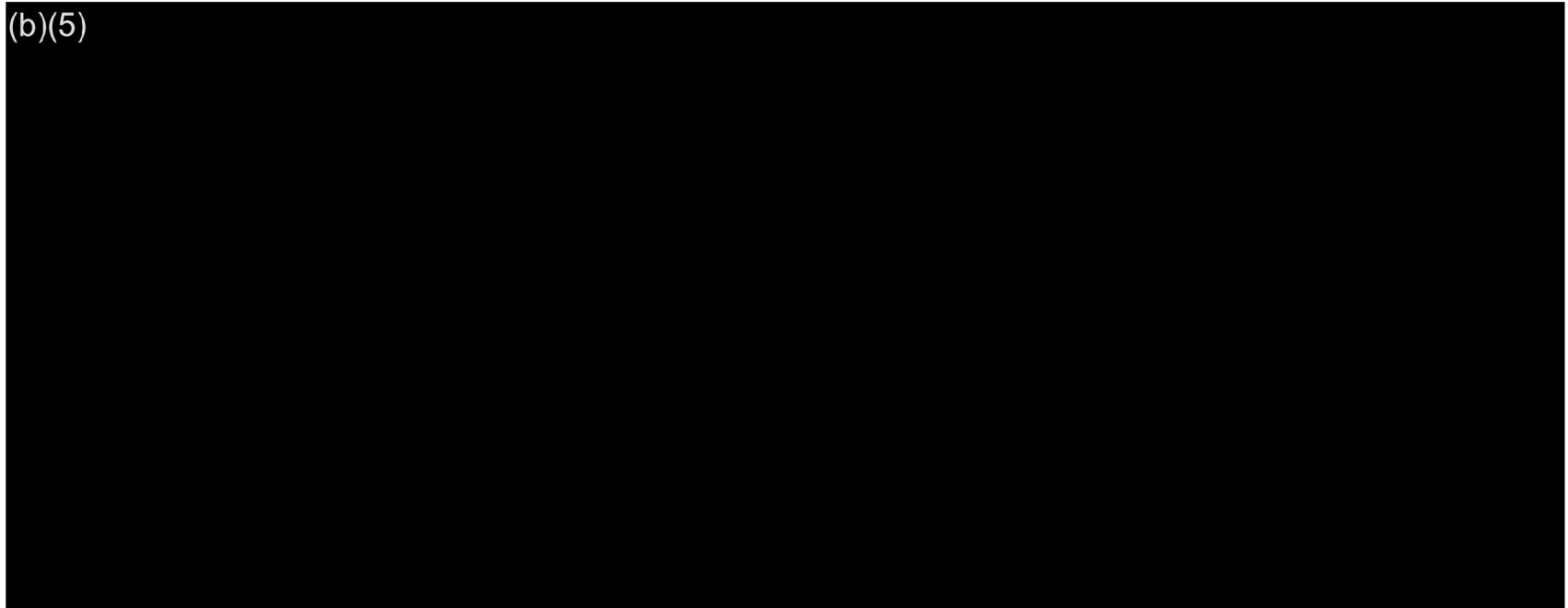
Tucker and I will discuss and then get back to you.

PK

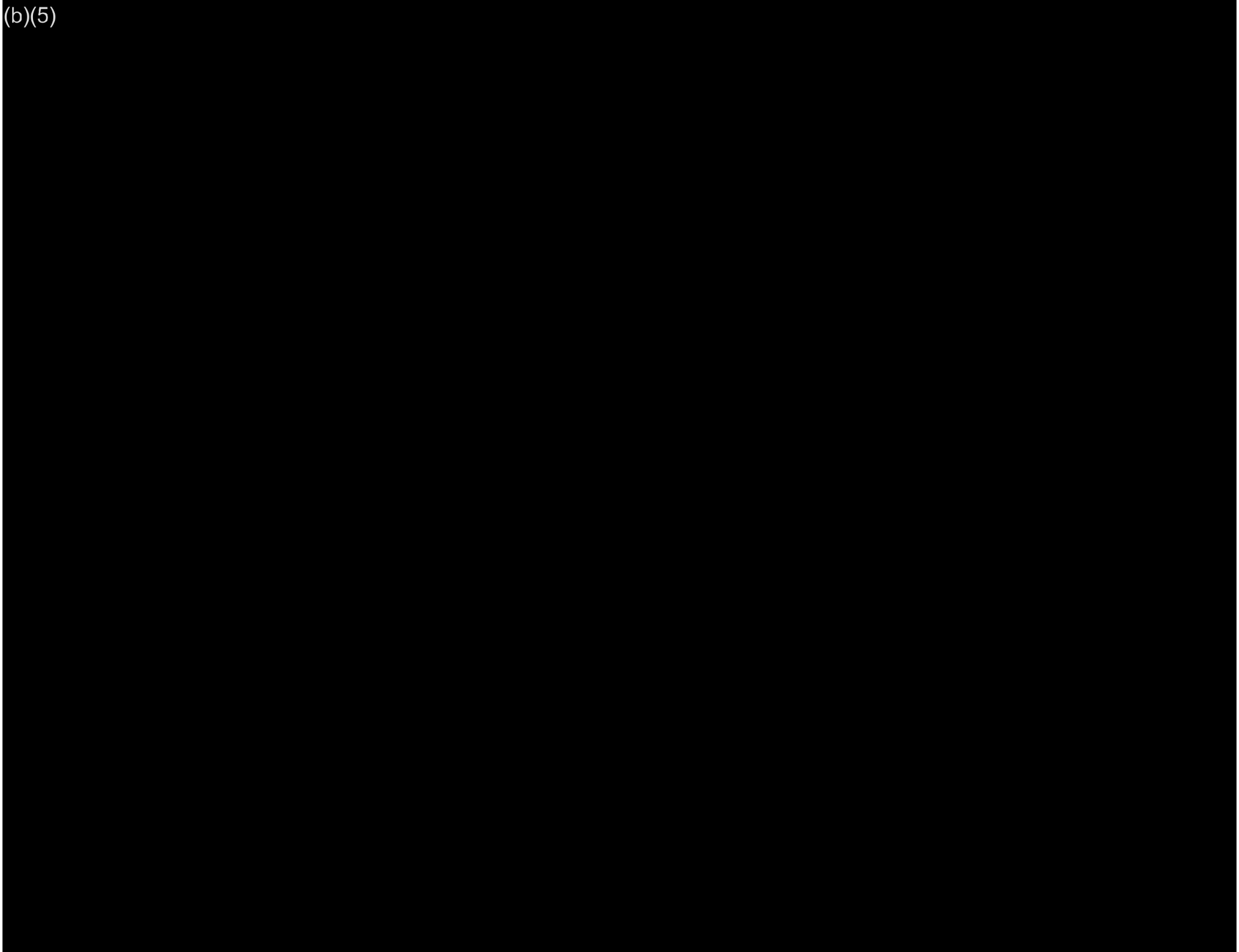
**Attorney Client/Work Product/Deliberative Process Document: Not subject to release under FOIA**

Ben,

(b)(5)



(b)(5)



(b)(5)



(b)(5)

(b)(5)

Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

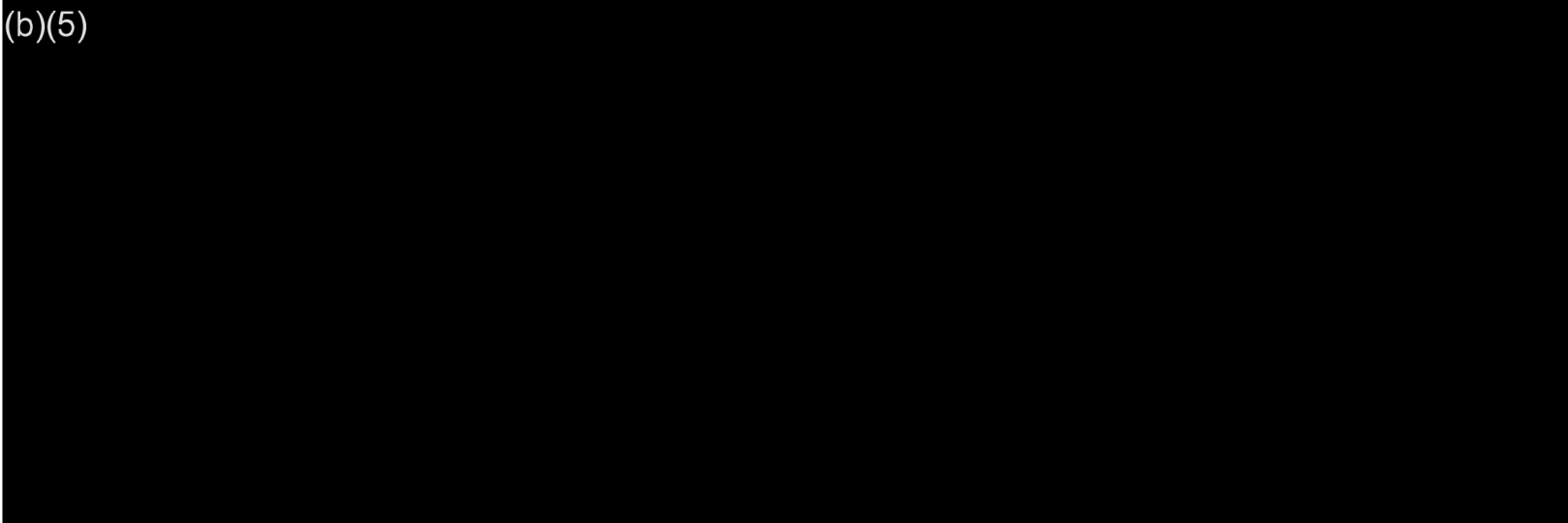
**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Welch,Dorothy W (BPA) - E-4

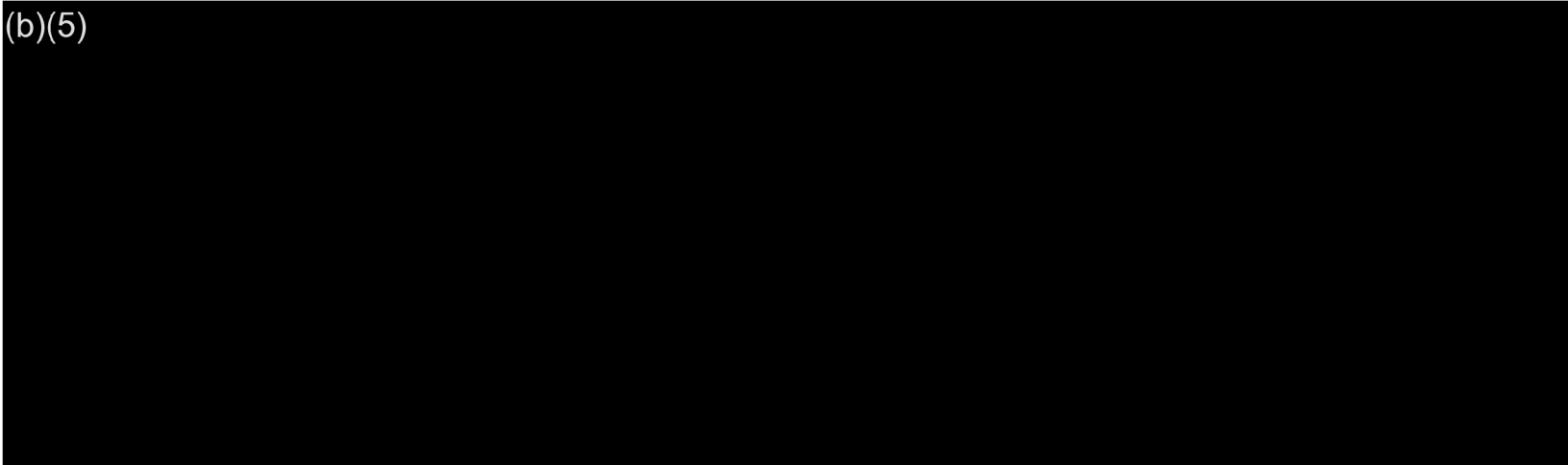
Sent: Fri Jul 10 15:24:41 2020

To: Miles,Tucker (BPA) - LN-7

Subject: FW: EJ01 Comment Needs

Importance: Normal

(b)(5)



**From:** Welch, Dorothy W (BPA) - E-4  
**Sent:** Friday, July 10, 2020 3:03 PM  
**To:** Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>  
**Subject:** FW: EJ01 Comment Needs

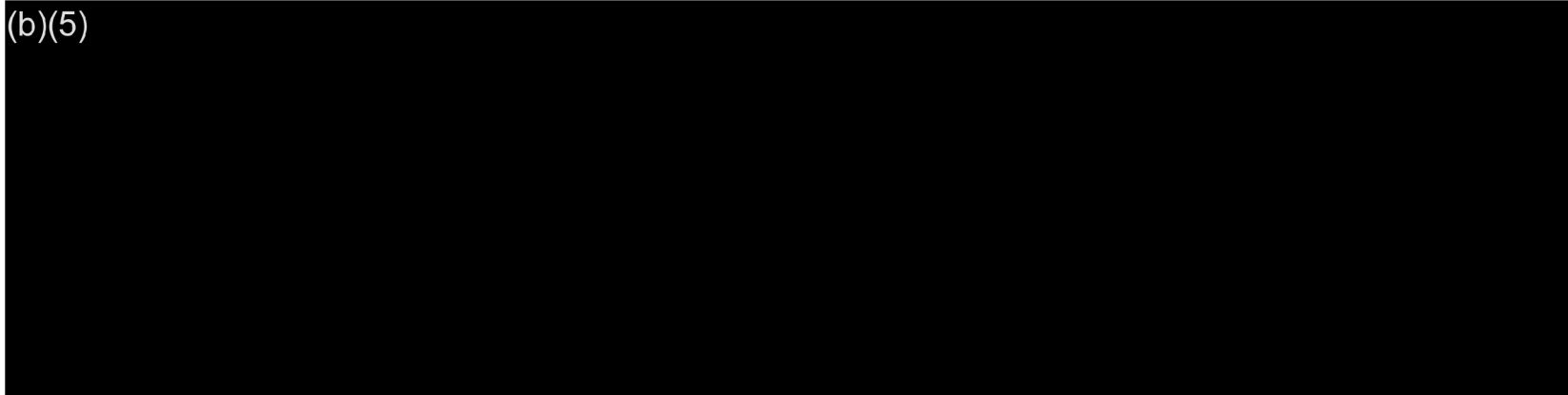
***Confidential/FOIA-exempt***

We have a new assignment. Here is the complete comment:

Section 7.7.20 Environmental Justice: The Coeur d'Alene Tribe has long endured inequitable treatment by the federal agencies mandated to protect, preserve, and enhance fish and wildlife resources and sovereign Tribal Treaty and Executive Order rights. The Upper Columbia continues to be the most impacted by the Federal Columbia River Power System and least mitigated. The continued absence of anadromous fish in the blocked area above Chief Joseph and Grand Coulee Dams will continue to have an incalculable, adverse impact on tribal populations in the area. As discussed in the Tribe's May 2019 letter on Tribal Perspectives and the information above, the loss of salmon resulting from dams has had significant cultural, economic, and human health impacts to the Tribe and its members. These impacts are disproportionately high to tribal members who have an increased reliance on salmon for subsistence and cultural uses. The agencies cannot continue to avoid the Northwest Power Act's stated purpose: to protect, mitigate, and enhance the fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries, particularly anadromous fish which are of significant importance to the social and economic well-being of the Pacific Northwest and the Nation and which are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System and other power generative facilities on the Columbia River and its tributaries. 16 U.S.C. § 839(6). Discussion in this section should be changed to reflect that.

And the draft response:

(b)(5)



**From:** Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>  
**Sent:** Friday, July 10, 2020 2:18 PM  
**To:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>  
**Subject:** RE: EJ01 Comment Needs

Responses below – let me know what you think!

**From:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>  
**Sent:** Friday, July 10, 2020 2:15 PM

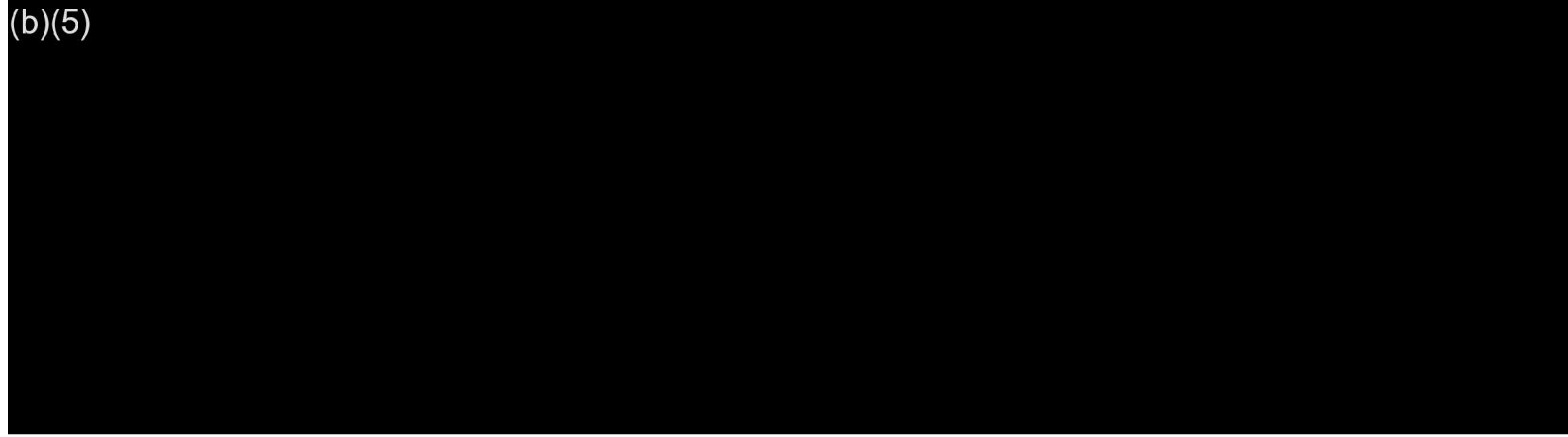
**To:** Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>  
**Subject:** EJ01 Comment Needs

***Confidential/FOIA-exempt***

Ok, these three jumped out at me during my review of EJ01. How would you like to proceed?

32262-55: CTCR comment that is very focused on passage and reintroduction: To right the imbalanced treatment of the upper Columbia to date, the co-lead agencies must commit in the Final EIS to studying the phased approach to fish passage and reintroduction outlined in the 2014 Fish and Wildlife Program as a means to mitigate the disproportionate effects of the CRS on the Colville Tribes and the other upper Columbia tribes – all constituents of an EJ protected class

(b)(5)





(b)(5)

6364-34: CDAT comment - The Upper Columbia continues to be the most impacted by the Federal Columbia River Power System and least mitigated. The agencies cannot continue to avoid the Northwest Power Act's stated purpose: to protect, mitigate, and enhance the fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries, particularly anadromous fish which are of significant importance to the social and economic well-being of the Pacific Northwest and the Nation and which are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System and other power generative facilities on the Columbia River and its tributaries. 16 U.S.C. § 839(6). Discussion in this section should be changed to reflect that.

Can you and Tucker draft something high level?

6841-21: Chapters 3 and 7 of the Draft EIS fail to analyze the effects of alternatives to regional service providers, specifically the municipal and cooperative utility providers that utilize Bonneville Power Administration's (BPA) generation and transmission. These service providers face more constraints than vertically integrated utilities and will be disproportionately affected by changes to CRSO. These effects should be robustly analyzed in the environmental justice sections of Chapter 3 and 7, as many municipal and cooperative utility providers serve low-income and minority communities identified in Appendix O.

Birgit has a response for this – would you mind asking?

From: Ball,Crystal A (BPA) - EW-4

Sent: Sun Aug 25 07:57:01 2019

To: Zelinsky,Benjamin D (BPA) - E-4; Armentrout,Scott G (BPA) - E-4; Welch,Dorothy W (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Johnston,Kenneth H (BPA) - DIT-7; Lofy,Peter T (BPA) - EWU-4

Cc: Kavanagh,Maureen A (BPA) - EWP-4; Wilson,David B (BPA) - DKP-7; Pruder Scruggs,Kathryn M (BPA) - E-4; Peone,Joe E (CONTR) - DIT-MEAD-GOB; Foster,Marchelle M (BPA) - DIT-7

Subject: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Importance: Normal

Attachments: CCT Release Salmon Upstream of Chief Joseph and Grand Coulee dams.pdf

This press release is a good overview of the Tribes' goals for cultural releases of salmon, which include:

Meet cultural and ceremonial needs of the tribes by reconnecting salmon with their historic habitat and reconnecting salmon with the people.

Contribute to knowledge about movement, survival, and behavior of fish in the streams, reservoirs and dams that will answer key uncertainties or better inform the development of experimental designs for studies in later phases of reintroduction.

Provide opportunity for salmon to spawn in the natural environment to generate offspring for downstream fisheries and future stock for additional reintroductions.

Ecosystem benefits such as reintroduction of marine derived nutrients for stream, riparian, forest and wildlife.

I assume we can share this press release with people we know who are curious about what the Tribes are doing.

Crystal Ball

Executive Manager, Fish and Wildlife Program

BONNEVILLE POWER ADMINISTRATION

caball@bpa.gov | P 503-230-3991 | C (b)(6)

-----Original Message-----

From: Cummings,Adam H (CONTR) - EW-4

Sent: Friday, August 23, 2019 10:36 AM  
To: Connor, Joseph W (BPA) - EWU-4; Lofy, Peter T (BPA) - EWU-4; Ball, Crystal A (BPA) - EW-4  
Cc: Kavanagh, Maureen A (BPA) - EWP-4  
Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Another announcement re: "cultural and educational fish release"

-----Original Message-----

From: Charles Brushwood (FNW) [<mailto:Charles.Brushwood@colvilletribes.com>]  
Sent: Thursday, August 22, 2019 2:48 PM  
To: Welch, Dorothy W (BPA) - E-4; Lesa Stark (lstark@usbr.gov); Dykstra, Timothy A CIV USARMY CENWD (US) (Timothy.A.Dykstra@usace.army.mil)  
Cc: Cummings, Adam H (CONTR) - EW-4; Kavanagh, Maureen A (BPA) - EWP-4; Randall Friedlander (FNW); Brian Gruber (bgruber@ziontzchestnut.com)  
Subject: [EXTERNAL] FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Good afternoon,

Please see the attached press release related to CTCR's cultural releases of salmon into the blocked area of the Columbia River upstream of Chief Joseph and Grand Coulee Dams.

As always, please let us know if you have any questions or if this is something you'd like to discuss. Thank you,

Charles (Chuck) Brushwood  
Fish & Wildlife Policy Analyst  
Colville Confederated Tribes  
Office: (509) 422-7749  
Cell: (b)(6)  
Fax: (509) 422-7443

-----Original Message-----

From: Michelle Campobasso (FNW)  
Sent: Thursday, August 22, 2019 8:04 AM  
To: Shelly Davis (FNW)  
Cc: Billy Gunn (FNW); Casey Baldwin (FNW); Cindy McCartney (FNW); Fauna Ferguson (FNW); Jennifer Mercado (FNW); Kary Nichols (FNW); LJ Stensgar (FNW); Marcella Pierre (FNW); Michelle Campobasso (FNW); Michelle Smith (FNW); Randall Friedlander (FNW); Roma Tynan (FNW); Therilyn Williams (FNW); Tony Williams (FNW); Vanessa Sanchez (FNW); Amanda Gendron (FNW); Andrew Child (FNW); Branditt West (FNW); Bret Nine (FNW); Bryan Jones (FNW); Charlee Capaul (FNW); Charles Joseph (FNW); Daniel Monaghan (FNW); David Beardslee (FNW); David Marchand (FNW); Dennis Moore (FNW); Erica Moses (FNW); Hank Etue (FNW); Holly McLellan

(FNW); Jason McLellan (FNW); Jeannette Finley (FNW); Jeffrey Joseph (FNW); Jeffrey Palmer (FNW); Jill Phillips (FNW); Leslie Plum (FNW); Matt Howell (FNW); Mindy Goodwin (FNW); Robert Thomas (FNW); Shay Wolverter (FNW); William Dick (FNW); William Laramie (FNW); Abraham Best (FNW); Andrea Pearl (FNW); Anthony Cleveland (FNW); Arnold Abrahamson (FNW); Brian Dietz (FNW); Brian Miller (FNW); Brooklyn Hudson (FNW); Byron Sam (FNW); Cameron Eddy (FNW); Chris Fisher (FNW); Danny Tompkins (FNW); Dennis Papa (FNW); Edward Berrigan (FNW); Jackie Roy (FNW); James Andrews (FNW); James Gottfriedson (FNW); John Arterburn (FNW); John Pakootas Jr (FNW); John Rohrback (FNW); Jordan Pakootas (FNW); Joseph Condon Sr (FNW); Joseph Frank (FNW); Justin Wilson (FNW); Keith Kistler (FNW); Kirk Truscott (FNW); Kirsten Brudevold (FNW); Mary Davisson (FNW); Matt Young (FNW); Matthew McDaniel (FNW); Michael Miller (FNW); Oliver Pakootas (FNW); Oly Zacherle (FNW); Paul Wagner (FNW); Rhonda Dasher (FNW); Ryan Klett (FNW); Sonya Schaller (FNW); Tatum Gunn (FNW); Tyler Marcellay (FNW); Vertis Campbell (FNW); Wesley Tibbits (FNW); Zachery Wilson-Arthur (FNW); Charles Brushwood (FNW); Nikki Dick (FNW); Sheri Sears (FNW); Corey Peone (FNW); Donovan Antoine (FNW); Eric Krausz (FNW); Jarred Erickson (FNW); Kelly Singer (FNW); Kristen Coles (FNW); Martin Blevins (FNW); Ossian Laspa (FNW); Richard Whitney (FNW); Sam Rushing (FNW); Winfred Pakootas (FNW); Cody Desautel (L&P ADM); Alice Koskela (ORA); Johannah Mason (FNW); Bryson Miller (FNW)  
Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Here's our story that went out to the press yesterday!

Colville Tribes Fish & Wildlife  
Michelle Campobasso  
Public Relations  
PO Box 150  
Nespelem, WA 99155  
Office: 509.634.2106  
Fax: 509.634.2126  
[michelle.campobasso@colvilletribes.com](mailto:michelle.campobasso@colvilletribes.com)

From: O'Donnchadha, Brian M (BPA) - DIT-7

Sent: Mon Aug 26 10:16:02 2019

To: Manchester, Kathleen L (CONTR) - DIT-7; Peone, Joe E (CONTR) - DIT-MEAD-GOB; Ikakoula, Corrina A (BPA) - DIT-7; Lynam, Kurt O (BPA) - DIT-7

Subject: FW: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Importance: Normal

Great stuff Joe! Were you there when the fish were released?

Sent from Workspace ONE Boxer

On Aug 26, 2019 10:24, "Peone, Joe E (CONTR) - DIT-MEAD-GOB" <jepeone@bpa.gov> wrote:

FYI

-----Original Message-----

From: Ball, Crystal A (BPA) - EW-4

Sent: Sunday, August 25, 2019 7:57 AM

To: Zelinsky, Benjamin D (BPA) - E-4; Armentrout, Scott G (BPA) - E-4; Welch, Dorothy W (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Johnston, Kenneth H (BPA) - DIT-7; Lofy, Peter T (BPA) - EWU-4

Cc: Kavanagh, Maureen A (BPA) - EWP-4; Wilson, David B (BPA) - DKP-7; Pruder Scruggs, Kathryn M (BPA) - E-4; Peone, Joe E (CONTR) - DIT-MEAD-GOB; Foster, Marchelle M (BPA) - DIT-7

Subject: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

This press release is a good overview of the Tribes' goals for cultural releases of salmon, which include:  
Meet cultural and ceremonial needs of the tribes by reconnecting salmon with their historic habitat and reconnecting salmon with the

people.

Contribute to knowledge about movement, survival, and behavior of fish in the streams, reservoirs and dams that will answer key uncertainties or better inform the development of experimental designs for studies in later phases of reintroduction.

Provide opportunity for salmon to spawn in the natural environment to generate offspring for downstream fisheries and future stock for additional reintroductions.

Ecosystem benefits such as reintroduction of marine derived nutrients for stream, riparian, forest and wildlife.

I assume we can share this press release with people we know who are curious about what the Tribes are doing.

Crystal Ball

Executive Manager, Fish and Wildlife Program BONNEVILLE POWER ADMINISTRATION caball@bpa.gov | P 503-230-3991 | C

(b)(6)

-----Original Message-----

From: Cummings,Adam H (CONTR) - EW-4

Sent: Friday, August 23, 2019 10:36 AM

To: Connor,Joseph W (BPA) - EWU-4; Lofy,Peter T (BPA) - EWU-4; Ball,Crystal A (BPA) - EW-4

Cc: Kavanagh,Maureen A (BPA) - EWP-4

Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Another announcement re: "cultural and educational fish release"

-----Original Message-----

From: Charles Brushwood (FNW) [mailto:[Charles.Brushwood@colvilletribes.com](mailto:Charles.Brushwood@colvilletribes.com)]

Sent: Thursday, August 22, 2019 2:48 PM

To: Welch,Dorothy W (BPA) - E-4; Lesa Stark (lstark@usbr.gov); Dykstra, Timothy A CIV USARMY CENWD (US) (Timothy.A.Dykstra@usace.army.mil)

Cc: Cummings,Adam H (CONTR) - EW-4; Kavanagh,Maureen A (BPA) - EWP-4; Randall Friedlander (FNW); Brian Gruber (bgruber@ziontzchestnut.com)

Subject: [EXTERNAL] FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Good afternoon,

Please see the attached press release related to CTCR's cultural releases of salmon into the blocked area of the Columbia River upstream of Chief Joseph and Grand Coulee Dams.

As always, please let us know if you have any questions or if this is something you'd like to discuss. Thank you,

Charles (Chuck) Brushwood  
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Sent: Thursday, August 22, 2019 8:04 AM

To: Shelly Davis (FNW)

Cc: Billy Gunn (FNW); Casey Baldwin (FNW); Cindy McCartney (FNW); Fauna Ferguson (FNW); Jennifer Mercado (FNW); Kary Nichols (FNW); LJ Stensgar (FNW); Marcella Pierre (FNW); Michelle Campobasso (FNW); Michelle Smith (FNW); Randall Friedlander (FNW); Roma Tynan (FNW); Therilyn Williams (FNW); Tony Williams (FNW); Vanessa Sanchez (FNW); Amanda Gendron (FNW); Andrew Child (FNW); Branditt West (FNW); Bret Nine (FNW); Bryan Jones (FNW); Charlee Capaul (FNW); Charles Joseph (FNW); Daniel Monaghan (FNW); David Beardslee (FNW); David Marchand (FNW); Dennis Moore (FNW); Erica Moses (FNW); Hank Etue (FNW); Holly McLellan (FNW); Jason McLellan (FNW); Jeannette Finley (FNW); Jeffrey Joseph (FNW); Jeffrey Palmer (FNW); Jill Phillips (FNW); Leslie Plum (FNW); Matt Howell (FNW); Mindy Goodwin (FNW); Robert Thomas (FNW); Shay Wolvert (FNW); William Dick (FNW); William Laramie (FNW); Abraham Best (FNW); Andrea Pearl (FNW); Anthony Cleveland (FNW); Arnold Abrahamson (FNW); Brian Dietz (FNW); Brian Miller (FNW); Brooklyn Hudson (FNW); Byron Sam (FNW); Cameron Eddy (FNW); Chris Fisher (FNW); Danny Tompkins (FNW); Dennis Papa (FNW); Edward Berrigan (FNW); Jackie Roy (FNW); James Andrews (FNW); James Gottfriedson (FNW); John Arterburn (FNW); John Pakootas Jr (FNW); John Rohrback (FNW); Jordan Pakootas (FNW); Joseph Condon Sr (FNW); Joseph Frank (FNW); Justin Wilson (FNW); Keith Kistler (FNW); Kirk Truscott (FNW); Kirsten Brudevold (FNW); Mary Davisson (FNW); Matt Young (FNW); Matthew McDaniel (FNW); Michael Miller (FNW); Oliver Pakootas (FNW); Oly Zacherle (FNW); Paul Wagner (FNW); Rhonda Dasher (FNW); Ryan Klett (FNW); Sonya Schaller (FNW); Tatum Gunn (FNW); Tyler Marcellay (FNW); Vertis Campbell (FNW); Wesley Tibbits (FNW); Zachery Wilson-Arthur (FNW); Charles Brushwood (FNW); Nikki Dick (FNW); Sheri Sears (FNW); Corey Peone (FNW); Donovan Antoine (FNW); Eric Krausz (FNW); Jarred Erickson (FNW); Kelly Singer (FNW); Kristen Coles (FNW); Martin Blevins (FNW); Ossian Laspa (FNW); Richard Whitney (FNW); Sam Rushing (FNW); Winfred Pakootas (FNW); Cody Desautel (L&P ADM); Alice Koskela (ORA); Johannah Mason (FNW); Bryson Miller (FNW)

Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Here's our story that went out to the press yesterday!

Colville Tribes Fish & Wildlife  
Michelle Campobasso

Public Relations  
PO Box 150  
Nespelem, WA 99155  
Office: 509.634.2106  
Fax: 509.634.2126  
[michelle.campobasso@colvilletribes.com](mailto:michelle.campobasso@colvilletribes.com)



**From:** Leary,Jill C (BPA) - LN-7  
**Sent:** Fri Jul 10 16:23:31 2020  
**To:** Welch,Dorothy W (BPA) - E-4  
**Cc:** Miles,Tucker (BPA) - LN-7  
**Subject:** RE: EJ01 Comment Needs  
**Importance:** Normal

Perfect!

I only have 26 comments left in NEPA06...hoping for no NWPA comments....

**From:** Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>  
**Sent:** Friday, July 10, 2020 4:15 PM  
**To:** Leary,Jill C (BPA) - LN-7 <jcleary@bpa.gov>  
**Cc:** Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>  
**Subject:** FW: EJ01 Comment Needs

***Confidential/FOIA-exempt***

Jill, how do the highlighted paragraphs look?

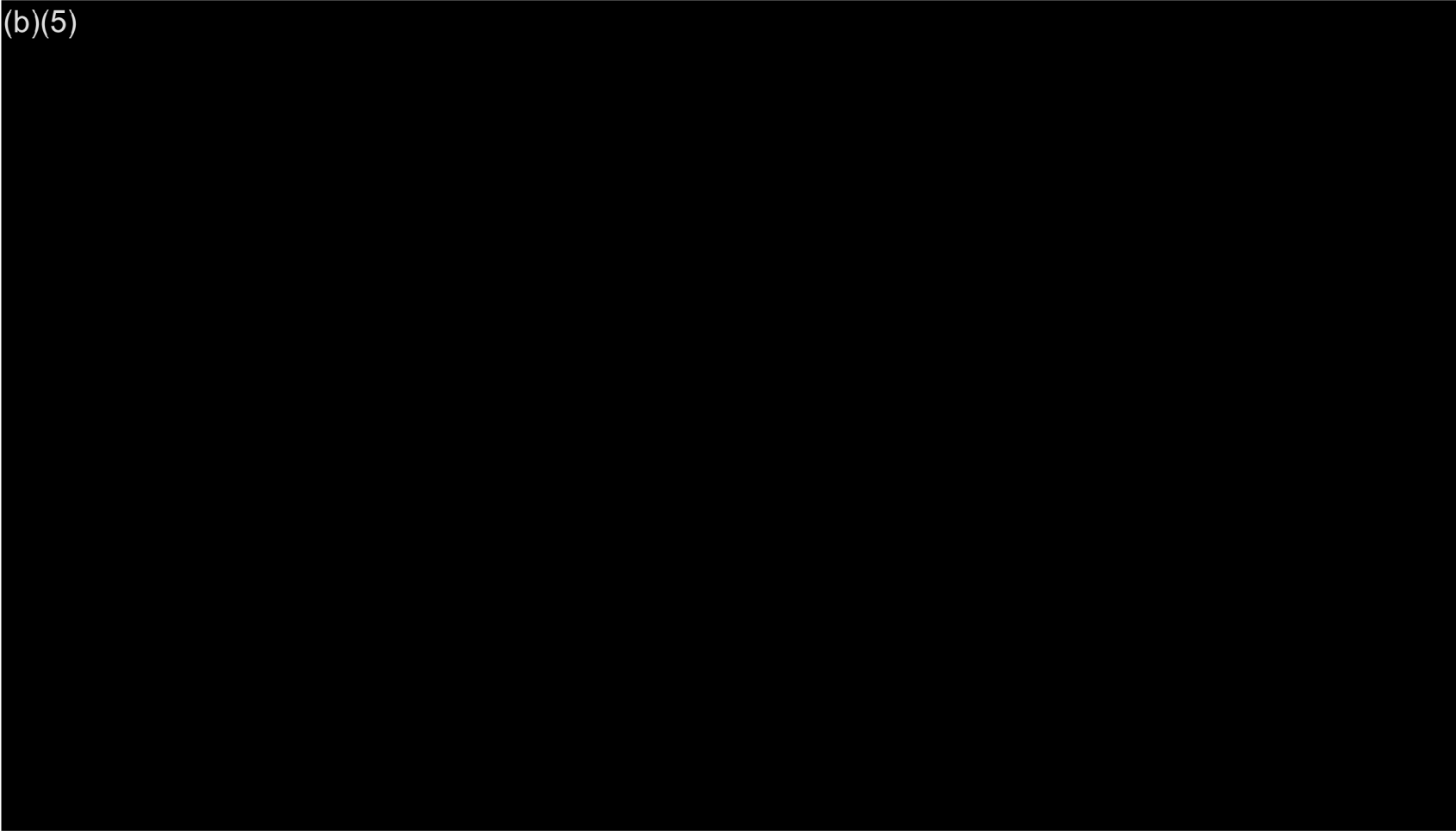
Comment:

Section 7.7.20 Environmental Justice: The Coeur d'Alene Tribe has long endured inequitable treatment by the federal agencies mandated to protect, preserve, and enhance fish and wildlife resources and sovereign Tribal Treaty and Executive Order rights. The Upper Columbia continues to be the most impacted by the Federal Columbia River Power System and least mitigated. The continued absence of anadromous fish in the blocked area above Chief Joseph and Grand Coulee Dams will continue to have an incalculable, adverse impact on tribal populations in the area. As discussed in the Tribe's May 2019 letter on Tribal Perspectives and the information above, the loss of salmon resulting from dams has had significant cultural, economic, and human health impacts to the Tribe and its members. These impacts are disproportionately high to tribal members who have an increased reliance on salmon for subsistence and cultural uses. The agencies cannot continue to avoid the Northwest Power Act's stated purpose: to protect, mitigate, and enhance the fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries, particularly anadromous fish which are of significant importance to the social and economic well-being of the Pacific Northwest and the Nation and which are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System and other power generative facilities on the Columbia River and its tributaries. 16 U.S.C. § 839(6). Discussion in this section should be changed to reflect that.

And the draft response:

(b)(5)

(b)(5)



**From:** Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>  
**Sent:** Friday, July 10, 2020 2:18 PM

**To:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>  
**Subject:** RE: EJ01 Comment Needs

Responses below – let me know what you think!

**From:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>  
**Sent:** Friday, July 10, 2020 2:15 PM  
**To:** Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>  
**Subject:** EJ01 Comment Needs

***Confidential/FOIA-exempt***

Ok, these three jumped out at me during my review of EJ01. How would you like to proceed?

32262-55: CTCR comment that is very focused on passage and reintroduction: To right the imbalanced treatment of the upper Columbia to date, the co-lead agencies must commit in the Final EIS to studying the phased approach to fish passage and reintroduction outlined in the 2014 Fish and Wildlife Program as a means to mitigate the disproportionate effects of the CRS on the Colville Tribes and the other upper Columbia tribes – all constituents of an EJ protected class

(b)(5)

(b)(5)

6364-34: CDAT comment - The Upper Columbia continues to be the most impacted by the Federal Columbia River Power System and least mitigated. The agencies cannot continue to avoid the Northwest Power Act's stated purpose: to protect, mitigate, and enhance the fish and wildlife, including related spawning grounds and habitat, of the Columbia River and its tributaries, particularly anadromous fish which are of significant importance to the social and economic well-being of the Pacific Northwest and the Nation and which are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System and other power generative facilities on the Columbia River and its tributaries. 16 U.S.C. § 839(6). Discussion in this section should be changed to reflect that.

Can you and Tucker draft something high level?

6841-21: Chapters 3 and 7 of the Draft EIS fail to analyze the effects of alternatives to regional service providers, specifically the municipal and cooperative utility providers that utilize Bonneville Power Administration's (BPA) generation and transmission. These service providers face more constraints than vertically integrated utilities and

will be disproportionately affected by changes to CRSO. These effects should be robustly analyzed in the environmental justice sections of Chapter 3 and 7, as many municipal and cooperative utility providers serve low-income and minority communities identified in Appendix O.

Birgit has a response for this – would you mind asking?

From: Miles,Tucker (BPA) - LN-7

Sent: Fri Jul 02 13:49:27 2021

To: Key,Philip S (BPA) - LN-7

Subject: RE: Next Steps on CJH Fish

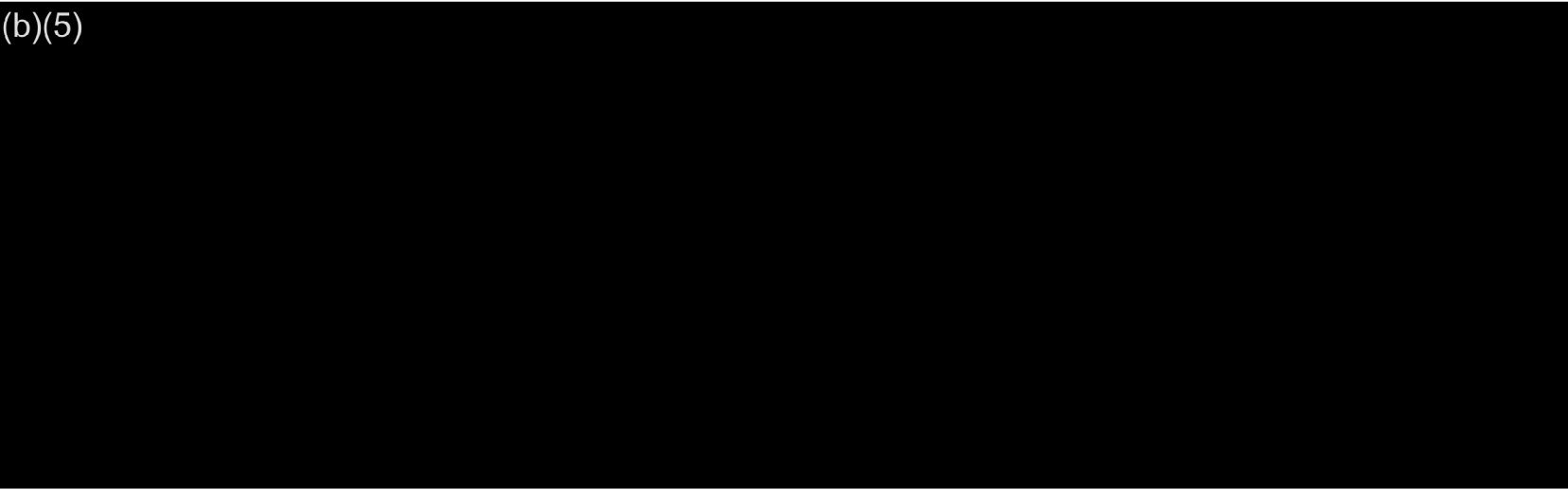
Importance: Normal

Attachments: RE: some early thoughts on external BA talking points ; Draft CJH fish message\_TM.docx

***Confidential; FOIA-exempt***

Yikes, this is a tough one. I copied your draft into a Word doc and have set up some time to talk because by-and-large I've raised more issues than I've resolved here.

(b)(5)



(b)(5)

Okay, this is getting kind of ramble-y, so let's talk next week. I also attached some of our collective thoughts from a few weeks ago about a strategy for getting some substantive concerns and positions staked out; they might be useful here.

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968 | C (b)(6)

**From:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Wednesday, June 30, 2021 1:57 PM

**To:** Senters, Anne E (BPA) - LN-7 <aesenters@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** FW: Next Steps on CJH Fish

Anne,



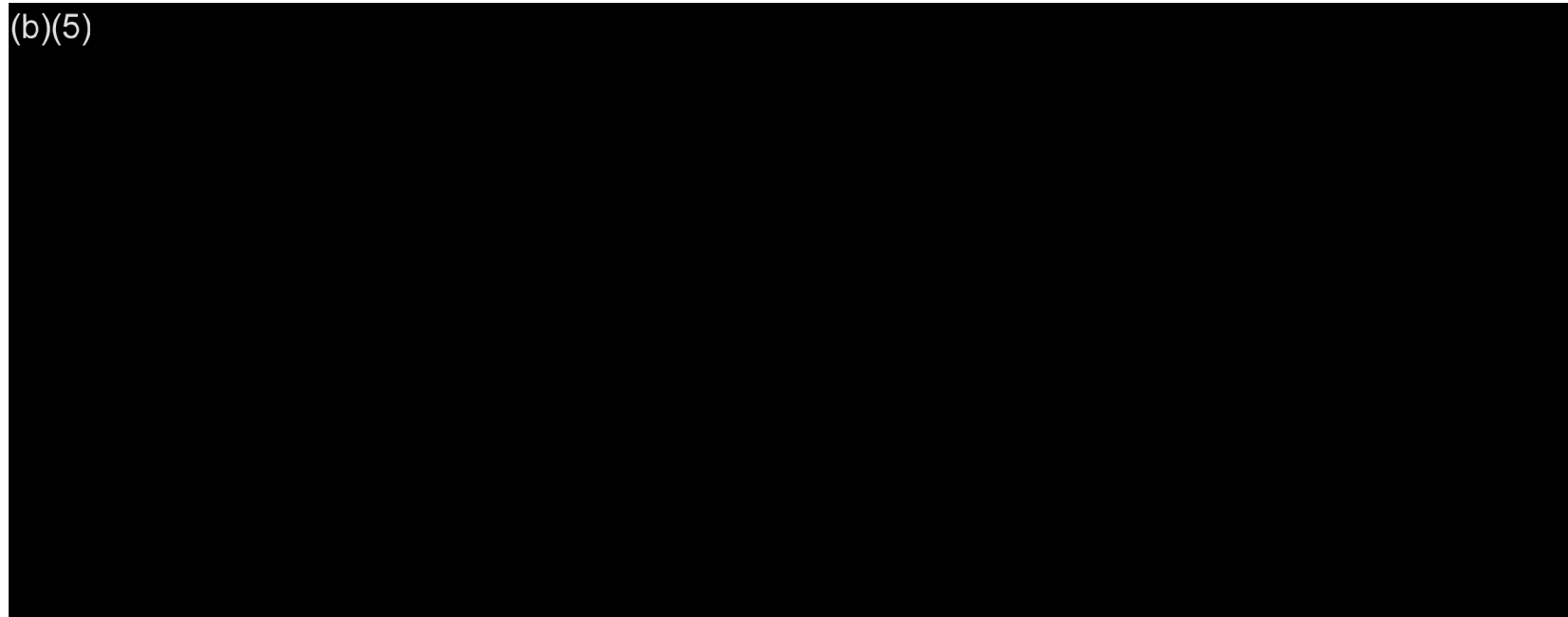
Tucker and I will discuss and then get back to you.

PK

**Attorney Client/Work Product/Deliberative Process Document: Not subject to release under FOIA**

Ben,

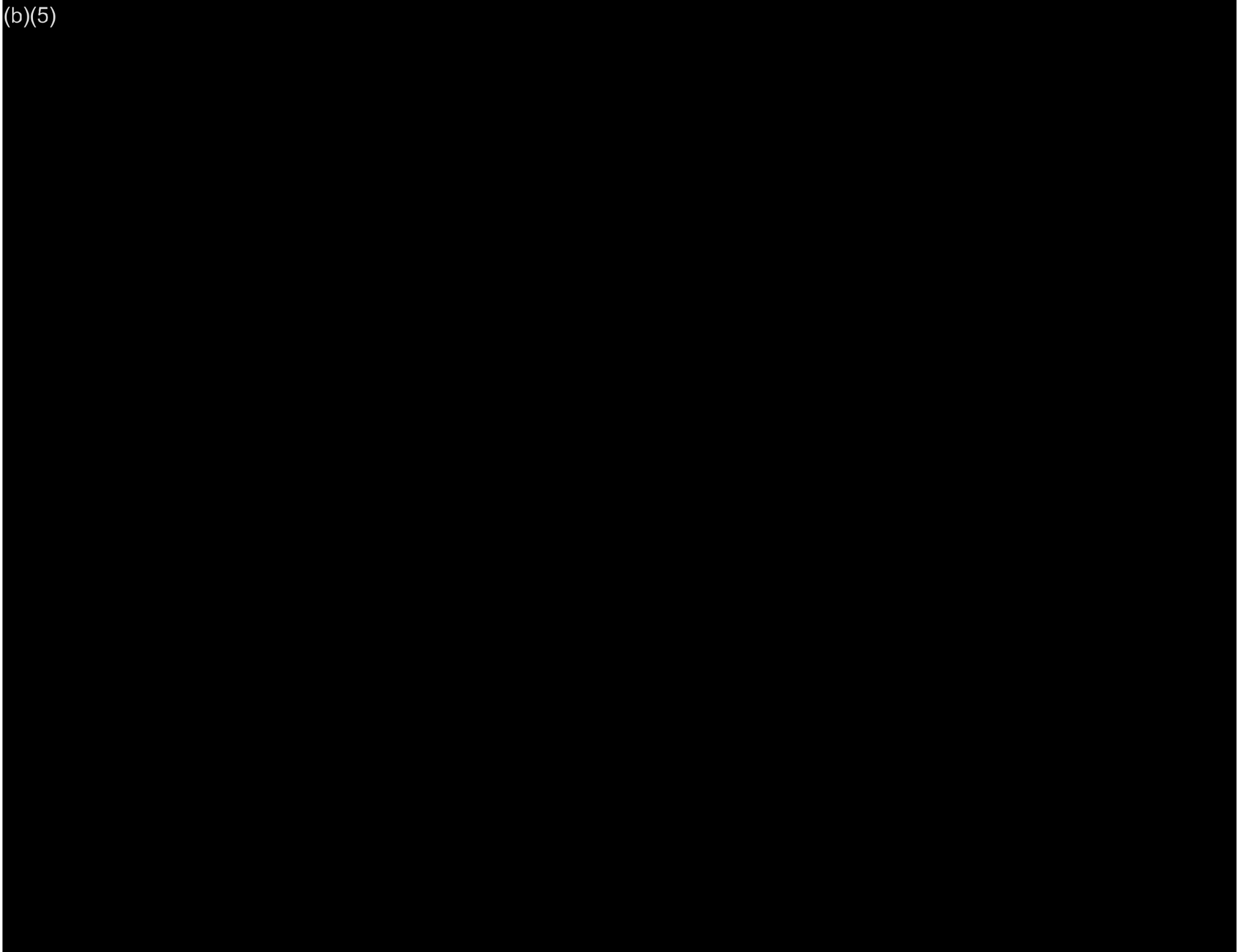
(b)(5)



(b)(5)

(b)(5)

(b)(5)



(b)(5)

Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[icsweet@bpa.gov](mailto:icsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

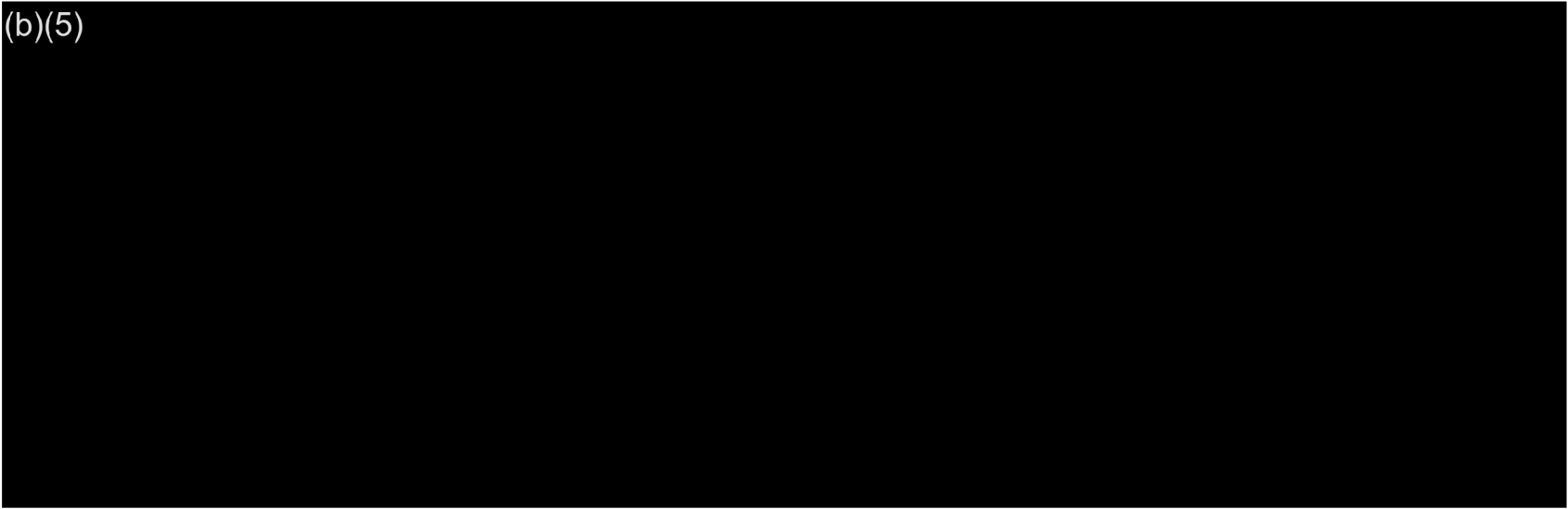
**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Key, Philip S (BPA) - LN-7

Sent: Wed May 26 15:53:27 2021

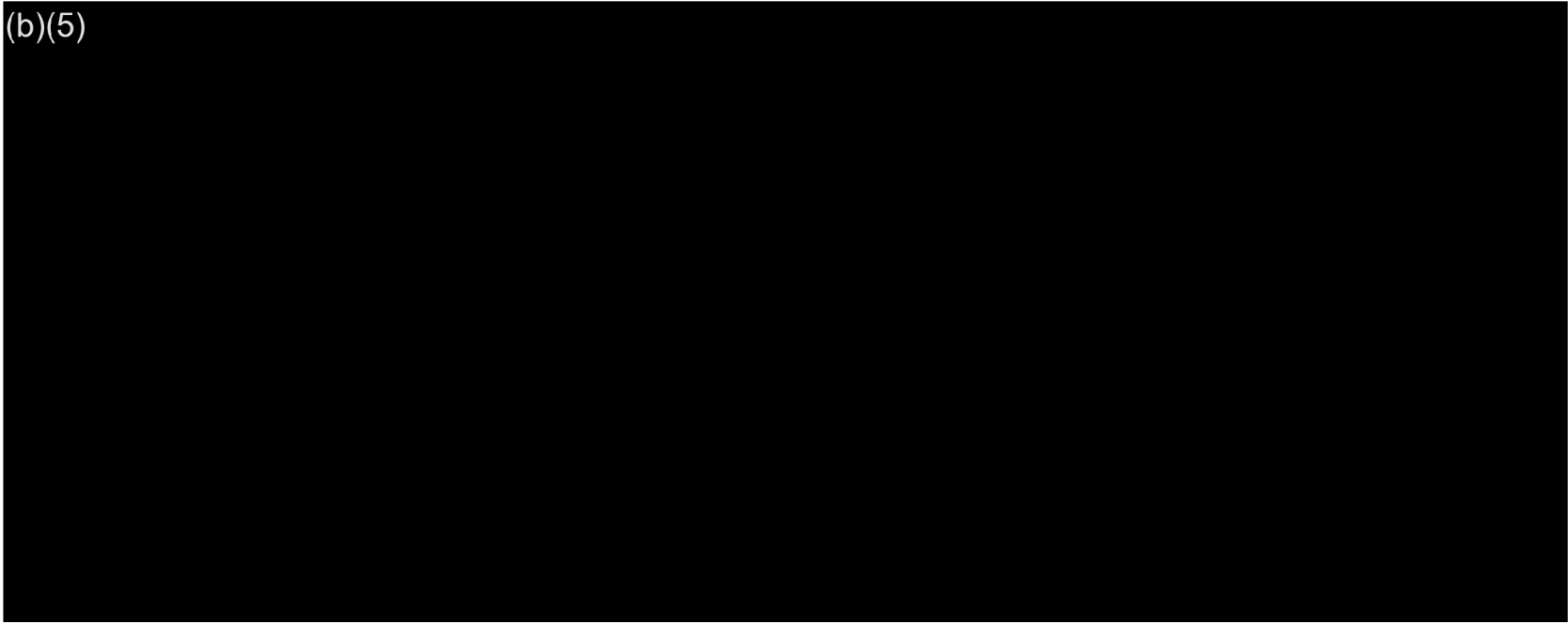
To: Miles, Tucker (BPA) - LN-7; Zelinsky, Benjamin D (BPA) - E-4; Welch, Dorothy W (BPA) - E-4

Subject: RE: some early thoughts on external BA talking points

Importance: Normal

***Attorney-client communication; privileged and confidential***

(b)(5)



Philip



**From:** Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Sent:** Wednesday, May 26, 2021 2:56 PM


**To:** Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Welch, Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>

**Cc:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Subject:** RE: some early thoughts on external BA talking points

***Attorney-client communication; privileged and confidential***

(b)(5)



(b)(5)



**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
**Sent:** Tuesday, May 25, 2021 1:07 PM  
**To:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>  
**Cc:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** FW: some early thoughts on external BA talking points

***Confidential and privileged attorney client communication/FOIA-exempt***

Dorie – see the discussion below and I'll follow up with you to provide a little context.

**From:** Zelinsky, Benjamin D (BPA) - E-4  
**Sent:** Tuesday, May 25, 2021 12:57 PM  
**To:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** RE: some early thoughts on external BA talking points

No problem – just wanted to get some thoughts out of my head.

I might share with Dorie in the meantime then and you can just weigh in on top of her edits when you get to it.

**From:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Sent:** Tuesday, May 25, 2021 12:50 PM  
**To:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
**Subject:** RE: some early thoughts on external BA talking points

Thanks for getting this started. I'll take a closer look and get back to you with thoughts when I can, but since this isn't an immediate need, I will have to put it a few places down on the to-do list. Let me know if any issues with that.

**Tucker Miles**

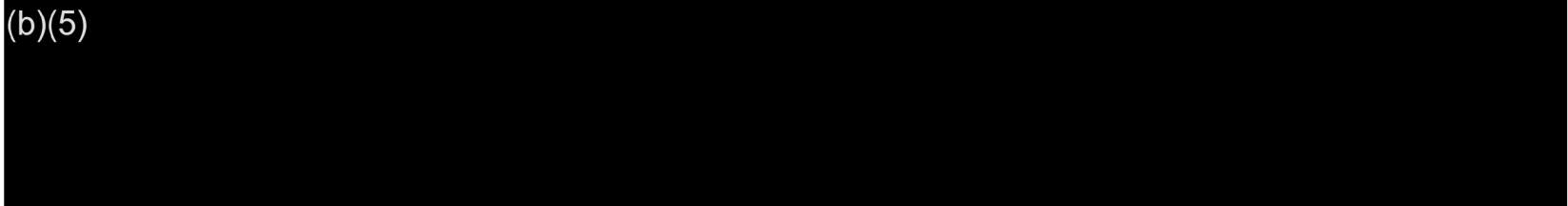
Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**  
[bpa.gov](http://bpa.gov) | P 503-230-5968

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**Sent:** Tuesday, May 25, 2021 12:48 PM  
**To:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** some early thoughts on external BA talking points


***Confidential and privileged attorney client communication/FOIA-exempt***

(b)(5)



Draft External Blocked Area Talking Points

(b)(5)



Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

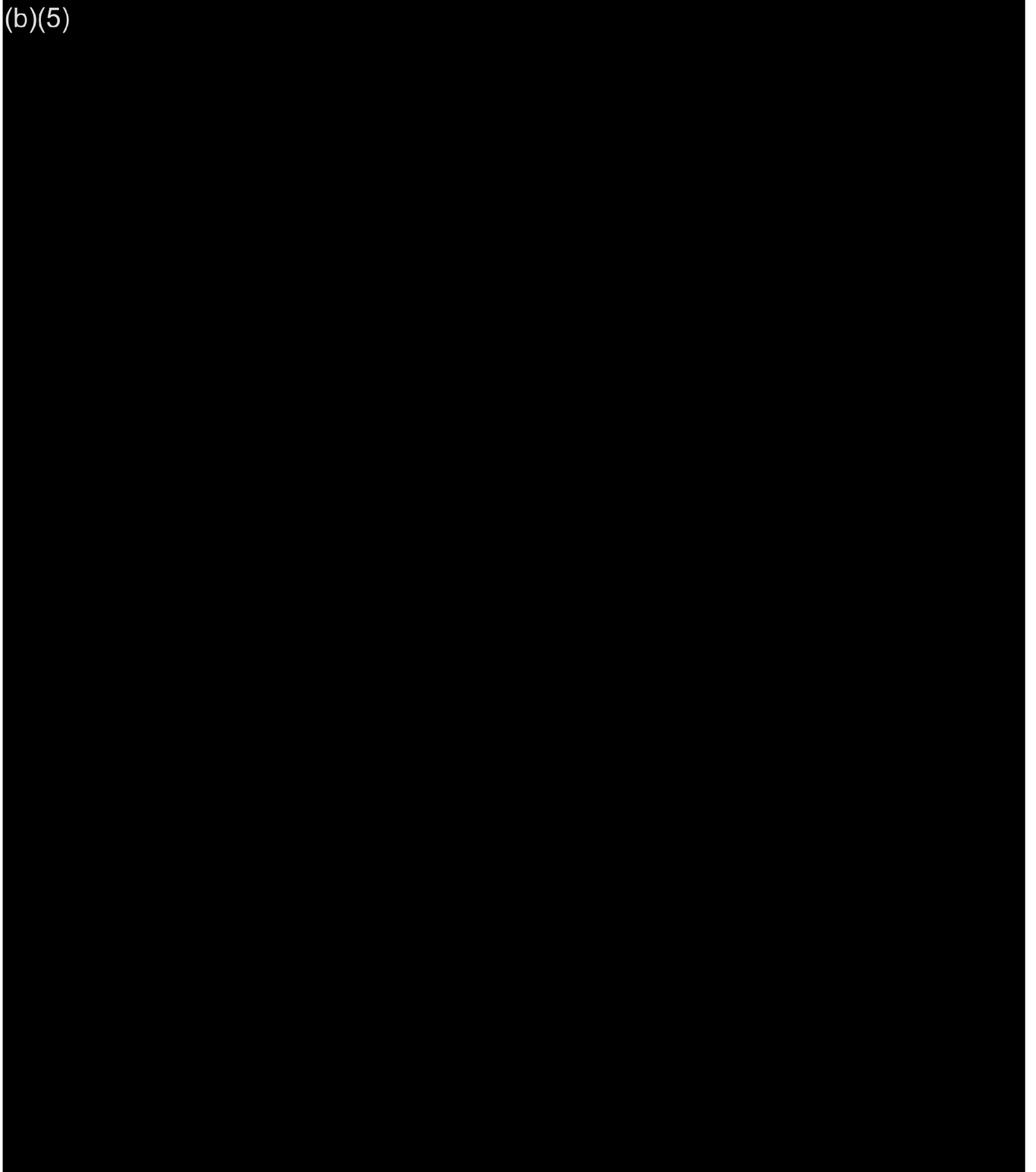
503.230.4737 (office)

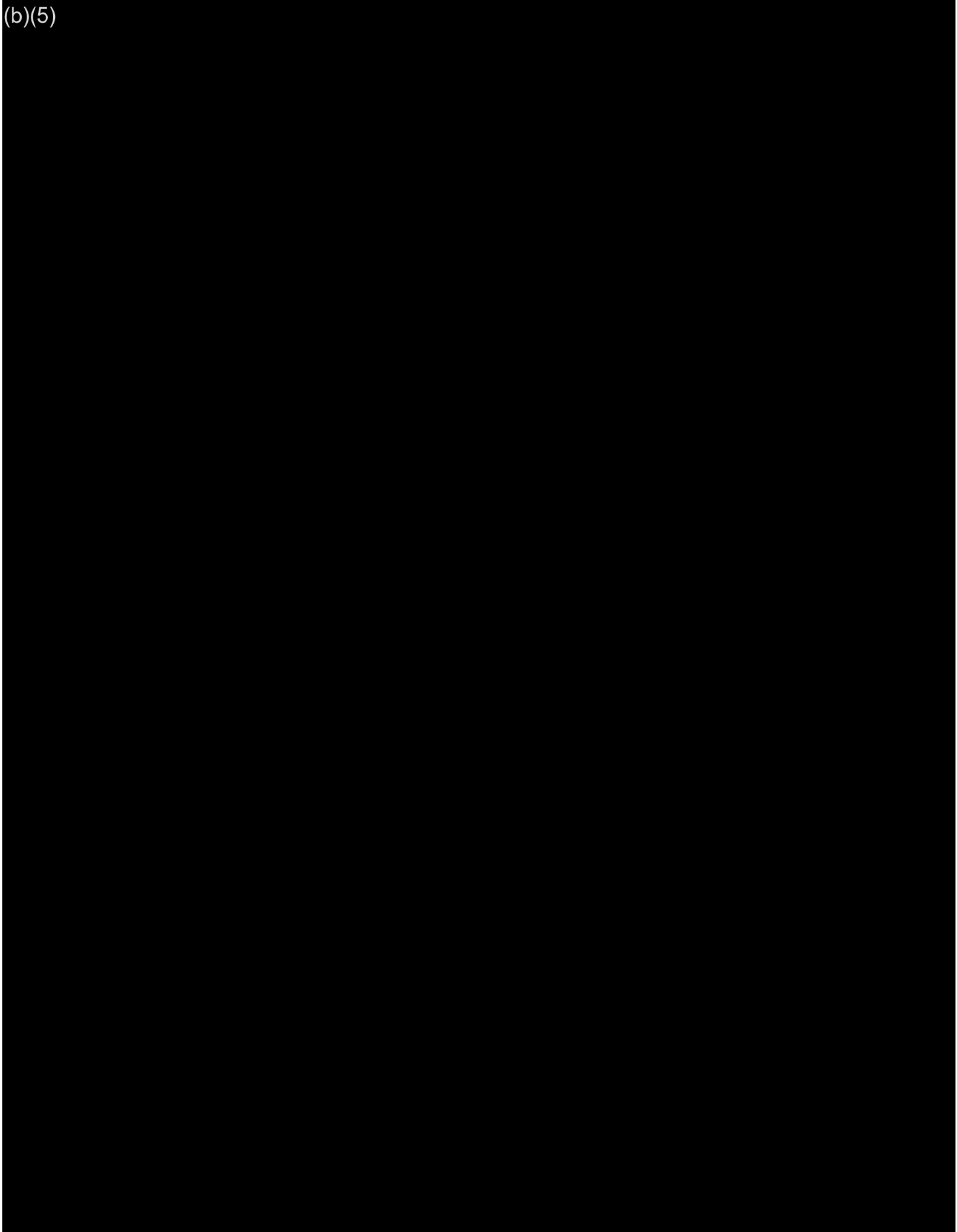
(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

Ben,

(b)(5)





Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

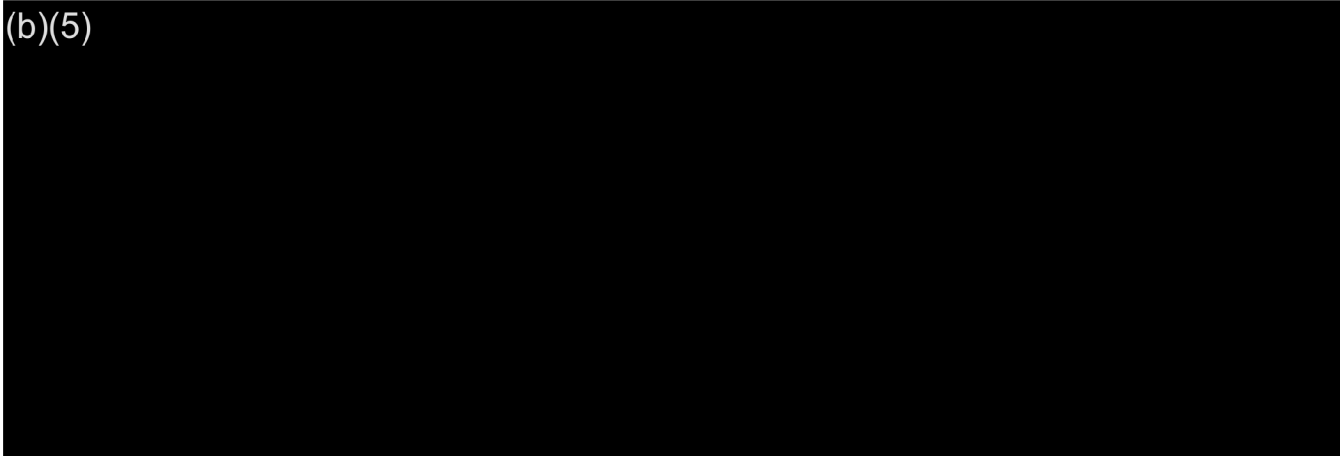
**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***



Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky  
Bonneville Power Administration  
905 NE 11<sup>th</sup> Ave – E-4  
Portland, OR 97232  
503.230.4737 (office)  
(b)(6) (cell)  
[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Library - BPA HQ

Sent: Wed Mar 17 14:35:33 2021

To: Media Relations

Subject: BPA Daily News Clips - 17 March 2021

Importance: Normal

[bpa logo](#)

[BPA News](#)

[Columbia River Basin](#)

[States and Partners](#)

[Industry News](#)

**BPA Daily News Clips** is produced by DKP for the purposes of informing executives and managers on how Bonneville Power Administration and its efforts throughout the Northwest are being captured in the media. Also included are stories that impact our partners or reflect broader trends in the utility industry. For feedback on this product, please send suggestions to [mediarelations@bpa.gov](mailto:mediarelations@bpa.gov).

**BPA News**

[Lower Snake River dam-breaching proposal a 'nonstarter' for more than a dozen regional environmental groups](#)

Yahoo news - March 17, 2021

. We have, like, 20 years before we completely lose *salmon* and *steelhead* in the *Snake River* Basin," said Greg McReynolds, the intermountain

[Why Washington state needs public broadband](#)

Crosscut - March 17, 2021

of 1936 . Inland Power buys its energy from the *Bonneville Power* Administration, a *federal agency* established that same year. The market

[Simpson displays leadership; Brandt should try it](#)

The Lewiston Tribune - March 17, 2021

about the plight of Idaho's *salmon* and *steelhead* and the current benefits and drawbacks of the lower *Snake*

**River** dams without inflammatory

[Reader Comment: When Mike Simpson Talks – Idaho AG Should Hear Him Out](#)

Magicvalley.com - March 17, 2021

and water users than salmon. Please consider: **Bonneville Power** Administration (**BPA**) **rates** have increased by over 30 percent since 2008

**Columbia River Basin**

[Some green groups raise objections to Simpson dam plan](#)

The Lewiston Tribune - March 16, 2021

\$33 billion legislative concept that would breach the four lower **Snake River dams** and mitigate affected industries and communities through a

[Idaho's Scott Bedke Remains Opposed to Removal of Dams](#)

KLIX-AM - March 17, 2021

in the session and they aren't pleased. One of the most vocal critics of **dam removal** is the Speaker of the Idaho House. His name is Scott

[Commissioners oppose breaching dams; support sheriff, prosecutor requests](#)

Idaho County Free Press - March 17, 2021

**Snake River** provide this energy—and again, jobs. While we acknowledge the benefits of recreational fishing and generally support **salmon**

## States and Partners

### [Federal 'brain drain' threatens American scientific leadership, new report says](#)

The Washington Post - March 17, 2021

service workforces of the Environmental Protection Agency, the **Energy Department**, and the National Oceanic and Atmospheric Administration

### [Biden administration wants the finance sector to face up to climate risk](#)

The Washington Post - March 17, 2021

Commodity Futures Trading Commission to create a new 'climate risk unit,' joining initiatives at Treasury, Securities and Exchange Commission, Federal Reserve A growing number of federal regulators are pushing corporate America to reckon with the cost of climate change, arguing that global warming poses significant peril not only to the environment but to the U.S. economy.

[DOE's first task for loan guarantees: Calming industry nerves](#)

Politico - March 17, 2021

**Energy Secretary Jennifer Granholm** has put the **Energy Department's** \$43 billion loan guarantee program at the forefront of her plans to

[CO2 infrastructure bill unveiled today](#)

Politico - March 17, 2021

pouring billions in **carbon capture** and storage to bolster the technology that sponsors say will be crucial to meet climate goals. — **DOE's**

[Why a powerful planet-warming gas is surging in Earth's atmosphere](#)

Mashable - March 17, 2021

Steven Smith, an earth scientist at the *Department of Energy's Pacific Northwest National Laboratory*. In contrast, methane can come from

[Thoughts on the massive wind and solar farm? Benton County wants to hear them](#)

Tri-City Herald - March 15, 2021

Tri-Cities area residents can comment this week on a project that will create a significant change in Benton County for decades to come — a wind and solar farm proposed to stretch along about 24 miles of agricultural land. The proposed project would be built along the Horse Heaven Hills from south

[Sens. Wyden, Merkley reintroduce \\$10 billion bill aimed at upgrading power line system](#)

The Register-Guard - March 12, 2021

After proposing a bill that would feed \$1 billion into Oregon's power system improvements, the state's two U.S. senators reintroduced legislation Wednesday that would increase the allotment to \$10 billion. Sens. Ron Wyden and Jeff Merkley's Disaster Safe Power Grid Act would offer incentives to utility companies



[Skykomish River hatchery to rely on native steelhead trout](#)

Peninsula Daily News - March 17, 2021

in April. A draft environmental assessment for the hatchery is open to **public comment** through Monday. “A lot of times the local people

[Catching fish for the future, nearing goal](#)

Idaho County Free Press - March 17, 2021

not operated on the South Fork to trap **steelhead**. These fish are collected to develop a localized **steelhead** broodstock for the South Fork.

[Continued outhouse damage may result in reduced services](#)

Idaho County Free Press - March 17, 2021

comes from dollars anglers spend on purchasing **salmon** and **steelhead** tags. According to Jones, **IDFG** works hard to make responsible financial

[Colville Reservation photographs are subject of museum program](#)

The Grand Coulee Star - Online - March 17, 2021

A museum in Colorado will offer a program this week showing historical photographs of the Nespelem area, streaming it live online so you can attend. The Clyfford Still Museum, located in Denver, Colorado, will be live streaming a free program titled "Into the Archives: Photographs from the Colville Reservation

[NRECA rolling out new technology to protect electric co-ops from cybersecurity threats](#)

Daily Energy Insider - March 17, 2021

The National Rural Electric Cooperative Association (NRECA) is working with industry partners to develop new technology to identify and defend against emerging cybersecurity threats. Through a grant from the U.S. Department of Energy, NRECA is working with BlackByte Cyber Security and Referentia Systems

[Marchand's new book continues mission of connecting](#)

Methow Valley News - March 17, 2021

Arnie Marchand, Okanogan storyteller and Indian activist, has published his second book, “Stim an S Kwist” – “What is your name?” – a continuation of Marchand’s activist work to provide context and understanding of Okanogan/Okanogan country and people. The book is published by Heritage Productions

[Sen. Cantwell Questions Department of Commerce Nominee on Census Delays and Fisheries Disaster Relief](#)

Saving Seafood - March 16, 2021

disaster determinations for my state, such as Washington Puget Sound **Coho salmon** fishery, they’ve been pending for years. Senator Wicker and

[Women's History Month spotlights women in male dominated fields](#)

KIDK-TV Local News 8 (Idaho Falls, ID) - March 11, 2021

IDAHO FALLS, Idaho (KIFI) - In celebration of Women's History Month, the National Rural Electric Cooperative Association is spotlighting women who perform typically male-dominated jobs in the utilities field. Local News 8's Rachel Fabbi sat down with two of them to discuss how they got started in the field

**Industry News**

[Texas AG says more than \\$29 million in unpaid electric bills will be forgiven as he sues Griddy Energy](#)

CNN.com - March 17, 2021

\$29 million owed to the **Electric** Reliability Council of Texas (ERCOT), which operates the state's **electric grid**. That form of bankruptcy

[Electric Cars Are Coming. How Long Until They Rule the Road?](#)

The New York Times - March 10, 2021

Around the world, governments and automakers are focused on selling newer, cleaner electric vehicles as a key solution to climate change. Yet it could take years, if not decades, before the technology has a drastic effect on greenhouse gas emissions. One reason for that? It will take a long time fo

[Volkswagen Aims to Use Its Size to Head Off Tesla](#)

The New York Times - March 15, 2021

The German carmaker outlined ambitious goals to build battery factories as it ties its fate to electric cars. Volkswagen is going all in on electric cars, with plans to build battery factories in Europe, install a network of charging stations and slash the cost of emission-free travel. That was the message Monday

[Last Texas power regulator from February blackouts resigns](#)

The Washington Post - March 16, 2021

**grid** and is under intensifying scrutiny following one of the worst **blackouts** in **U.S.** history. More than 4 million customers lost **electricity**

[This Google X spin-off backed by Bill Gates is offering a pathway to heat and cool your home with clean energy](#)

CNBC - March 17, 2021

systems (exactly how much varies). These pumps can use **renewable**, carbon-free energy, like **solar** or wind.  
"Geothermal heat pumps are part of

[Government sets out £1bn plan to cut industrial carbon emissions](#)

Yahoo news - March 17, 2021

**Wind turbine** in front of smoking chimney A blueprint to cut industrial carbon emissions by two-thirds within 15 years has been announced by

[Why does bitcoin use 10 times more electricity than Google?](#)

Yahoo news - March 17, 2021

environmental impact? Bitcoin advocates say that rapid development of **renewable energy** in the power plant sectors means that the currency

[Griddy Offers to Cancel Texas Power Bills If Customers Don't Sue](#)

Yahoo! Finance - March 16, 2021

on Monday, blaming its woes on the **Electric** Reliability Council of Texas, which runs the state's power **grid**. During the storm, Ercot, as it

[Electricity repricing bill hits wall in House, marking first major schism with Senate this session](#)

Chron.com - March 17, 2021

Scores of Texans who have reported skyrocketing **electric** bills in the storm's aftermath. For some whose **electricity** prices are not fixed and

[After winter storms, we're looking to Oncor and Dallas to beef up their emergency plans](#)

The Dallas Morning News - March 17, 2021

feeders — the poles and power lines that distribute **electricity** — are connected to **critical infrastructure**, such as hospitals and 911 call

[California power projections underscore difficulty of Biden climate targets](#)

Washington Examiner - March 17, 2021

the **power sector** by 2035, 10 years earlier than California's target. The effort would require the biggest transformation of the **electricity**



[Daily on Energy, presented by Bipartisan Policy Center: Bipartisan push on CO2 pipelines comes just as infrastructure talks begin](#)

Washington Examiner - March 17, 2021

**renewable** energy and storage capacity each year, the agencies found. That is significantly more than the roughly 1 GW of utility-scale **solar**

[How Dan Crenshaw and Elon Musk want to fix Texas's energy grid](#)

Washington Examiner - March 16, 2021

**electricity** at night. **Grid**-level battery storage units would help Texas's vaunted wind farms become more resilient. Excess **electricity**

[Parris Glendening: Energy deregulation was a mistake in Maryland | COMMENTARY](#)

The Baltimore Sun - March 17, 2021

swings. During the height of the Texas power outages and **grid** spikes, wholesale **electricity** prices rose by more than 10,000%, meaning that

[BlueCross BlueShield employees given option to work from home permanently](#)

WRCB-TV 3 News (Chattanooga, TN) - March 16, 2021

When given the choice, 50% of BCBS employees chose to ditch the office and stay home for good. [...] About 60% of Tennessee Valley Authority (TVA) employees are also working from home on a full-time or intermittent schedule. The electric utility company has not announced plans to phase employees ba

[Palo Alto Networks founder Nir Zuk moves back to Israel](#)

Globes - March 16, 2021

After more than 20 years in California, Zuk and his family have returned to Israel, and he continues to work remotely for the company. After living in the US for more than 20 years, Palo Alto Networks founder and CTO Nir Zuk has returned to live in Israel with his family in the past few months, sources

[BLM rebukes Trump, advances large-scale Calif. solar project](#)

E&E News ENERGYWIRE - March 17, 2021

The Biden administration will study what could be the first solar power project inside a California renewable energy zone, just a week after nixing a Trump-era proposal that critics say would have undermined the intent of the zone to balance development and wildlife protection. The proposed Oberon solar project

[Memphis will probably bid out its electricity supply in the next few months.](#)

The Commercial Appeal - March 16, 2021

Editor's note: The story has been updated to reflect actions the Memphis, Light, Gas and Water board took Wednesday morning. It is looking quite likely that Memphis will bid out its electricity supply and eventually reach the crossroads of whether to leave the Tennessee Valley Authority. The Memphis City Council

[Meltwater - 225 Bush St Suite 1000, San Francisco, California 94104 USA](#)

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From: Schlough, Daniela (BPA) - FRF-2

Sent: Mon Jul 01 21:35:22 2019

To: Bernard, Kevin J (BPA) - FRP-2; Eggimann, Scott A (BPA) - FRF-2; Rice, Cara N (BPA) - FRF-2

Subject: FYI: NW Fish letter - Fish Passage at Grand Coulee and Chief Joe

Importance: Normal

NW Fishletter #395, July 1, 2019

### **[1] Report Finds 'Good Potential' For Fish Passage Above Grand Coulee**

Leaders from five upper Columbia River tribes told the Northwest Power and Conservation Council on June 11 that their region has been without salmon for too long, and they're ready to take the next steps toward reintroducing this culturally important fish above Chief Joseph and Grand Coulee dams.

"Most of our tribes are salmon people," Colville Tribal councilman Darnell Sam told the Council. But, he said, with dams blocking salmon from returning to the upper Columbia, many tribal members now live too far from the places where salmon return. As a Wenatchi descendant, Sam said he travels for three hours to fish for salmon in the Icicle River near Wenatchee. Passage would mean they were two miles away. He said the upper Columbia and the people who live there were the most impacted by the dams, but they receive the fewest benefits from mitigation.

John Sirois, committee coordinator for the Upper Columbia United Tribes, or UCUT, said tribes continue to conduct salmon ceremonies at Kettle Falls--which disappeared with the construction of Grand Coulee Dam--even though it has been blocked to salmon for nearly 80 years. Other tribal leaders said they've lost their salmon ceremonies after so many decades without fish passage.

Representatives from several tribes spoke to the full Council after scientists gave a technical presentation to the Council's Fish and Wildlife Committee on the tribes' Fish Passage and Reintroduction Phase 1 [Report](#). The

analysis concludes that environmental, operational and structural conditions at both dams "show good potential to produce a fish passage system that provides safe, timely and effective fish passage for summer/fall Chinook and sockeye salmon."

The report addresses an emerging priority from the Council's 2014 Fish and Wildlife Program to investigate options for reintroduction, passage and habitat improvement above blocked areas. One of the program's measures is to reintroduce anadromous fish above Chief Joseph and Grand Coulee dams, an area with over 2 million acres of tribal reservation land, 14 million acres of their traditional territory, 500 miles of waterways, 40 interior lakes, and 30 dams and reservoirs.

Council members expressed interest in pursuing the next phase, which would involve installing interim passage facilities and reintroducing salmon above the two upper Columbia River dams on an experimental basis. They also said the Phase 1 report should first be reviewed by independent scientists, and raised questions about evaluating the costs.

The study was prepared by the Upper Columbia United Tribes, or UCUT--which includes the Coeur d'Alene Tribe of Indians, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, Kootenai Tribe of Idaho, and Spokane Tribe of Indians--with support from the U.S. Geological Survey and Washington Department of Fish and Wildlife.

According to UCUT's website, the first phase cost hundreds of thousands of dollars, paid mostly by UCUT and tribes, with some contributions from the Bureau of Reclamation and the Bonneville Power Administration; and staffing contributions from the Washington Department of Fish and Wildlife. A second phase would likely cost millions, the website says. "If Phase 2 experimental releases and interim passage facilities show favorable results, then an important step at the end of Phase 2 will be to determine the preferred options and cost estimates," it says.

The first phase looked at the habitat and its suitability for salmon spawning, rearing and migration; the availability of stocks that could be used for reintroduction; the risks of reintroduction to resident species; potential passage facilities; and current dam operations. It determined the possible outcomes through life-cycle modeling.

According to the report, modeling revealed "significant amounts of habitat within the U.S. portion of the blocked area, totaling 711 miles for spring Chinook and 1,610 miles for summer steelhead for spawning, rearing, and

migration." Eighty percent of the spring Chinook habitat and 53 percent of the steelhead habitat has moderate to high productivity potential. Currently accessible tributaries could produce 2,300 natural origin adult steelhead, 600 spring Chinook and 8,500 summer/fall Chinook. The Columbia's mainstem from Chief Joseph Dam to Canada could support between 5,800 and 76,000 spawning summer/fall Chinook adults. The Sanpoil River and its tributaries could produce 34,000 to 216,000 sockeye adults.

The assessment also found many donor sources for reintroducing summer/fall Chinook and sockeye, with Chief Joseph Hatchery right below the dam ranking highest for summer/fall Chinook reintroduction, which includes a high proportion of natural-origin broodstock from the Okanogan River.

The report found that floating surface collectors, already being used in other locations, would be effective in the forebays at both Chief Joseph and Grand Coulee dams, and with attraction flow would have the potential for high collection efficiency. It says dam operations are compatible with juvenile migration periods. It also acknowledged a need to investigate all options for efficient and cost-effective adult passage, including retrofitted fish ladders, a "negative pressure salmon transport system" such as the Whooshh Innovations' salmon cannon, or a combination of both.

Continued studies in the second phase would show what kinds of fish passage facilities would be needed, and the potential to test floating surface collectors and salmon cannons.

Tribal representatives said they are currently focused on reintroducing summer Chinook and sockeye, which are not listed under the Endangered Species Act, both because those stocks are available from nearby sources downstream, and it will be easier to obtain initial supplies.

Casey Baldwin, senior research scientist for the Colville Tribes, said that tribes are pursuing fish passage through three forums--the Columbia River Treaty, the Northwest Power and Conservation Council, and through tribal initiatives.

He went over the conclusions of the first phase, which found there are good options for donor stocks; the risks of disease are manageable; there are large quantities of available and suitable habitat in the U.S. above Chief Joseph and Grand Coulee dams; passage technology exists and is being used at other high-head dams; and returning salmon to blocked areas will deliver cultural and economic benefits for all.

Randy Friedlander, fish and wildlife director for the Colville Tribes, said the tribes recognize the expectations for an independent scientific review, and hope that any questions raised can be answered so their efforts can continue. "Overall, Phase 1 confirmed we should move forward into Phase 2," he said.

He told the Council that before coming to Portland to address them, he stopped at the Columbia River to return salmon remains to the river after a fishing trip with his father. "I looked up[river] towards Grand Coulee Dam, and down[river] towards Chief Joseph Dam and I said a prayer: 'I'm sorry these fish aren't in this water as you intended them to be, but help us figure out how to put them back in'," he said. [-K.C. Mehaffey](#)

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Sincerely,

Daniela Schlough, CPA

Accountant | Federal Partner Accounting FRF-2

Bonneville Power Administration

E [dxschlough@bpa.gov](mailto:dxschlough@bpa.gov) | P 503-230-3428

From: Miles,Tucker (BPA) - LN-7

Sent: Wed Jun 30 17:22:20 2021

To: Senters,Anne E (BPA) - LN-7; Key,Philip S (BPA) - LN-7

Subject: RE: Next Steps on CJH Fish

Importance: Normal

It's a very long email...

## **Tucker Miles**

Attorney-Adviser | Office of General Counsel

### **Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>

**Sent:** Wednesday, June 30, 2021 5:22 PM

**To:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmliles@bpa.gov>

**Subject:** RE: Next Steps on CJH Fish

I'm just teasing!! Man.

**Anne Senters** (she/her)

Assistant General Counsel | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-4998 | C (b)(6)

[cid:image001.jpg@01D52C3E.DF0B9390cid:image008.jpg@01D52C3E.09FCE1E0cid:image009.jpg@01D52C3E.09FCE1E0cid:image010.jpg@01D52C3E.09FCE1E0cid:image011.jpg@01D52C3E.09FCE1E0cid:image012.jpg@01D52C3E.09FCE1E0](#)

**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 5:20 PM

**To:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** RE: Next Steps on CJH Fish

Sorry Ms. Hasty, we're still in discussion. Meeting week of 12 is fine.

**From:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 5:13 PM

**To:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** RE: Next Steps on CJH Fish

Nobody got back to me!

FYI I shared the presentation with Marcus and he'd like a briefing. I'll set it up for the week of the 12<sup>th</sup>.

**Anne Senters** (she/her)  
Assistant General Counsel | Office of General Counsel

**Bonneville Power Administration**  
[bpa.gov](http://bpa.gov) | P 503-230-4998 | C (b)(6)

[cid:image001.jpg@01D52C3E.DF0B9390cid:image008.jpg@01D52C3E.09FCE1E0cid:image009.jpg@01D52C3E.09FCE1E0cid:image010.jpg@01D52C3E.09FCE1E0cid:image011.jpg@01D52C3E.09FCE1E0cid:image012.jpg@01D52C3E.09FCE1E0](#)

**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>  
**Sent:** Wednesday, June 30, 2021 1:57 PM  
**To:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>  
**Subject:** FW: Next Steps on CJH Fish

Anne,

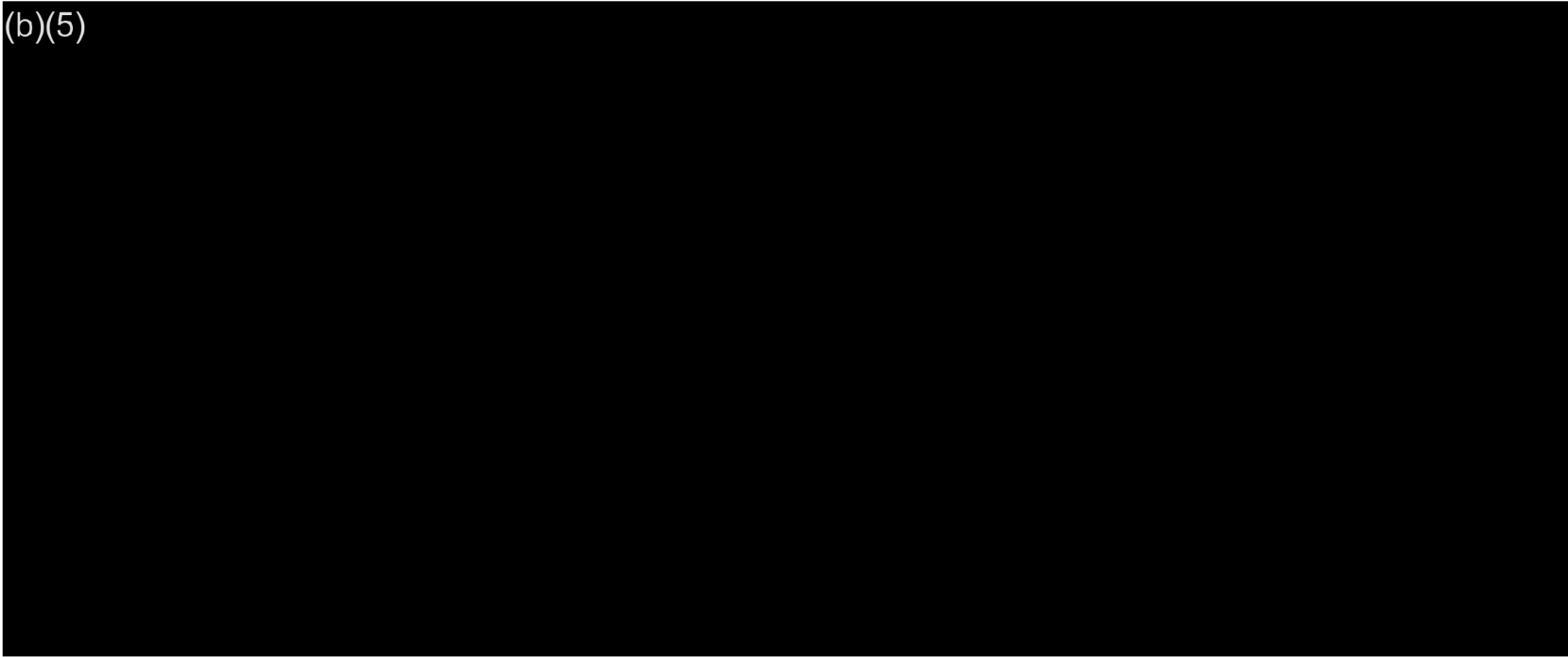
Tucker and I will discuss and then get back to you.

PK

**Attorney Client/Work Product/Deliberative Process Document: Not subject to release under FOIA**

Ben,

(b)(5)



(b)(5)

(b)(5)

(b)(5)



(b)(5)

Environment and Natural Resource Section, Office of General Counsel

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>


**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

**Subject:** Next Steps on CJH Fish

***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



Also, please let me know if I missed anything or if you had a different interpretation of the guidance we received.

Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Peone,Joe E (CONTR) - DIT-MEAD-GOB

Sent: Mon Aug 26 09:24:00 2019

To: Ikakoula,Corrina A (BPA) - DIT-7; Manchester,Kathleen L (CONTR) - DIT-7; O'Donnchadha,Brian M (BPA) - DIT-7; Lynam,Kurt O (BPA) - DIT-7

Subject: FW: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Importance: Normal

Attachments: CCT Release Salmon Upstream of Chief Joseph and Grand Coulee dams.pdf

FYI

-----Original Message-----

From: Ball,Crystal A (BPA) - EW-4

Sent: Sunday, August 25, 2019 7:57 AM

To: Zelinsky,Benjamin D (BPA) - E-4; Armentrout,Scott G (BPA) - E-4; Welch,Dorothy W (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Johnston,Kenneth H (BPA) - DIT-7; Lofy,Peter T (BPA) - EWU-4

Cc: Kavanagh,Maureen A (BPA) - EWP-4; Wilson,David B (BPA) - DKP-7; Pruder Scruggs,Kathryn M (BPA) - E-4; Peone,Joe E (CONTR) - DIT-MEAD-GOB; Foster,Marchelle M (BPA) - DIT-7

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I assume we can share this press release with people we know who are curious about what the Tribes are doing.

Crystal Ball

Executive Manager, Fish and Wildlife Program BONNEVILLE POWER ADMINISTRATION caball@bpa.gov | P 503-230-3991 | C

(b)(6)

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Sent: Friday, August 23, 2019 10:36 AM

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Cc: Kavanagh,Maureen A (BPA) - EWP-4

Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Another announcement re: "cultural and educational fish release"

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From: Charles Brushwood (FNW) [<mailto:Charles.Brushwood@colvilletribes.com>]

Sent: Thursday, August 22, 2019 2:48 PM

To: Welch,Dorothy W (BPA) - E-4; Lesa Stark (lstark@usbr.gov); Dykstra, Timothy A CIV USARMY CENWD (US)

(Timothy.A.Dykstra@usace.army.mil)

Cc: Cummings,Adam H (CONTR) - EW-4; Kavanagh,Maureen A (BPA) - EWP-4; Randall Friedlander (FNW); Brian Gruber

(bgruber@ziontzchestnut.com)

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Please see the attached press release related to CTCR's cultural releases of salmon into the blocked area of the Columbia River upstream of Chief Joseph and Grand Coulee Dams.

As always, please let us know if you have any questions or if this is something you'd like to discuss. Thank you,

Charles (Chuck) Brushwood

Fish & Wildlife Policy Analyst

Colville Confederated Tribes

Office: (509) 422-7749

Cell: (b)(6)

Fax: (509) 422-7443

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From: Michelle Campobasso (FNW)  
Sent: Thursday, August 22, 2019 8:04 AM  
To: Shelly Davis (FNW)

Cc: Billy Gunn (FNW); Casey Baldwin (FNW); Cindy McCartney (FNW); Fauna Ferguson (FNW); Jennifer Mercado (FNW); Kary Nichols (FNW); LJ Stensgar (FNW); Marcella Pierre (FNW); Michelle Campobasso (FNW); Michelle Smith (FNW); Randall Friedlander (FNW); Roma Tynan (FNW); Therilyn Williams (FNW); Tony Williams (FNW); Vanessa Sanchez (FNW); Amanda Gendron (FNW); Andrew Child (FNW); Branditt West (FNW); Bret Nine (FNW); Bryan Jones (FNW); Charlee Capaul (FNW); Charles Joseph (FNW); Daniel Monaghan (FNW); David Beardslee (FNW); David Marchand (FNW); Dennis Moore (FNW); Erica Moses (FNW); Hank Etue (FNW); Holly McLellan (FNW); Jason McLellan (FNW); Jeannette Finley (FNW); Jeffrey Joseph (FNW); Jeffrey Palmer (FNW); Jill Phillips (FNW); Leslie Plum (FNW); Matt Howell (FNW); Mindy Goodwin (FNW); Robert Thomas (FNW); Shay Wolvert (FNW); William Dick (FNW); William Laramie (FNW); Abraham Best (FNW); Andrea Pearl (FNW); Anthony Cleveland (FNW); Arnold Abrahamson (FNW); Brian Dietz (FNW); Brian Miller (FNW); Brooklyn Hudson (FNW); Byron Sam (FNW); Cameron Eddy (FNW); Chris Fisher (FNW); Danny Tompkins (FNW); Dennis Papa (FNW); Edward Berrigan (FNW); Jackie Roy (FNW); James Andrews (FNW); James Gottfriedson (FNW); John Arterburn (FNW); John Pakootas Jr (FNW); John Rohrback (FNW); Jordan Pakootas (FNW); Joseph Condon Sr (FNW); Joseph Frank (FNW); Justin Wilson (FNW); Keith Kistler (FNW); Kirk Truscott (FNW); Kirsten Brudevold (FNW); Mary Davisson (FNW); Matt Young (FNW); Matthew McDaniel (FNW); Michael Miller (FNW); Oliver Pakootas (FNW); Oly Zacherle (FNW); Paul Wagner (FNW); Rhonda Dasher (FNW); Ryan Klett (FNW); Sonya Schaller (FNW); Tatum Gunn (FNW); Tyler Marcellay (FNW); Vertis Campbell (FNW); Wesley Tibbits (FNW); Zachery Wilson-Arthur (FNW); Charles Brushwood (FNW); Nikki Dick (FNW); Sheri Sears (FNW); Corey Peone (FNW); Donovan Antoine (FNW); Eric Krausz (FNW); Jarred Erickson (FNW); Kelly Singer (FNW); Kristen Coles (FNW); Martin Blevins (FNW); Ossian Laspa (FNW); Richard Whitney (FNW); Sam Rushing (FNW); Winfred Pakootas (FNW); Cody Desautel (L&P ADM); Alice Koskela (ORA); Johannah Mason (FNW); Bryson Miller (FNW)

Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Here's our story that went out to the press yesterday!

Colville Tribes Fish & Wildlife  
Michelle Campobasso  
Public Relations  
PO Box 150  
Nespelem, WA 99155  
Office: 509.634.2106  
Fax: 509.634.2126  
michelle.campobasso@colvilletribes.com



## Colville Confederated Tribes Fish and Wildlife Department



\*Colville Tribes Fish & Wildlife PO Box 150 Nespelem, WA 99155 \* (509)634-2110 \* Fax: (509)634-2126

**Contact: Michelle Campobasso**  
**Colville Tribes Fish and Wildlife**  
**Public Relations**  
**(509) 634-2106**

### *Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams*



*(Salmon Cultural Release at Lake Rufus Woods on August 9, 2019)*

*(Nespelem, Wash. August 21, 2019)* – For the first time, the Colville Confederated Tribes held cultural releases along the Upper Columbia River to reintroduce adult salmon to their historic habitat. The recent releases are part of a larger plan to pursue fish passage into the blocked areas above Chief Joseph and Grand Coulee dams.

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Colville Tribal Chairman Rodney Cawston has embraced fish passage and has brought the efforts to higher levels within the state government and on a national front. At the first release he said, “Our elders teach us that each of us has a purpose on this earth and so do the

**(MORE)**

salmon and we've seen the negative impacts to salmon and it's time to right something that's been wrong for 80 years now."

This effort started in 2014 at the *Future of Our Salmon Conference* which supported restoring salmon back to historic waters. Soon after that, a 15-tribe coalition developed a phased approach to fish passage and the Northwest Power and Conservation Council adopted a similar approach.

"This has been a team effort involving council members, Upper Columbia United Tribes staff and Colville Tribes Fish and Wildlife staff," said Friedlander. "The ceremonial releases are a great start and allow the membership and others to participate in this great endeavor."



"At about the same time the ceremonial releases are taking place, we will release an additional 60 summer chinook into Rufus Woods for a tracking study, said Casey Baldwin, research scientist for CTFW. "This study will help to answer several important monitoring questions, such as fallback rate, post release movement behavior, release site effectiveness and whether or not the fish find and use the spawning habitat."

The adult summer chinook used in the releases are from the Wells Hatchery since that facility has surplus fish and a history of infrequent IHN virus detections. The Washington Department of Fish and Wildlife is performing the fish health screenings for IHN, a virus that could affect resident trout. Each group of salmon are tested before they are released into the blocked areas.

**A third cultural release is set to take place near Kettle Falls, Wash. on Friday, August 23. People will gather at 9 a.m and fish will be released at 10 a.m.**

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- Meet cultural and ceremonial needs of the tribes by reconnecting salmon with their historic habitat and reconnecting salmon with the people.
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**(MORE)**



**Fish passage and reintroduction work performed by UCUT and its member tribes include: implementing a phased approach that will consider important science and feasibility questions and work with state, federal and local stakeholders to systematically evaluate and implement fish passage into the blocked area:**

- **Phase I** included habitat suitable for spawning and rearing, fish stock and risk assessments (which looked at the genetic, disease, competition, predation risks and benefits of 40 stocks of fish across five species: spring chinook, summer/fall chinook, steelhead, sockeye, and coho), evaluation of passage facilities, technologies at existing dams, life cycle modeling, cost and financing considerations, and a final report. Phase I also includes ceremonial and educational releases.
- **Phase II** involves interim passage facilities and experimental pilot releases of non-ESA listed salmon into blocked areas.



*(Salmon Cultural Release at Keller Boat Launch on August 16, 2019)*

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**From:** Cummings,Adam H (CONTR) - EW-4

**Sent:** Fri Aug 23 10:35:55 2019

**To:** Connor,Joseph W (BPA) - EWU-4; Lofy,Peter T (BPA) - EWU-4; Ball,Crystal A (BPA) - EW-4

**Cc:** Kavanagh,Maureen A (BPA) - EWP-4

**Subject:** FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

**Importance:** Normal

**Attachments:** CCT Release Salmon Upstream of Chief Joseph and Grand Coulee dams.pdf

Another announcement re: "cultural and educational fish release"

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**Sent:** Thursday, August 22, 2019 2:48 PM

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Sent: Mon Aug 26 10:55:57 2019

To: ADL\_DIT\_ALL; khjohnston@bpa.gov; caikakoula@bpa.gov; kolynam@bpa.gov; bmodonnchadha@bpa.gov; jepeone@bpa.gov; klmanchester@bpa.gov; mmfoster@bpa.gov

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Executive Manager, Fish and Wildlife Program BONNEVILLE POWER ADMINISTRATION caball@bpa.gov | P 503-230-3991 | C

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Sent: Thursday, August 22, 2019 8:04 AM  
To: Shelly Davis (FNW)

Cc: Billy Gunn (FNW); Casey Baldwin (FNW); Cindy McCartney (FNW); Fauna Ferguson (FNW); Jennifer Mercado (FNW); Kary Nichols (FNW); LJ Stensgar (FNW); Marcella Pierre (FNW); Michelle Campobasso (FNW); Michelle Smith (FNW); Randall Friedlander (FNW); Roma Tynan (FNW); Therilyn Williams (FNW); Tony Williams (FNW); Vanessa Sanchez (FNW); Amanda Gendron (FNW); Andrew Child (FNW); Branditt West (FNW); Bret Nine (FNW); Bryan Jones (FNW); Charlee Capaul (FNW); Charles Joseph (FNW); Daniel Monaghan (FNW); David Beardslee (FNW); David Marchand (FNW); Dennis Moore (FNW); Erica Moses (FNW); Hank Etue (FNW); Holly McLellan (FNW); Jason McLellan (FNW); Jeannette Finley (FNW); Jeffrey Joseph (FNW); Jeffrey Palmer (FNW); Jill Phillips (FNW); Leslie Plum (FNW); Matt Howell (FNW); Mindy Goodwin (FNW); Robert Thomas (FNW); Shay Wolvert (FNW); William Dick (FNW); William Laramie (FNW); Abraham Best (FNW); Andrea Pearl (FNW); Anthony Cleveland (FNW); Arnold Abrahamson (FNW); Brian Dietz (FNW); Brian Miller (FNW); Brooklyn Hudson (FNW); Byron Sam (FNW); Cameron Eddy (FNW); Chris Fisher (FNW); Danny Tompkins (FNW); Dennis Papa (FNW); Edward Berrigan (FNW); Jackie Roy (FNW); James Andrews (FNW); James Gottfriedson (FNW); John Arterburn (FNW); John Pakootas Jr (FNW); John Rohrback (FNW); Jordan Pakootas (FNW); Joseph Condon Sr (FNW); Joseph Frank (FNW); Justin Wilson (FNW); Keith Kistler (FNW); Kirk Truscott (FNW); Kirsten Brudevold (FNW); Mary Davisson (FNW); Matt Young (FNW); Matthew McDaniel (FNW); Michael Miller (FNW); Oliver Pakootas (FNW); Oly Zacherle (FNW); Paul Wagner (FNW); Rhonda Dasher (FNW); Ryan Klett (FNW); Sonya Schaller (FNW); Tatum Gunn (FNW); Tyler Marcellay (FNW); Vertis Campbell (FNW); Wesley Tibbits (FNW); Zachery Wilson-Arthur (FNW); Charles Brushwood (FNW); Nikki Dick (FNW); Sheri Sears (FNW); Corey Peone (FNW); Donovan Antoine (FNW); Eric Krausz (FNW); Jarred Erickson (FNW); Kelly Singer (FNW); Kristen Coles (FNW); Martin Blevins (FNW); Ossian Laspa (FNW); Richard Whitney (FNW); Sam Rushing (FNW); Winfred Pakootas (FNW); Cody Desautel (L&P ADM); Alice Koskela (ORA); Johannah Mason (FNW); Bryson Miller (FNW)

Subject: FW: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Here's our story that went out to the press yesterday!

Colville Tribes Fish & Wildlife  
Michelle Campobasso  
Public Relations  
PO Box 150  
Nespelem, WA 99155  
Office: 509.634.2106  
Fax: 509.634.2126  
michelle.campobasso@colvilletribes.com

From: Lynam, Kurt O (BPA) - DIT-7

Sent: Mon Aug 26 10:16:03 2019

To: O'Donnchadha, Brian M (BPA) - DIT-7

Subject: Automatic reply: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Importance: Normal

I will be away from the office on annual leave Wednesday, 21 August through the Labor Day holiday Monday, 2 September. I will check cell phone and email when possible, and plan to be back in the office Tuesday, 3 September.

If you need immediate support please contact my colleague Kathie Manchester at **503. 230. 7685**.

+++ **Kurt** +++

Kurt Lynam, SPHR

Tribal Account Executive

ext. 5218



From: Lynam, Kurt O (BPA) - DIT-7

Sent: Mon Aug 26 09:24:02 2019

To: Peone, Joe E (CONTR) - DIT-MEAD-GOB

Subject: Automatic reply: PRESS RELEASE: Colville Confederated Tribes Reintroduce Salmon Upstream of Chief Joseph and Grand Coulee Dams (story)

Importance: Normal

I will be away from the office on annual leave Wednesday, 21 August through the Labor Day holiday Monday, 2 September. I will check cell phone and email when possible, and plan to be back in the office Tuesday, 3 September.

If you need immediate support please contact my colleague Kathie Manchester at **503. 230. 7685**.

+++ **Kurt** +++

Kurt Lynam, SPHR

Tribal Account Executive

ext. 5218



From: Joe Peone (FNW)

Sent: Mon Aug 09 08:51:18 2021

To: Zelinsky,Benjamin D (BPA) - E-4; Charles Brushwood (FNW)

Cc: Welch,Dorothy W (BPA) - E-4; Cummings,Adam H (CONTR) - EW-4

Subject: [EXTERNAL] RE: No surprises coordination call - initial outreach

Importance: Normal

Ben

Chuck is on vacation.

U am in all day if you want to discuss (b)(6)

**From:** Zelinsky,Benjamin D (BPA) - E-4 [<mailto:bdzelinsky@bpa.gov>]

**Sent:** Friday, August 6, 2021 11:34 AM

**To:** Charles Brushwood (FNW); Joe Peone (FNW)

**Cc:** Welch,Dorothy W (BPA) - E-4; Cummings,Adam H (CONTR) - EW-4

**Subject:** RE: No surprises coordination call - initial outreach

You guys have time for a quick call this afternoon? I have some preliminary thoughts from Bonneville to share with you.

-----Original Appointment-----

**From:** Charles Brushwood (FNW) <Charles.Brushwood@colvilletribes.com>

**Sent:** Monday, August 2, 2021 10:50 AM

**To:** Charles Brushwood (FNW); Zelinsky,Benjamin D (BPA) - E-4; Cummings,Adam H (CONTR) - EW-4; Joe Peone (FNW)

**Subject:** No surprises coordination call - initial outreach

**When:** Monday, August 2, 2021 1:00 PM-1:30 PM (UTC-08:00) Pacific Time (US & Canada).

**Where:** Conference line: (888) 721-8686 pin: 9471406#

No surprises coordination call with Ben Z., Joe P., and Chuck B.

Call-in number: (b)(2)

Pin: (b)(2)



**From:** Brian Gruber

**Sent:** Mon Jul 22 10:13:37 2019

**To:** Key, Philip S (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

**Cc:** 'Randy Friedlander (Randall.Friedlander@colvilletribes.com)'; Cody Desautel (cody.desautel@colvilletribes.com); 'Chuck Brushwood (Charles.Brushwood@colvilletribes.com)'; Charissa Eichman (Charissa.Eichman.ORA@colvilletribes.com); Beth Baldwin; Lesa Stark (lstark@usbr.gov); Dykstra, Timothy A CIV USARMY CENWD (US); Welch, Dorothy W (BPA) - E-4

**Subject:** [EXTERNAL] Fish passage article

**Importance:** Normal

**Attachments:** Tribes expect to move salmon above dams soon (TT 7.19.19).pdf

Hi Philip and Tucker,

Pursuant to the no surprises provision of the Colville Fish Accord and Section III.H.4.a of the 2018 Extension, I am writing to share an article regarding fish passage in the blocked area above Chief Joseph Dam that appeared in Friday's Tribal Tribune. If BPA or the other Accord partners have a need to follow-up with the Tribes about this, please reach out to Chuck Brushwood.

Brian

Brian C. Gruber  
Ziontz Chestnut  
2101 Fourth Avenue, Suite 1230  
Seattle, Washington 98121  
(206) 448-1230/448-0962(fax)  
[bgruber@ziontzchestnut.com](mailto:bgruber@ziontzchestnut.com)  
[www.ziontzchestnut.com](http://www.ziontzchestnut.com)

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[http://www.tribaltribune.com/news/article\\_08cf3220-aa40-11e9-bd1f-9b7e25ce692a.html](http://www.tribaltribune.com/news/article_08cf3220-aa40-11e9-bd1f-9b7e25ce692a.html)

## Tribes expect to move salmon above dams soon

Justus Caudell 2 min ago

### **Salmon will first have to pass screening for IHN before being moved above Chief Joseph or Grand Coulee dams**

NESPELEM – The Colville Confederated Tribes might be only weeks away from moving salmon above the Chief Joseph and Grand Coulee dams.

At some point in the next month, the Colville Tribal Fish and Wildlife department will move Chinook from the Wells Hatchery above Chief Joseph and (possibly) above Grand Coulee dams as part of a “cultural release” if those salmon pass a screening for Infectious Hematopoietic Necrosis virus, a virus found in trout and salmon.

CTFW director Randall Friedlander presented a 2019 Fish Passage plan to the Colville Business Council Natural Resource Committee, Tuesday.

“We’re to the point that we could have fish ready to move by the end of this month or the first part of August,” said Friedlander, who noted the fish will be tested at Wells Hatchery on “a Monday or Tuesday. We won’t know the results until probably Wednesday or Thursday.”

Pacific Aquaculture, which produces fish in Lake Rufus Woods above Chief Joseph Dam, has started inoculating their stock for IHN, but the private company will not complete their inoculation until next year, according to Friedlander.

The movement of salmon into Lake Rufus Woods would represent the first migratory salmon above Chief Joseph Dam in 64 years. The movement of salmon to Lake

Roosevelt or the lake’s tributaries would represent the first migratory salmon above Grand Coulee Dam in 77 years.

The salmon would be from a surplus of the current summer Chinook run up the Columbia River, and CTFW's Kirk Brushwood stated the number of fish available could be as high as 500.

In past years, surplus salmon had been distributed to the Colville tribal membership, and some of this year's surplus is expected to be used for that purpose.

According to Friedlander, the tribe currently has a state license to move the fish from the Wells Hatchery to Lake Rufus Woods and the CTFW director stated the tribe would work to get a second state permit to move the salmon above Grand Coulee Dam to Lake Roosevelt as well.

Friedlander defined a cultural releases as a salmon release with the intent of "reconnecting traditionally with the resource and creating awareness of fish passage."

The director and others present noted a desire to hold a ceremonial event representing the occasion.

"Because an event like this taking place is so significant, because we haven't had fish above Chief Joseph, or above Grand Coulee Dam, in so long, being a reintroduction there does, in my eyes, need to be something done as far as recognizing that we are trying to help the salmon be brought back up there," said Colville tribal member Jim Andrews.

"I can only speak on my behalf," said Andrews. "The way I see it is at least before they are released, something I would do is just sing a song for them and let them go. Acknowledge that yes we are helping them up there."

CTFW has published a call for input that reads, "The Colville Tribes' Fish and Wildlife Department (CTFW) is seeking input from tribal elders and other interested tribal members regarding the first return of salmon above Chief Joseph Dam in 64 years and Grand Coulee Dam in 77 years. A cultural release is being planned and we welcome your input.

Our planning meeting will be held in the Auditorium, Lucy Covington Building (main floor) on Tuesday, July 23 from 12 noon to 2pm.

If you have any questions, please contact Randall Friedlander, CTFW Director at (509) 978-8005.”

From: Ball, Crystal A (BPA) - EW-4

Sent: Tue Nov 12 06:18:21 2019

To: Zelinsky, Benjamin D (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Connolly, Kieran P (BPA) - PG-5; Jule, Kristen R (BPA) - EWP-4; Kennedy, David K (BPA) - EC-4; Koehler, Birgit G (BPA) - PG-5; Leary, Jill C (BPA) - LN-7; McDaniel, Kandi L (CONTR) - E-4; Senters, Anne E (BPA) - LN-7; Skidmore, John T (BPA) - EWL-4; Sweet, Jason C (BPA) - PGB-5; Welch, Dorothy W (BPA) - E-4; Renner, Marcella P (BPA) - E-4; Eraut, Michelle L (BPA) - ECF-4; Gordon, Peter S (BPA) - E-4; Armentrout, Scott G (BPA) - E-4; Miles, Tucker (BPA) - LN-7; Key, Philip S (BPA) - LN-7; Godwin, Mary E (BPA) - LN-7; Johnston, Kenneth H (BPA) - DIT-7; Wilson, David B (BPA) - DKP-7; Lut, Agnes (BPA) - E-4; Sullivan, Leah S (BPA) - EWP-4; Scruggs, Joel L (BPA) - DK-7

Cc: Pruder Scruggs, Kathryn M (BPA) - E-4; Hansen, Michael S (BPA) - DKP-7

Subject: ISAB Review of UCUT Fish Passage and Reintroduction Report

Importance: Normal

At the Council meeting this week, the ISAB Chair will review answers to the Council's questions about the [UCUT's report](#). The answers address donor stock and risk assessment, habitat assessments, life-cycle modeling, fish passage and costs. "While it is reasonable to expect that reintroduction could be successful to some extent, there is great uncertainty about the numbers of adults that will return and the types of management that will be required to maintain them. A strategic plan for future steps and an adaptive management process will be needed to address these uncertainties. The ISAB encourages the UCUT and the Council to make decisions conservatively or with caution because of the very wide ranges of estimates of capacity and habitat availability."

A summary is posted [https://www.nwcouncil.org/sites/default/files/2019\\_1112\\_4.pdf](https://www.nwcouncil.org/sites/default/files/2019_1112_4.pdf)

The full ISAB report is available <https://www.nwcouncil.org/reports/isab2019-3>

Thanks,  
Crystal

Crystal Ball  
Executive Manager | Fish & Wildlife Program EW-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3991 | C (b)(6) | E [caball@bpa.gov](mailto:caball@bpa.gov)

DRAFT LETTER OF GENERAL SUPPORT FOR INVESTIGATING SALMON  
REINTRODUCTION TO THE UPPER COLUMBIA BASIN

To: Mr. Rodney Cawston,  
Chair of the Business Council for The Confederated Tribes of the Colville Reservation  
From: Chuck Tracy  
Executive Director of the Pacific Fishery Management Council

Dear Mr. Cawston

The Pacific Fishery Management Council would like to thank you for your presentation to the Council in November 2020 and to our advisory bodies in the past. We appreciate the work that the Confederated Tribes of the Colville Reservation have done with the Upper Columbia United Tribes and other key partners in developing a feasibility study using a phased approach to investigate the concept of reintroducing salmon to the upper Columbia Basin.

As you know, the Council is one of eight Regional Fishery Management Councils established by the Magnuson--Stevens Fishery Conservation and Management Act (MSA) of 1976, and recommends management actions for Federal fisheries off Washington, Oregon, and California. The Council represents the interests of the Federal government, tribal governments, state governments, sport and commercial salmon fishing communities, and the public that depend on our management actions, including our duties under the MSA's essential fish habitat provisions to take action to conserve freshwater habitat for the salmon runs of the west coast.

The Council recognizes that the Columbia basin incorporates multiple tribes, states, and federal jurisdictions, and that a range of activities related to salmon restoration and management are taking place in this large region. A project such as this is one component in a much larger effort to promote healthy salmon runs and viable habitat in the Columbia Basin. The Council also recognizes that the broad stakeholder community represented in the Columbia Basin Partnership report supports reintroduction of salmon in the upper Columbia Basin. The implications of, and perspectives on, such projects vary and should be fully understood prior to implementation.

We look forward to learning more about the progress of the study, and generally support these types of investigations that help inform the process of rebuilding and restoring salmon stocks and habitat in the Pacific Northwest.

Sincerely,

Executive Director  
Pacific Fishery Management Council



From: Welch,Dorothy W (BPA) - E-4

Sent: Tue Nov 03 10:46:09 2020

To: Charles Brushwood (FNW)

Subject: RE: Tribal Tribune article and video

Importance: Normal

Thanks for sharing this – take care, Dorie

**From:** Charles Brushwood (FNW) <Charles.Brushwood@colvilletribes.com>

**Sent:** Tuesday, November 3, 2020 10:25 AM

**To:** Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Dykstra, Timothy A CIV USARMY CENWD (US) (Timothy.A.Dykstra@usace.army.mil) <Timothy.A.Dykstra@usace.army.mil>; JMclaughlin@usbr.gov

**Cc:** Cody Desautel (L&P ADM) <Cody.Desautel@colvilletribes.com>; Jeannette Finley (FNW) <Jeannette.Finley@colvilletribes.com>; Peone,Joe E (CONTR) - DIT-MEAD-GOB <jepeone@bpa.gov>

**Subject:** [EXTERNAL] Tribal Tribune article and video

Good morning Accords points-of-contact,

Please see the link below to an article (with video) in the Tribal Tribune about CTCR's "salmon reintroduction into the blocked area" efforts, specifically in the Sanpoil River, a tributary to Lake Roosevelt located on the Colville Reservation:

[http://www.tribaltribune.com/news/article\\_0356989e-1a27-11eb-8021-87b1f09e20b3.html](http://www.tribaltribune.com/news/article_0356989e-1a27-11eb-8021-87b1f09e20b3.html)

Please let us know if you have any questions about this article or if you would like to have a discussion or discussions about it.

Thank you,

Charles (Chuck) Brushwood

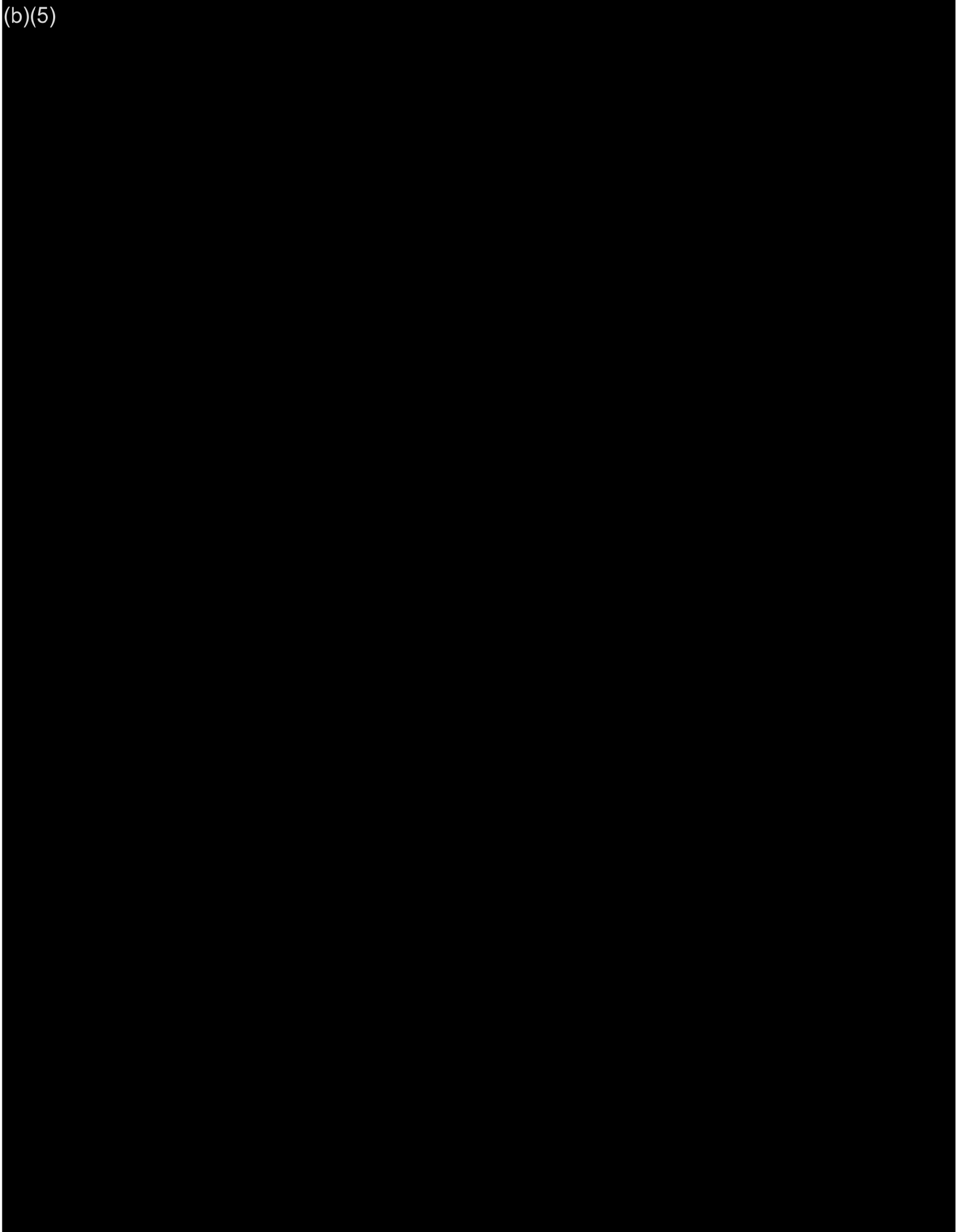
Fish & Wildlife Policy Analyst

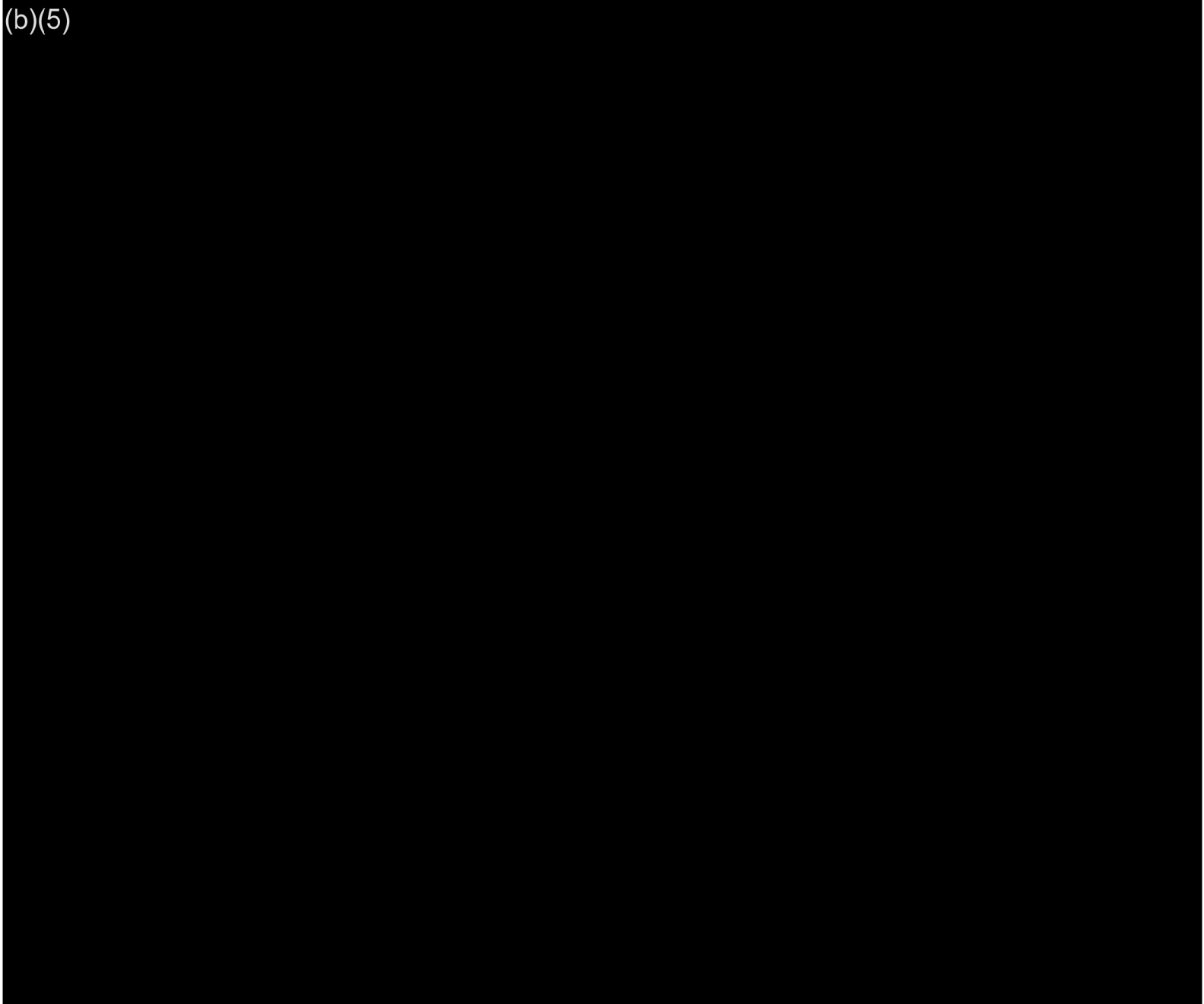
Colville Confederated Tribes

Office: (509) 422-7749

Cell: (b)(6)

Fax: (509) 422-7443








# Colville Confederated Tribes Fish and Wildlife Department M E M O R A N D U M



8/6/19

To: F&W Program  
From: Randy Friedlander   
Cc: Shelly Davis; file  
Subject: August 9<sup>th</sup>, Salmon Release into Rufus Woods

I would like to let all F&W Staff know that they may attend the salmon release on August 9<sup>th</sup>, 2019. The gathering will begin at 9:00 am with a release at 10:00 am. Please feel free to join in this historical activity if you so choose. I realize that some people will not be able to make it because someone has to stay behind at the hatcheries. Hopefully, those people will be able to go to the next one in the Sanpoil.

This event will be quick so there is no need to take the whole day for the activity just swing on by the Rufus Woods DFA Site 1. That is the original fishing hole below the net pens where the RV Park is located.

Some people may wonder why Rufus Woods is important. Rufus Woods is a run of the river section. The Hanrahan Study suggests that the section of river can hold thousands of adults. Most of the spawning habitat is in the main stem. 1,000 spawning adults could produce around 3 million juvenile salmon that we don't have feed, chill the water, etc. This would result in the supplementation of fish production below Chief Joseph Dam.

I hope to see you there.



# Salmon Cultural Release At Lake Rufus Woods



Friday August 9, 2019

Gathering at 9 am, Fish Release at 10 am

At the new RV Park at Lake Rufus Woods below Nespelem, WA

(Just follow Columbia River Road down to the RV site about 5 miles)

Continental breakfast to follow

Join us for this exciting event as the Colville Tribes release the first chinook salmon upstream of Chief Joseph Dam since construction was completed in 1955.

*Information will be posted on [www.colvilletribes.com](http://www.colvilletribes.com) and CCT F&W Facebook page. For questions, contact Michelle Campobasso at 509.634.2106. For more detailed information about how to get there, go to <https://www.colvilletribes.com/parks-recreation>*

*Bring your own lawn chairs.*

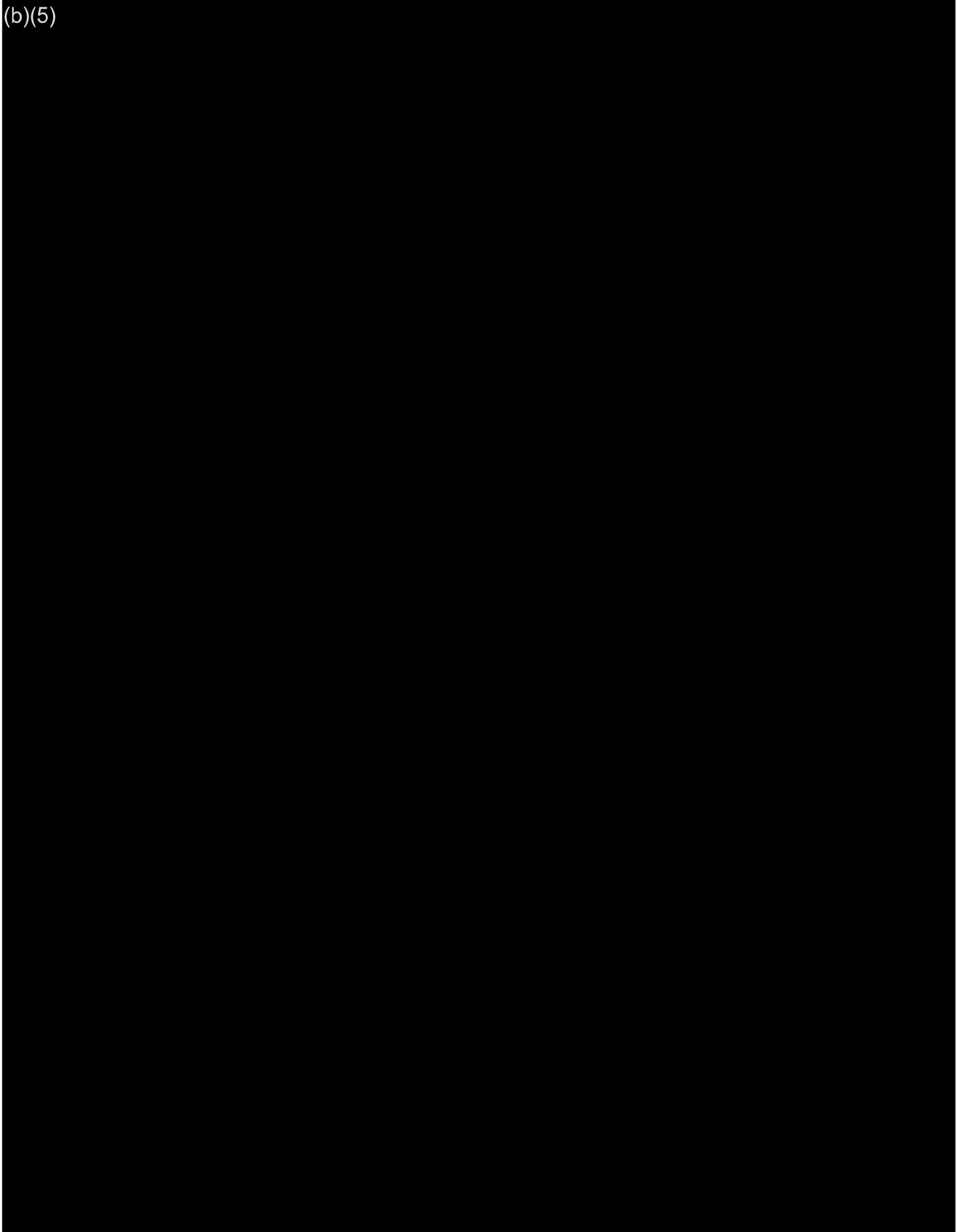
**DELIBERATIVE PROCESS DRAFT v. 4 Edits**

**INFORMATION/BRIEFING MEMORANDUM from REGIONAL EXECUTIVES**

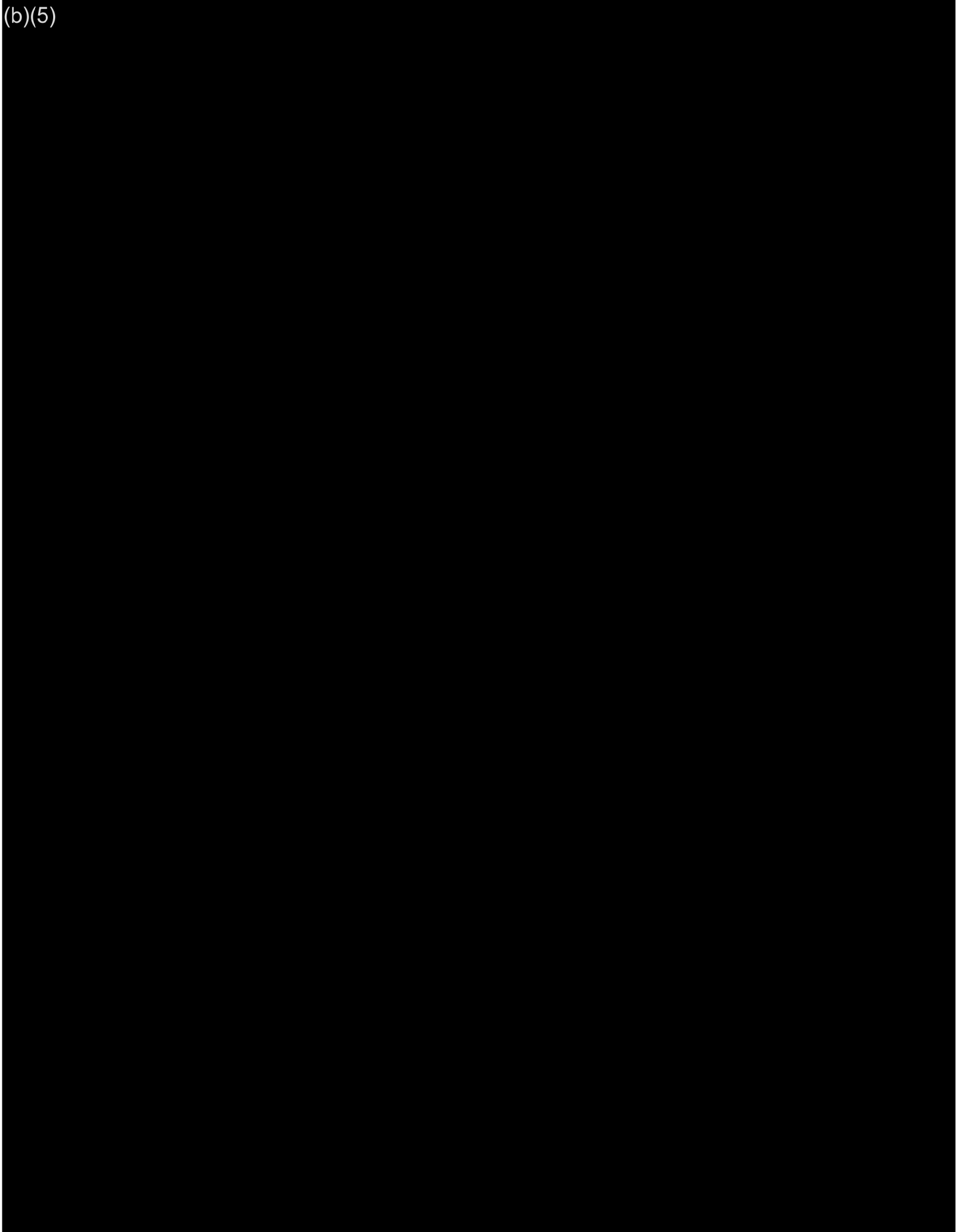
DATE: May 7, 2019  
FROM: Your Administrator Here  
SUBJECT: Upper Columbia River Anadromous Fish Management in Areas Where Federal Dams  
Block Salmon Migration

(b)(5)









## Technical staff report to the Council on the UCUT Phase 1 studies

June 11, 2019

- Overview of findings:
  - Good options for spawning/donor stocks
  - Lots of suitable habitat
  - Have necessary technology
- Uncertainties and qualifications:
  - Did not attempt to establish costs, in part because that would require detailed work with dam owners/operators who were not involved in the study
  - Pathogen could be an issue: “Anadromy brings pathogens, it always does.”
    - Alternatives would have to comport with fisheries managers’ disease policies.
  - Predation was not examined closely because they don’t know the number or predators or their prey priorities.
    - Related: The OSU economic analysis of northern pike impacts was inconclusive because they didn’t have enough data.
  - Stock assessments were based on “good years,” which they admitted wouldn’t be valid in years like this.
  - Habitat was based on intrinsic potential; that is, with human barriers like dams removed.
    - A considerable amount of the potential habitat is in the Spokane River subbasin, behind several non-federal dams.
  - Spawning capacity estimated between 50,000 and 800,000 redds.
  - Smolt capacity of Lake Roosevelt estimated between 15 million and 45 million
  - Next steps: Public comment and ISRP review
    - Council staff will work with UCUT to draft ISRP questions for the Council to consider at its July meeting.
    - UCUT handled public comment before, likely to do on the final report as well.
  - There was no express request or discussion regarding moving from Phase 1 to Phase 2 now.

From: Miles, Tucker (BPA) - LN-7

Sent: Wed Jun 10 09:31:38 2020

To: Key, Philip S (BPA) - LN-7; Senters, Anne E (BPA) - LN-7


Subject: Blocked Area Forum Talking Points

Importance: High

Attachments: Annotated FMBA Kickoff Meeting Agenda - Internal Federal DRAFT\_2020-06-01.pdf

***Confidential; FOIA-exempt***

(b)(5)



Sharing this to keep you in the loop, but please let me know if you have questions or concerns. I am planning to be on the call with Ben and Scott this afternoon.

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968


**From:** Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Sent:** Tuesday, June 9, 2020 8:52 PM

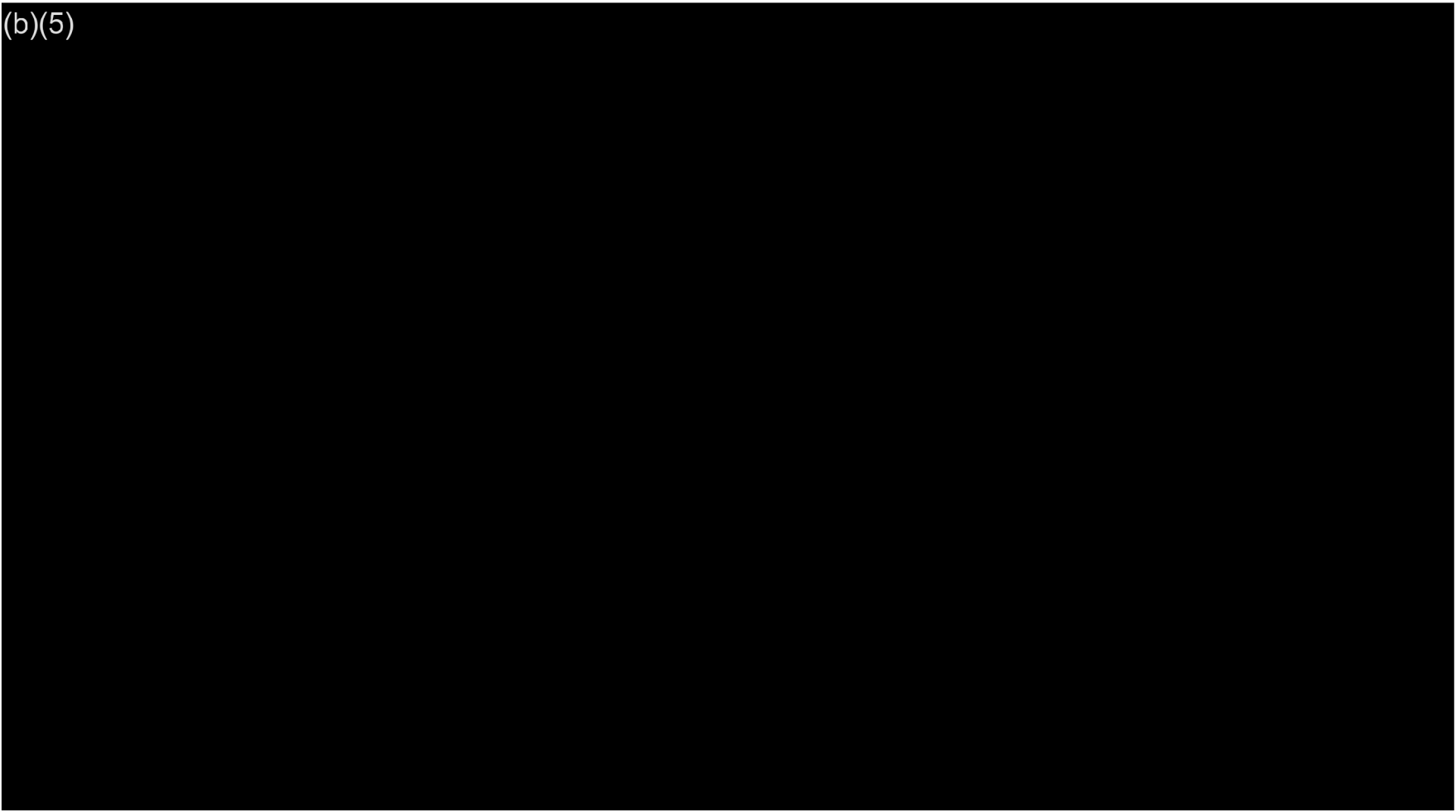
**To:** Armentrout, Scott G (BPA) - E-4 <sgarmtrout@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** RE: Discuss Forum Talking Points

(b)(5)



(b)(5)



Anything we should mention about the nexus with Accord development or should we stay away from that for now?

Also – I am double booked for this one with a FWS BiOp meeting. Let's discuss priorities tomorrow.

Ben

-----Original Appointment-----

**From:** Swanson, Linda M <[LSwanson@usbr.gov](mailto:LSwanson@usbr.gov)>

**Sent:** Wednesday, May 20, 2020 2:32 PM

**To:** Swanson, Linda M; Gray, Lorri J; Hoefer, Scott E; Springer, Roland K; Paquin, Melanie J; Zelinsky, Benjamin D (BPA) - E-4; Michael Tehan - NOAA ; Abrams, Mary M; Elicker, Roy E; [Mike.J.Langeslay@usace.army.mil](mailto:Mike.J.Langeslay@usace.army.mil); [rock.d.peters@usace.army.mil](mailto:rock.d.peters@usace.army.mil); Mercier, Bryan K; Frances E (Beth) CIV USARMY CENWD Coffey (US); Jlm Fredericks; Gordon, Judith; Armentrout, Scott G (BPA) - E-4

**Cc:** Johnston, Chanelle M; White, Rollie

**Subject:** [EXTERNAL] Discuss Forum Talking Points

**When:** Wednesday, June 10, 2020 2:00 PM-3:00 PM (UTC-07:00) Mountain Time (US & Canada).

**Where:** Conference call in #: 866-904-2910 pc: 4858687 Ldr code: 2455744

**Annotated Agenda  
Fish Management in Blocked Areas**

**Kickoff Meeting**

**June 23, 2020**

**8:00 – 10:00 am PDT**

**Participants:** Upper Columbia United Tribes, Spokane Tribe, Colville Tribes, Kalispel Tribe, Kootenai Tribe, Coeur D’Alene Tribe, Yakama Tribes, Columbia River Inter-Tribal Fish Commission, Oregon, Washington, Idaho, Montana, CPN Bureau of Reclamation, Northwest Division Corps of Engineers, PNW Region Fish and Wildlife Service, Bureau of Indian Affairs, West Coast Region NOAA Fisheries, and BPA

**Purpose of Meeting:** Re-engage with interested stakeholders to establish process alignment and lay the groundwork for future, substantive discussions concerning management of anadromous fish in the blocked area upstream of Chief Joseph and Grand Coulee dams.

**8:00 am**     **Introductions** – All participants introduce themselves with name, title, and organization.

**8:15 am**     **Opening Remarks** – Lorri Gray and Beth Coffey briefly discuss the formation of this forum and describe the purpose of the meeting.

- Talking Points:
  - Sole focus of table is fish management above Chief Joseph & Grand Coulee
  - Direction of table is driven by all participants

**8:30 am**     **November 2019 Survey Results** – Roland Springer or Scott Hoefler describe what was learned through the survey and seek additional process-related thoughts from participants.

- Strong support for facilitation
- Meeting Location – Spokane received most support
- Frequency – Quarterly most common response
- Issues to Address – covered in detail in future meetings. Examples: Timelines, broad goals, feasibility and potential for success, measuring success, adaptive management approach, coordinating release of fish, studying fish movement, evaluating passage strategies

**9:00 am**     **Planned Activities above Chief Joseph for 2020 [Round Robin]** – Tribes and states present priority activities planned for 2020 related to managing anadromous fish above Chief Joseph and Grand Coulee. Tribes: Spokane, Colville, Kalispel, Kootenai, Coeur D’Alene; States: Washington

**9:45 am**     **Charting the Path Forward**

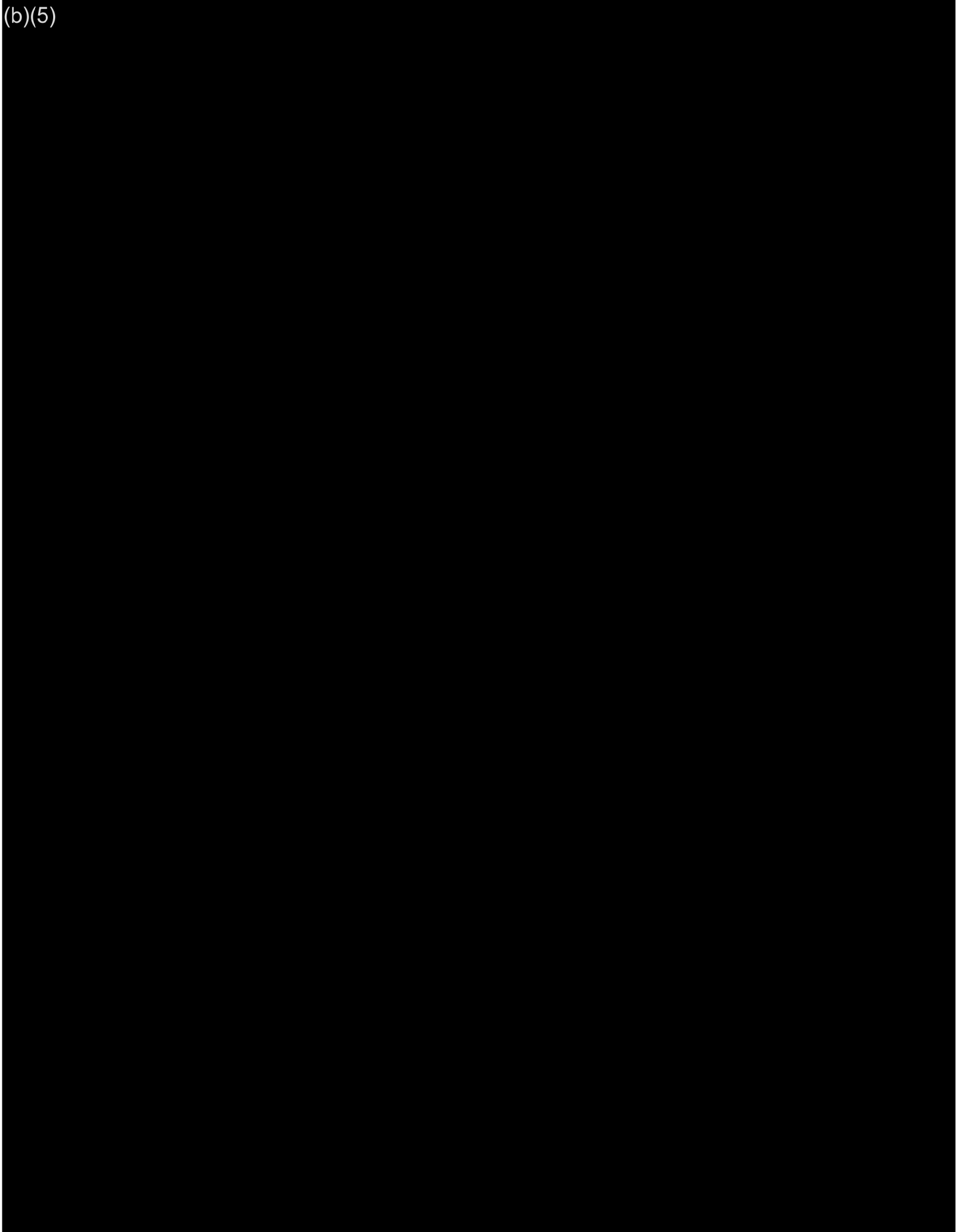
- Facilitation – confirm agreement for third-party facilitation and provide update on approach
- Meeting structure with and without COVID-19 measures
  - Determine best virtual platform to use
  - In-person meeting locations, e.g. possible meeting locations in or around Spokane.

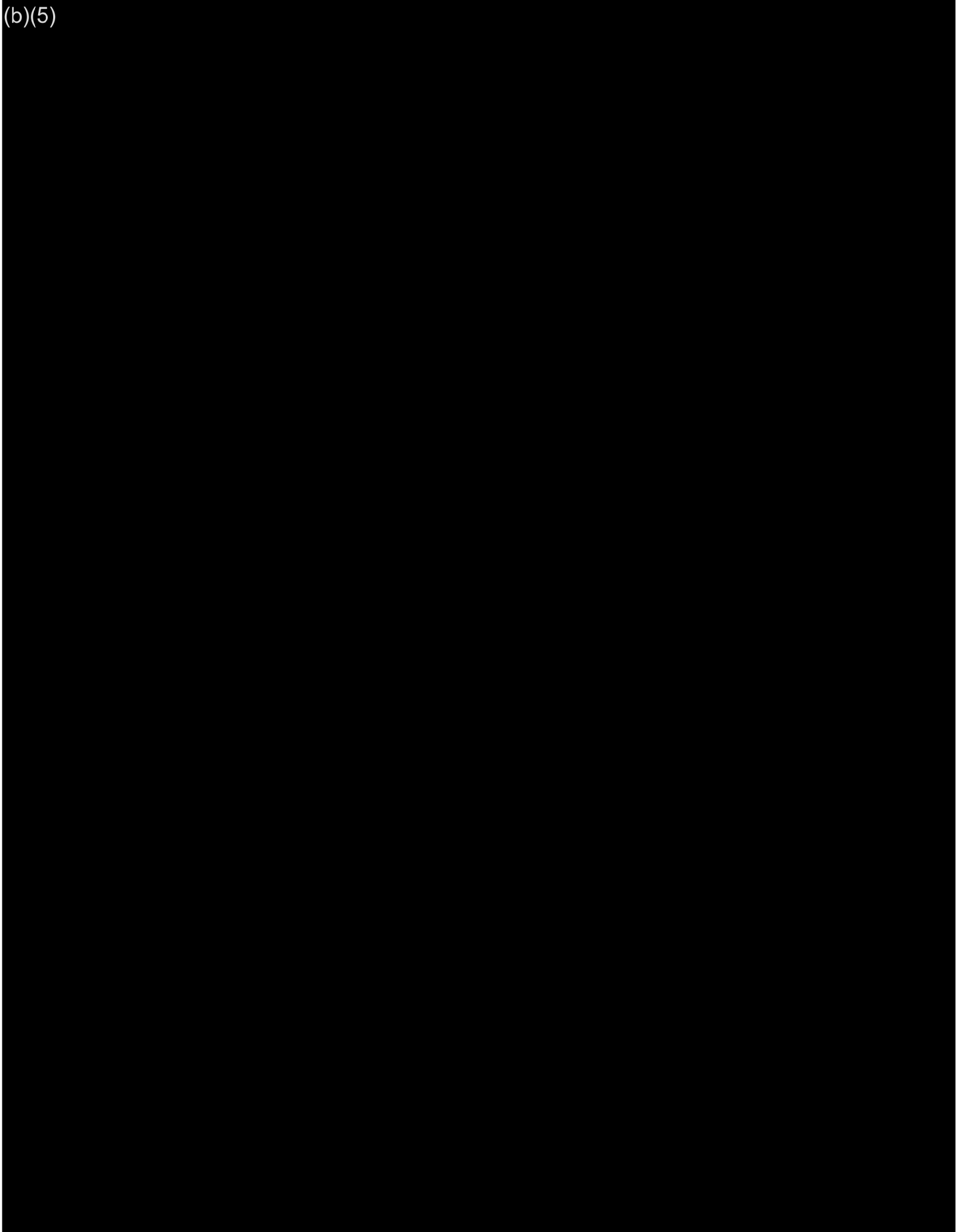
**10:00 am Adjourn**

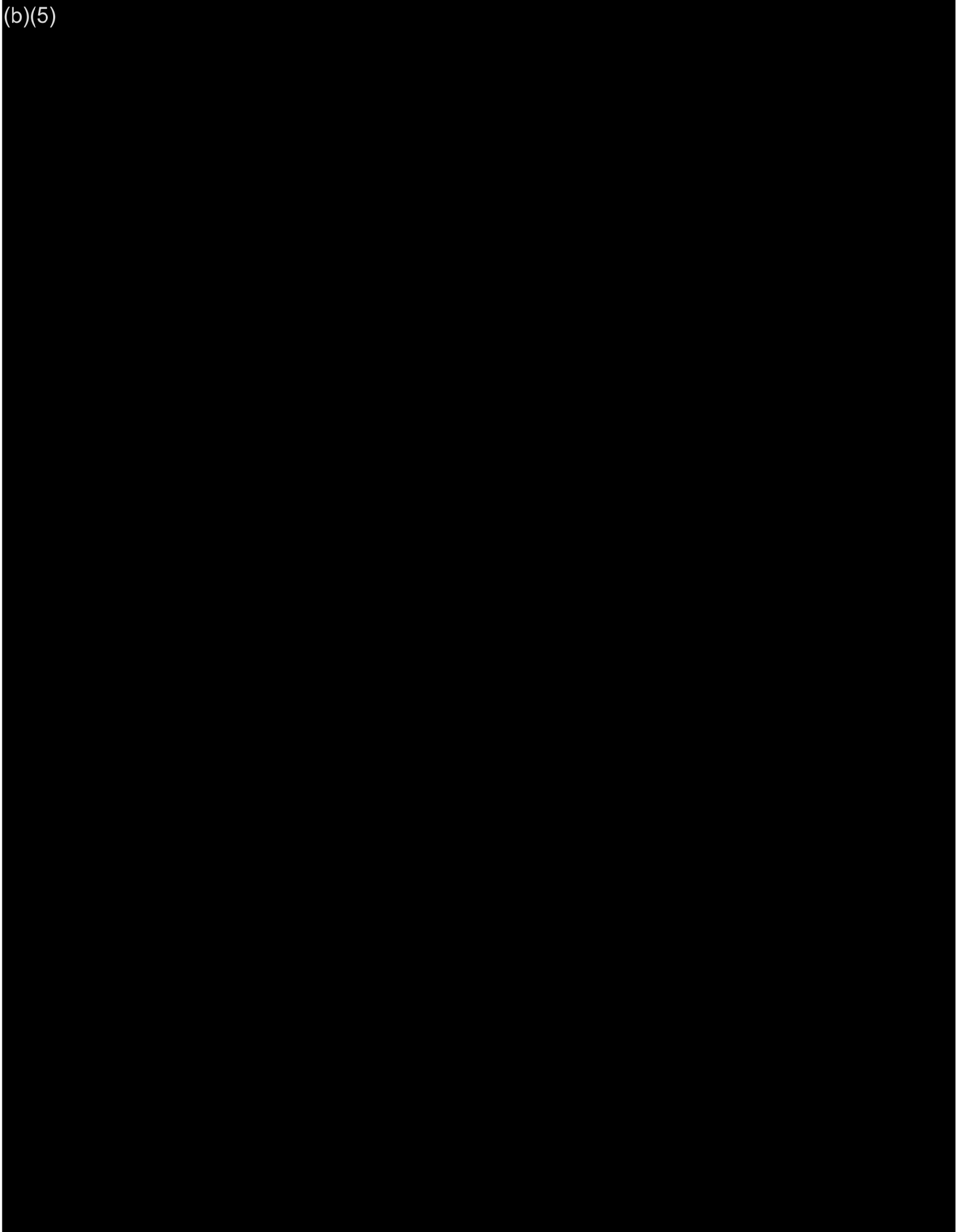
#### **Next Steps**

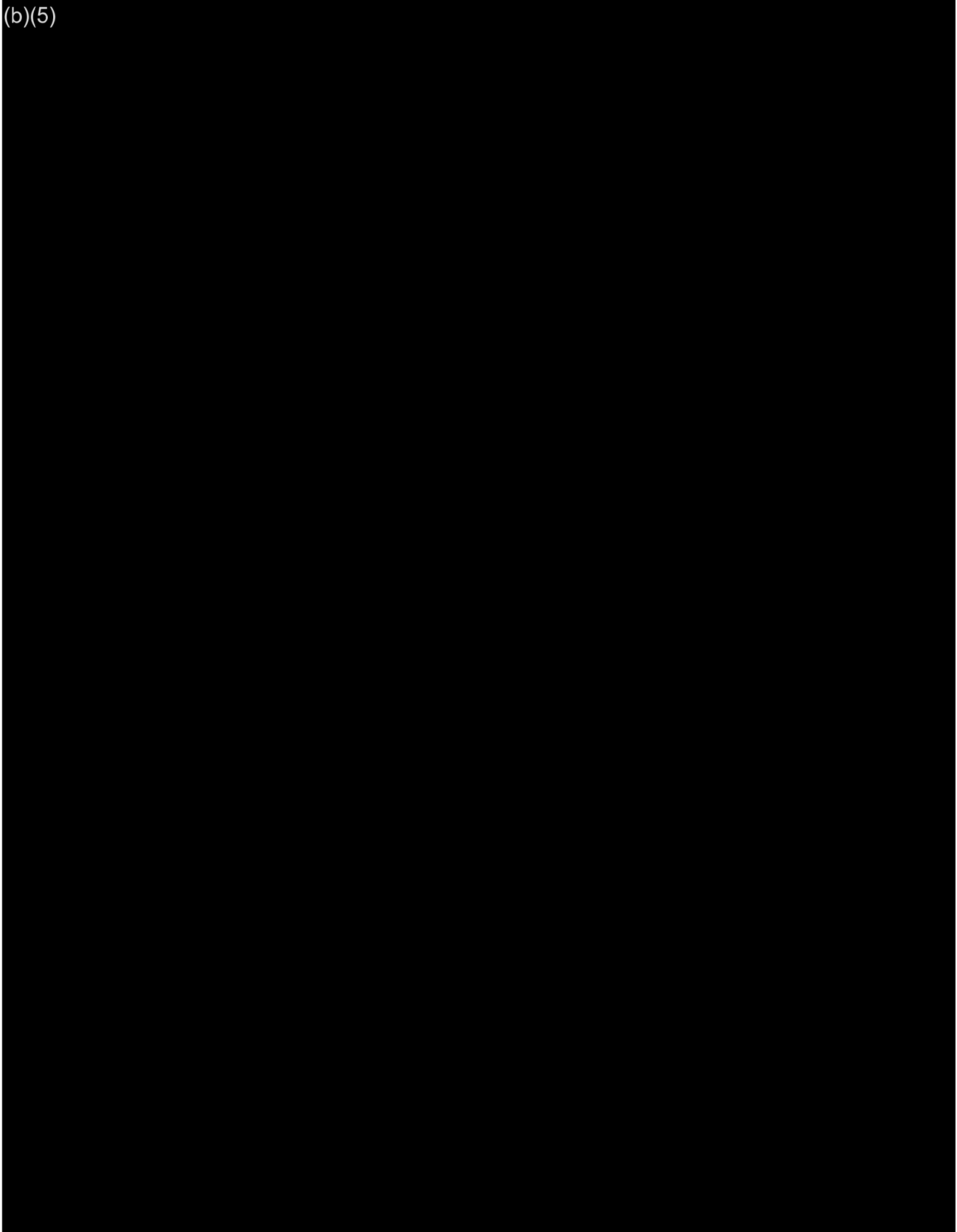
- Secure facilitation
- Schedule next meeting (influenced by availability of facilitation)
- Build agenda for next meeting – refer to meeting matrix for possible focus areas

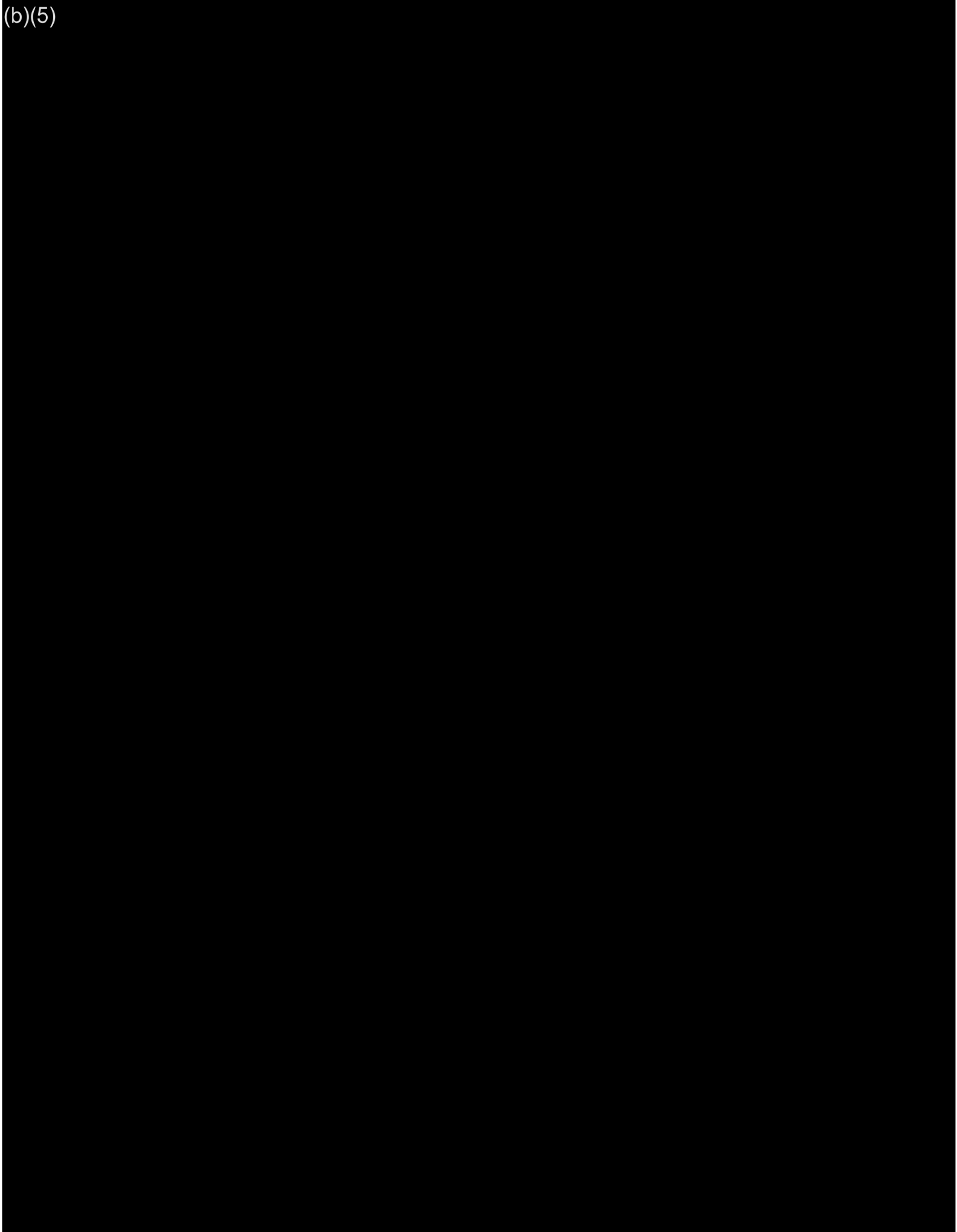


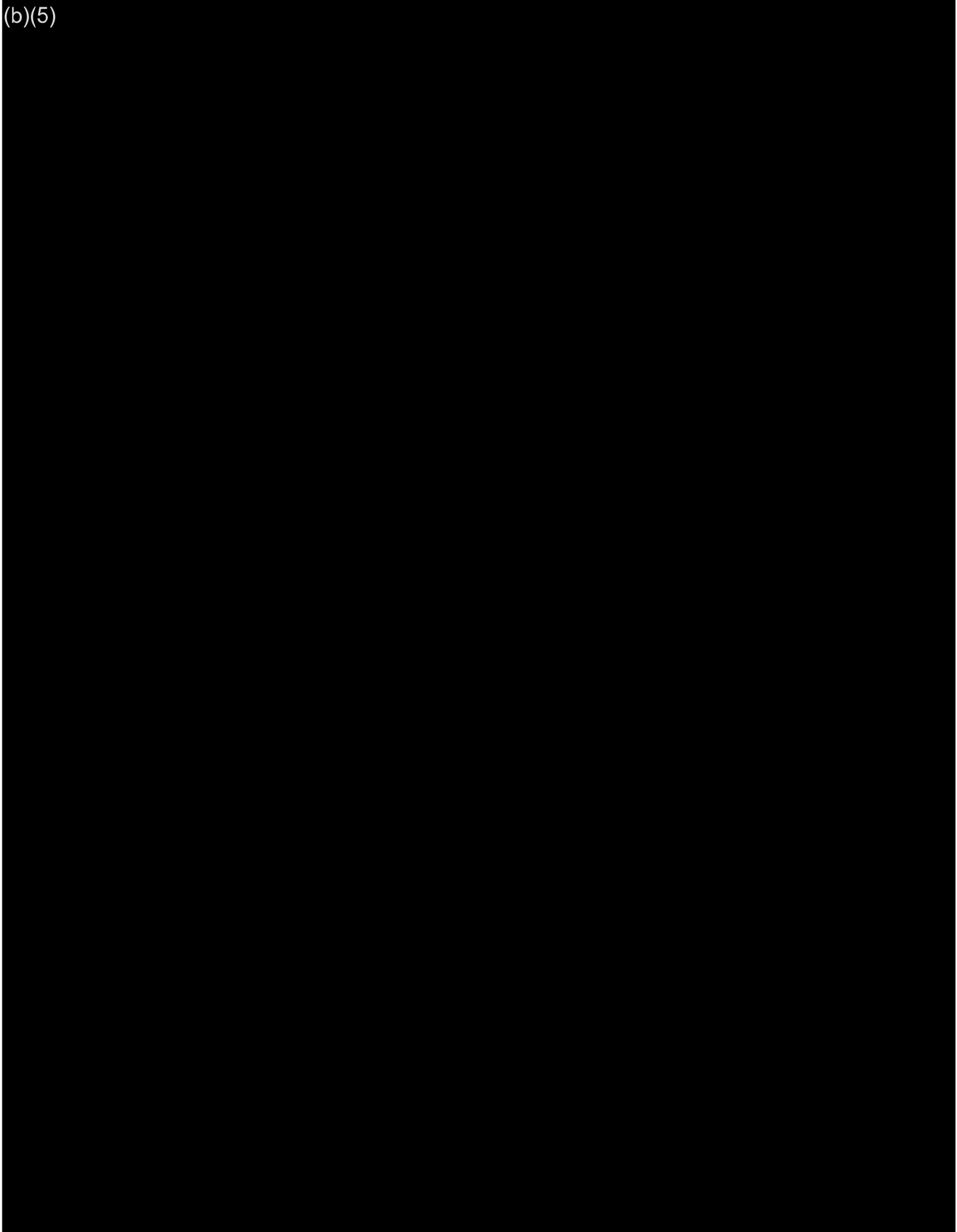


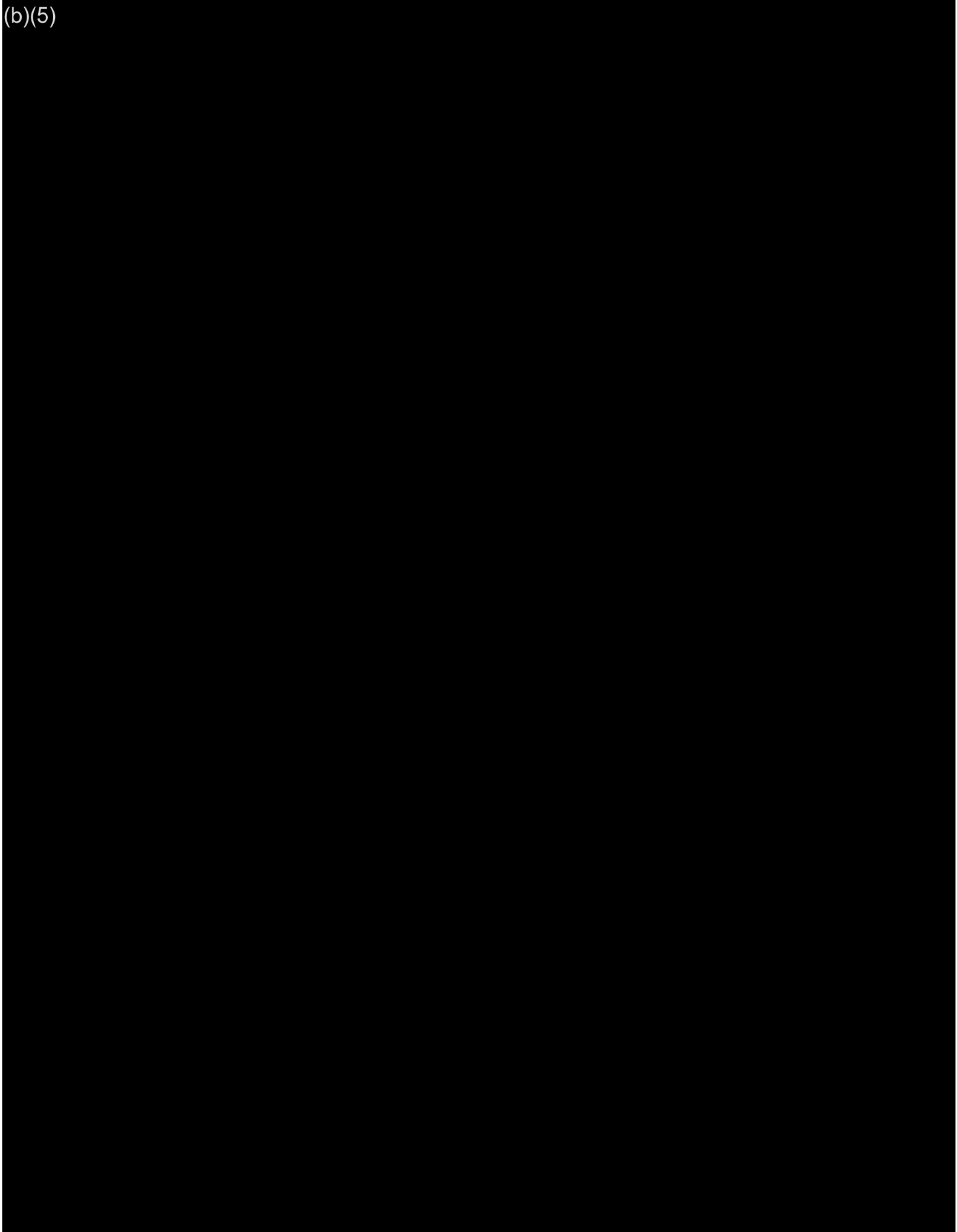


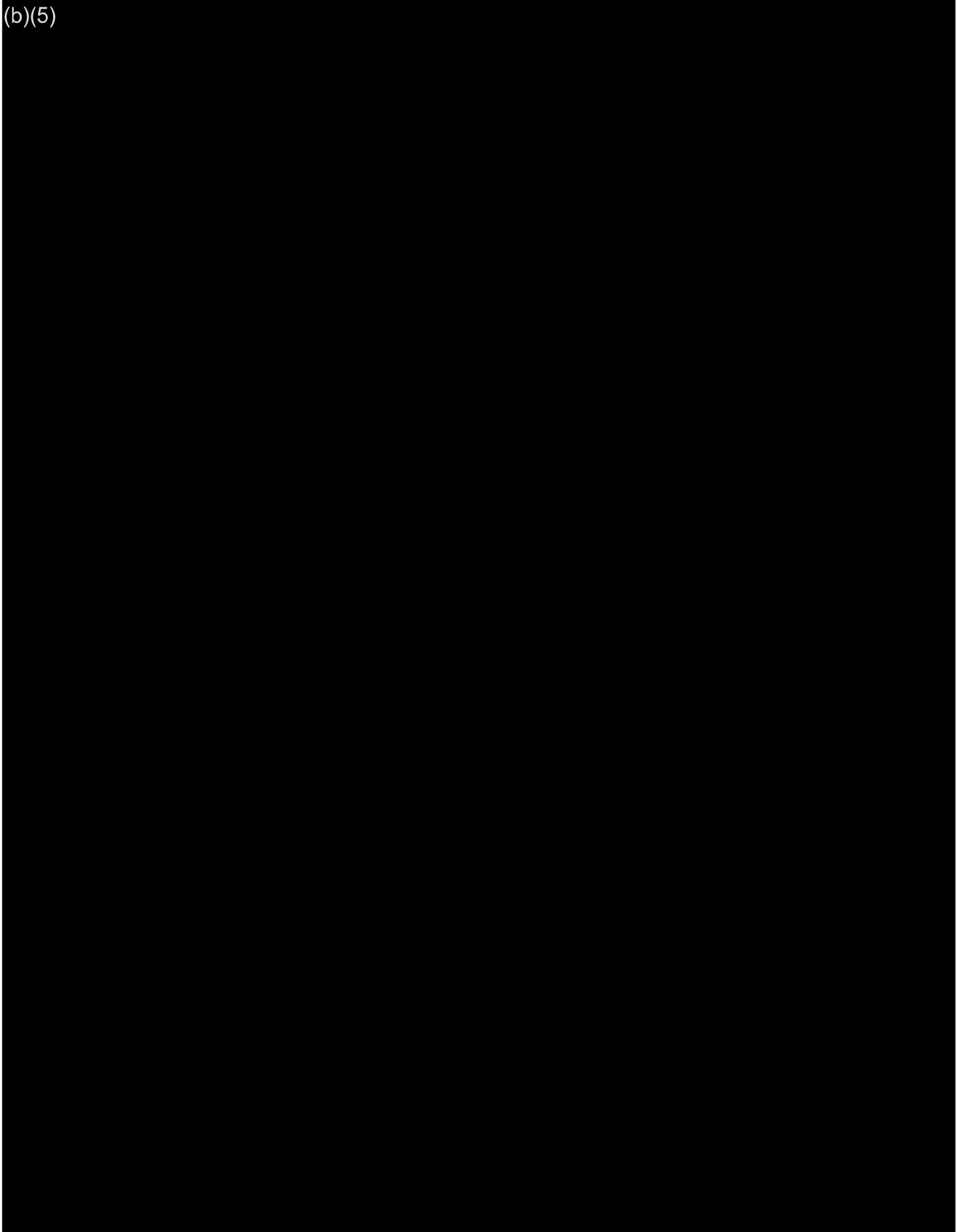




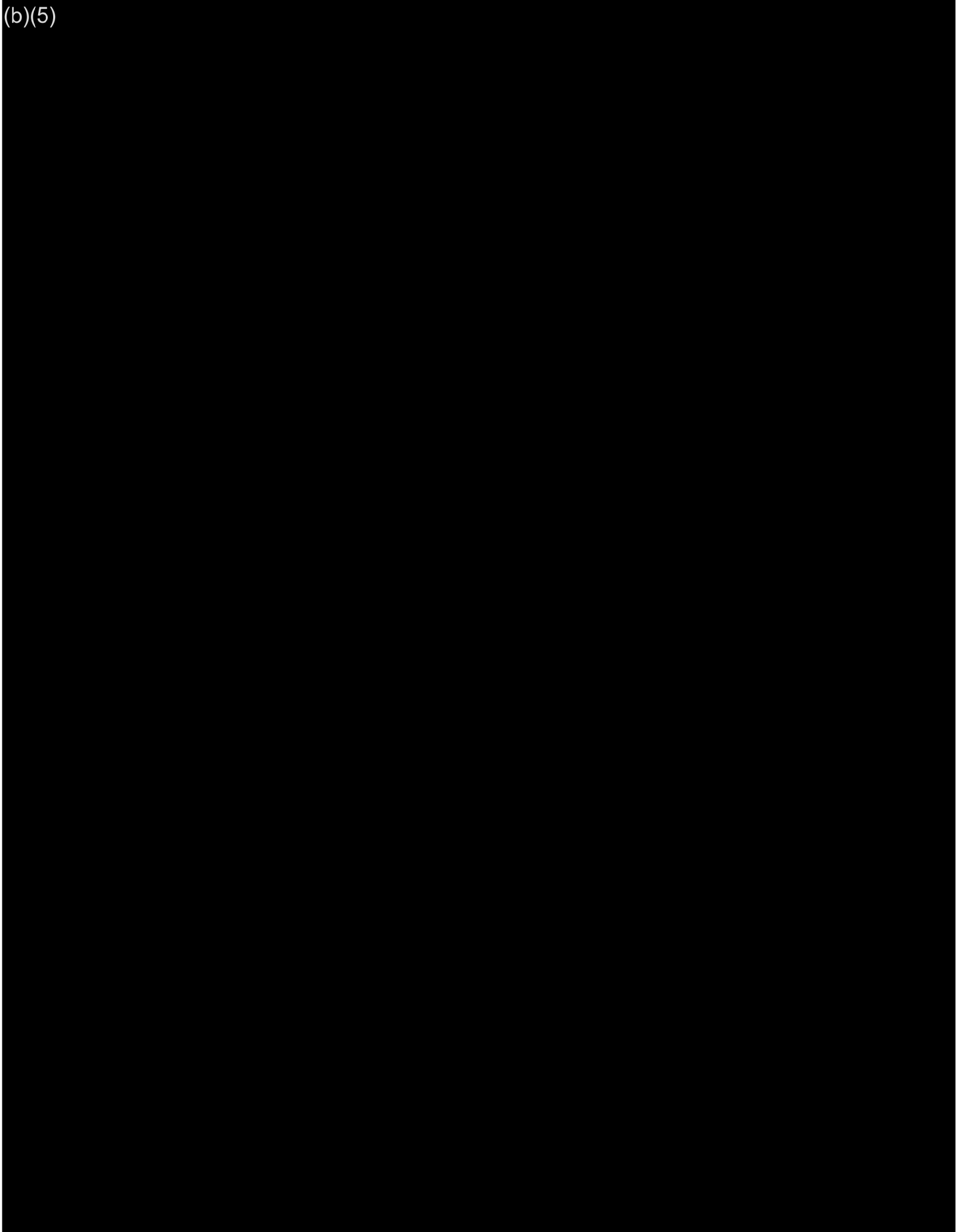


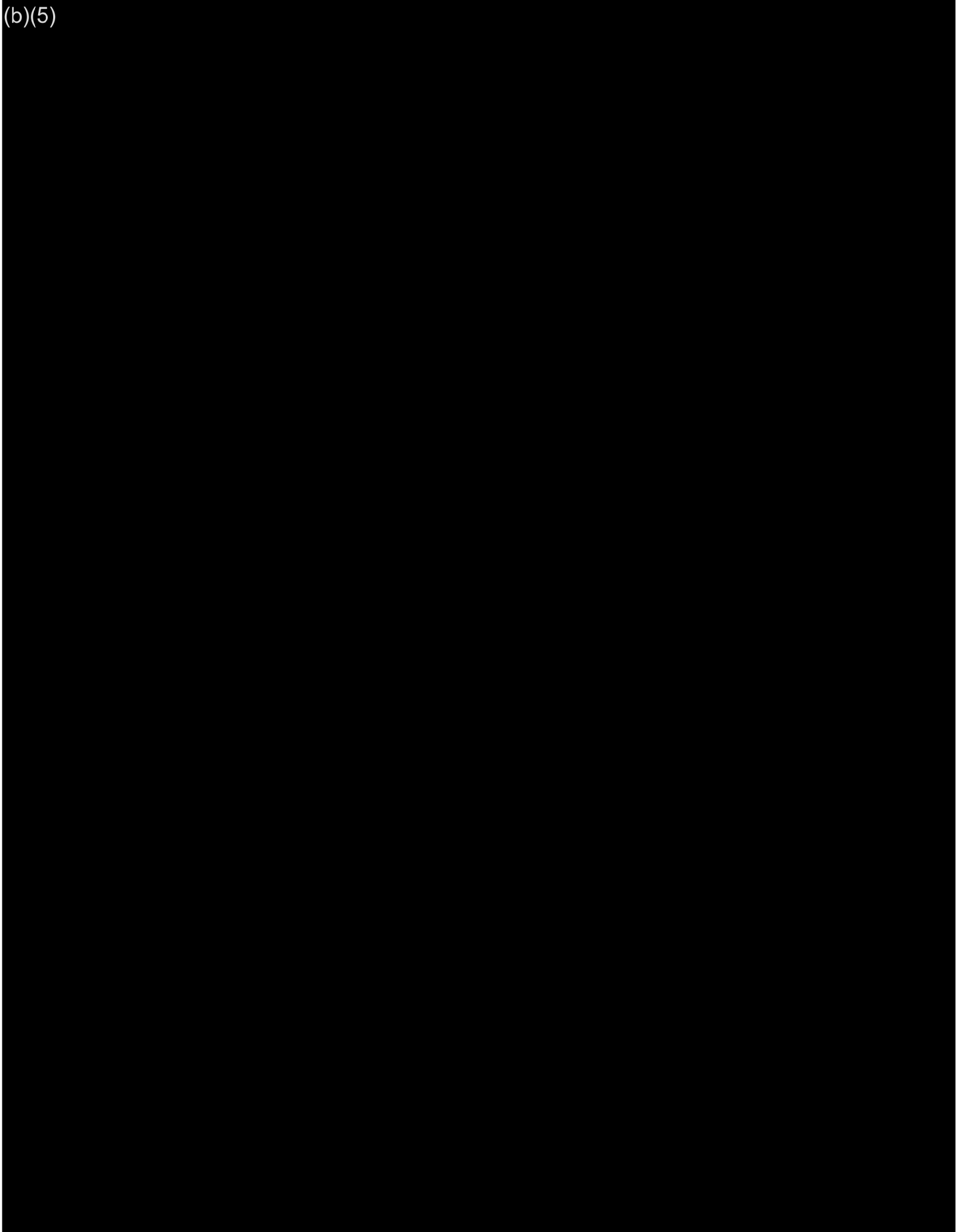


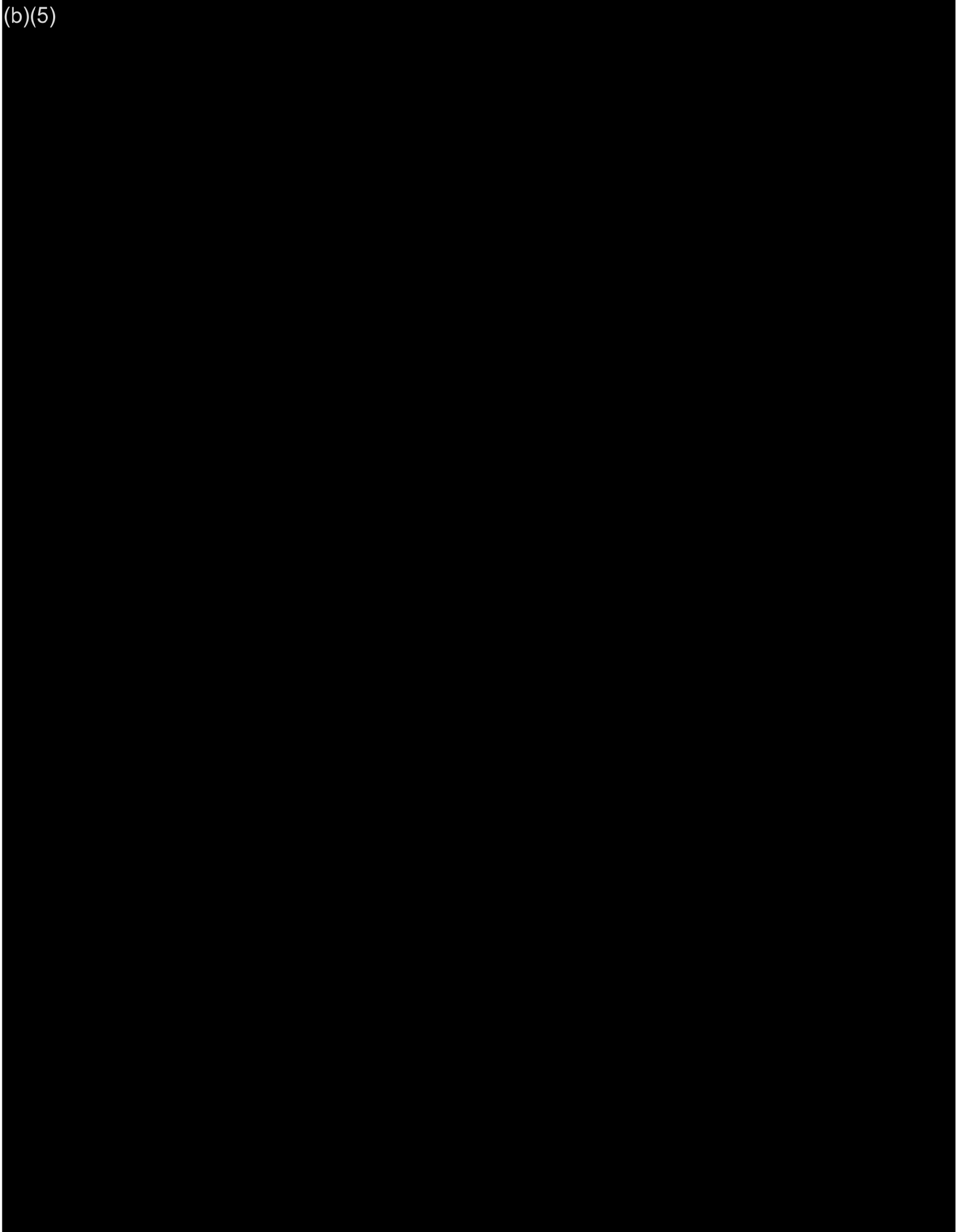


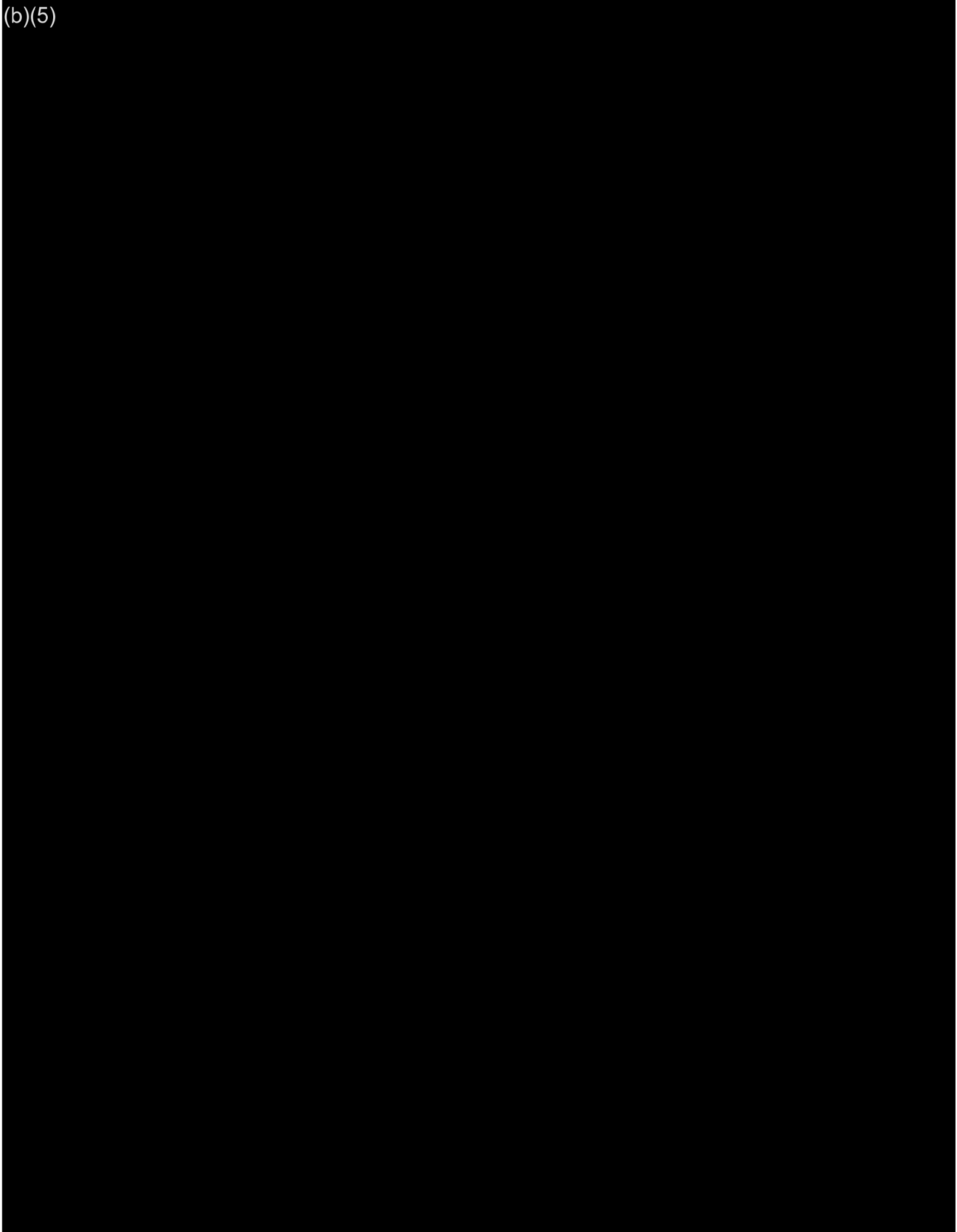


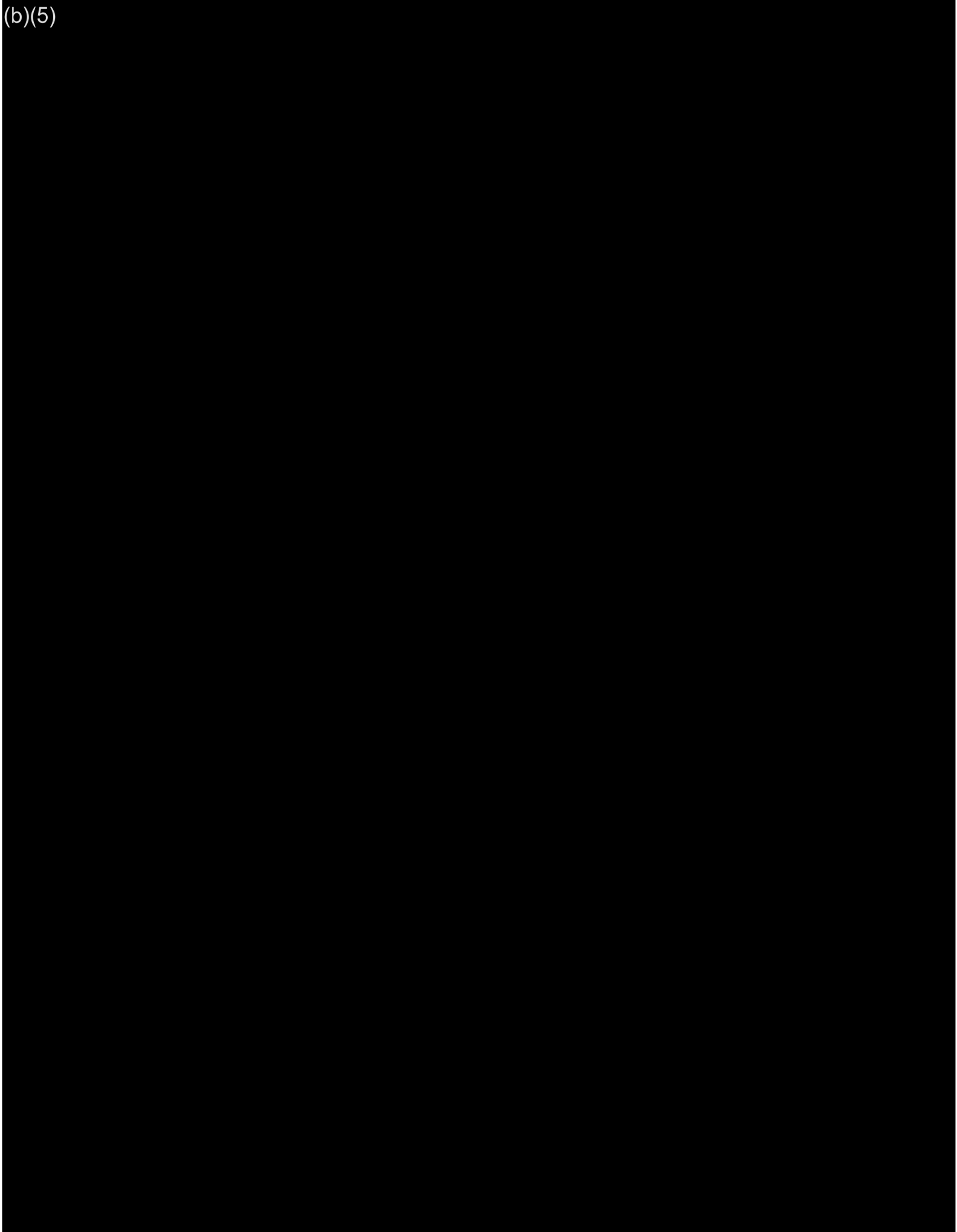


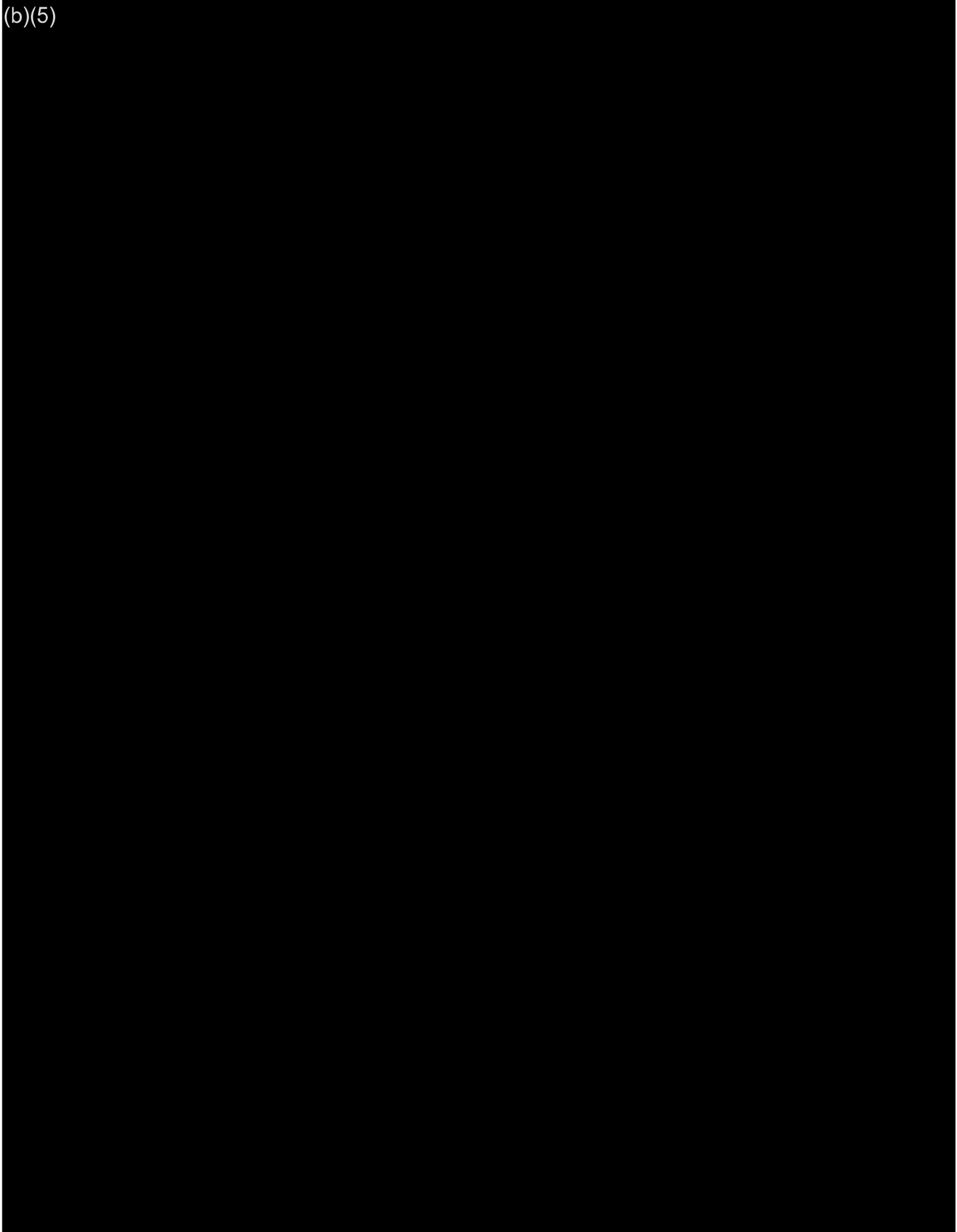


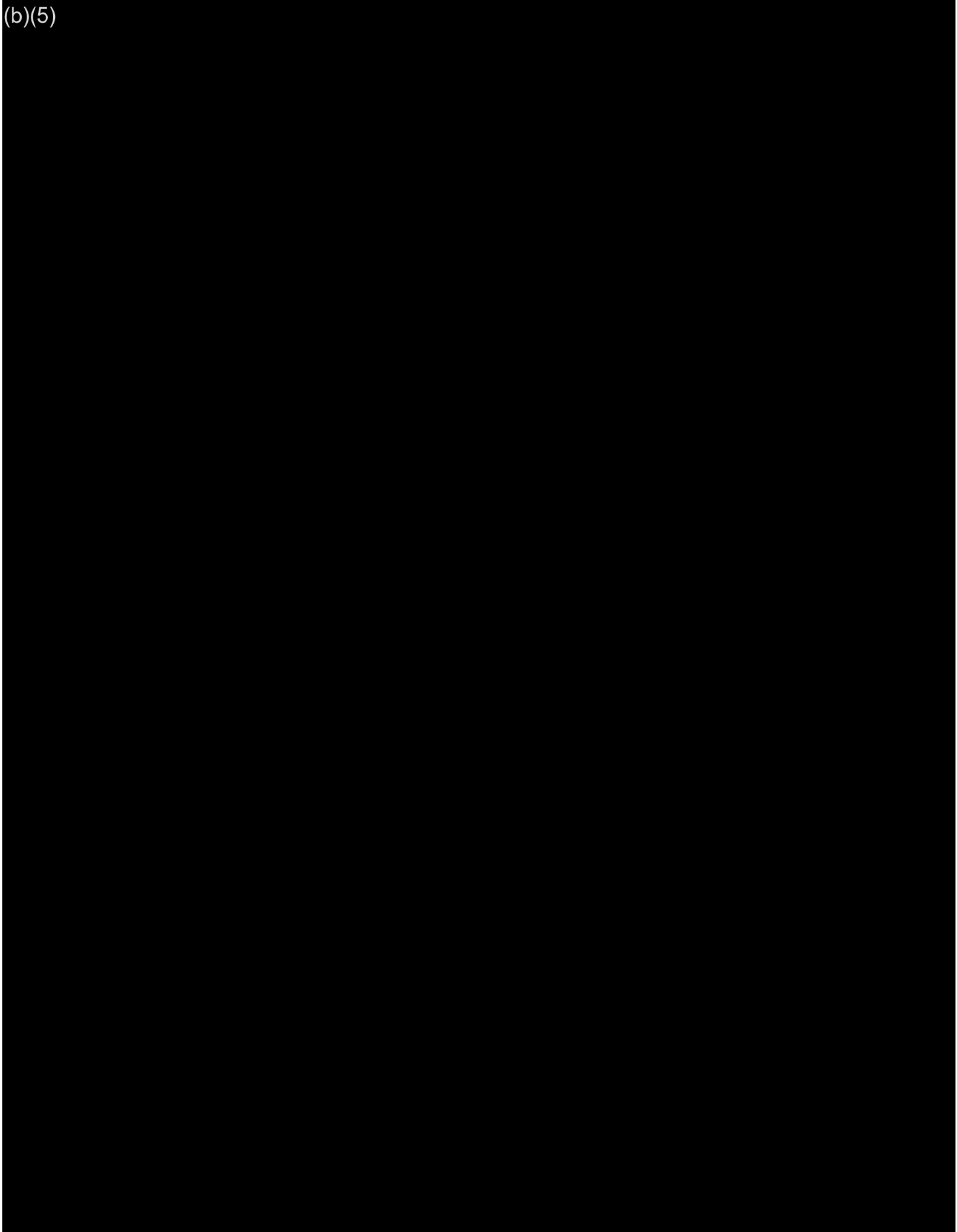


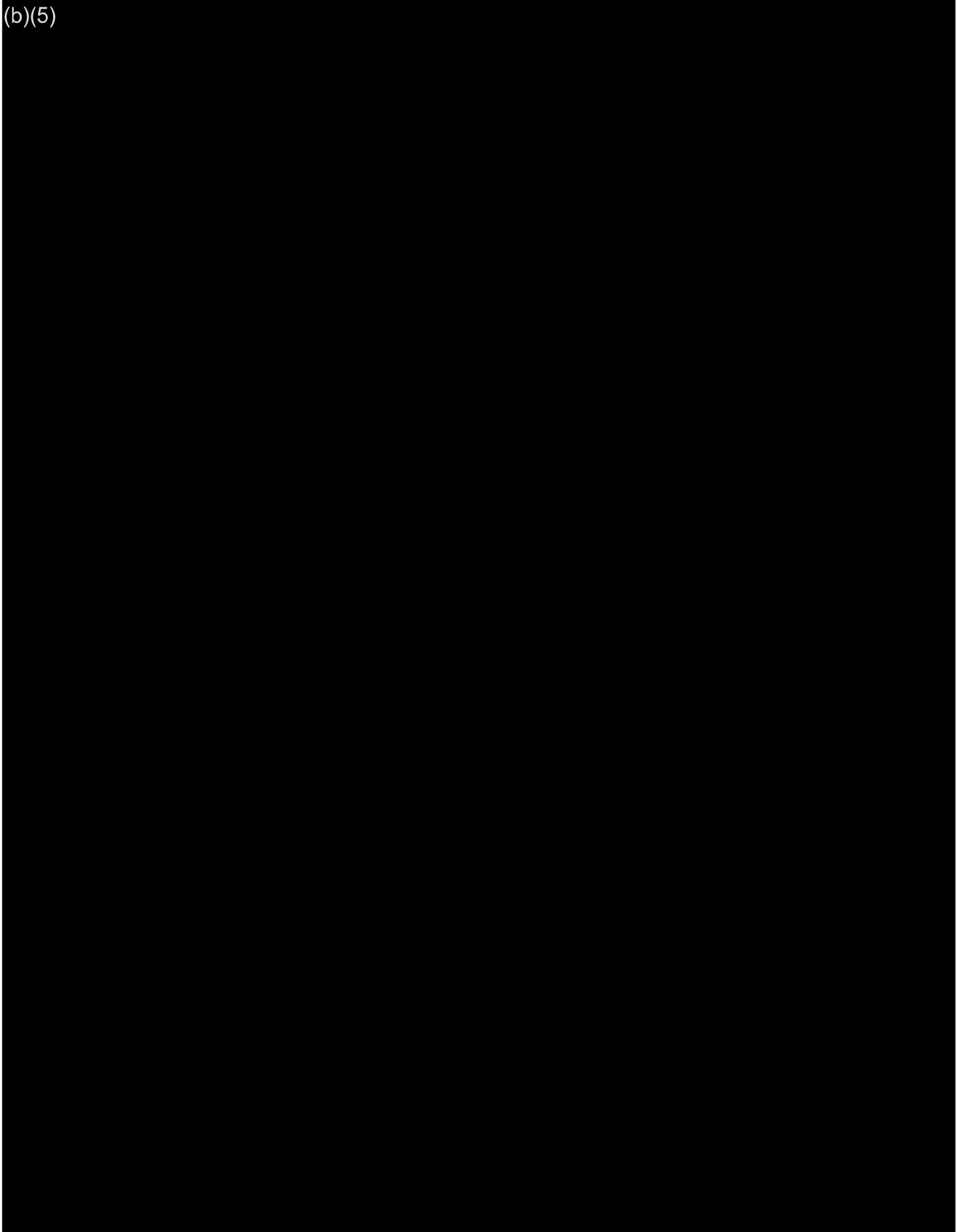




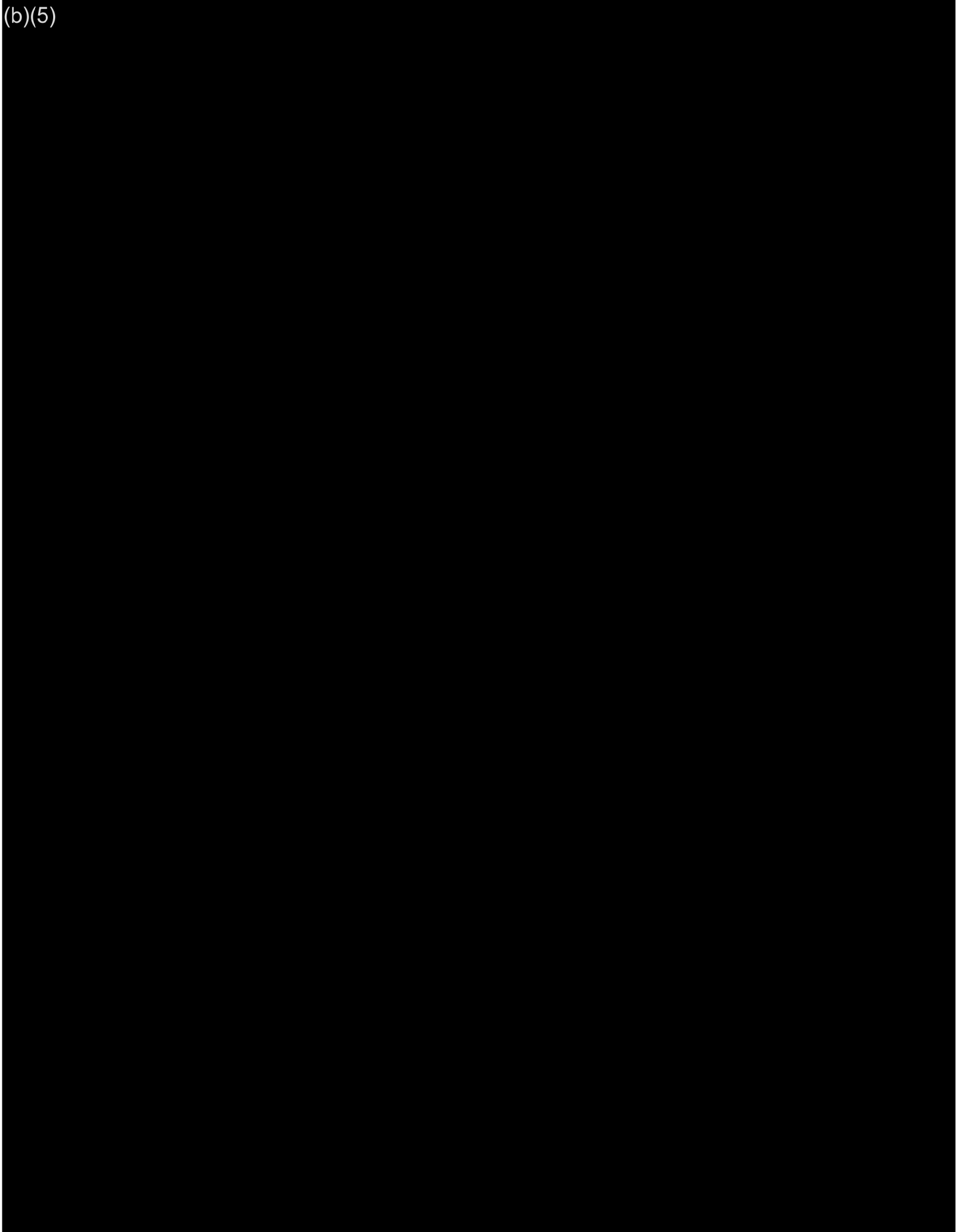


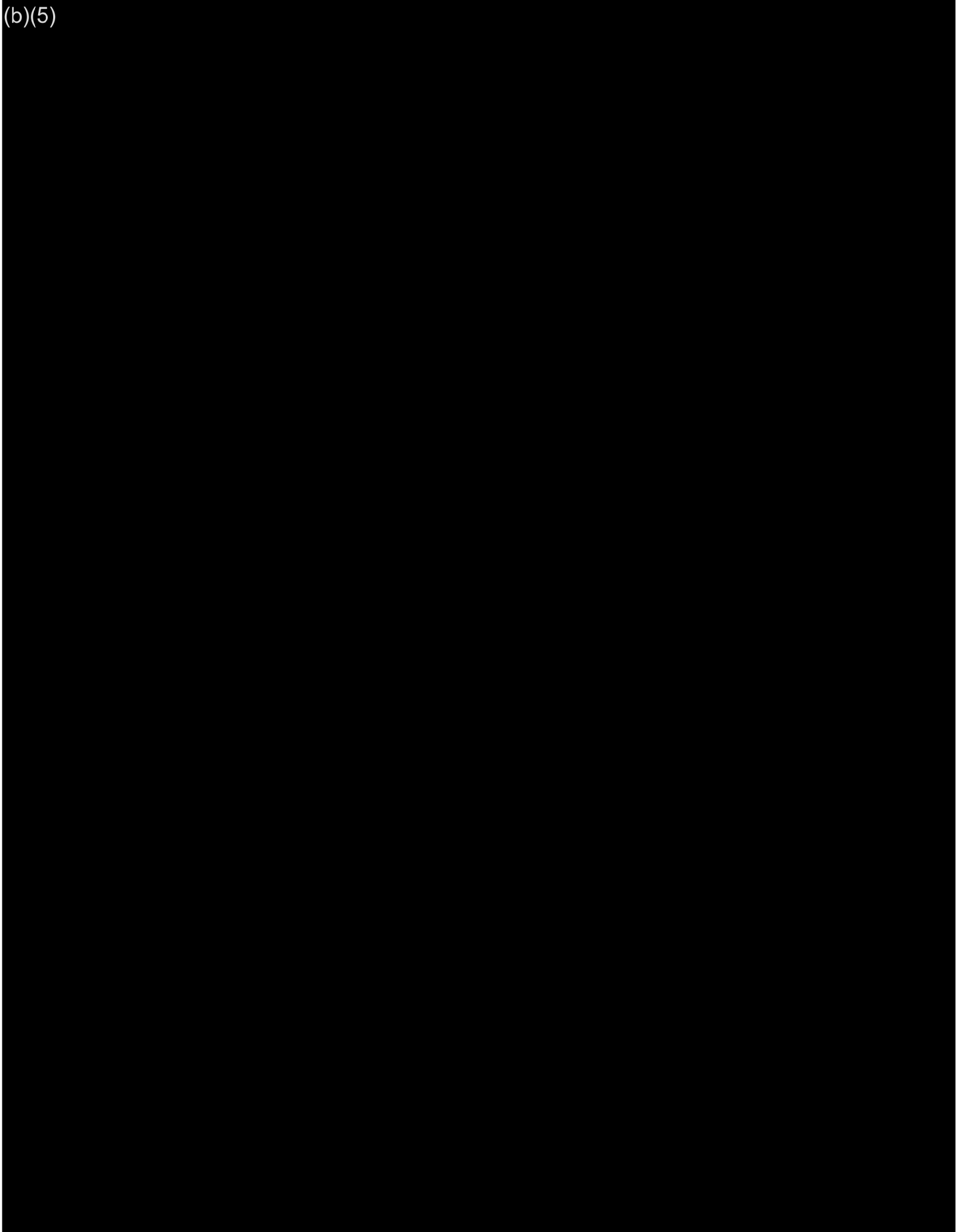


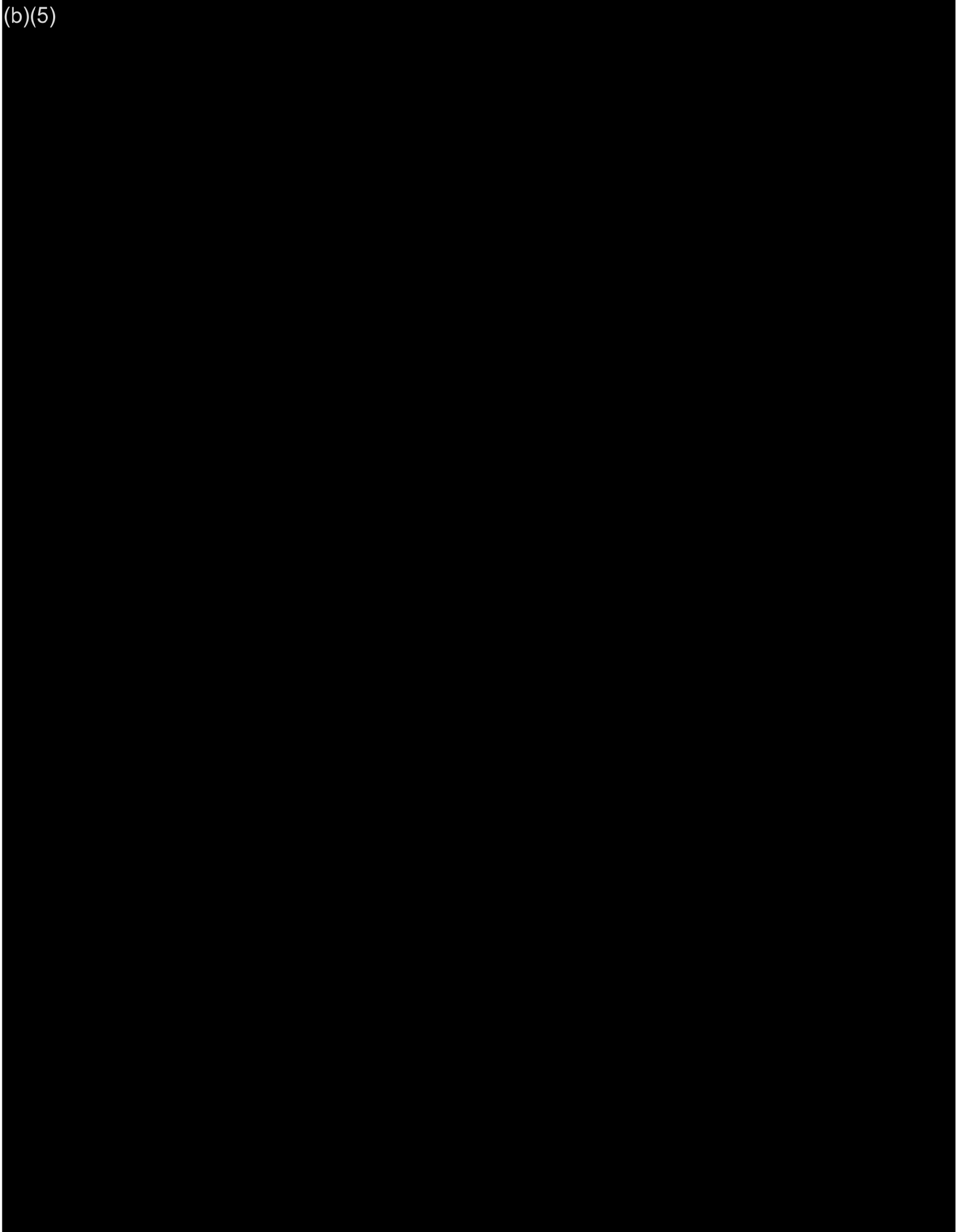


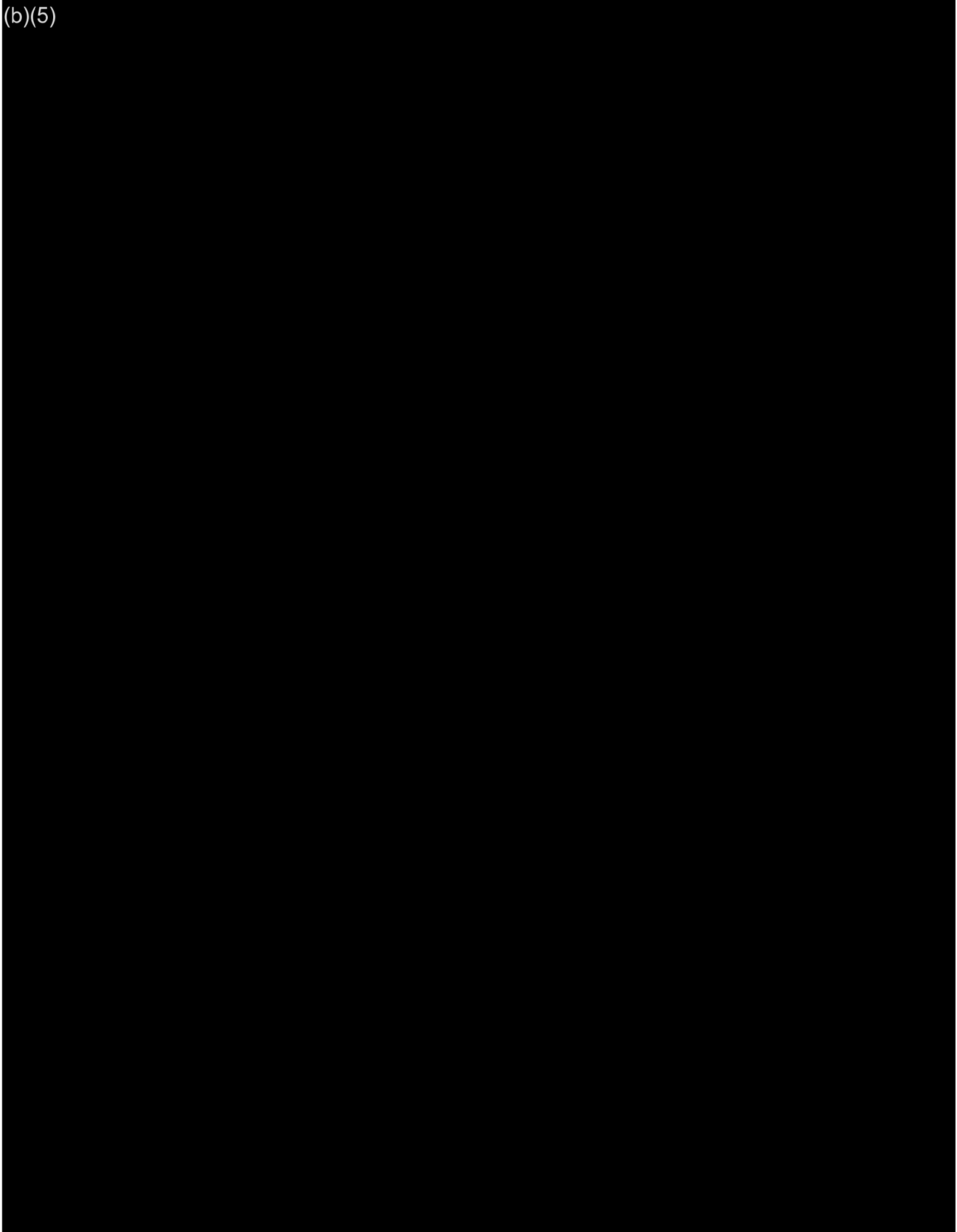


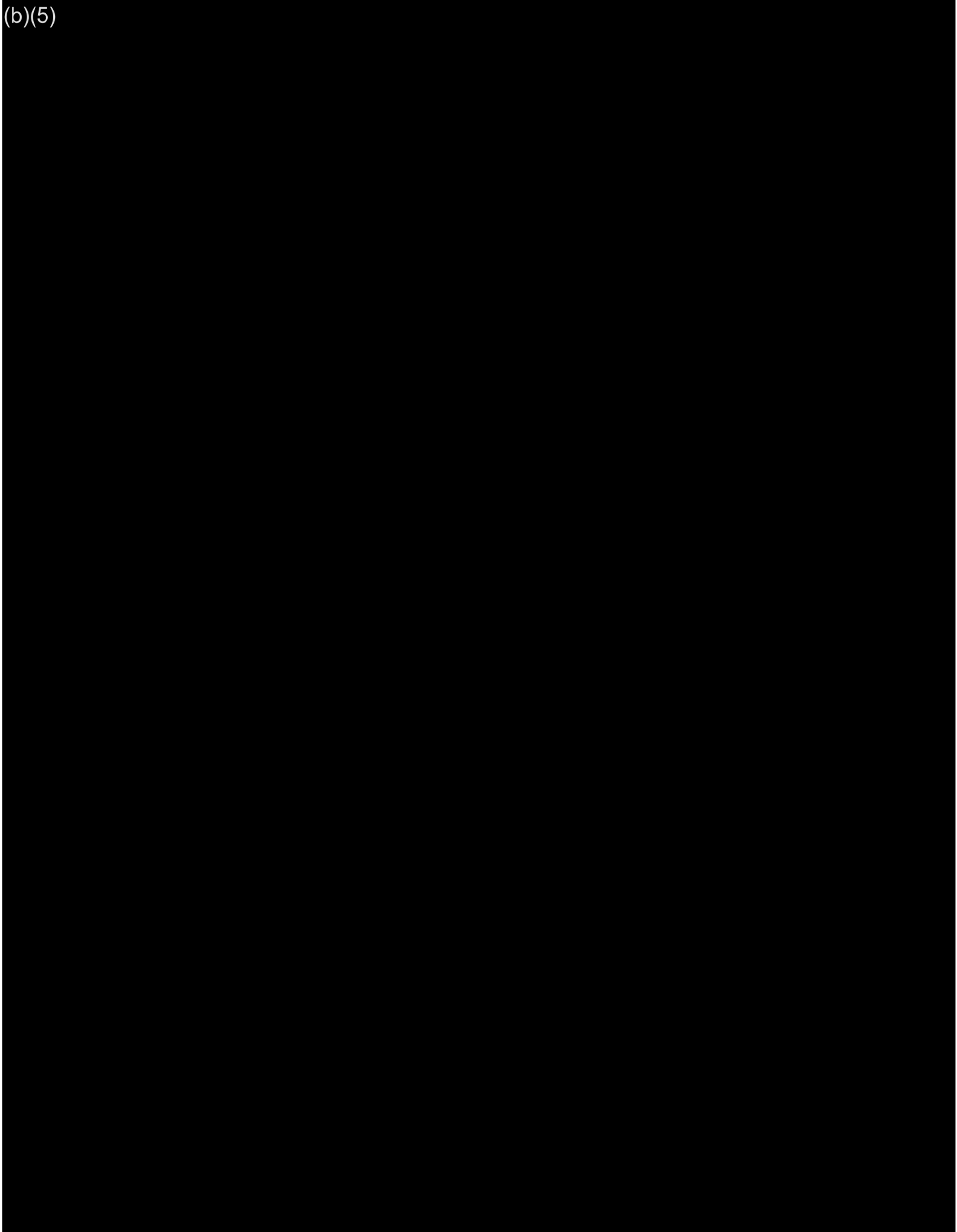


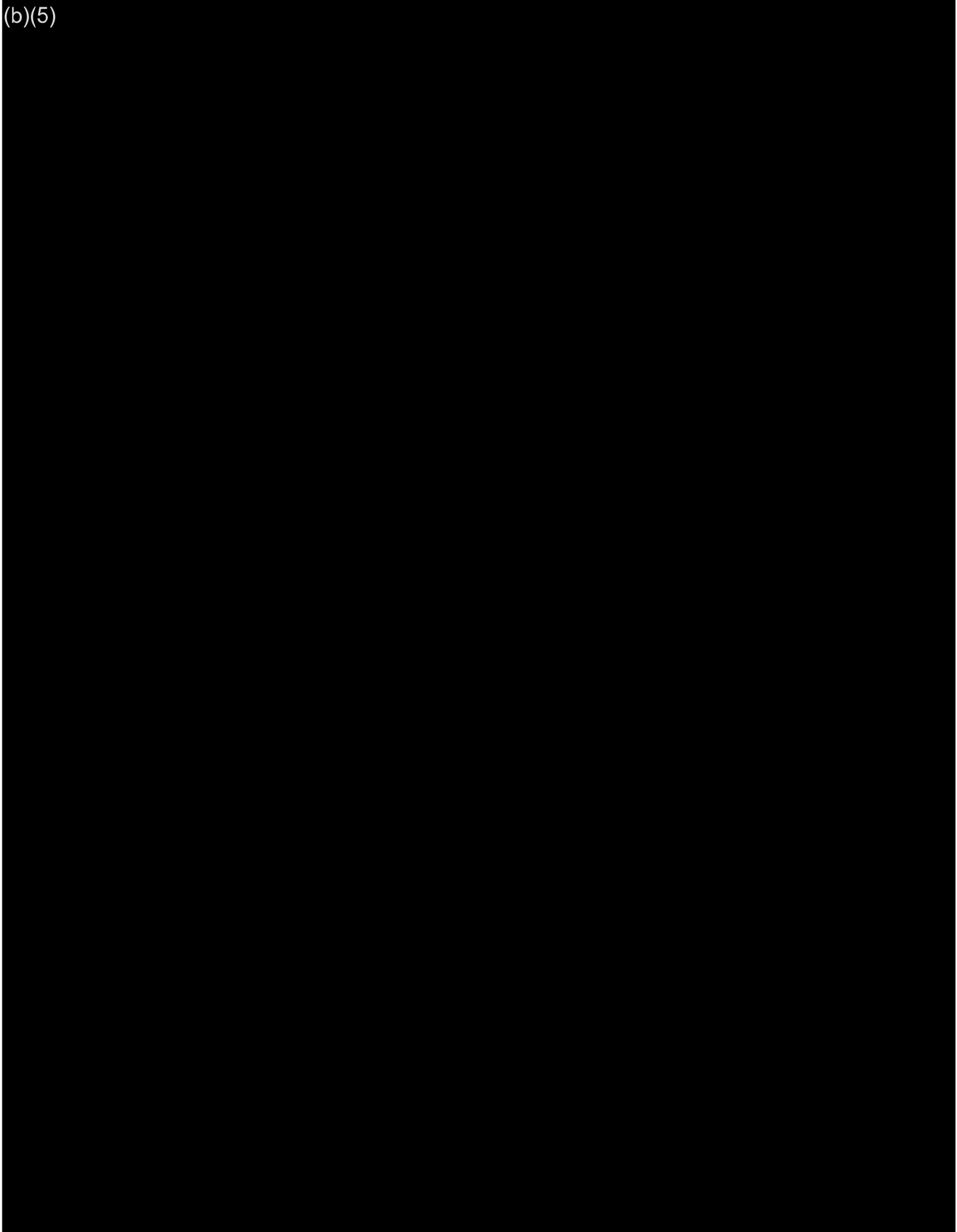












From: Cummings,Adam H (CONTR) - EW-4

Sent: Tue Apr 30 13:52:03 2019

To: Welch,Dorothy W (BPA) - E-4; Armentrout,Scott G (BPA) - E-4; Foster,Marchelle M (BPA) - DIT-7; Kavanagh,Maureen A (BPA) - EWP-4; Lofy,Peter T (BPA) - EWU-4; 'Charles Brushwood (FNW)'; 'randall.friedlander@colvilletribes.com'; 'cody.desautel@colvilletribes.com'; Ball,Crystal A (BPA) - DIR-7; Miles,Tucker (BPA) - LN-7; Key,Philip S (BPA) - LN-7; 'Tim Dykstra'; 'Lesla Stark'; 'kary.nichols@colvilletribes.com'; 'kirk.truscott@colvilletribes.com'; 'bgruber@ziontzchestnut.com'; 'bbaldwin@ziontzchestnut.com'; Cummings,Adam H (CONTR) - EW-4

Cc: Peone,Joe E (CONTR) - DIT-MEAD-GOB; casey.baldwin@colvilletribes.com; Skidmore,John T (BPA) - EWL-4; Cummings,Adam H (CONTR) - EW-4; Zelinsky,Benjamin D (BPA) - E-4; Karnezis,Jason P (BPA) - E-4; McDaniel,Kandi L (CONTR) - A-7; Yarman,Jennifer A (CONTR) - EW-4; Renner,Marcella P (BPA) - E-4

Subject: Colville Accord meeting 4/11/19 @ BPA - takeaways / next steps

Importance: Normal

Greetings all,

Thanks to all for joining us here at BPA on 4/11! Apologies for the late distribution on this list of takeaways. It took a bit circulate and validate some of the tasks both internally and with Chuck. Sharing with all to memorialize our progress and where we're heading.

Please let me know if I missed anything critical. I will work with Maureen and Chuck primarily to track progress, and with Marcy to ensure we have the next forum of this nature scheduled in August.

**Attendees:**

- Colville: Cody Desautel, Randy Friedlander, Kirk Truscott, Brian Gruber, Beth (Baldwin) Marcella, Chuck Brushwood, Kary Nichols (phone)
- BPA: Dorie Welch, Crystal Ball, Scott Armentrout, Marcy Foster, Peter Lofy, Maureen Kavanagh, Tucker Miles, Philip Key, Adam Cummings
- BOR: Lesa Stark (phone)
- Corps: Tim Dykstra

**Actions / Takeaways**

- Flex spill:
  - o Corps and other AAs to keep CTCR informed of discussion with flex spill partners on options for 2020 (to avoid informing us after a decision has been made).
  - o BPA (Crystal) - follow up with Jason sweet re: how do we address reserve power needs outside of 8 dams in Flex Spill Agreement (reference P. 19 of FSA - table 1.3a) -- usually April/May'ish -- Cody Desautel needs to better understand so he can respond to tribal council inquiries (**COMPLETE**)
- Council Amendment process
  - o Next phase from Council - July timeframe (watch website for committee meetings for best updates)
  - o Marcy will provide dates ca. 2 weeks after release (mid-July) of F&W Program addendum – for no surprises



coordination on any comments.

- Contracting efficiencies:
  - o BPA (Lofy/Kavanagh) - exploring 2-year contracts. First to look at include OBMEP & Hells Gate (both just kicked off 3/1); Chief Joe O&M / M&E other options.
- Relief tunnel:
  - o Kirk T - share with Maureen K the letter from Joe Peone to Linda Hermiston from 2011 re: relief tunnel
  - o Maureen K / Kirk T - work together to scope technical service contractor work to scope alternatives
  - o Kirk to share with Maureen / Corps geotech report & other relevant information from TetraTech related to CHJ construction
  - o Maureen K / Tim D to work together to engage Corps
- Leavenworth
  - o Perhaps an update August timeframe? New BOR PM Daniel Childs recently reached out to Chuck Brushwood to engage.
- Captive fishery
  - o Per memorialization document, CTCR to work internally to develop an outline of a captive fishery concept for discussion with BPA; no timeline set.
- Trout pond
  - o CTCR working to integrate scope of work into contract for 2020 (renews in Dec)
  - o Trout Hatchery: we don't have current O&M agreement and CTCR would like to explore, no timeline set for

next step

- Education & leadership
  - o Kary to share memo w/ Maureen with breakdown of students, cost share, etc. of past education funding to help inform discussion (CBC priority)
- Passage/reintroduction
  - o CTCR let BPA know when phase 1 report is published - BPA will let CTCR know re: our desired level of engagement
  - o BPA (Dorie) share habitat assessment (from 2018 contract deliverable) with BOR (**COMPLETE**)
  - o Use of CHJ fish -- CTCR to draft proposed approach and engage BPA (Beth, Brian, Chuck to engage with Philip and Tucker) - no timeline set
- Land and water/fish habitat acquisitions
  - o Dorie/Chuck to have further conversation -- include Joe Connor/Sandra Fife/Peter Lofy. Refer to handout (keep handout restricted). CTCR wants to expand scope of land acquisitions into Entiat and Wenatchee basins.
- Next meeting date
  - o Marcy to provide dates for BPA visit to Nespelem (Dorie, Crystal, Scott et al) for CBC meeting, staff meeting, tour, etc., [CTCR discussion – probably makes sense to have this after new CBC seated].
  - o Aim for early August (following Council Amendment next steps)
- Topics not covered

- o Dry year strategy closeout from Accord? (Jason S / Lesa / Ben)
- o Any additional activities planned in 2019 re: passage/reintroduction
- o Outstanding questions re: CRSO expedited schedule / Accord Extension duration

Thanks & have a great week,

Regards,

Adam

--

**Adam Cummings**

Project Manager / Fish & Wildlife

(CONTR) – Aerotek

**Bonneville Power Administration**

[ahcummings@bpa.gov](mailto:ahcummings@bpa.gov) | 503-230-7631 – desk | (b)(6) – mobile | EW-4, Pole M20

**From:** Cummings,Adam H (CONTR) - EW-4

**Sent:** Wednesday, April 10, 2019 4:04 PM

**To:** Welch,Dorothy W (BPA) - E-4; Skidmore,John T (BPA) - EWL-4; Armentrout,Scott G (BPA) - E-4; Foster,Marchelle M (BPA) - DIT-7; Kavanagh,Maureen A (BPA) - EWP-4; Lofy,Peter T (BPA) - EWU-4; 'Charles Brushwood (FNW)'; 'randall.friedlander@colvilletribes.com'; 'cody.desautel@colvilletribes.com'; Ball,Crystal A (BPA) - DIR-7; Miles,Tucker (BPA) - LN-7; Key,Philip S (BPA) - LN-7; Peone,Joe E (CONTR) - DIT-MEAD-GOB; Tim Dykstra; Lesa Stark; kary.nichols@colvilletribes.com; 'kirk.truscott@colvilletribes.com'; 'bgruber@ziontchestnut.com'; 'bbaldwin@ziontchestnut.com'; casey.baldwin@colvilletribes.com

**Subject:** Colville Accord meeting - agenda, materials

**Importance:** High

Greetings all:

Please see attached the agenda for tomorrow's meeting. Please note, we'll need to be flexible with some of the earlier agenda topics as several BPA folks won't be able to join us for the entire meeting (Scott Armentrout and Ben Zelinsky will both join around 11; we can dial in specifics in the morning).

We won't be doing any screen share, but will of course be dialed in on the conference # (b)(2)

Please let me know if you have any questions. I'll send any last-minute changes out in the morning.

Regards,

Adam

--

**Adam Cummings**

Project Manager / Fish & Wildlife

(CONTR) – Aerotek

**Bonneville Power Administration**

[ahcummings@bpa.gov](mailto:ahcummings@bpa.gov) | 503-230-7631 – desk | (b)(6) – mobile | EW-4, Pole M20

From: Miles,Tucker (BPA) - LN-7

Sent: Fri May 31 15:33:09 2019

To: 'dmabe@usbr.gov'

Cc: Armentrout,Scott G (BPA) - E-4; James,Daniel M (BPA) - D-7; Key,Philip S (BPA) - LN-7

Subject: Comments on briefieng memo for blocked area fish management

Importance: Normal

Attachments: 2019.05.31\_BlockedArea-Memo 5\_tm.docx

***Confidential; FOIA-exempt***

Good afternoon, Dave.

(b)(5)



Please let me know if you have any questions. Best,

Tucker

- - -

**Tucker Miles**

Attorney-Adviser, LN-7

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave.

Portland, OR 97232

(503)230-5968

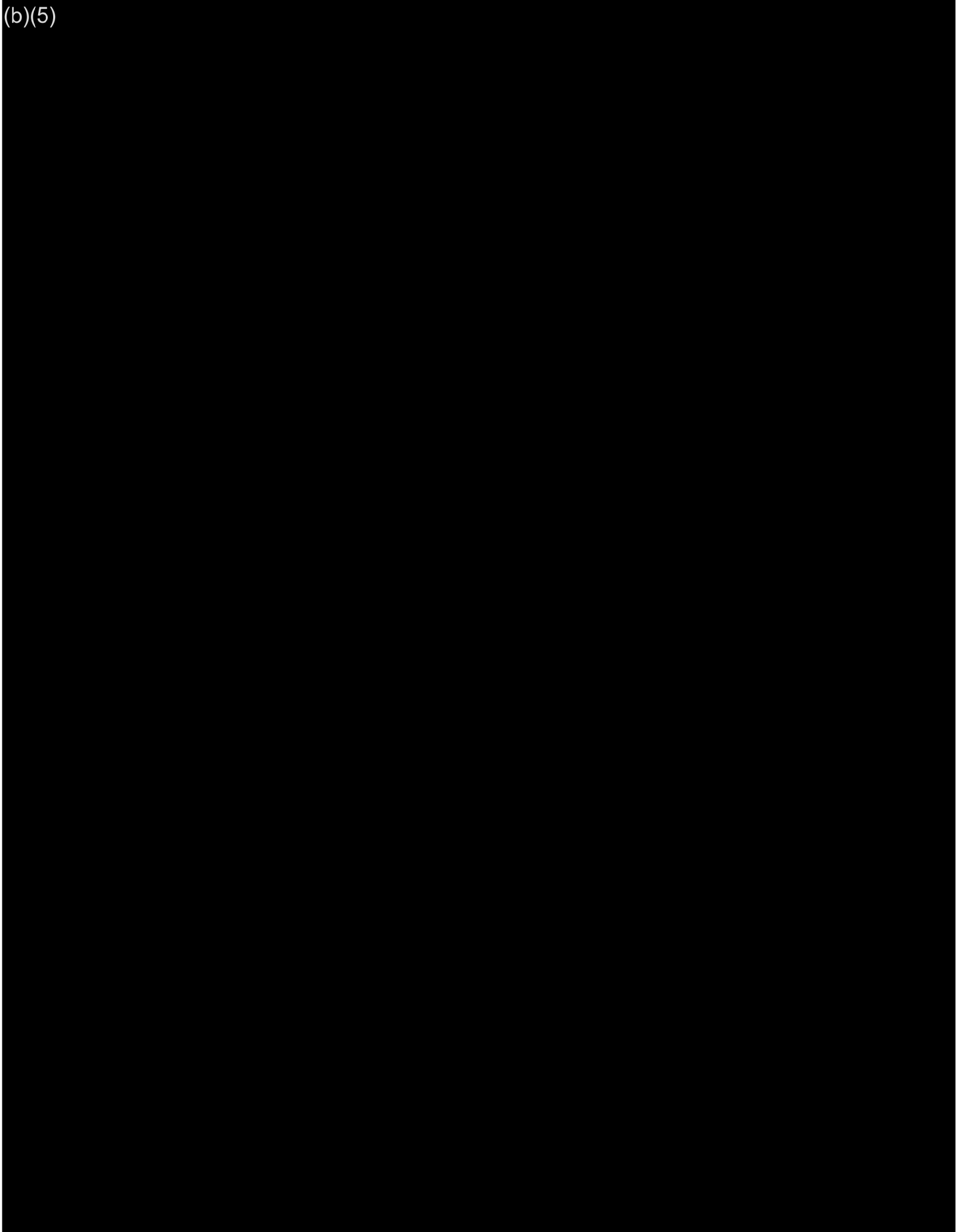
**DELIBERATIVE PROCESS DRAFT v. 5 Edits**  
**INFORMATION/BRIEFING MEMORANDUM from REGIONAL EXECUTIVES**

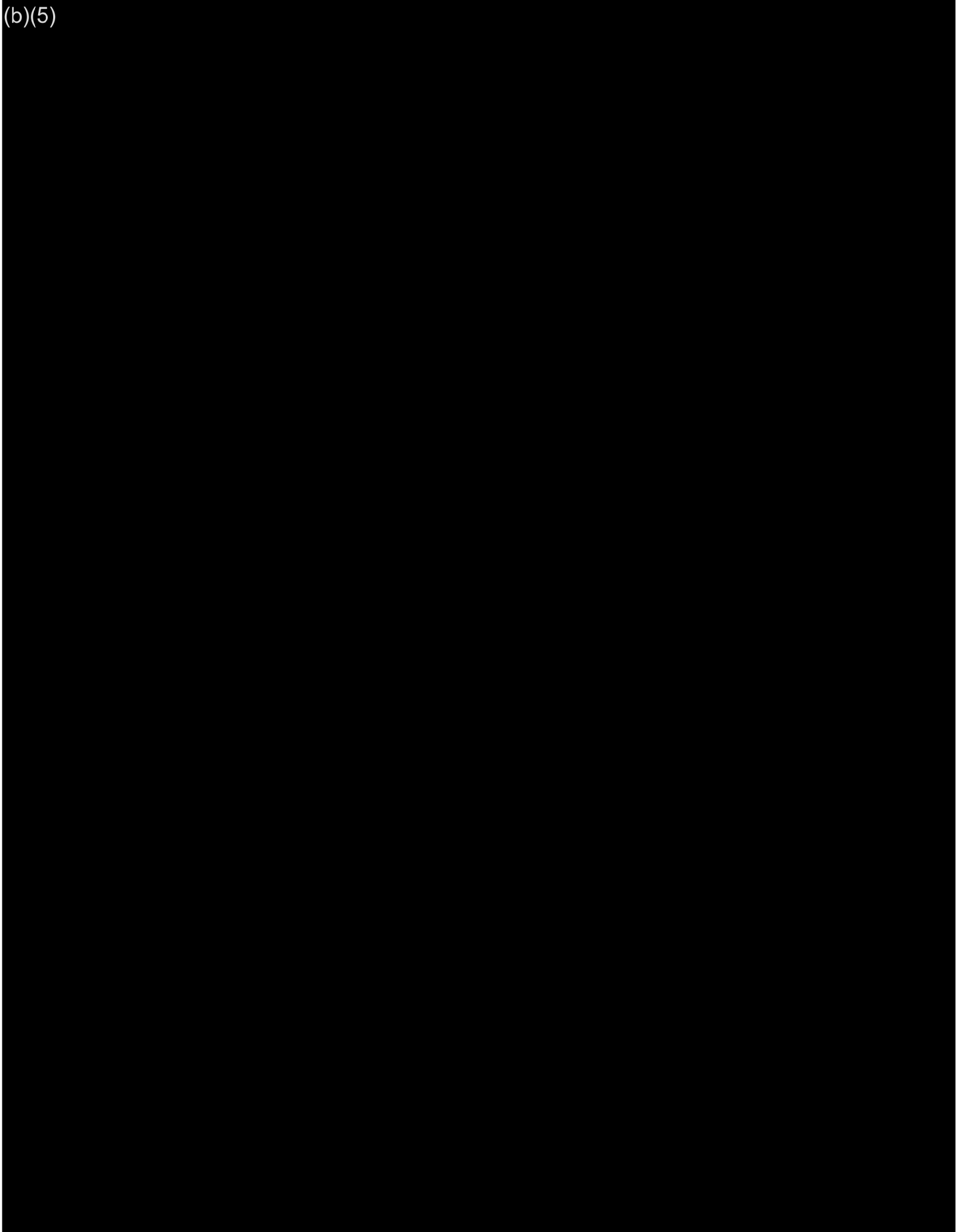
DATE: June , 2019  
FROM: Your Administrator Here  
SUBJECT: Upper Columbia River Anadromous Fish Management in Areas Where Federal Dams  
Block Migration.

(b)(5)









**From:** Godwin,Mary E (BPA) - LN-7

**Sent:** Mon Apr 22 13:07:05 2019

**To:** Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7

**Subject:** FW: [EXTERNAL] Response to CDL letter re: Reintroduction. Please let me know if you think this is ready for discussion on Friday with Execs.

**Importance:** Normal

**Attachments:** image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg; CDL response letter\_meg.docx

FYI

Thanks,

Mary

**From:** Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Friday, April 19, 2019 4:43 PM

**To:** Godwin,Mary E (BPA) - LN-7 <megodwin@bpa.gov>; Armentrout,Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Leary,Jill C (BPA) - LN-7 <jcleary@bpa.gov>

**Subject:** RE: [EXTERNAL] Response to CDL letter re: Reintroduction. Please let me know if you think this is ready for discussion on Friday with Execs.

(b)(5)

(b)(5)

**From:** Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>

**Sent:** Friday, April 19, 2019 4:14 PM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>

**Cc:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Subject:** RE: [EXTERNAL] Response to CDL letter re: Reintroduction. Please let me know if you think this is ready for discussion on Friday with Execs.

I had a few clarifying edits to consider.

Thanks,

Mary

**From:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>  
**Sent:** Friday, April 19, 2019 1:23 PM  
**To:** Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>  
**Cc:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Subject:** FW: [EXTERNAL] Response to CDL letter re: Reintroduction. Please let me know if you think this is ready for discussion on Friday with Execs.

As mentioned this morning.....

## SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife | E-4

**Bonneville Power Administration**  
[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Mabe, David <[dmabe@usbr.gov](mailto:dmabe@usbr.gov)>  
**Sent:** Wednesday, April 17, 2019 8:55 AM  
**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Beth Coffey <[frances.e.coffey@usace.army.mil](mailto:frances.e.coffey@usace.army.mil)>; david ponganis <[david.j.ponganis@usace.army.mil](mailto:david.j.ponganis@usace.army.mil)>

**Subject:** [EXTERNAL] Response to CDL letter re: Reintroduction. Please let me know if you think this is ready for discussion on Friday with Execs.

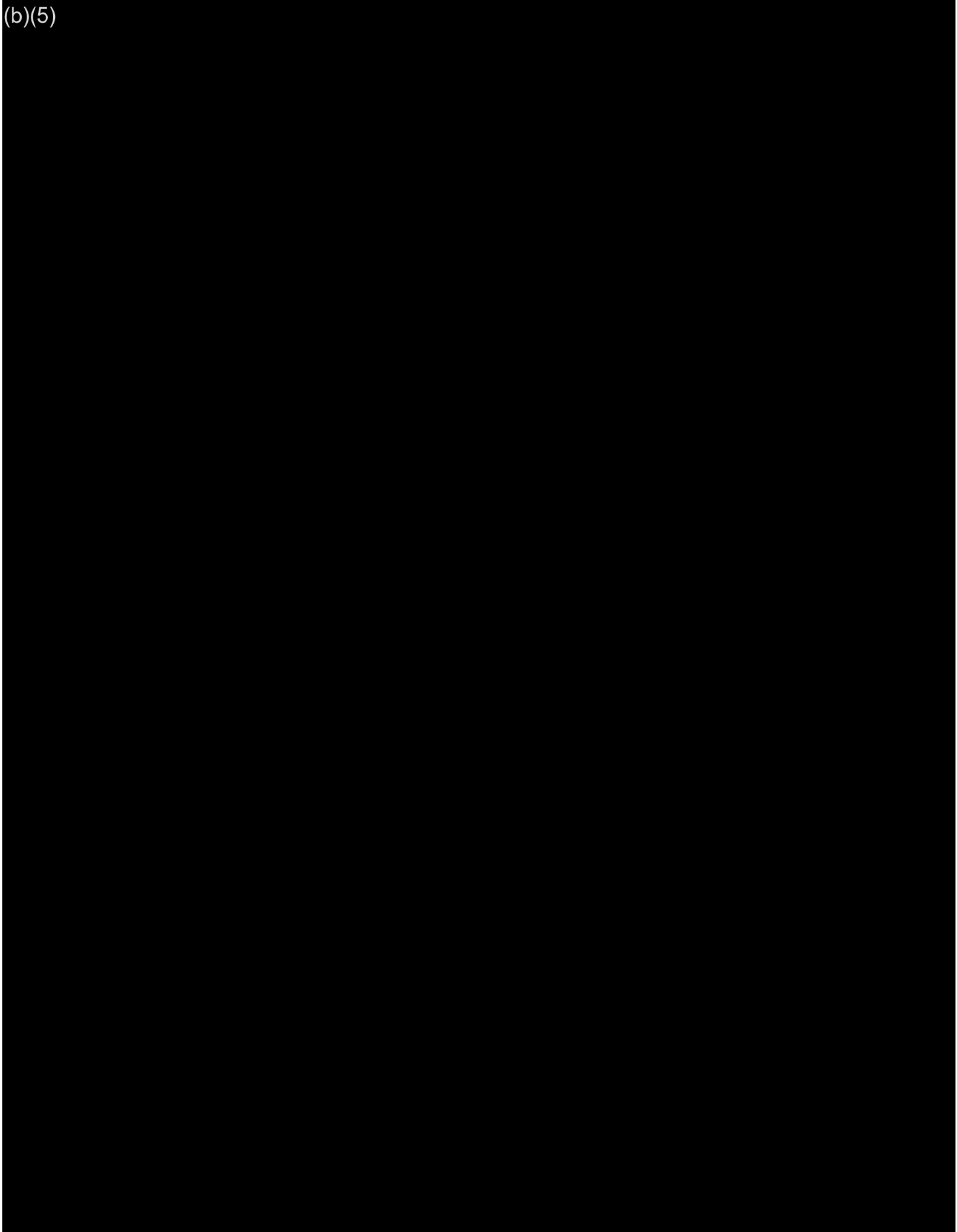
Dave I included you because of treaty and your attendance at the meeting.

--

David Mabe

Desk Phone 208-378-5006

Cell Phone (b)(6)



From: Key,Philip S (BPA) - LN-7

Sent: Mon Jun 22 15:21:38 2020

To: Johnston,Kenneth H (BPA) - DIT-7

Subject: FW: Chief Joe Hatchery Funding Authorization

Importance: Normal

FYI, here's a response to a PM from Scott earlier today.

**From:** Key,Philip S (BPA) - LN-7

**Sent:** Monday, June 22, 2020 9:52 AM

**To:** Armentrout,Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

**Cc:** Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Senters,Anne E (BPA) - LN-7 (aesenters@bpa.gov) <aesenters@bpa.gov>; Miles,Tucker (BPA) - LN-7 (btmiles@bpa.gov) <btmiles@bpa.gov>

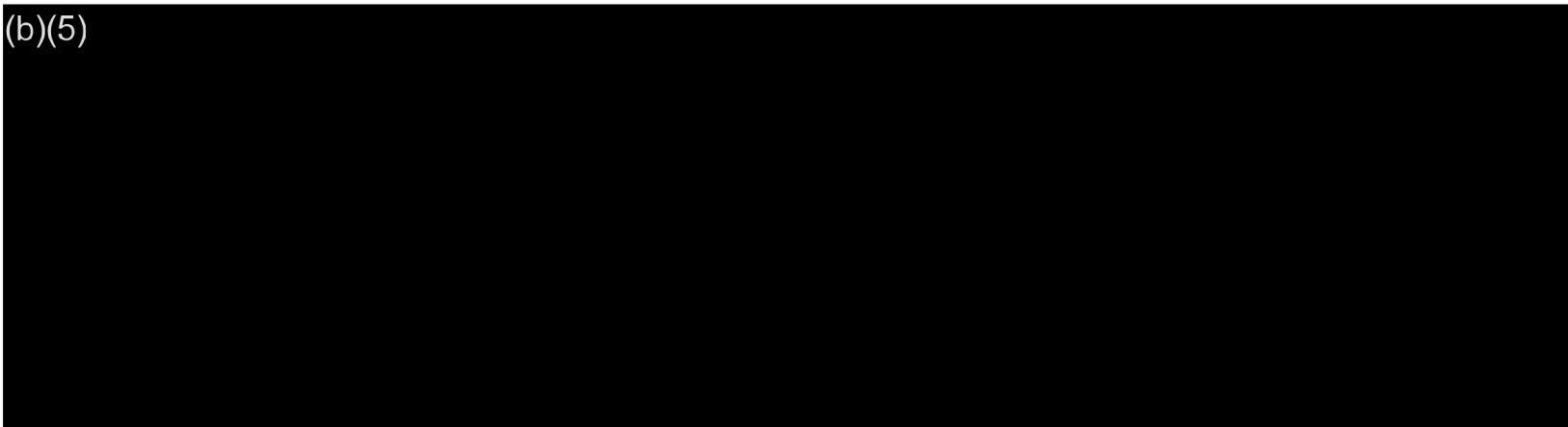
**Subject:** FW: Chief Joe Hatchery Funding Authorization

**Attorney Client Privileged**

Scott,



(b)(5)



Philip

**From:** Maslen,Bill (BPA) - EW-4 <[wcmaslen@bpa.gov](mailto:wcmaslen@bpa.gov)>

**Sent:** Friday, May 20, 2016 1:54 PM

**To:** Key,Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Mercier,Bryan K (BPA) - EWB-4 <[bkmercier@bpa.gov](mailto:bkmercier@bpa.gov)>;  
Johnston,Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Jule,Kristen R (BPA) - EWP-4 <[krjule@bpa.gov](mailto:krjule@bpa.gov)>;  
Welch,Julee A (BPA) - LP-3 <[jawelch@bpa.gov](mailto:jawelch@bpa.gov)>

**Subject:** FW: Chief Joe Hatchery Funding Authorization

fyi

**From:** Maslen,Bill (BPA) - EW-4

**Sent:** Friday, May 20, 2016 1:53 PM

**To:** [Randall.Friedlander@colvilletribes.com](mailto:Randall.Friedlander@colvilletribes.com); Bill Towey ([bill@ucut-nsn.org](mailto:bill@ucut-nsn.org))  
**Cc:** Grimm, Lydia T (BPA) - A-7  
**Subject:** Chief Joe Hatchery Funding Authorization

Randy and Bill:

In past discussions, we have indicated that the authorizing language associated with BPA capital funding of the Chief Joseph Hatchery indicated that the authorization was for production of fish for release downstream of Chief Joseph Dam. Below is a brief description of the context for the authorization as well as the language in the BPA budget document.

Section 4h10B of the NW Power Act requires that construction of fish and wildlife capital facilities with an estimated life of greater than 15 years and an estimated cost of at least \$2.5 million shall be funded in the same manner as major transmission facilities. 16 USC 839bh10B. That means BPA cannot expend funds for construction until approved by Congress to do so. This is why BPA seeks congressional expenditure approval well in advance of planned construction start dates. In the case of Chief Joseph Hatchery, this approval was sought and received in FY 2008.

The Consolidated Appropriations Act 2008 provides the authorization as BPA requested: "Expenditures from the Bonneville Power Administration Fund, . . . are approved for . . . hatchery production facilities to supplement Chinook salmon below Chief Joseph Dam in Washington. . . ." P.L. 110-161 (Dec. 26, 2007), 121 STAT. 1964.

The narrative in BPA's FY 2008 Budget Submission for Congress (Feb. 2007) is the only source that OMB, the

President, or Congress had to inform the intent of the authorization language that BPA requested. The BPA budget document says,

Chief Joseph Dam Hatchery. BPA is proposing to fund the Chief Joseph Dam Hatchery Program, a comprehensive management program for supplementing Chinook salmon below Chief Joseph Dam, in Washington in the Okanogan subbasin and the Columbia River between the confluence of the Okanogan River and Chief Joseph Dam. Project includes a new hatchery facility (at the base of the Chief Joseph Dam) and acclimation ponds (throughout the Okanogan River subbasin), broodstock collection, egg incubation, rearing, release, and selective broodstock collection method development. The objective is to improve production of spring/summer and fall Chinook salmon in the Okanogan River Subbasin below Chief Joseph Dam. Planned production levels are 2 million summer/fall Chinook and 0.9 million spring Chinook smolts. Exploration of potential cost sharing for O&M is underway with several public utility districts having some level of mitigation responsibility for their hydro projects within this geographic area.

We're available to discuss if you have any questions.

Have a good weekend. Bill

From: Welch,Dorothy W (BPA) - E-4

Sent: Wed Mar 10 12:35:25 2021

To: Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7; Ball,Crystal A (BPA) - EW-4

Subject: FW: Call from Joe P re: Using CJ Hatchey Fish above CJD

Importance: Normal

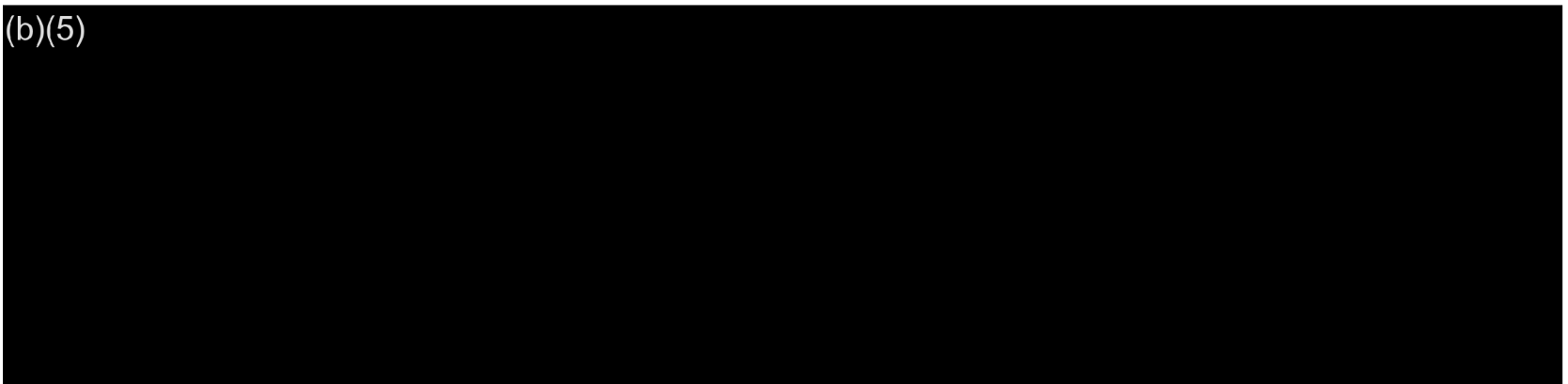
**From:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Monday, January 11, 2021 11:54 AM

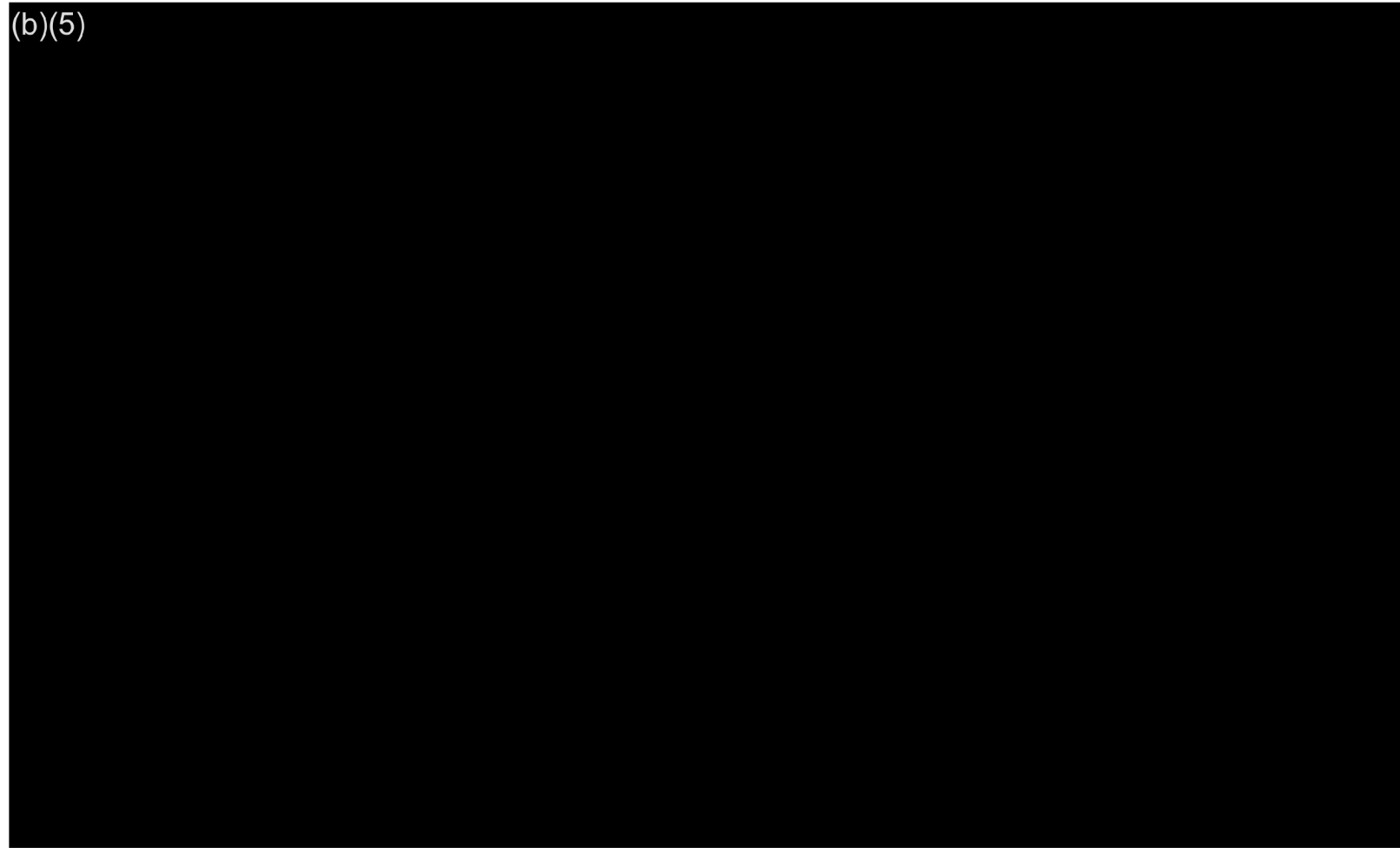
**To:** Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Subject:** Call from Joe P re: Using CJ Hatchey Fish above CJD

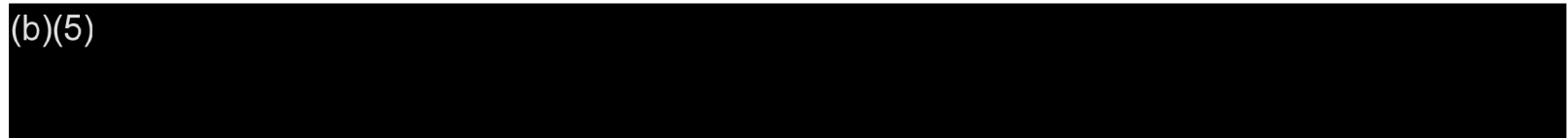
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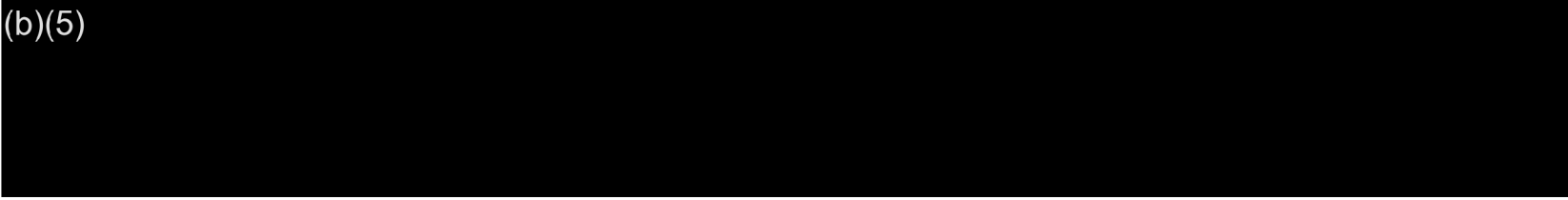
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Philip

**From:** Miles,Tucker (BPA) - LN-7

**Sent:** Mon Jul 22 10:48:48 2019

**To:** Zelinsky,Benjamin D (BPA) - E-4; Sweet,Jason C (BPA) - PGB-5

**Cc:** Welch,Dorothy W (BPA) - E-4; Key,Philip S (BPA) - LN-7

**Subject:** FW: Fish passage article

**Importance:** Normal

**Attachments:** Tribes expect to move salmon above dams soon (TT 7.19.19).pdf

FYI. The Colville Tribes expect to do a “cultural release” of Wells Hatchery chinook above CJ and possibly Coulee in the next few weeks, if the fish pass IHN screening tests. This is the same tribal initiative we’ve been hearing about in bits and pieces over the last month or so. There’s no indication that they intend to use fish from CJ hatchery and there doesn’t seem to be any particular request of the federal Accord parties.

**From:** Brian Gruber [<mailto:bgruber@ziontzchestnut.com>]

**Sent:** Monday, July 22, 2019 10:14 AM

**To:** Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7

**Cc:** 'Randy Friedlander (Randall.Friedlander@colvilletribes.com)'; Cody Desautel (cody.desautel@colvilletribes.com); 'Chuck Brushwood (Charles.Brushwood@colvilletribes.com)'; Charissa Eichman (Charissa.Eichman.ORA@colvilletribes.com); Beth Baldwin; Lesa Stark (lstark@usbr.gov); Dykstra, Timothy A CIV USARMY CENWD (US); Welch,Dorothy W (BPA) - E-4

**Subject:** [EXTERNAL] Fish passage article

Hi Philip and Tucker,

Pursuant to the no surprises provision of the Colville Fish Accord and Section III.H.4.a of the 2018 Extension, I am writing to share an article regarding fish passage in the blocked area above Chief Joseph Dam that appeared in Friday's Tribal Tribune. If BPA or the other Accord partners have a need to follow-up with the Tribes about this, please reach out to Chuck Brushwood.

Brian

Brian C. Gruber  
Ziontz Chestnut  
2101 Fourth Avenue, Suite 1230  
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(206) 448-1230/448-0962(fax)  
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[http://www.tribaltribune.com/news/article\\_08cf3220-aa40-11e9-bd1f-9b7e25ce692a.html](http://www.tribaltribune.com/news/article_08cf3220-aa40-11e9-bd1f-9b7e25ce692a.html)

## Tribes expect to move salmon above dams soon

Justus Caudell 2 min ago

### **Salmon will first have to pass screening for IHN before being moved above Chief Joseph or Grand Coulee dams**

NESPELEM – The Colville Confederated Tribes might be only weeks away from moving salmon above the Chief Joseph and Grand Coulee dams.

At some point in the next month, the Colville Tribal Fish and Wildlife department will move Chinook from the Wells Hatchery above Chief Joseph and (possibly) above Grand Coulee dams as part of a “cultural release” if those salmon pass a screening for Infectious Hematopoietic Necrosis virus, a virus found in trout and salmon.

CTFW director Randall Friedlander presented a 2019 Fish Passage plan to the Colville Business Council Natural Resource Committee, Tuesday.

“We’re to the point that we could have fish ready to move by the end of this month or the first part of August,” said Friedlander, who noted the fish will be tested at Wells Hatchery on “a Monday or Tuesday. We won’t know the results until probably Wednesday or Thursday.”

Pacific Aquaculture, which produces fish in Lake Rufus Woods above Chief Joseph Dam, has started inoculating their stock for IHN, but the private company will not complete their inoculation until next year, according to Friedlander.

The movement of salmon into Lake Rufus Woods would represent the first migratory salmon above Chief Joseph Dam in 64 years. The movement of salmon to Lake

Roosevelt or the lake’s tributaries would represent the first migratory salmon above Grand Coulee Dam in 77 years.

The salmon would be from a surplus of the current summer Chinook run up the Columbia River, and CTFW's Kirk Brushwood stated the number of fish available could be as high as 500.

In past years, surplus salmon had been distributed to the Colville tribal membership, and some of this year's surplus is expected to be used for that purpose.

According to Friedlander, the tribe currently has a state license to move the fish from the Wells Hatchery to Lake Rufus Woods and the CTFW director stated the tribe would work to get a second state permit to move the salmon above Grand Coulee Dam to Lake Roosevelt as well.

Friedlander defined a cultural releases as a salmon release with the intent of "reconnecting traditionally with the resource and creating awareness of fish passage."

The director and others present noted a desire to hold a ceremonial event representing the occasion.

"Because an event like this taking place is so significant, because we haven't had fish above Chief Joseph, or above Grand Coulee Dam, in so long, being a reintroduction there does, in my eyes, need to be something done as far as recognizing that we are trying to help the salmon be brought back up there," said Colville tribal member Jim Andrews.

"I can only speak on my behalf," said Andrews. "The way I see it is at least before they are released, something I would do is just sing a song for them and let them go. Acknowledge that yes we are helping them up there."

CTFW has published a call for input that reads, "The Colville Tribes' Fish and Wildlife Department (CTFW) is seeking input from tribal elders and other interested tribal members regarding the first return of salmon above Chief Joseph Dam in 64 years and Grand Coulee Dam in 77 years. A cultural release is being planned and we welcome your input.

Our planning meeting will be held in the Auditorium, Lucy Covington Building (main floor) on Tuesday, July 23 from 12 noon to 2pm.

If you have any questions, please contact Randall Friedlander, CTFW Director at (509) 978-8005.”

**From:** Zelinsky,Benjamin D (BPA) - A-7

**Sent:** Thu Feb 14 13:21:13 2019

**To:** Armentrout,Scott G (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Welch,Dorothy W (BPA) - E-4; Skidmore,John T (BPA) - EW-4

**Cc:** Senters,Anne E (BPA) - LN-7; Key,Philip S (BPA) - LN-7

**Subject:** FW: Help Needed Passage and Reintroduction White Paper

**Importance:** Normal

**Attachments:** Reintroduction Background 25 Jan 19\_BPA+PK.docx; RE: Do you have a final of the Colville Captive fishery letter from Peter?par

Scott, Peter, Dorie, and John,

I plan to send this draft of the passage and reintroduction white paper back to Dave Mabe on Wed next week. Philip and Anne inserted some language on BPA's authorities and on captive fisheries. Please let me know if you have any additional edits.

Thanks,

Ben

**From:** Zelinsky,Benjamin D (BPA) - A-7

**Sent:** Friday, February 08, 2019 6:52 AM

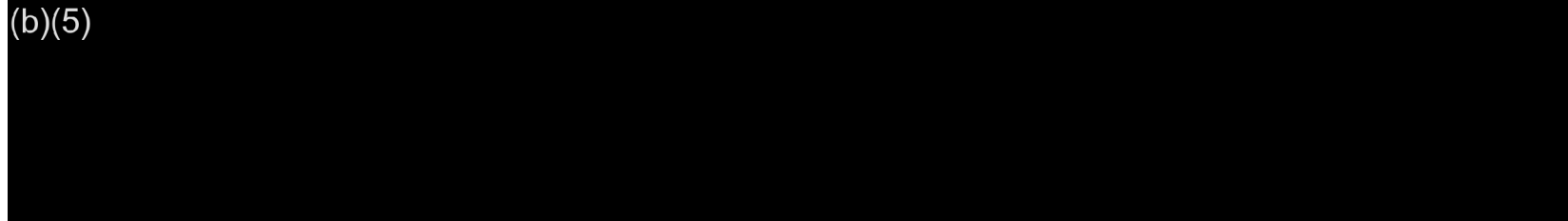
**To:** Skidmore,John T (BPA) - EW-4; Key,Philip S (BPA) - LN-7; Senters,Anne E (BPA) - LN-7; Adams,Hub V

(BPA) - LN-7

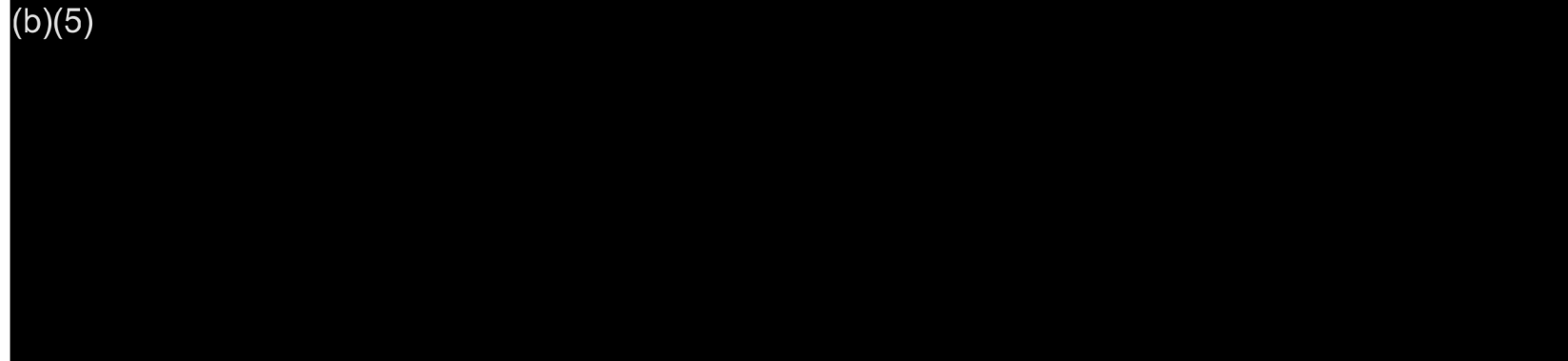
Cc: Welch, Dorothy W (BPA) - E-4

Subject: Help Needed Passage and Reintroduction White Paper

(b)(5)



(b)(5)



Thank you,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

(b)(6) (cell)

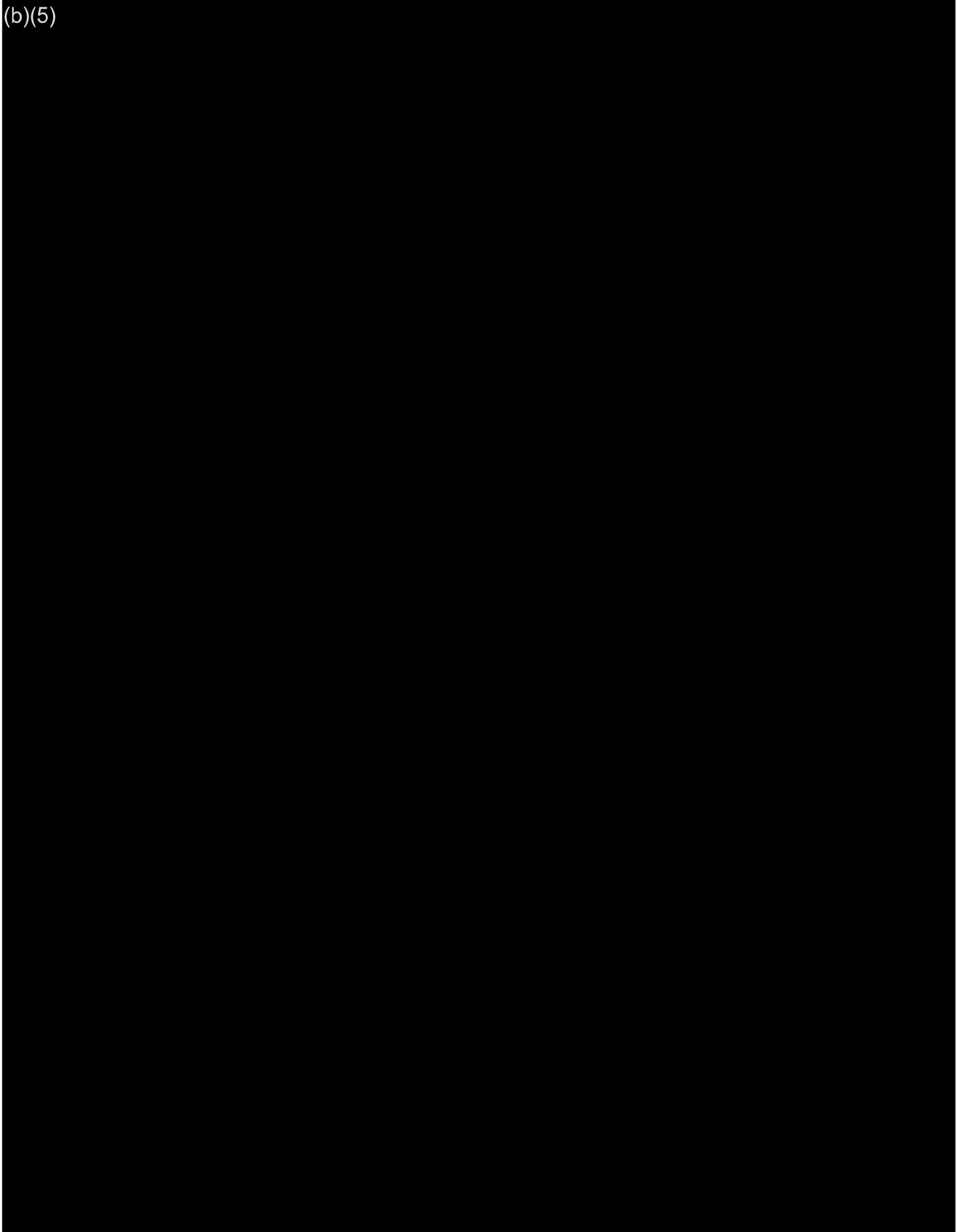
[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

**PASSAGE AND REINTRODUCTION ABOVE CHIEF JOSEPH/GRAND COULEE**  
**DRAFT BACKGROUND INFORMATION**

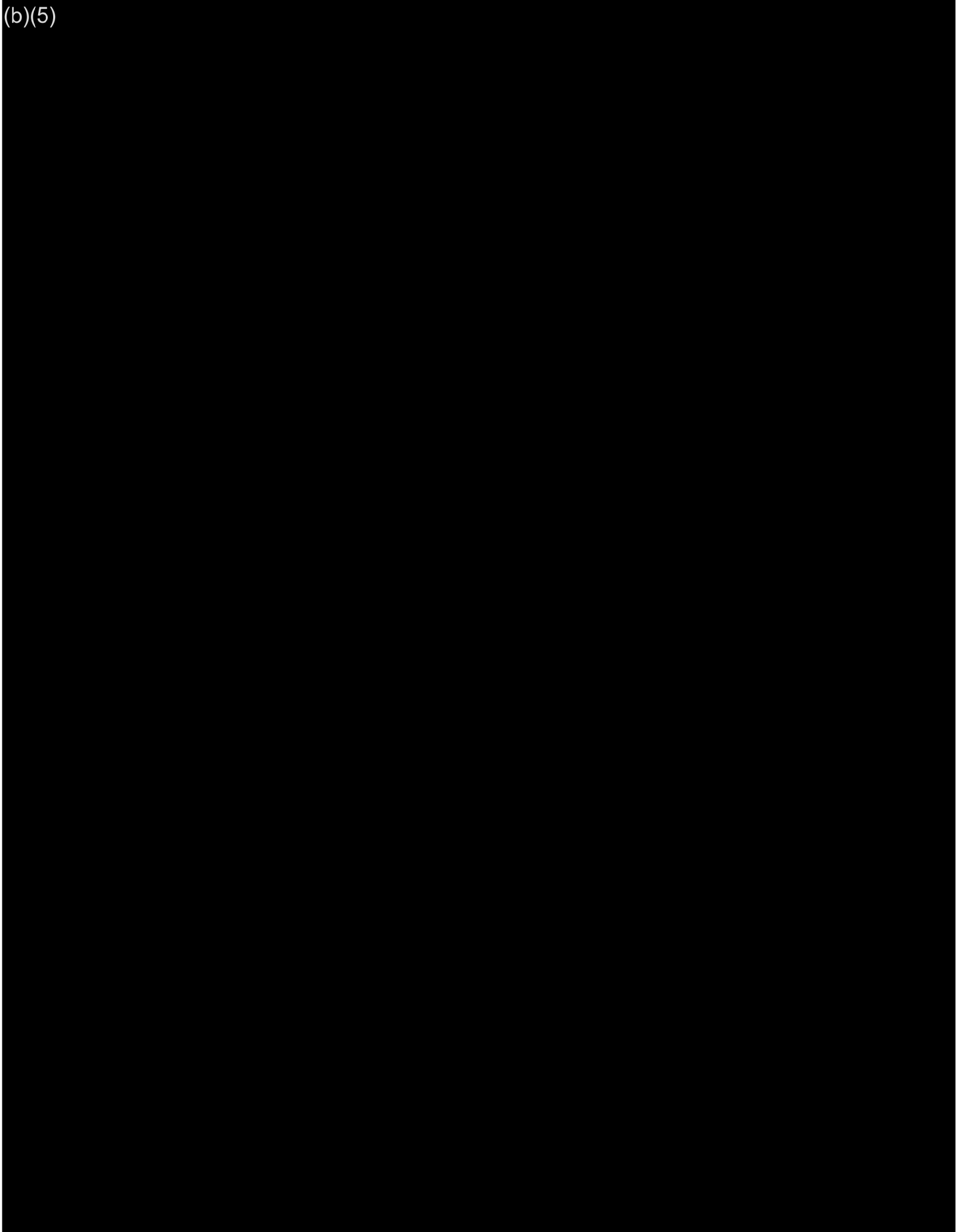
14 January 2019

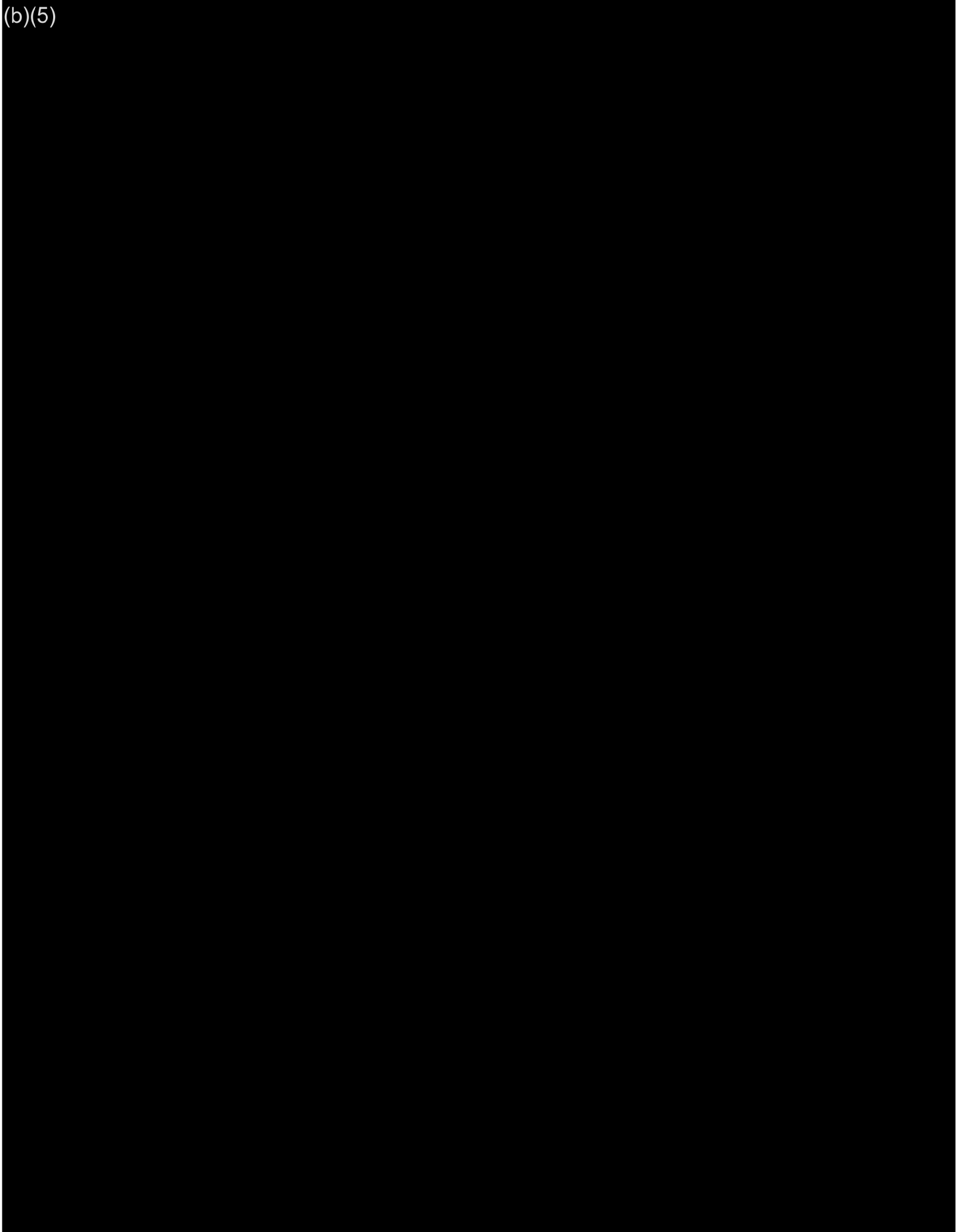
(b)(5)

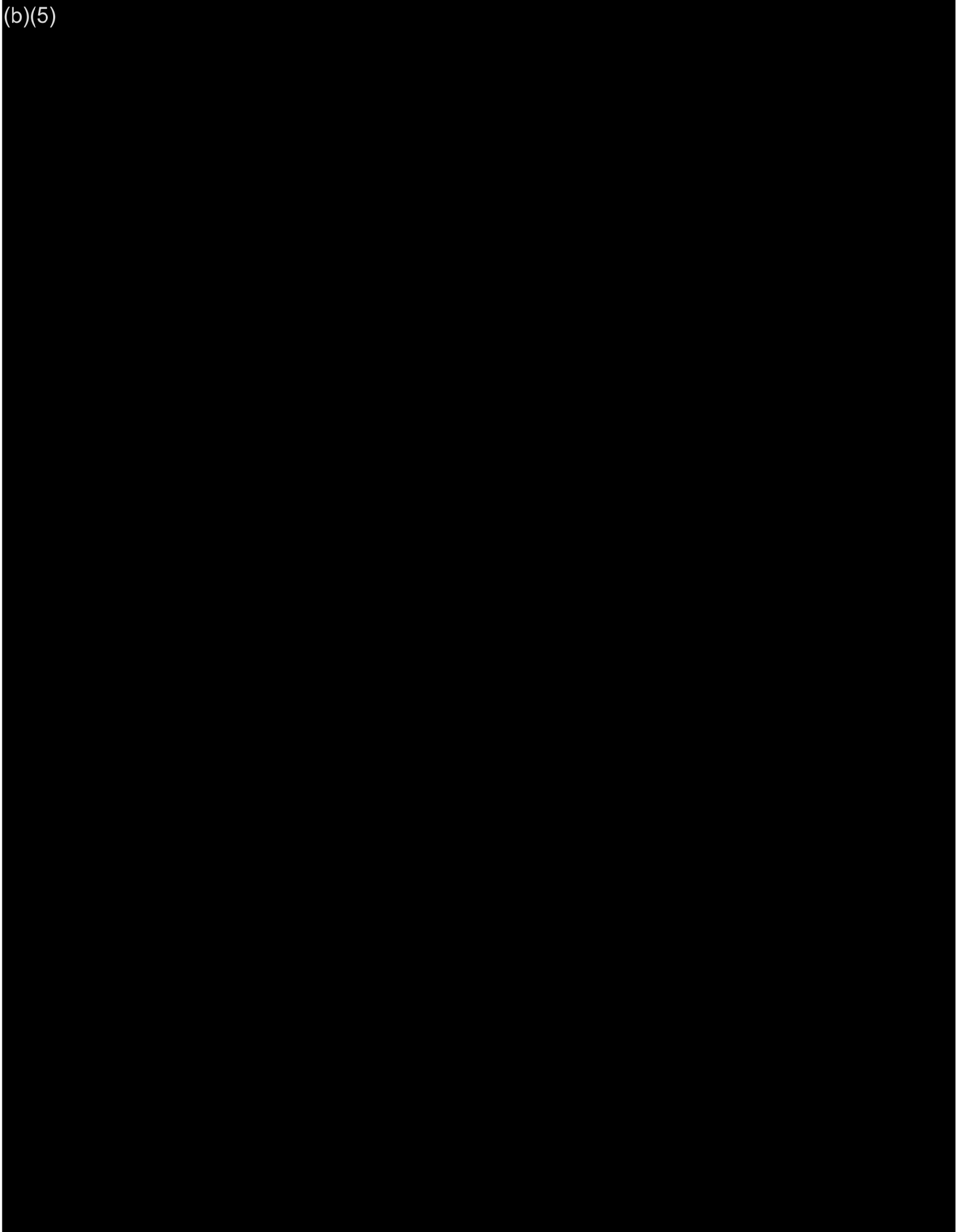


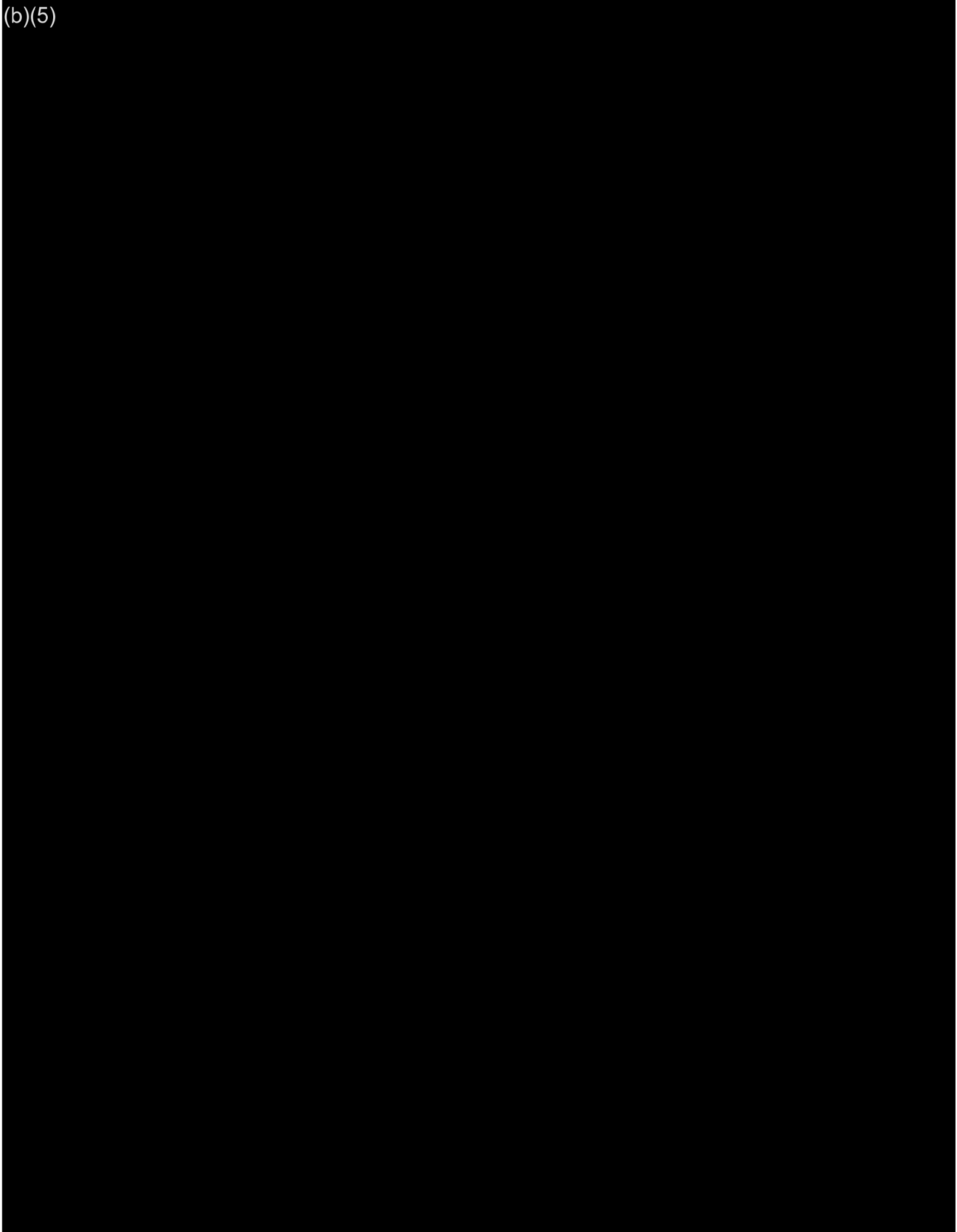


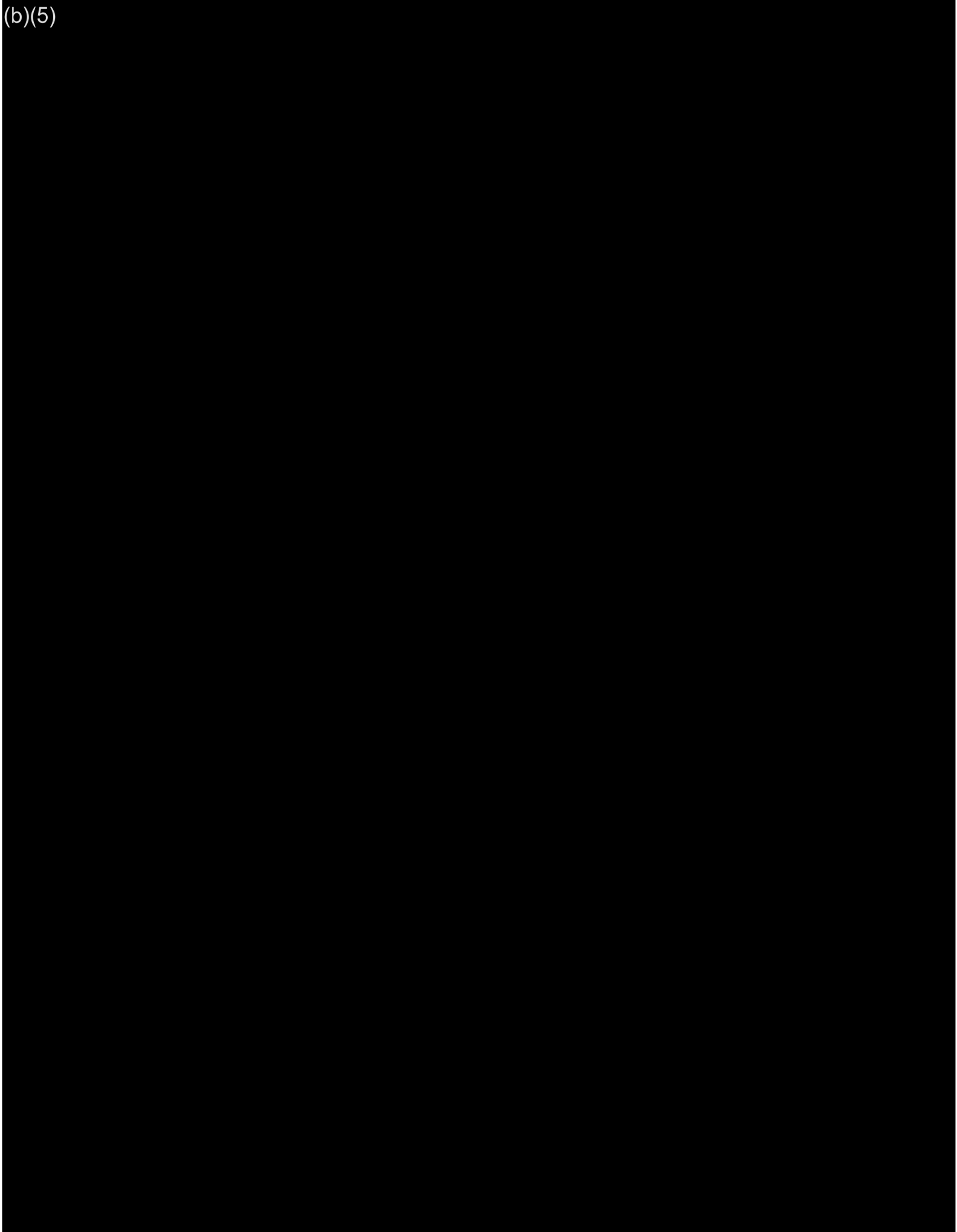


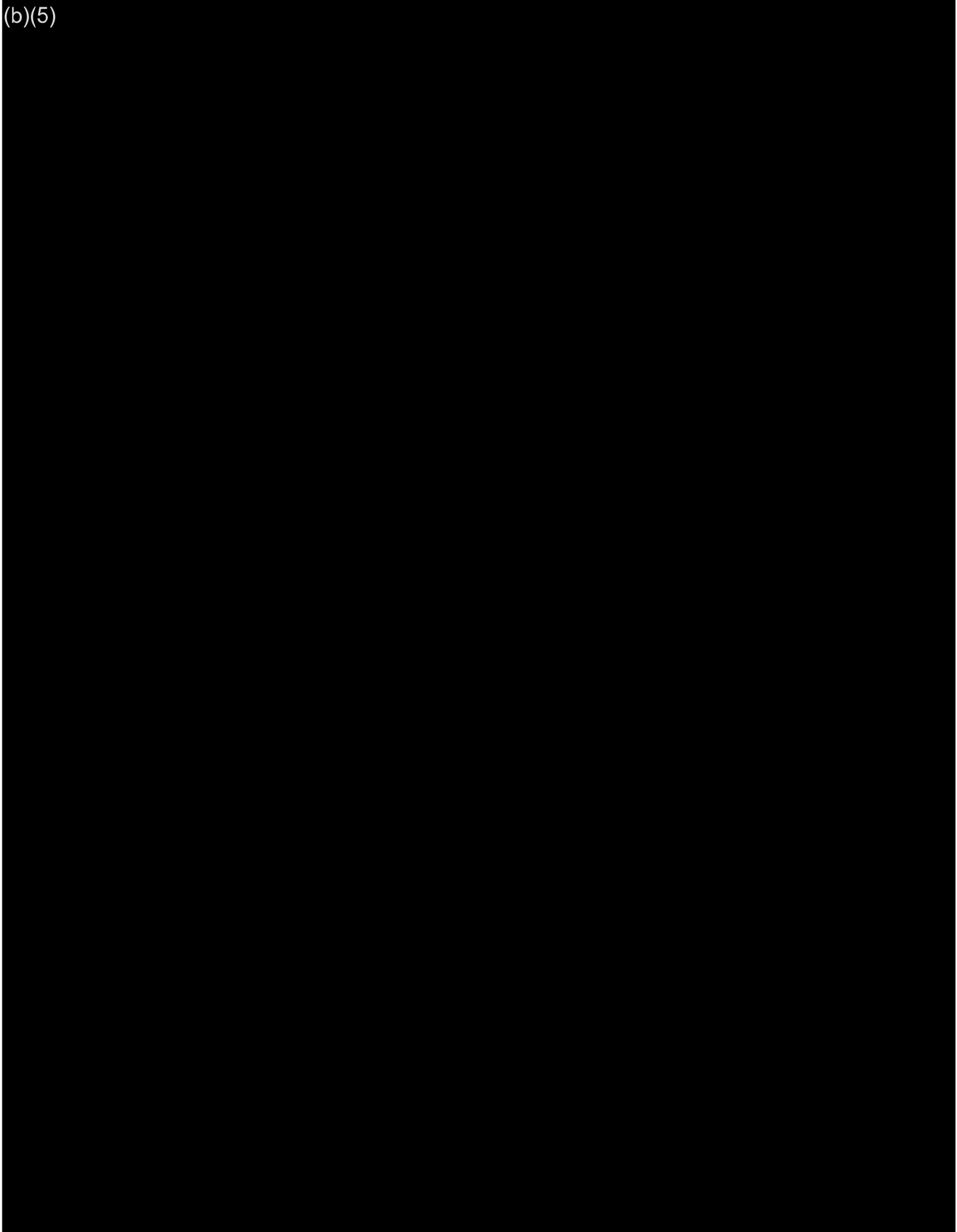


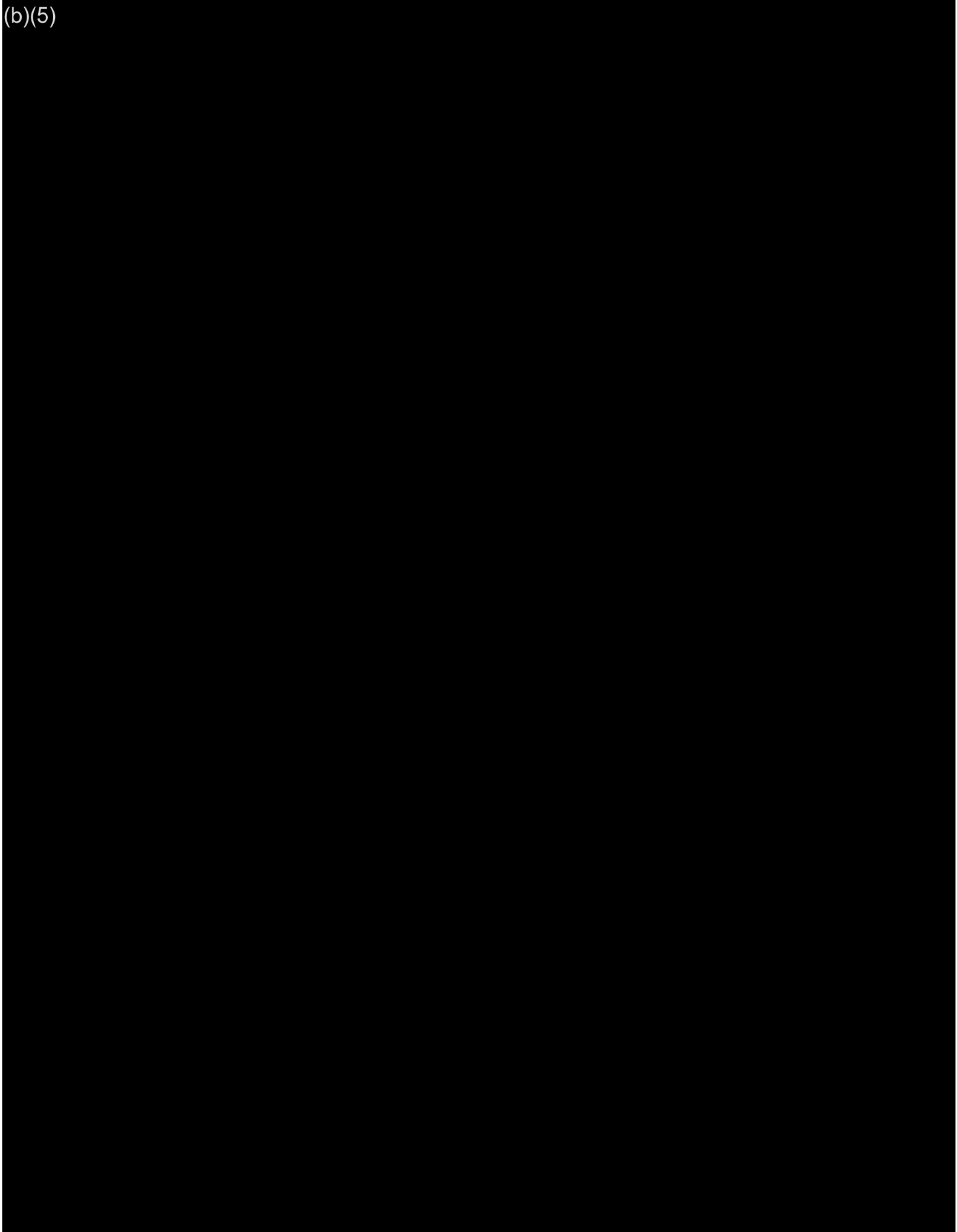


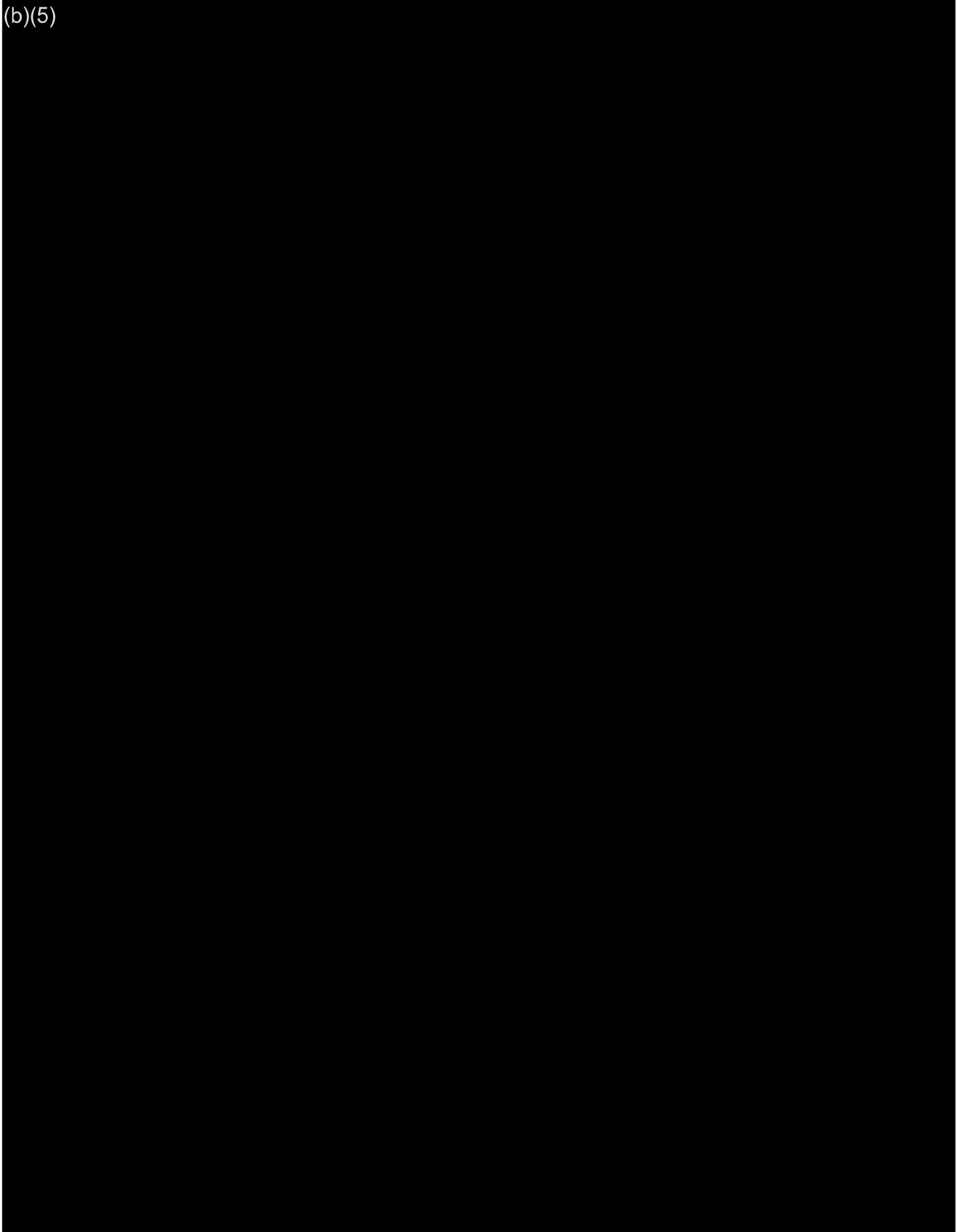




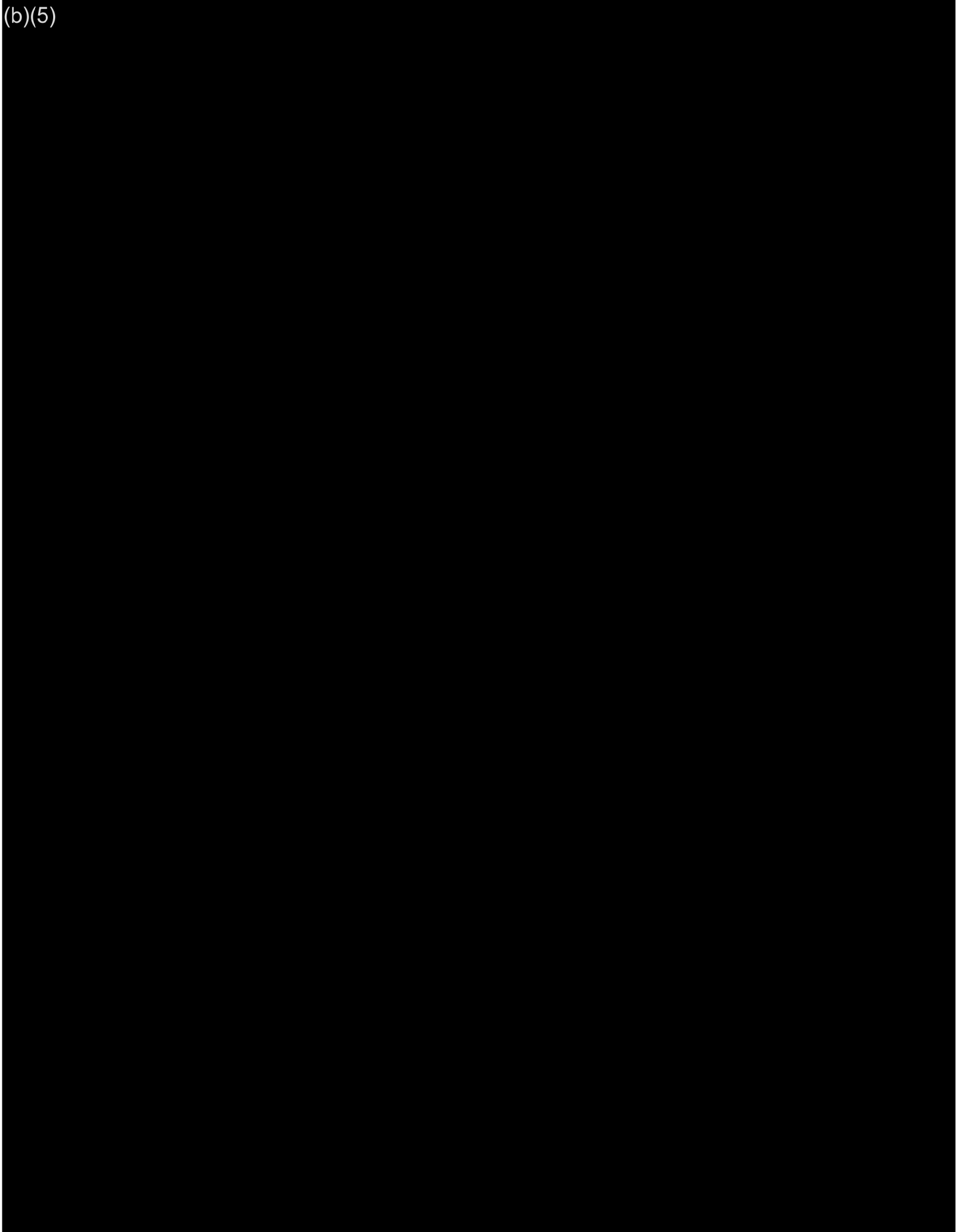


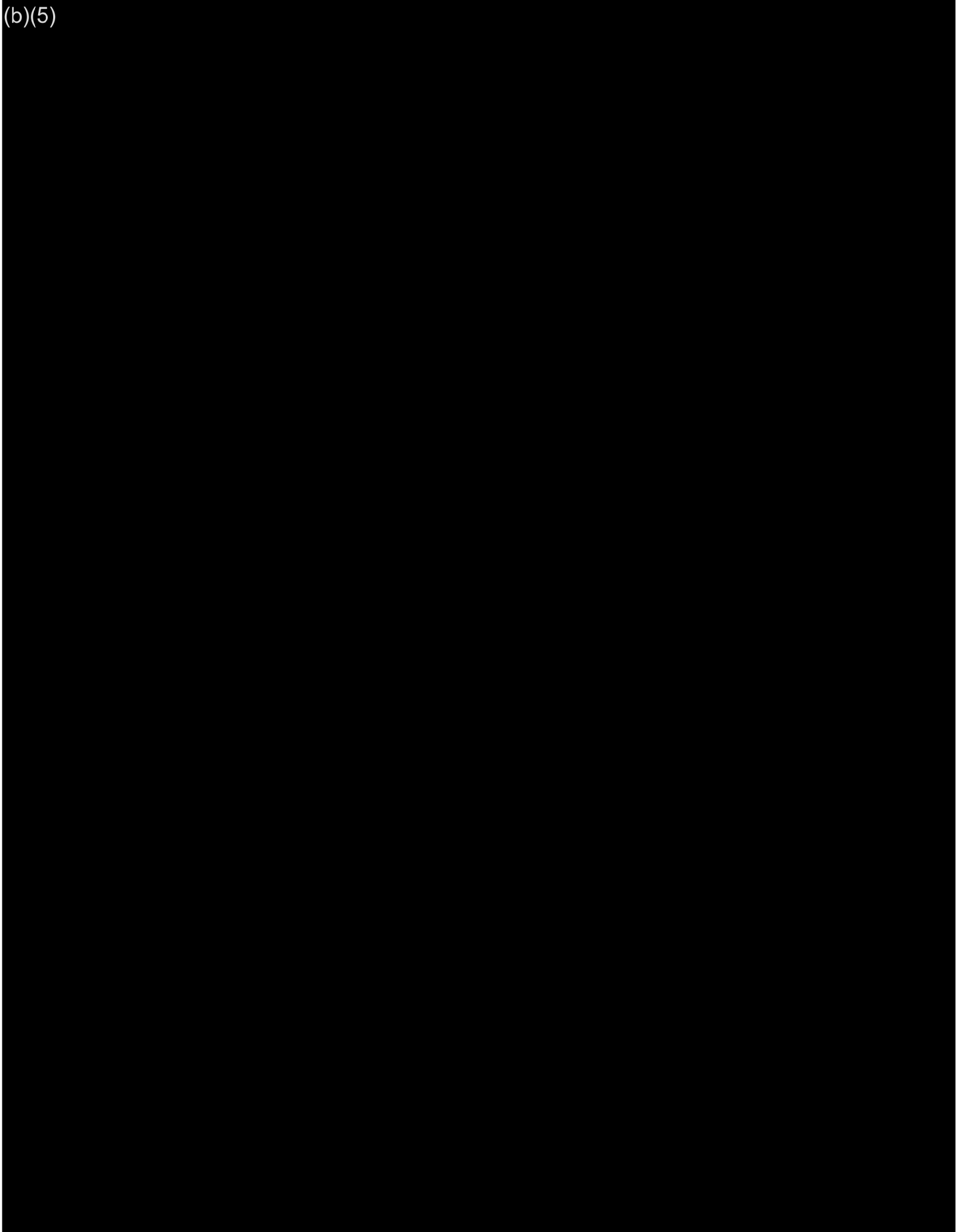














**From:** Cummings,Adam H (CONTR) - EW-4

**Sent:** Thu Feb 14 10:12:57 2019

**To:** Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7

**Subject:** RE: Do you have a final of the Colville Captive fishery letter from Peter?par **Importance:** Normal

**Attachments:** Letter from Armentrout to Friedlander re Memorialization\_Signed by AJ for CBC Chairman.pdf

**From:** Key,Philip S (BPA) - LN-7

**Sent:** Thursday, February 14, 2019 10:03 AM

**To:** Miles,Tucker (BPA) - LN-7; Cummings,Adam H (CONTR) - EW-4

**Subject:** Do you have a final of the Colville Captive fishery letter from Peter?

I think it went out in October. If so, please send.



## Department of Energy

Bonneville Power Administration  
P.O. Box 3621  
Portland, Oregon 97208-3621

ENVIRONMENT, FISH AND WILDLIFE

November 13, 2018

In reply refer to: E-4

Mr. Randall Friedlander  
Confederated Tribes of the Colville Reservation  
Fish and Wildlife Program Director  
P.O. Box 150  
Nespelem, WA 99155

Dear Mr. Friedlander:

I write to memorialize and confirm our shared understanding regarding process and milestones for a captive fishery concept that we recently discussed during our Fish Accord Extension negotiations.

Section III.H.4.c of the Accord Extension provides as follows:

The Colville Tribes and the Action Agencies intend to discuss and seek alignment on planning and implementation of a captive fishery involving anadromous fish above Chief Joseph and/or Grand Coulee dams, including potential funding by Bonneville, during this Extension. The Parties agree that such discussions will be conducted in good faith and with the sensitivity described above, and remain within the overall portfolio budget shown in Attachment A consistent with the budget rules in Section III.C.4.

The Colville Tribes (CTCR) and Bonneville discussed the importance of memorializing the next steps for the captive fishery concept because time did not allow for more thorough review and discussion while negotiating the Extension. This document is not part of the Accord Extension.

CTCR and Bonneville agree to the following process and milestones that will assist them in fulfilling their commitment to “discussing and seeking alignment” in “good faith.” The milestones will also assist in discussing progress on the captive fishery concept pursuant to Section III.A.

- 1) CTCR will develop and share a detailed outline of its vision of a captive fishery that will provide cultural and subsistence benefits by establishing a fishery in locations above Chief Joseph and/or Grand Coulee dams to create opportunities to harvest anadromous salmon.
- 2) Bonneville (and other Action Agencies) will provide written comments, feedback and questions on the outline in a timely manner. The Action Agencies will make reasonable efforts to answer questions posed by CTCR in its outline or as part of the Parties’

discussions.

- 3) CTRC and Bonneville will meet to discuss comments, questions, answers and feedback on the outline by Bonneville or other Action Agencies. The meeting will include discussion of:
- a. Potential donor stocks
  - b. Potential locations in the blocked area for captive fisheries
  - c. Fishing methods and gear types
  - d. Potential Bonneville funding under the Extension (within the Attachment A portfolio budget) of a captive fishery project and any associated technical review and legal requirements related to Bonneville funding;
  - e. An agreed schedule for both the remainder of the planning process and implementation of a captive fishery.
  - f. Other topics as warranted and appropriate to facilitate planning, alignment, and implementation in a timely manner. CTRC's goal is to complete planning by September 30, 2019 and to implement the fishery in FY 2020.
- 4) At the initial meeting, the Parties will agree on next steps for a timely follow-up on the exchange of comments, questions, and feedback described above.

Bonneville understands that the CTRC has a continuing interest in exploring the use of fish produced at Chief Joseph Hatchery (CJH) in the blocked area following the term of the Accord Extension. In light of the legal, policy and financial concerns raised by Bonneville in a draft letter dated March 27, 2018, CTRC and Bonneville agree to discuss in good faith the specific nature of the identified concerns and steps that would be needed to address such concerns regarding the use of CJH fish in the blocked area. This discussion would occur parallel with the discussion of the captive fishery concept outlined above.

Thank you for working to bring this matter to a successful conclusion. I have signed and enclosed two originals of this understanding. Please sign them and return one to me.

Sincerely,

(b)(6)

Scott G. Armentrout, Executive Vice President, Environment, Fish, & Wildlife  
Bonneville Power Administration

(b)(6)

Randall Friedlander, Fish and Wildlife Program Director, Chairman  
Confederated Tribes of the Colville Reservation

**From:** Welch,Dorothy W (BPA) - E-4

**Sent:** Tue Oct 27 12:59:54 2020

**To:** Key,Philip S (BPA) - LN-7

**Cc:** Miles,Tucker (BPA) - LN-7

**Subject:** FW: Phase 1 ---> Phase 2

**Importance:** Normal

**Attachments:** Council on reintroduction in blocked areas; image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

Looping PK in

**From:** Ball,Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>

**Sent:** Tuesday, October 27, 2020 12:56 PM

**To:** Armentrout,Scott G (BPA) - E-4 <[sgarmtrout@bpa.gov](mailto:sgarmtrout@bpa.gov)>; Welch,Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>

**Cc:** Zelinsky,Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Subject:** RE: Phase 1 ---> Phase 2

Reintroduction report was presented to the Council in May 2019. ISRP reviewed the report in November 2019. Patty confirms the Council has not advanced the work beyond the ISRP review. She also says there isn't a bright line between Phase I and Phase II.

The Program specifically calls for 1) evaluation of information from passage studies at Grand Coulee and Chief Joseph dams and other blockages, 2) assessment of habitat availability, suitability and salmon survival potential above Grand Coulee, and 3) investigation of the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead.

The Reintroduction Report addressed all these elements except for cost of passage options and provided a general proof of concept.”

**From:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>

**Sent:** Tuesday, October 27, 2020 12:49 PM

**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>

**Cc:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Subject:** Phase 1 ---> Phase 2

How would you describe where the council is regarding the phase 1 to phase 2 study on fish above blocked areas? Ben and I are on that call still.....

**SCOTT G ARMENTROUT**



Executive Vice President, Environment, Fish & Wildlife, SES | E-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

From: Ball, Crystal A (BPA) - EW-4

Sent: Thu Sep 17 10:25:21 2020

To: Armentrout, Scott G (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Zelinsky, Benjamin D (BPA) - E-4; Miles, Tucker (BPA) - LN-7; Key, Philip S (BPA) - LN-7

Cc: Donahue, Scott L (BPA) - EWP-4

Subject: Council on reintroduction in blocked areas

Importance: Normal

Scott, you asked for more information about passage and reintroduction. The Council has supported reintroduction of anadromous fish to blocked areas since the 2000 revision of the fish and wildlife program, recommending that reintroduction be pursued where it is determined to be feasible. Consistent with the Power Act, the Council believes that the abundance of native fish species should be restored throughout blocked areas where original habitat conditions exist or can be feasibly restored or improved.

The Anadromous Fish Mitigation in Blocked Areas Strategy in the Council's 2014 Fish and Wildlife Program calls for a science-based, phased approach to investigate reintroduction of anadromous fish in the blocked U.S. waters of the Upper Columbia River.

<https://www.nwcouncil.org/fish-and-wildlife/topics/reintroduction-anadromous-fish-above-chief-joseph-and-grand-coulee>

Phase I of this investigation includes:

- Evaluate information from passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams
- Investigate habitat availability, suitability and salmon survival potential in habitats above Grand Coulee. This might include selective releases of salmon and steelhead. Investigate the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead. Before funding new investigations, provide the Council with a report for consideration of subsequent work to advance the fish passage planning process.
- As part of Phase 1, the Council will engage in discussions with tribal, state, and federal agencies and others regarding the purpose, scope and progress of reintroduction efforts above Chief Joseph and Grand Coulee dams.

Reintroduction report was presented to the Council in May 2019

<https://secureservercdn.net/104.238.71.140/b63.d34.myftpupload.com/wp-content/uploads/2019/05/Fish-Passage-and-Reintroduction-Phase-1-Report.pdf>

ISRP reviewed the report in November 2019.

<https://www.nwcouncil.org/reports/isab2019-3>

“The 2014 Fish and Wildlife Program identifies several key steps in a phased approach to reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams to mainstem reaches and tributaries in the United States. The Program specifically calls for 1) evaluation of information from passage studies at Grand Coulee and Chief Joseph dams and other blockages, 2) assessment of habitat availability, suitability and salmon survival potential above Grand Coulee, and 3) investigation of the scientific feasibility and possible cost of upstream and

downstream passage options for salmon and steelhead. The Reintroduction Report addressed all these elements except for cost of passage options and provided a general proof of concept.”

“While it is reasonable to expect that reintroduction could be successful to some extent, there is great uncertainty about the numbers of adults that will return and the types of management that will be required to maintain them. A strategic plan for future steps and an adaptive management process will be needed to address these uncertainties. The ISAB encourages the UCUT and the Council to make decisions conservatively or with caution because of the very wide ranges of estimates of capacity and habitat availability. While the ISAB recommends careful development of future decisions and actions, it is clear the UCUT and their collaborators put a lot of thought and effort into this assessment and make the fundamental issues and management alternatives accessible to many stakeholders.”

Patty confirms the Council has not advanced the work beyond the ISRP review. She also says there isn’t a bright line between Phase I and Phase II.

Crystal Ball

Executive Manager | Fish & Wildlife Program EW-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3991 | C (b)(6) | E [caball@bpa.gov](mailto:caball@bpa.gov)

**From:** Miles,Tucker (BPA) - LN-7

**Sent:** Wed May 20 13:09:00 2020

**To:** Key,Philip S (BPA) - LN-7

**Subject:** FW: Tomorrow's agenda

**Importance:** Normal

**Attachments:** image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

PK, see the two messages, immediately below, between me and Anne – they are background for thoughts on the Accords meeting with Finance that we'll discuss a little later.

## **Tucker Miles**

Attorney-Adviser | Office of General Counsel

### **Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

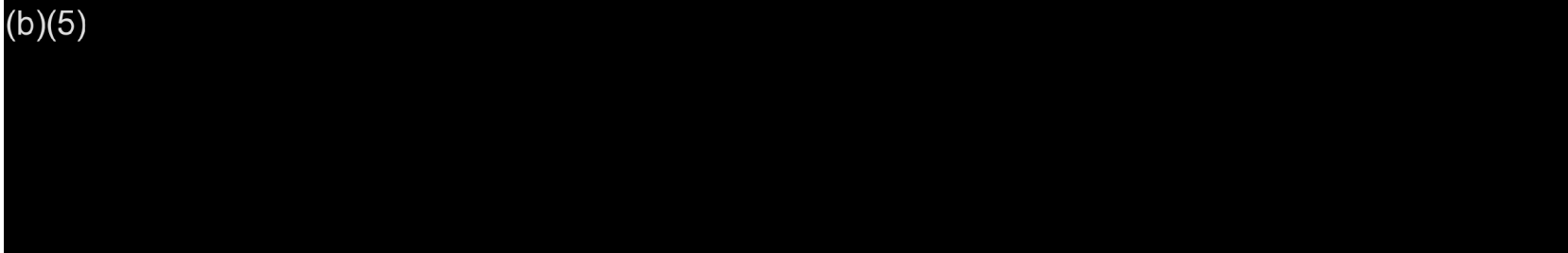
**From:** Miles,Tucker (BPA) - LN-7

**Sent:** Wednesday, May 13, 2020 4:30 PM

**To:** Senters,Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>

**Subject:** RE: Tomorrow's agenda

(b)(5)



**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>

**Sent:** Wednesday, May 13, 2020 3:41 PM

**To:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** RE: Tomorrow's agenda

Thanks! Very interesting.

(b)(5)



Anyhooo, that's it. Thanks.

**Anne Senters**

Assistant General Counsel | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-4998

**From:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Sent:** Wednesday, May 13, 2020 3:34 PM

**To:** Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>

**Subject:** FW: Tomorrow's agenda

FYI, here's the agenda for the meeting I mentioned. I'll follow up afterwards.

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Sent:** Wednesday, May 13, 2020 3:27 PM

**To:** Mainzer, Elliot E (BPA) - A-7 <[eemainzer@bpa.gov](mailto:eemainzer@bpa.gov)>; Richard Devlin <[RDevlin@nwcouncil.org](mailto:RDevlin@nwcouncil.org)>; Bo Downen (<[bdownen@nwcouncil.org](mailto:bdownen@nwcouncil.org)> <[bdownen@nwcouncil.org](mailto:bdownen@nwcouncil.org)>); Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Jeff Allen <[jallen@NWCouncil.org](mailto:jallen@NWCouncil.org)>; GNorman@NWCouncil.org; Steve Crow <[scrow@nwcouncil.org](mailto:scrow@nwcouncil.org)>; Patty O'Toole <[potoole@nwcouncil.org](mailto:potoole@nwcouncil.org)>; Ben Kujala <[BKujala@NWCouncil.org](mailto:BKujala@NWCouncil.org)>; John Shurts <[jshurts@nwcouncil.org](mailto:jshurts@nwcouncil.org)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Peacock Williamson, Julie (BPA) - DIR-7 <[jxpeacockwilliamson@bpa.gov](mailto:jxpeacockwilliamson@bpa.gov)>; Warner, Joshua P (BPA) - DIR-7 <[jpwarner@bpa.gov](mailto:jpwarner@bpa.gov)>; Skidmore, John T (BPA) - EWL-4 <[jtskidmore@bpa.gov](mailto:jtskidmore@bpa.gov)>; Mark Walker <[mwalker@nwcouncil.org](mailto:mwalker@nwcouncil.org)>

**Cc:** Case, Cynthia D (CONTR) - DIR-7 <[cdc case@bpa.gov](mailto:cdc case@bpa.gov)>

**Subject:** Tomorrow's agenda

Hello Everyone:



Attached is an agenda for tomorrow's check-in at 3:00 Portland time. We appreciate everyone making time to meet. Let me know if you have any questions. Looking forward to catching up with everyone.

Peter

From: Zelinsky, Benjamin D (BPA) - E-4

Sent: Fri Jul 12 06:39:07 2019

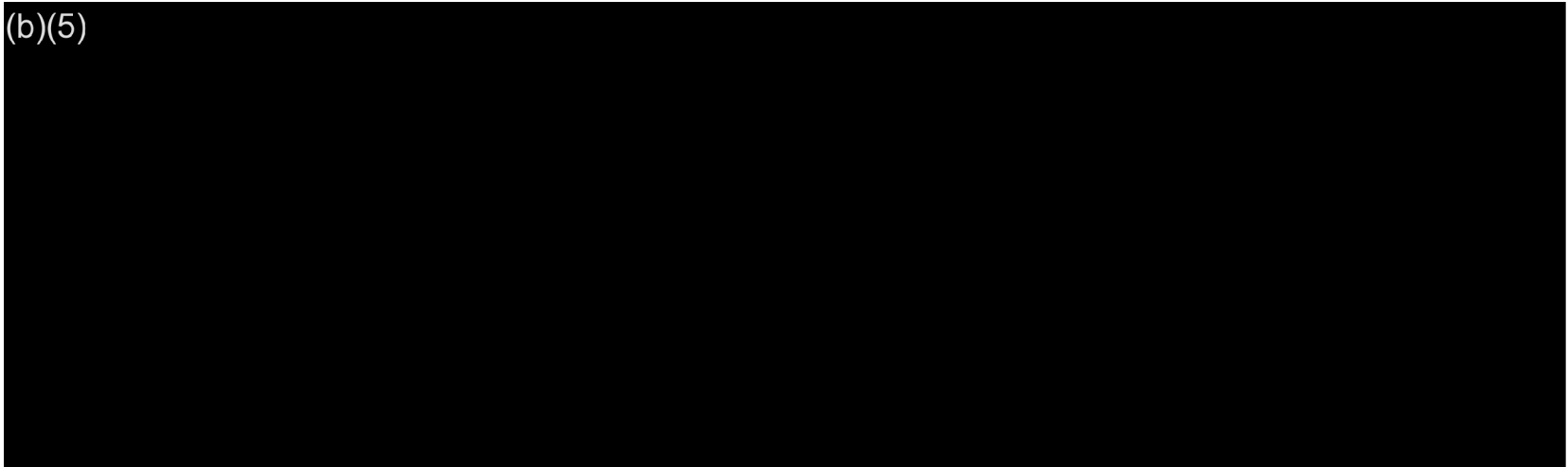
To: judith\_gordon@fws.gov; mike.tehan@noaa.gov; ritchie.graves@noaa.gov; timothy.a.dykstra@usace.army.mil; lstark@usbr.gov; eric\_hein@fws.gov; roy\_elicker@fws.gov; dan.h.feil@usace.army.mil; ryan.couch@noaa.gov; Leary, Jill C (BPA) - LN-7; Sweet, Jason C (BPA) - PGB-5; jeremiah.williamson@sol.doi.gov; jblades@usbr.gov; Godwin, Mary E (BPA) - LN-7; Key, Philip S (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

Subject: Management of Anadromous Fish in Blocked Areas - Summary of Authorities

Importance: Normal

*Draft – confidential – do not distribute*

(b)(5)



Thanks

Benjamin Zelinsky  
Bonneville Power Administration  
905 NE 11<sup>th</sup> Ave – E-4  
Portland, OR 97232  
503.230.4737 (office)  
(b)(6) (cell)  
[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Johnston,Kenneth H (BPA) - DIT-7

Sent: Mon Jan 11 15:51:59 2021

To: Key,Philip S (BPA) - LN-7; Welch,Dorothy W (BPA) - E-4; Zelinsky,Benjamin D (BPA) - E-4; Senters,Anne E (BPA) - LN-7; Miles,Tucker (BPA) - LN-7

Subject: RE: Call from Joe P re: Using CJ Hatchey Fish above CJD

Importance: Normal

Thanks Philip. Joe will be key to working this and these types of issues to reasonable conclusions with CTCR.

k

**From:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

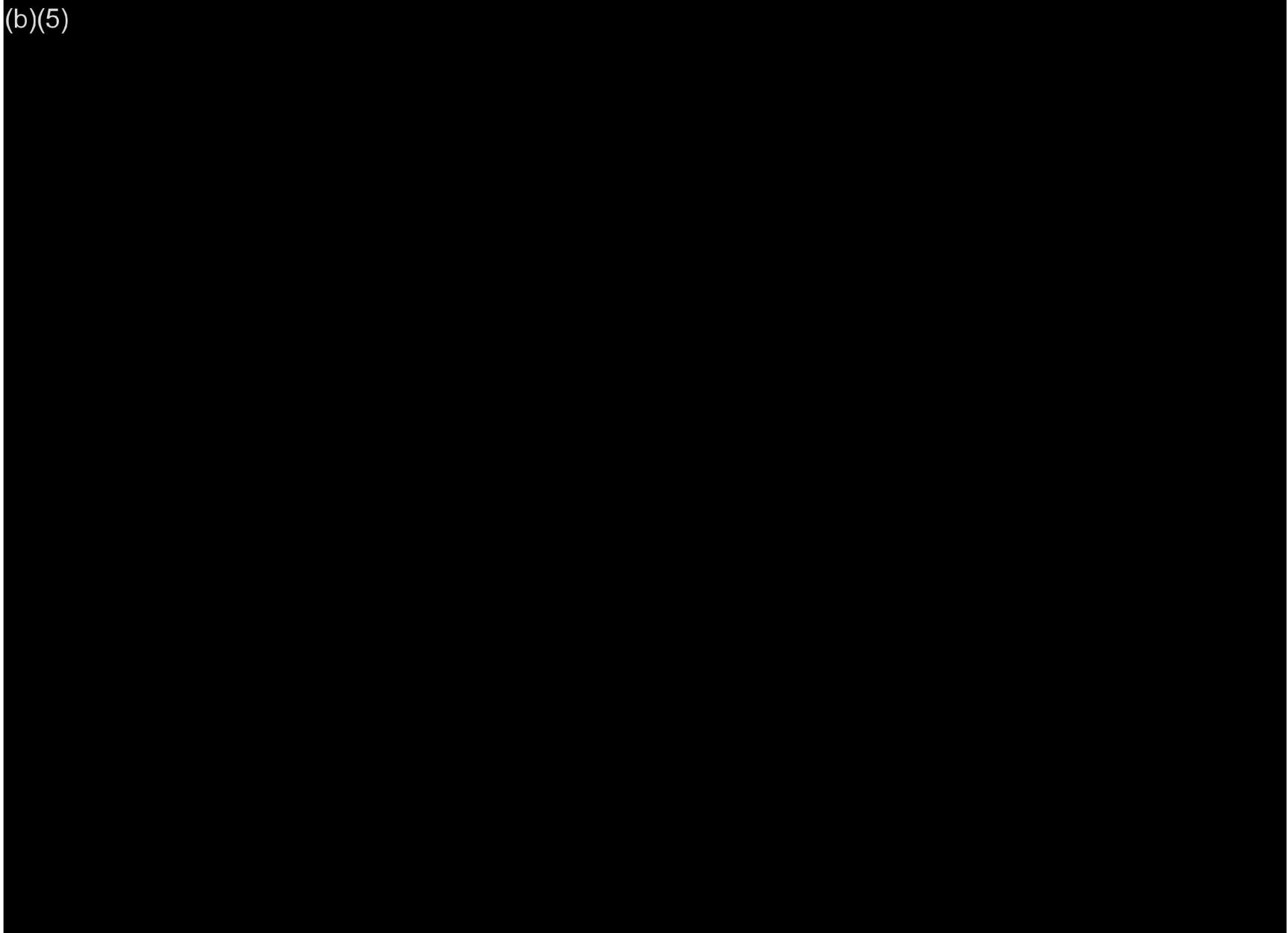
**Sent:** Monday, January 11, 2021 11:54 AM

**To:** Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

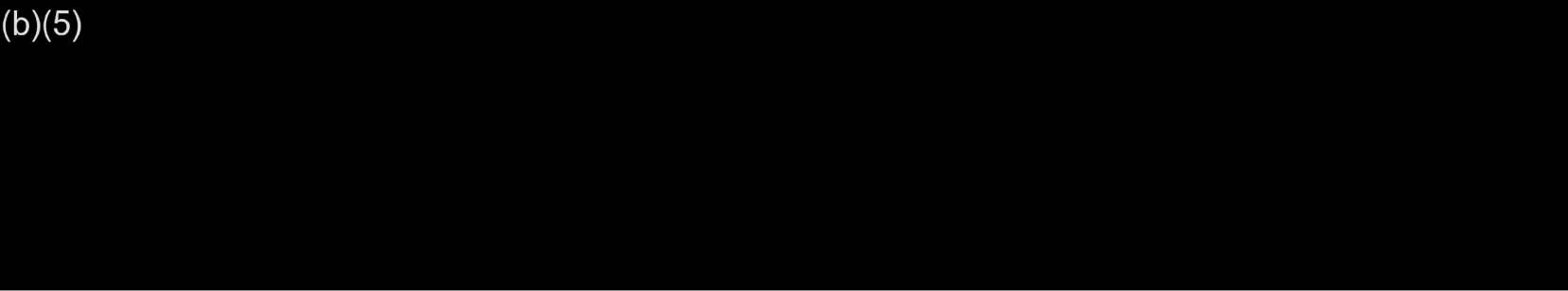
**Subject:** Call from Joe P re: Using CJ Hatchey Fish above CJD

(b)(5)

(b)(5)



(b)(5)



Philip

From: Ball,Crystal A (BPA) - EW-4

Sent: Thu Jun 27 10:01:04 2019

To: Zelinsky,Benjamin D (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Connolly,Kieran P (BPA) - PG-5; Jule,Kristen R (BPA) - EWP-4; Kennedy,David K (BPA) - EC-4; Koehler,Birgit G (BPA) - PG-5; Leary,Jill C (BPA) - LN-7; McDaniel,Kandi L (CONTR) - E-4; Senters,Anne E (BPA) - LN-7; Simms,Scott R (BPA) - DK-7; Skidmore,John T (BPA) - EWL-4; Sweet,Jason C (BPA) - PGB-5; Welch,Dorothy W (BPA) - E-4; Renner,Marcella P (BPA) - E-4; Eraut,Michelle L (BPA) - ECF-4; Gordon,Peter S (BPA) - E-4; Armentrout,Scott G (BPA) - E-4; Johnson,Kimberly O (BPA) - PGAF-6; Karnezis,Jason P (BPA) - E-4; Miles,Tucker (BPA) - LN-7; Key,Philip S (BPA) - LN-7; Godwin,Mary E (BPA) - LN-7; Allen,Christopher R (BPA) - PGAF-6; Johnston,Kenneth H (BPA) - DIT-7; Wilson,David B (BPA) - DKP-7; Stier,Jeffrey K (BPA) - E-4

Cc: Pruder Scruggs,Kathryn M (BPA) - E-4; James,Eve A L (BPA) - PGPO-5

Subject: Fish Passage and Reintroduction Phase 1 Report

Importance: Normal

Passing on some information I got from the Council about the Fish Passage and Reintroduction Phase 1 Report

Phase 1 includes several activities, some that are complete and others that are not:

- Evaluate information from passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams. (Completed by Council staff - December 28, 2016)
- Evaluate habitat availability, suitability and survival potential in habitats above Grand Coulee. (Prepared by UCUT staff on May 2, 2019 and submitted to the Council on May 17, 2019. Has not yet been reviewed by the

ISRP/ISAB.)

- Possible selective releases of salmon and steelhead. (Has not yet occurred)
- Investigate the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead. (Has not yet occurred.)
- Before funding new investigations, provide the Council with a report for consideration of subsequent work to advance the fish passage planning process. (Has not yet occurred.)
- As part of Phase 1, the Council will engage in discussions with tribal, state and federal agencies and others regarding the purpose, scope and progress of reintroduction efforts above Chief Joseph and Grand Coulee Dams. (These discussions have not yet begun.)

A decision to proceed to Phase 2 will only occur after Phase 1 is complete and will be made by the Council after collaboration with other relevant entities.

Thanks,

Crystal

-----Original Appointment-----

**From:** Zelinsky,Benjamin D (BPA) - A-7

**Sent:** Wednesday, August 22, 2018 11:28 AM

**To:** Zelinsky,Benjamin D (BPA) - A-7; Cogswell,Peter (BPA) - DI-7; Connolly,Kieran P (BPA) - PG-5; Jule,Kristen R (BPA) - EWP-4; Kennedy,David K (BPA) - EC-4; Koehler,Birgit G (BPA) - PG-5; Leary,Jill C (BPA) - LN-7; McDaniel,Kandi L (CONTR) - A-7; Senters,Anne E (BPA) - LN-7; Simms,Scott R (BPA) - DK-7; Skidmore,John T



(BPA) - EW-4; Sweet, Jason C (BPA) - PGB-5; Welch, Dorothy W (BPA) - E-4; Renner, Marcella P (BPA) - E-4; Eraut, Michelle L (BPA) - ECF-4; Gordon, Peter S (BPA) - E-4; Armentrout, Scott G (BPA) - E-4; Johnson, Kimberly O (BPA) - PGA-6; Karnezis, Jason P (BPA) - EWL-4; Miles, Tucker (BPA) - LN-7; Key, Philip S (BPA) - LN-7; Godwin, Mary E (BPA) - LN-7; Ball, Crystal A (BPA) - DIR-7; Allen, Christopher R (BPA) - PGAF-6; Johnston, Kenneth H (BPA) - DIT-7; Wilson, David B (BPA) - DKP-7; Stier, Jeffrey K (BPA) - E-4  
**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4; James, Eve A L (BPA) - PGPO-5  
**Subject:** Senior Environmental Strategy and Policy Team  
**When:** Thursday, June 27, 2019 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).  
**Where:** HQ 678 Conference Line 503-230-4000 ID (b)(2)

3/20/19-Added Crystal Ball to series (KLM)

3/6/19 – Added Mary Godwin to series and updated Conference Line (KLM)

2/11 – Changed meeting name (KLM)

9/17/2018 Adding Peter Gordon again.

9/4/2018 Adding Michelle Eraut to this series.

8/22/2018 New series from Ben Zelinsky's calendar. (MPR)

**From:** Baskerville, Sonya L (BPA) - DIN-WASH

**Sent:** Fri May 28 12:13:08 2021

**To:** Zelinsky, Benjamin D (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Armentrout, Scott G (BPA) - E-4

**Cc:** Cook, Joel D (BPA) - K-7; Ball, Crystal A (BPA) - EW-4; Miles, Tucker (BPA) - LN-7; Connolly, Kieran P (BPA) - PG-5; Key, Philip S (BPA) - LN-7

**Subject:** RE: Colville conversation summary

**Importance:** Normal

**Attachments:** image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

(b)(5)

Sonya Baskerville  
BPA National Relations

(b)(6) m

On May 28, 2021 1:10 PM, "Cogswell, Peter (BPA) - DI-7" <ptcogswell@bpa.gov> wrote:

(b)(5)

**From:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

**Sent:** Friday, May 28, 2021 6:51 AM

**To:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Cc:** Cook, Joel D (BPA) - K-7 <jdcook@bpa.gov>; Ball, Crystal A (BPA) - EW-4 <caball@bpa.gov>; Connolly, Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** RE: Colville conversation summary

**Importance:** High

(b)(5)

## SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

### Bonneville Power Administration

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Thursday, May 27, 2021 4:00 PM

**To:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4

<[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

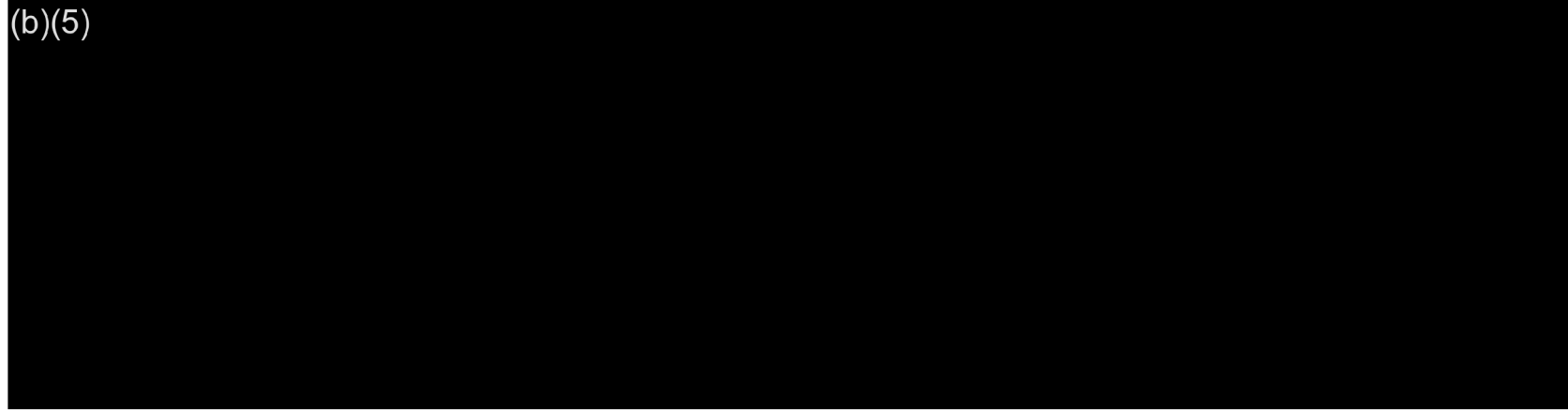
**Cc:** Cook, Joel D (BPA) - K-7 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[sibaskerville@bpa.gov](mailto:sibaskerville@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Carmack, Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** Colville conversation summary

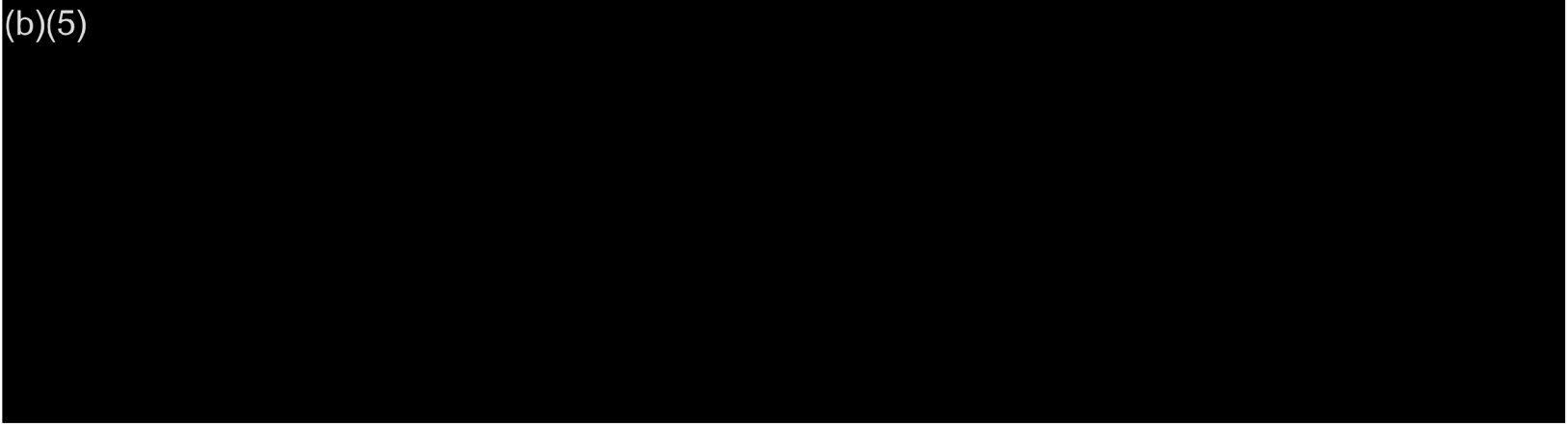
Scott and Ben:

Sonya, Ken, Marcy, Corey and I met with several reps of the Colville tribe yesterday to discuss their interest in legislation to allow the use of Chief Joseph Hatchery fish for placement above CJD and GCD. I did most of the speaking for us and the tribe was primarily represented by Chair Rodney Cawston.

(b)(5)



(b)(5)



I can loop around with some additional detail, but wanted to get you a sense of how the conversation went.

Let me know if you have any questions or concerns.

Thanks.

Peter

From: Welch,Dorothy W (BPA) - E-4

Sent: Wed Sep 16 10:37:57 2020

To: Armentrout,Scott G (BPA) - E-4; Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7

Subject: Potential materials for John re fish management in blocked areas

Importance: Normal

Article about CTCR salmon releases in 9/2020:

[https://www.wenatcheeworld.com/news/local/first-salmon-ceremony-is-more-than-fishing-opener/article\\_a9eaa1ea-6c5d-5350-a930-5d3f38ae291a.html](https://www.wenatcheeworld.com/news/local/first-salmon-ceremony-is-more-than-fishing-opener/article_a9eaa1ea-6c5d-5350-a930-5d3f38ae291a.html)

ISAB review of UCUT Passage and Reintroduction Report:

<https://www.nwcouncil.org/sites/default/files/ISAB%202019-3%20ReviewUCUTReintroductionReport1Nov.pdf>

From: Connolly, Kieran P (BPA) - PG-5

Sent: Fri May 28 13:24:07 2021

To: Cook, Joel D (BPA) - K-7; Cooper, Suzanne B (BPA) - P-6; Armentrout, Scott G (BPA) - E-4; Key, Philip S (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

Cc: Ball, Crystal A (BPA) - EW-4; Baskerville, Sonya L (BPA) - DIN-WASH; Koehler, Birgit G (BPA) - PG-5; Eve James (evejames1@yahoo.com); Cogswell, Peter (BPA) - DI-7; Zelinsky, Benjamin D (BPA) - E-4

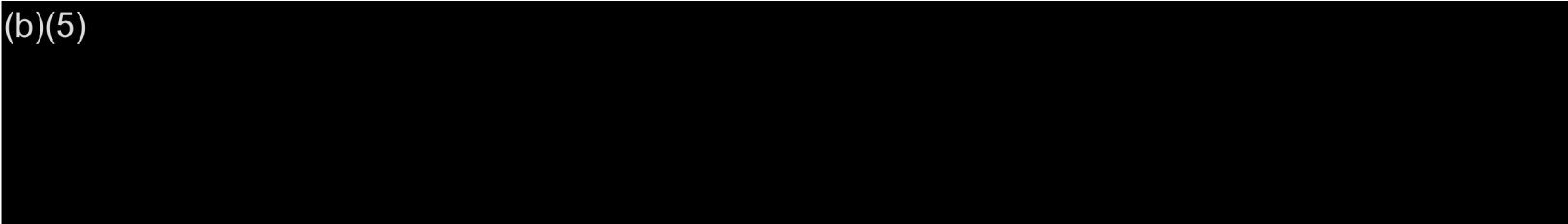
Subject: RE: Colville conversation summary

Importance: Normal


Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

***Confidential and privileged attorney client communication/FOIA-exempt***

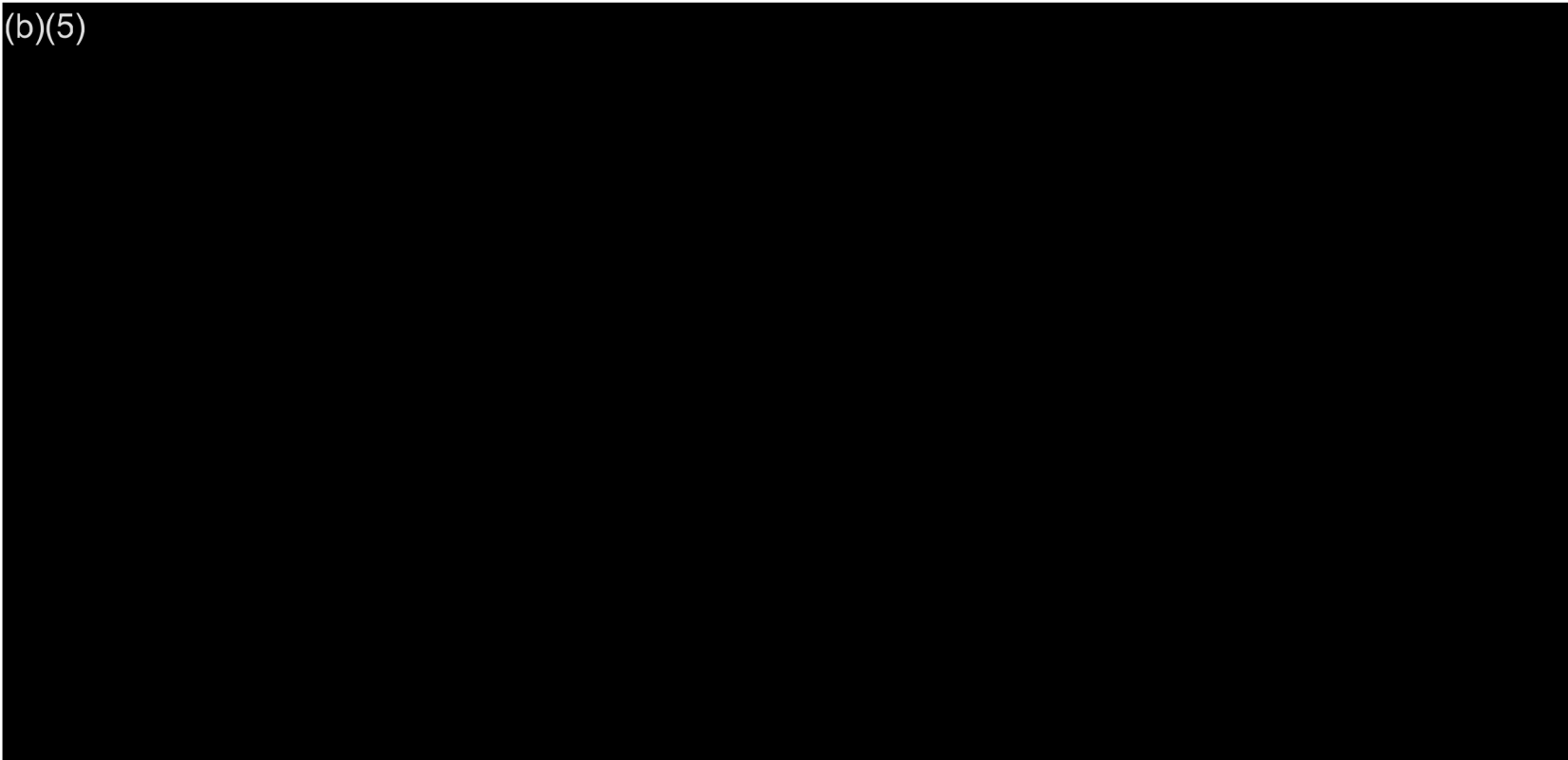
(b)(5)



(b)(5)



(b)(5)



**Kieran P. Connolly**

Vice President, Generation Asset Management

**Bonneville Power Administra**

[bpa.gov](http://bpa.gov) | P 503-230-4680



C(b)(6)

**From:** Cook, Joel D (BPA) - K-7 <jdcook@bpa.gov>  
**Sent:** Friday, May 28, 2021 12:21 PM  
**To:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>  
**Cc:** Ball, Crystal A (BPA) - EW-4 <caball@bpa.gov>; Connolly, Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>  
**Subject:** RE: Colville conversation summary

(b)(5)

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Sent:** Friday, May 28, 2021 10:10 AM  
**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
**Cc:** Cook, Joel D (BPA) - K-7 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>  
**Subject:** RE: Colville conversation summary

(b)(5)

(b)(5)

**From:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>

**Sent:** Friday, May 28, 2021 6:51 AM

**To:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Cc:** Cook, Joel D (BPA) - K-7 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** RE: Colville conversation summary

**Importance:** High

(b)(5)

## SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Sent:** Thursday, May 27, 2021 4:00 PM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Cc:** Cook, Joel D (BPA) - K-7 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[sibaskerville@bpa.gov](mailto:sibaskerville@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Carmack, Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** Colville conversation summary

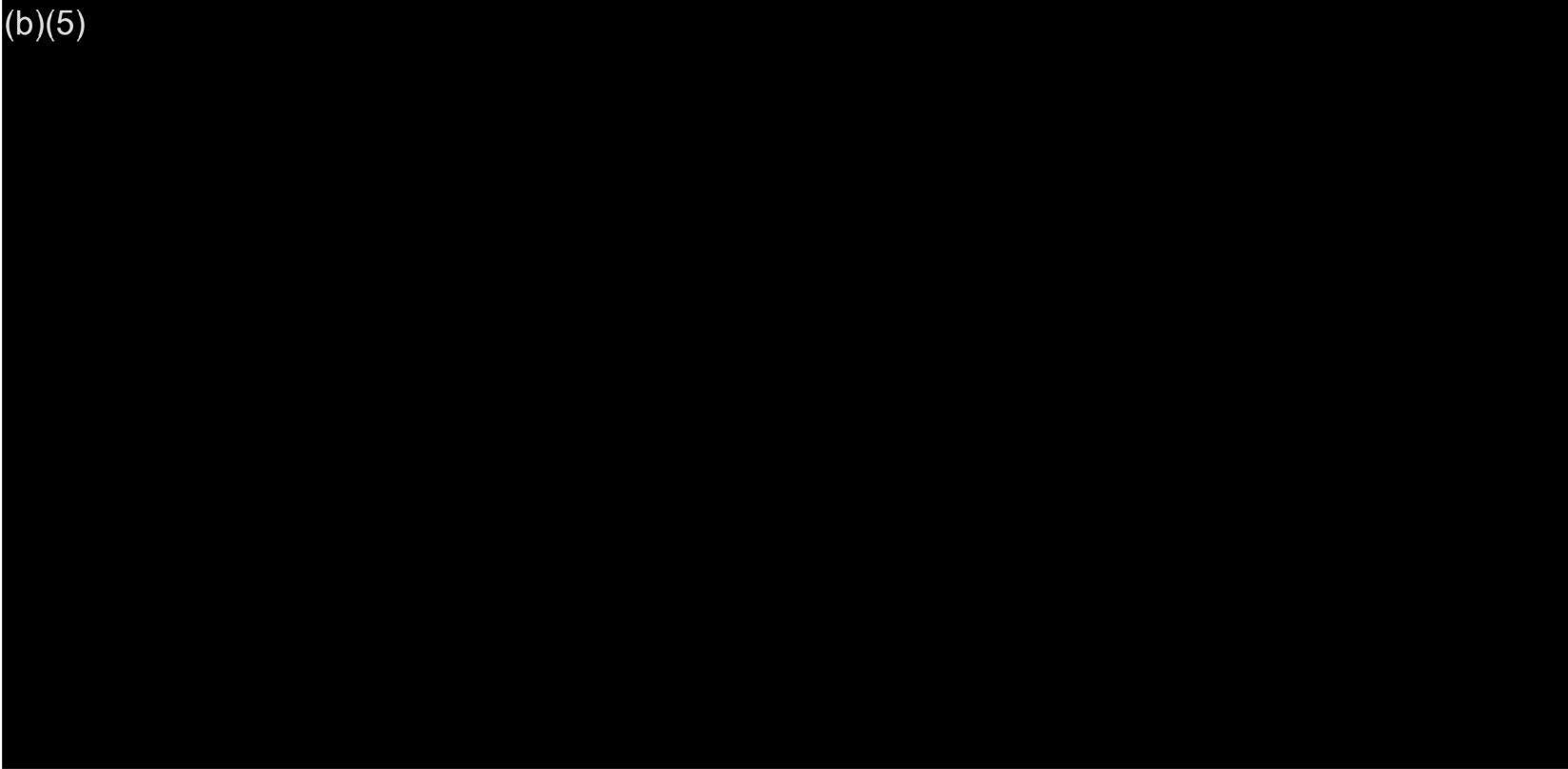
Scott and Ben:

Sonya, Ken, Marcy, Corey and I met with several reps of the Colville tribe yesterday to discuss their interest in legislation to allow the use of Chief Joseph Hatchery fish for placement above CJD and GCD. I did most of the speaking for us and the tribe was primarily represented by Chair Rodney Cawston.

(b)(5)



(b)(5)



Let me know if you have any questions or concerns.

Thanks.

Peter



From: Donahue,Scott L (BPA) - EWP-4

Sent: Mon Jun 22 11:42:32 2020

To: Key,Philip S (BPA) - LN-7

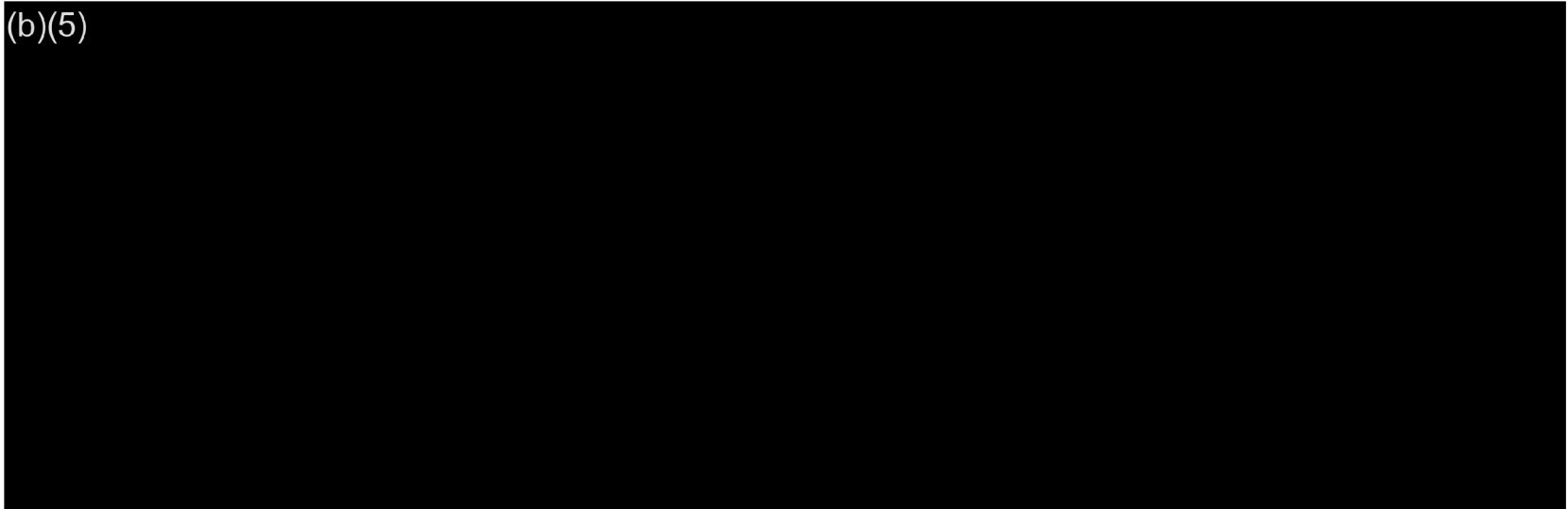
Subject: RE: Cover Ltr and Comments 6.22.2020

Importance: Normal

CONFIDENTIAL

Hi Philip,

(b)(5)



Cheers,

Scott

-----Original Message-----

From: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

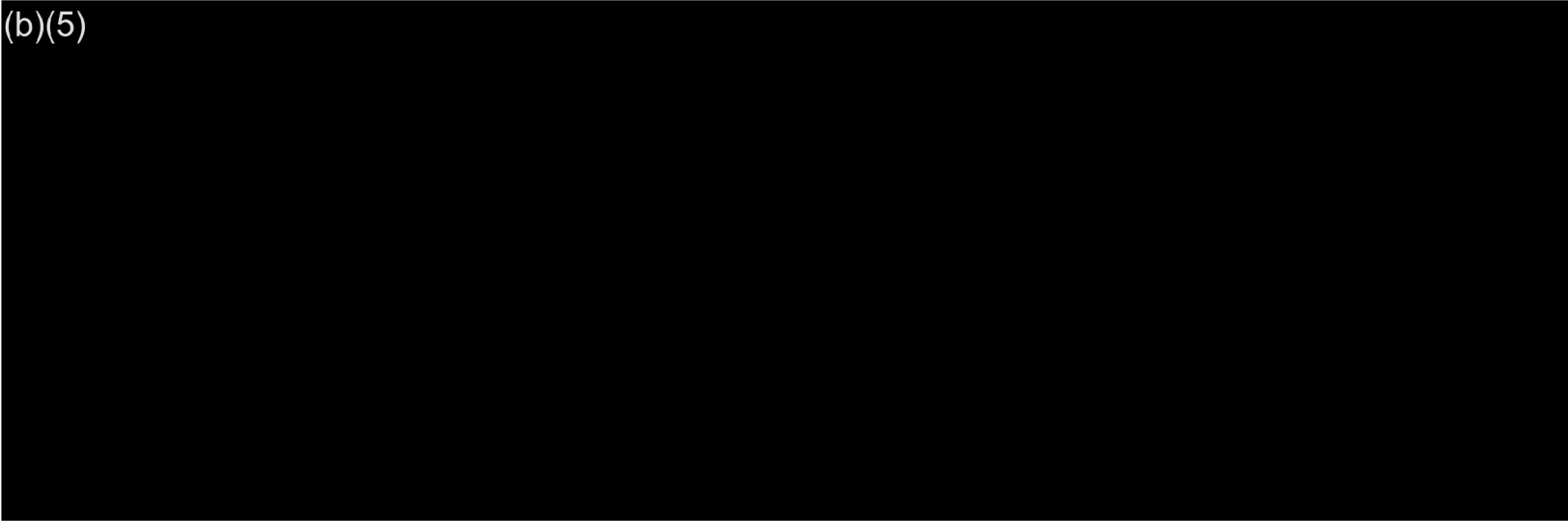
Sent: Monday, June 22, 2020 11:00 AM

To: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

(b)(5)



Philip

-----Original Message-----

From: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

Sent: Monday, June 22, 2020 9:20 AM

To: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Did you see the clearing up article on the 5 million fish change? Scott

SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife, SES | E-4 BONNEVILLE POWER ADMINISTRATION bpa.gov | P 503-230-3076

| C (b)(6)

-----Original Message-----

From: Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

Sent: Monday, June 22, 2020 9:02 AM

To: Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>; Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

Subject: RE: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Let me know if any of y'all have questions or concerns on the letter as I'm covering for Tucker today and worked on it with him.

-----Original Message-----

From: Renner, Marcella P (BPA) - E-4 <mprenner@bpa.gov>

Sent: Friday, June 19, 2020 2:09 PM

To: Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

Cc: Skidmore, John T (BPA) - EWL-4 <jtskidmore@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Donahue, Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

Subject: Emailing: Final Bonneville Comments on Draft Council Addendum 2019.10.18, Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Hi Scott, (Armentrout)

Please find the attached letter for your final review prior to signature. It has been vetted through EWP, EW, LN, and DI. Peter Cogswell (Out today) would like one more final review, but won't be able to look at until Monday. The letter is due to Council on Monday. Once you approve as written, I will PDF, combine the documents and prepare for your electronic signature. I know you would probably like to see this after Cogswell, but I really want to make sure you don't have any big flags that need addressing or specific heartburn with anything since this is DUE MONDAY.

Please reach out to Peter, John, and Scott with any questions or concerns you may have.

Thanks!



Marcella

Your message is ready to be sent with the following file or link attachments:

Final Bonneville Comments on Draft Council Addendum 2019.10.18 Council Addendum Pt 1 Cover Ltr and Comments 6.22.2020

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

From: Baskerville, Sonya L (BPA) - DIN-WASH


Sent: Tue Jun 22 19:13:55 2021

To: Zelinsky, Benjamin D (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Senters, Anne E (BPA) - LN-7; Miles, Tucker (BPA) - LN-7; Key, Philip S (BPA) - LN-7

Subject: RE: Draft Presentation on use of CJH Fish in Blocked Areas for EESP

Importance: Normal

(b)(5)



Sonya Baskerville  
BPA National Relations

(b)(6) m

On Jun 22, 2021 8:47 PM, "Key, Philip S (BPA) - LN-7" <pskey@bpa.gov> wrote:

Ben and Peter,

LN comments on the slides for this challenging issue.

PK

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

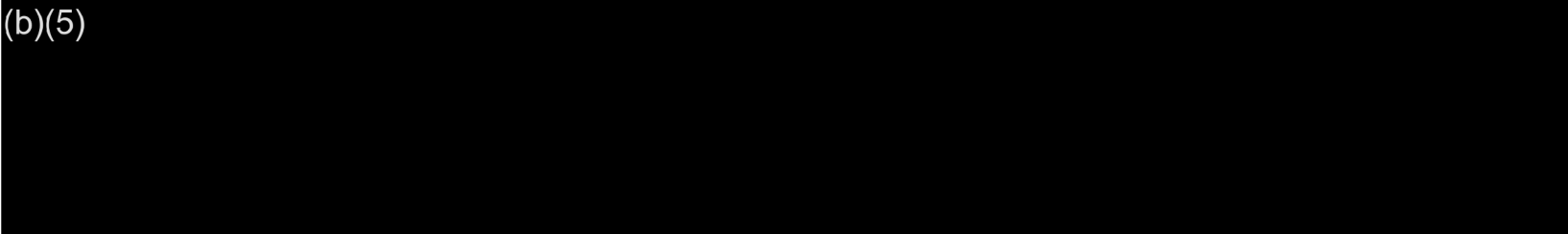
**Sent:** Thursday, June 17, 2021 7:00 PM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Jule, Kristen R (BPA) - EWP-4 <[krjule@bpa.gov](mailto:krjule@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>; Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

**Subject:** Draft Presentation on use of CJH Fish in Blocked Areas for EESP

***Pre-decisional – Deliberative – Confidential – Not for Distribution***

(b)(5)



Katie – could you please do a round of clean up on that version and get me an updated version by COB 6/25?

Peter C and Sonya – could you please provide some content on slide 4?

Maureen – could you please provide some content on slide 5?

Thanks and please reach out to me or Peter C with any questions. FYI - I'll be on leave 6/23-6/25.

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

503.230.4737 (office)

(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

From: Koehler,Birgit G (BPA) - PG-5

Sent: Thu Jun 10 08:39:33 2021

To: Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7; Cogswell,Peter (BPA) - DI-7; Zelinsky,Benjamin D (BPA) - E-4

Cc: James,Eve A L (BPA) - PG-5; Sweet,Jason C (BPA) - PGB-5

Subject: RE: Help understanding Power impacts of Colville proposal on CJH fish

Importance: Normal

Attachments: 2021-06-10-CJHfish.docx

***Confidential, Attorney-Client Communication, Do Not Release under FOIA***

Tucker and Philip,

Eve pulled together this *draft* paper on potential power impacts of releasing fish above CHJ/GCL with help from Jason, Tony Norris, Scott Bettin, Leah Williams, and me.

As next step, I suggest Peter and Ben let us know if they would like more detail in certain areas to help in the conversations with the Tribe. Likewise, Tucker and Philip, please tell us if this format is useful and whether you'd like to see any areas expanded. We did not put much effort into areas that are more in F&W's wheelhouse.

Thanks,

Birgit

**From:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Tuesday, June 1, 2021 11:44 AM

**To:** Koehler, Birgit G (BPA) - PG-5 <bgkoehler@bpa.gov>; James, Eve A L (BPA) - PG-5 <ejames@bpa.gov>

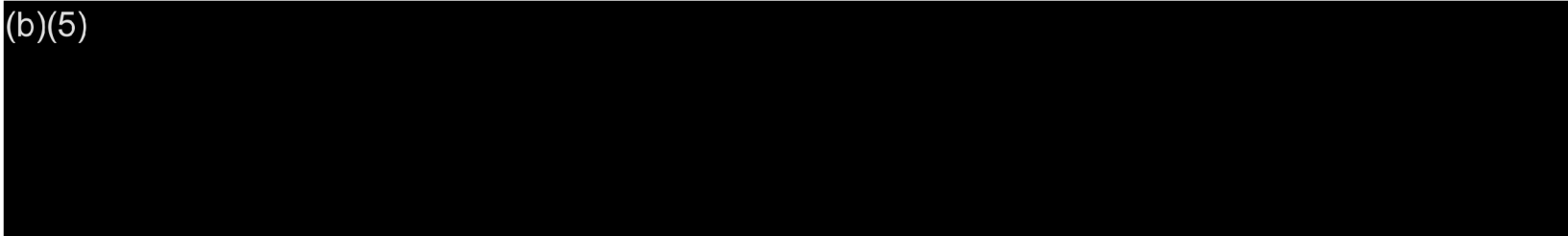
**Cc:** Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** Help understanding Power impacts of Colville proposal on CJH fish

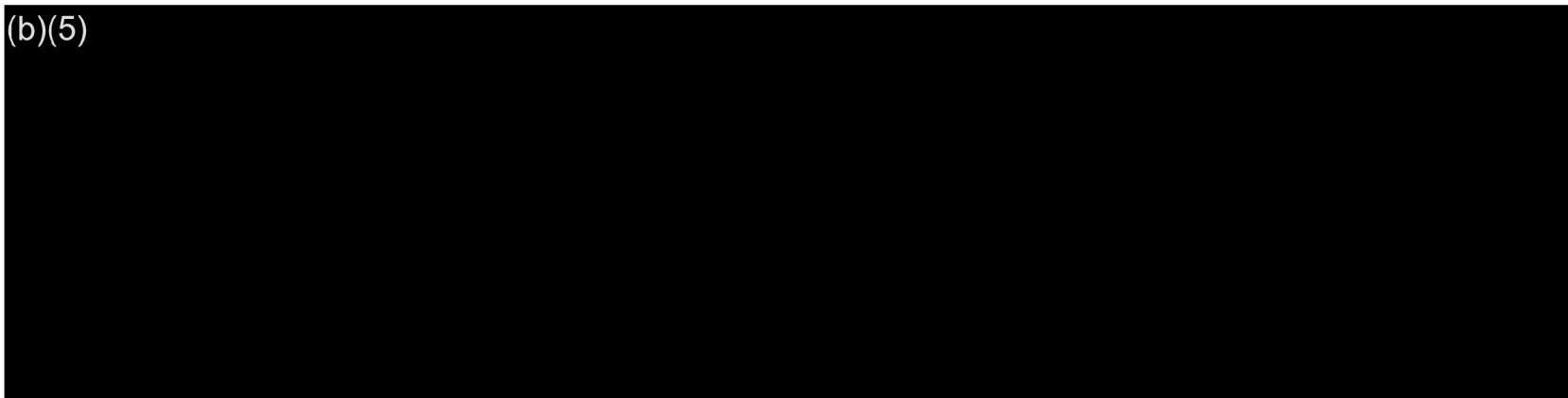
**Attorney Client Privileged/Deliberative Process Communication**

Birgit and Eve,

(b)(5)

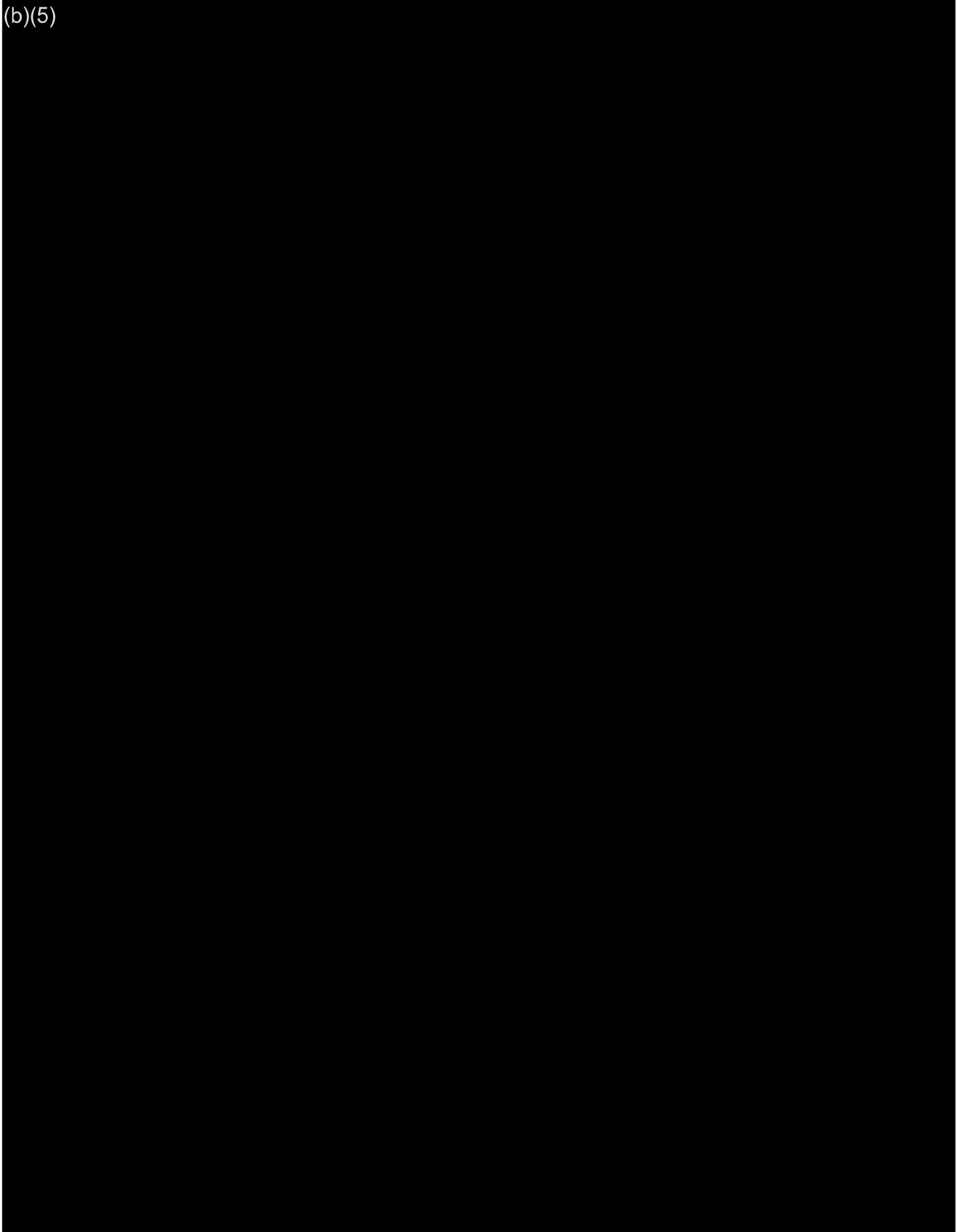


(b)(5)

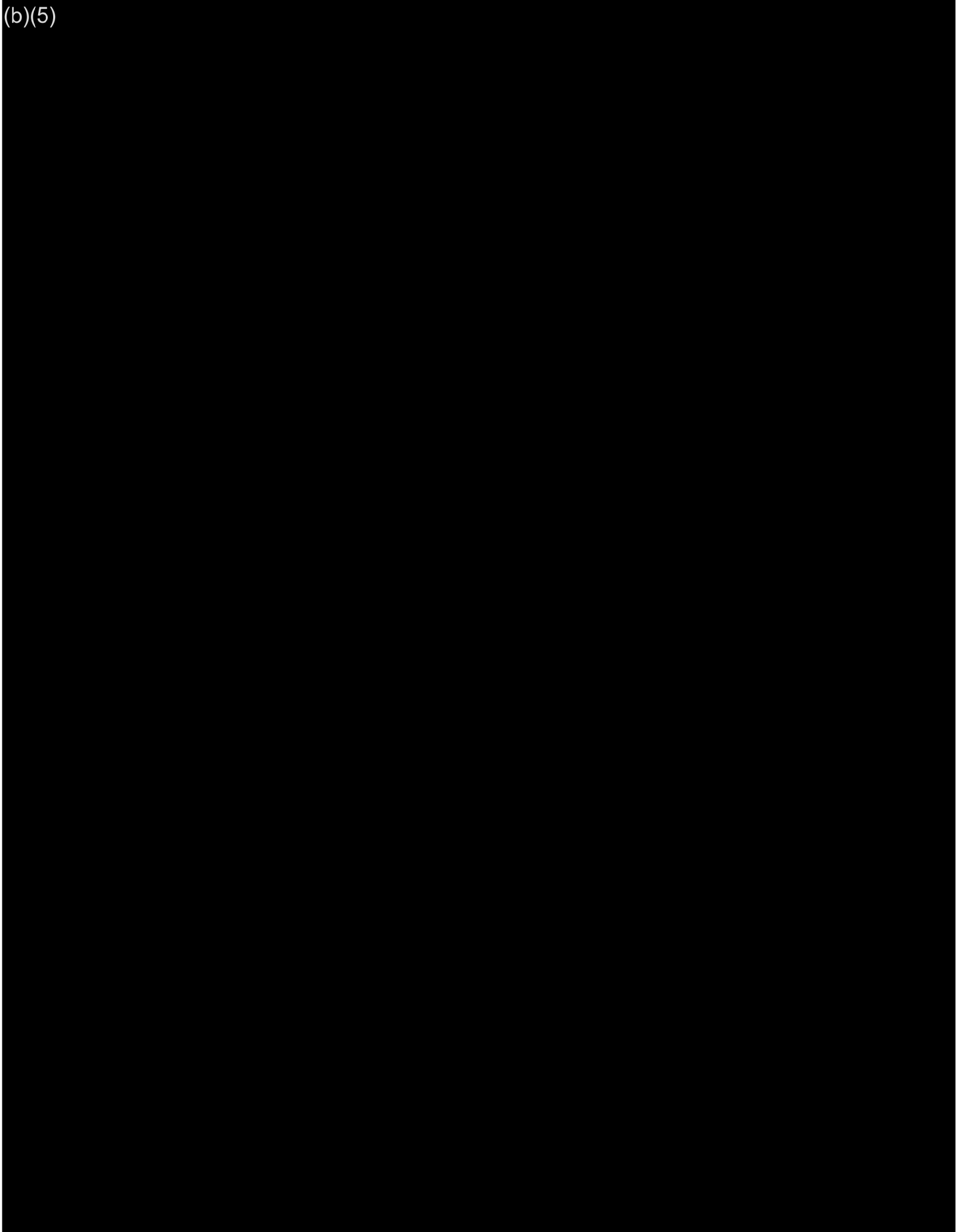


Thank you for your help.

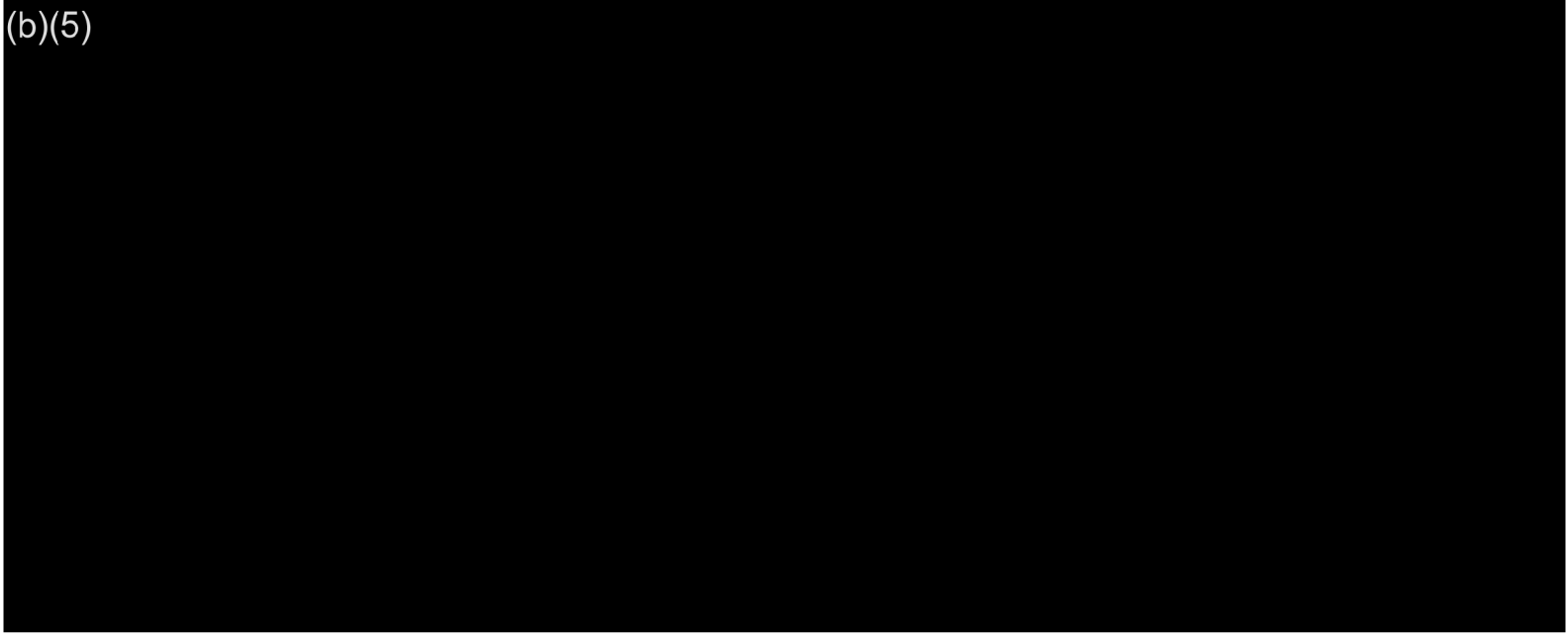
Philip







(b)(5)



From: Miles,Tucker (BPA) - LN-7

Sent: Thu Jul 22 16:45:07 2021

To: Koehler,Birgit G (BPA) - PG-5; Key,Philip S (BPA) - LN-7; James,Eve A L (BPA) - PG-5

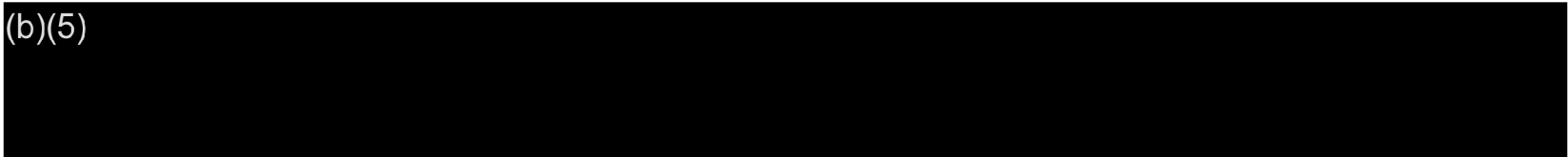
Subject: RE: Next Steps on CJH Fish--power impacts

Importance: Normal

Attachments: 2021.07.13\_Draft Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas.docx

***Attorney-client communication; privileged and confidential***

(b)(5)



I'm sorry that I couldn't make yesterday's call. And I haven't had a chance to follow-up with Philip about it, so I'll admit that I'm a bit lost with respect to your message below. Maybe Philip will be able to help clarify. I'll be out of office tomorrow and Monday, but could follow up further as needed when I'm back next week.

Tucker

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968 | C (b)(6)

**From:** Koehler,Birgit G (BPA) - PG-5 <bgkoehler@bpa.gov>

**Sent:** Thursday, July 22, 2021 4:17 PM

**To:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>; James,Eve A L (BPA) - PG-5 <ejames@bpa.gov>

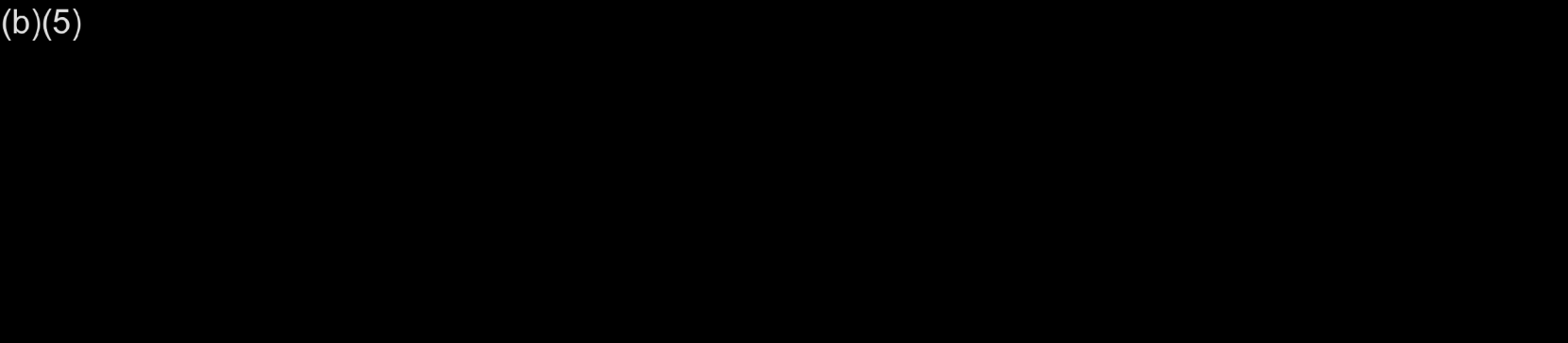
**Cc:** Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** RE: Next Steps on CJH Fish--power impacts

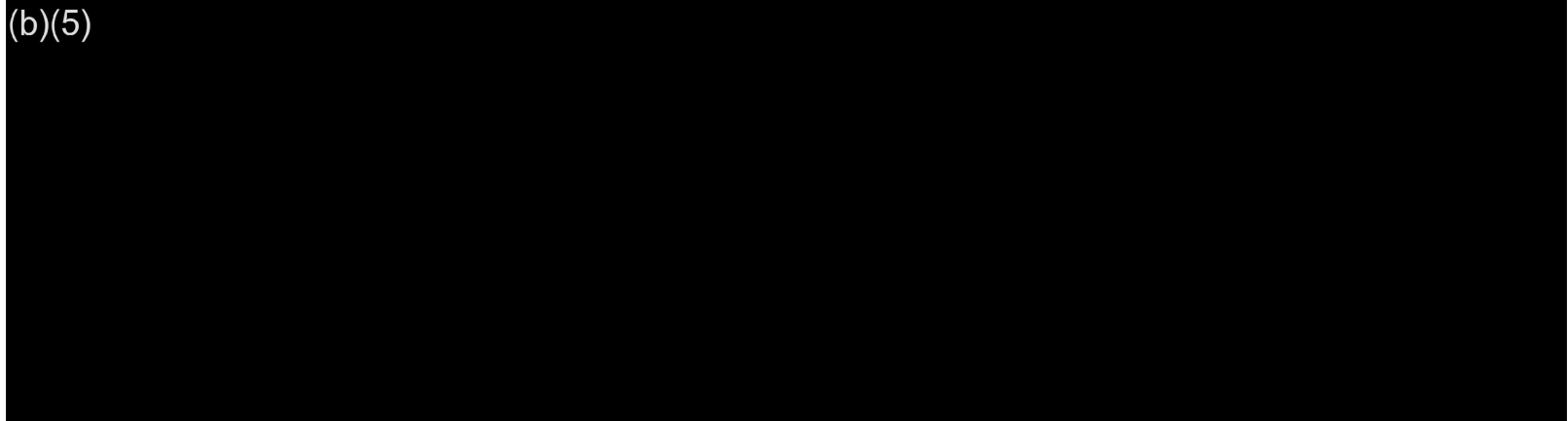
***Confidential, Attorney-Client Communication, Do Not Release under FOIA***

Hello all.

(b)(5)



(b)(5)



Birgit

**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Sent:** Wednesday, July 21, 2021 11:45 AM

**To:** James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Koehler, Birgit G (BPA) - PG-5 <[bgkoehler@bpa.gov](mailto:bgkoehler@bpa.gov)>

**Cc:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** FW: Next Steps on CJH Fish--power impacts

*Draft Deliberative Process/Attorney Client Privileged/Do Not Release Under FOIA*

Eve and Birgit,

(b)(5)

Philip

**From:** Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Sent:** Tuesday, July 13, 2021 2:26 PM

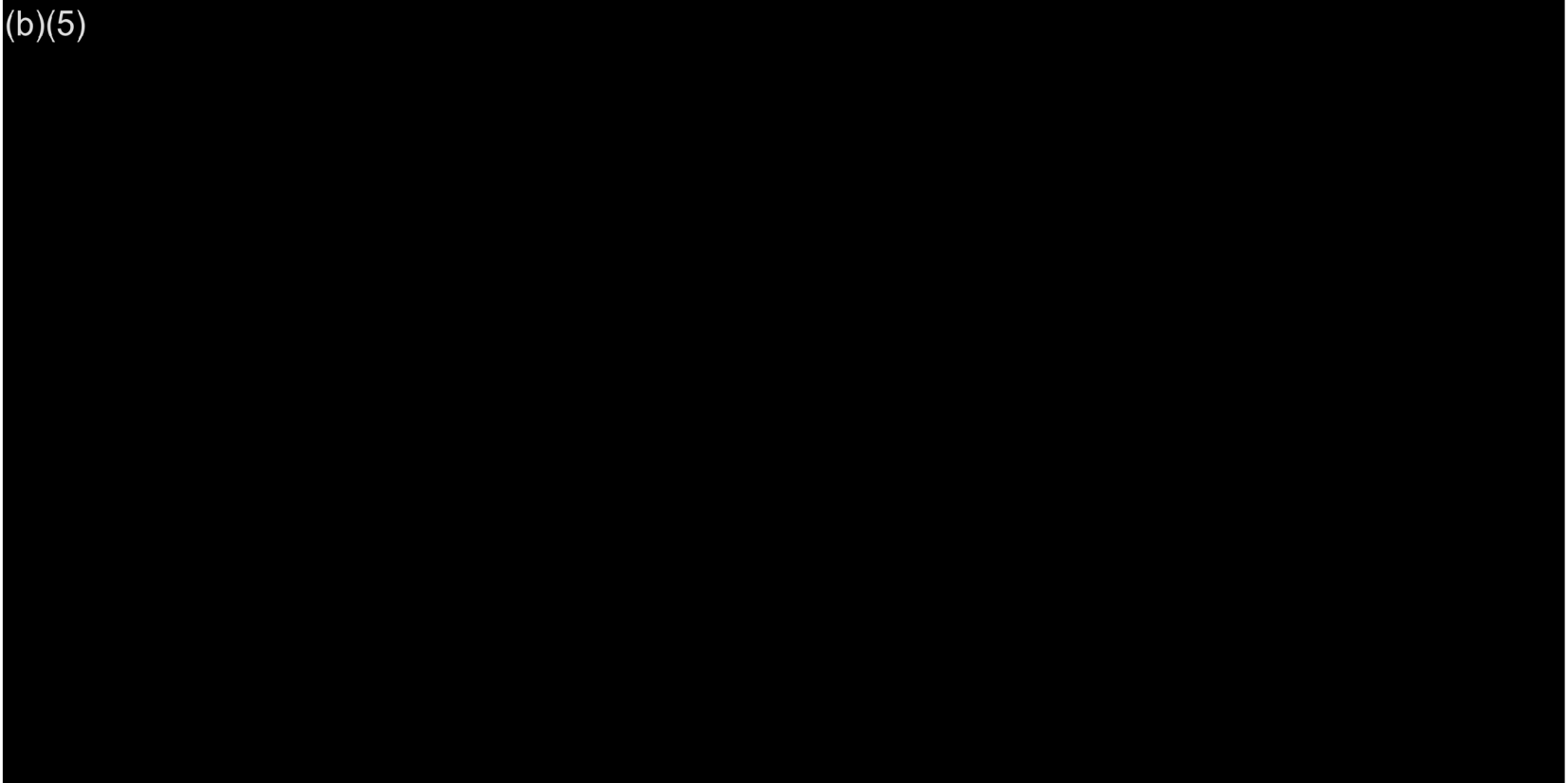
**To:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senter, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>; Leary, Jill C (BPA) - LN-7 <[jcleary@bpa.gov](mailto:jcleary@bpa.gov)>

**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

**Subject:** RE: Next Steps on CJH Fish

***Attorney-client communication; privileged and confidential***

(b)(5)



Let me know if you would like to discuss.

**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968 | C (b)(6)

**From:** Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

**Sent:** Wednesday, June 30, 2021 11:22 AM

**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>; Connolly, Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Sweet, Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Kavanagh, Maureen A (BPA) - EWP-4 <[makavanagh@bpa.gov](mailto:makavanagh@bpa.gov)>; Godwin, Mary E (BPA) - LN-7 <[megodwin@bpa.gov](mailto:megodwin@bpa.gov)>; Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

**Cc:** Pruder Scruggs, Kathryn M (BPA) - E-4 <[kpruder@bpa.gov](mailto:kpruder@bpa.gov)>; Gordon, Peter S (BPA) - E-4 <[psgordon@bpa.gov](mailto:psgordon@bpa.gov)>

**Subject:** Next Steps on CJH Fish

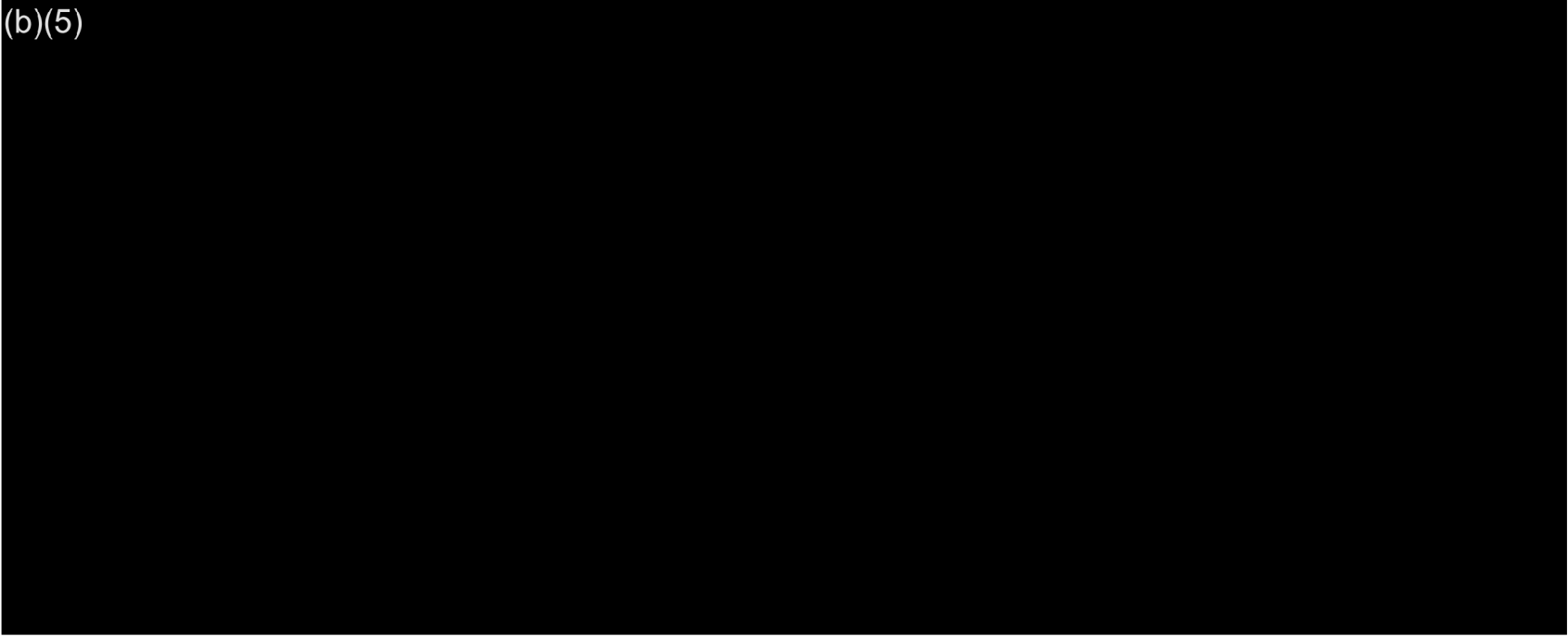
***Draft – deliberative – do not distribute***

Just wanted to capture what I thought the take-aways were from the EESP discussion yesterday on CJH fish:

(b)(5)



(b)(5)



Thanks,

Benjamin Zelinsky

Bonneville Power Administration

905 NE 11<sup>th</sup> Ave – E-4

Portland, OR 97232

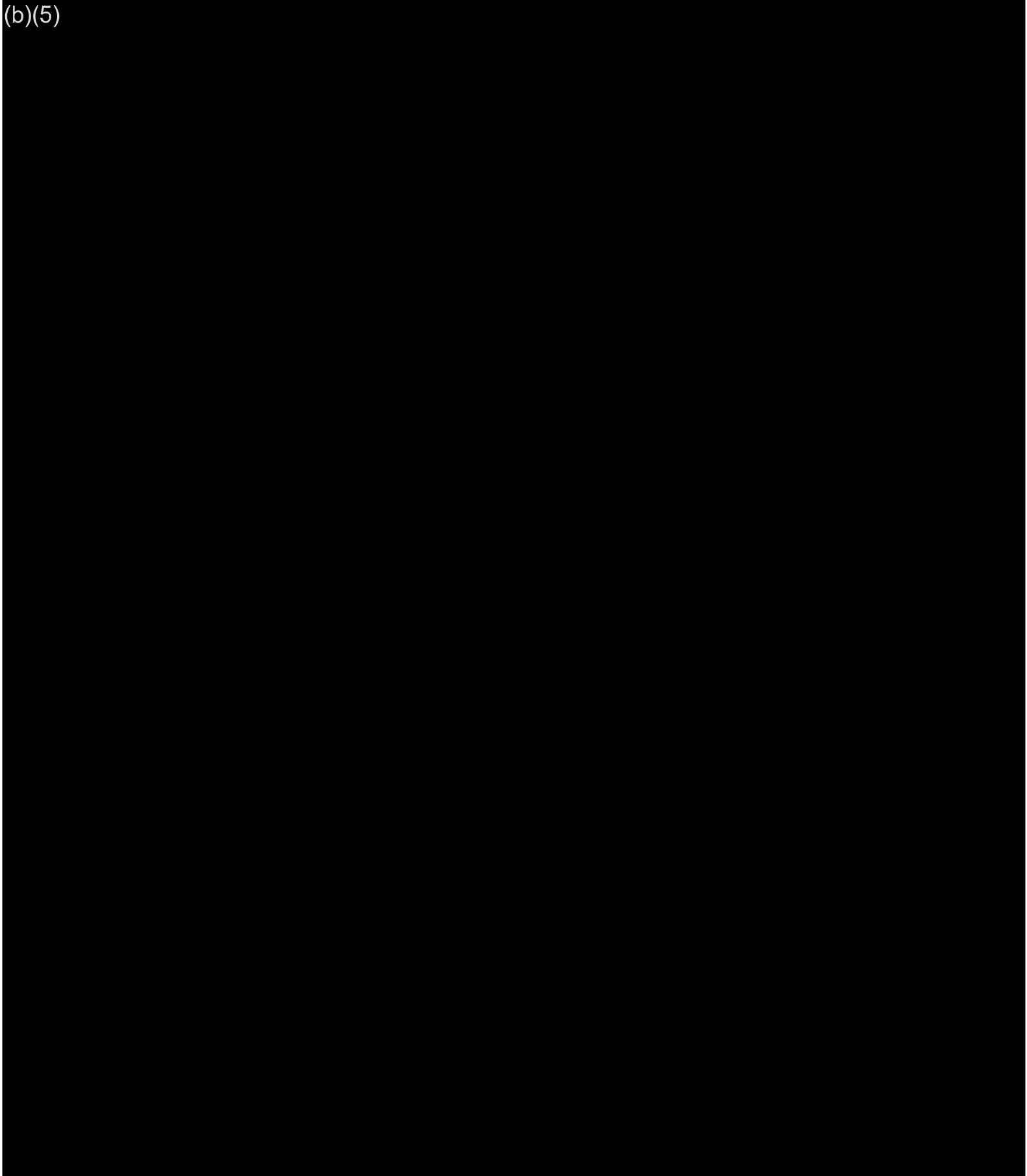
503.230.4737 (office)

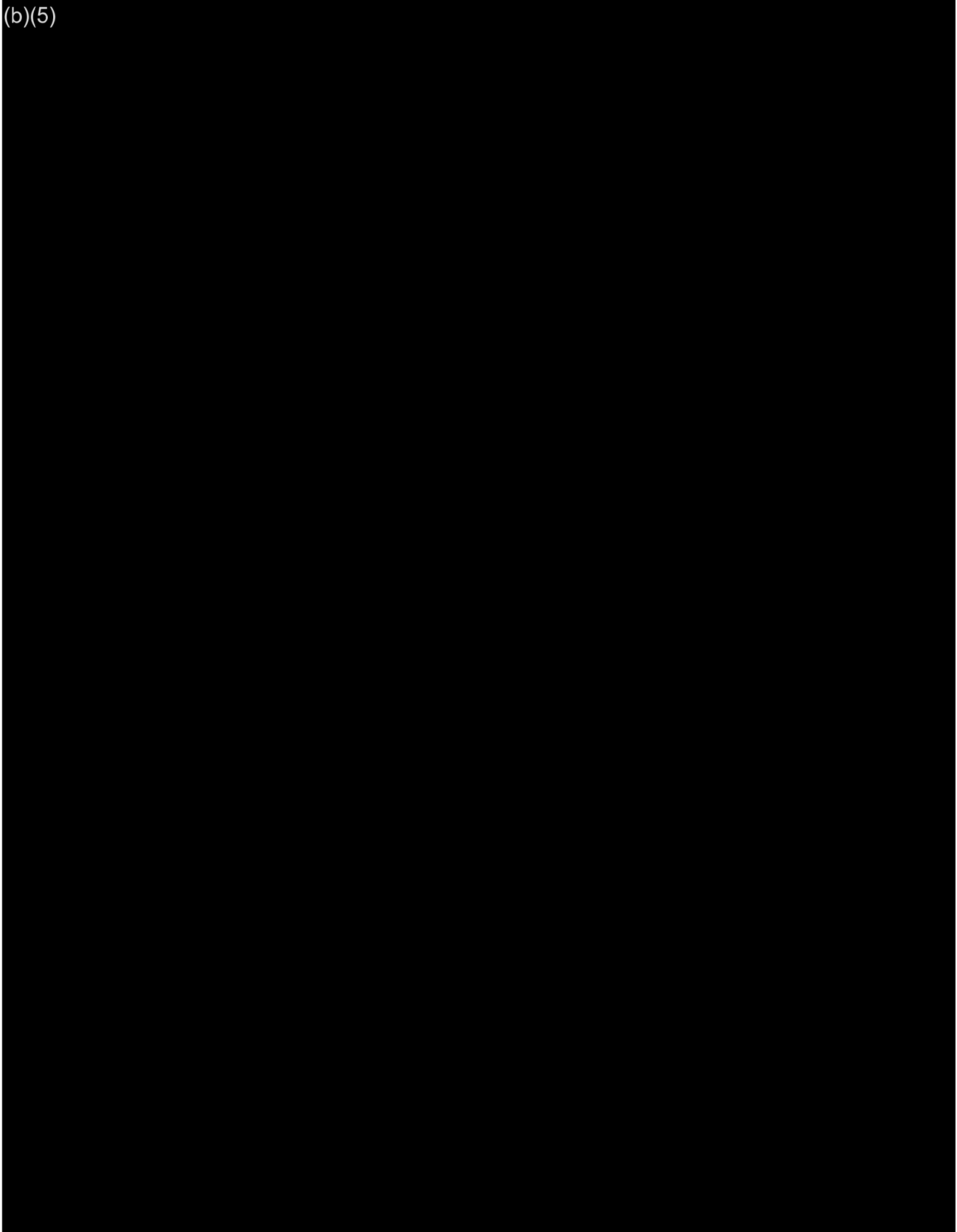
(b)(6) (cell)

[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)

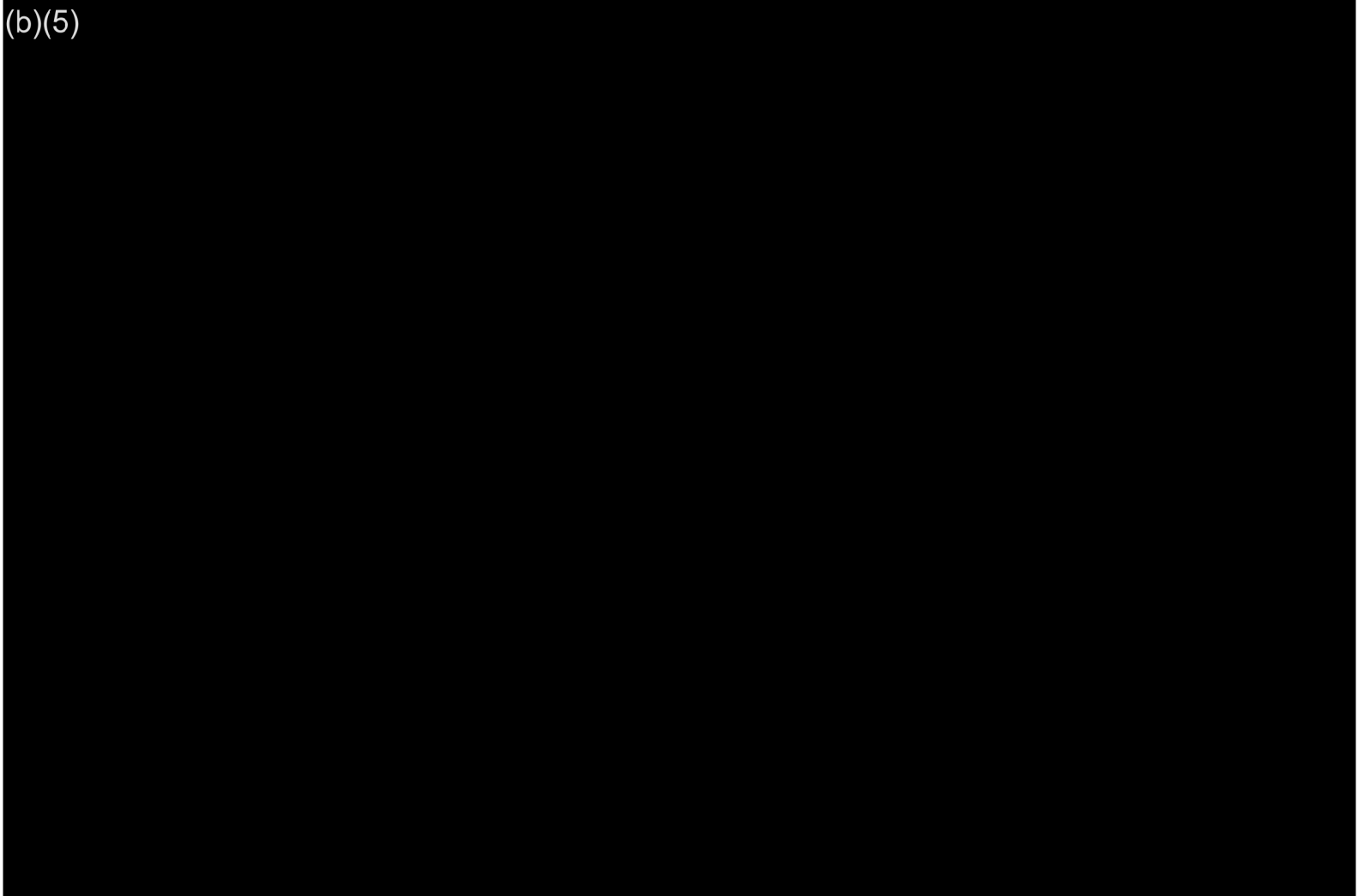
Talking Points for Bonneville Funding and Use of CJH Fish in the Blocked Areas

(b)(5)





(b)(5)



From: Miles, Tucker (BPA) - LN-7

Sent: Wed Mar 10 09:18:11 2021

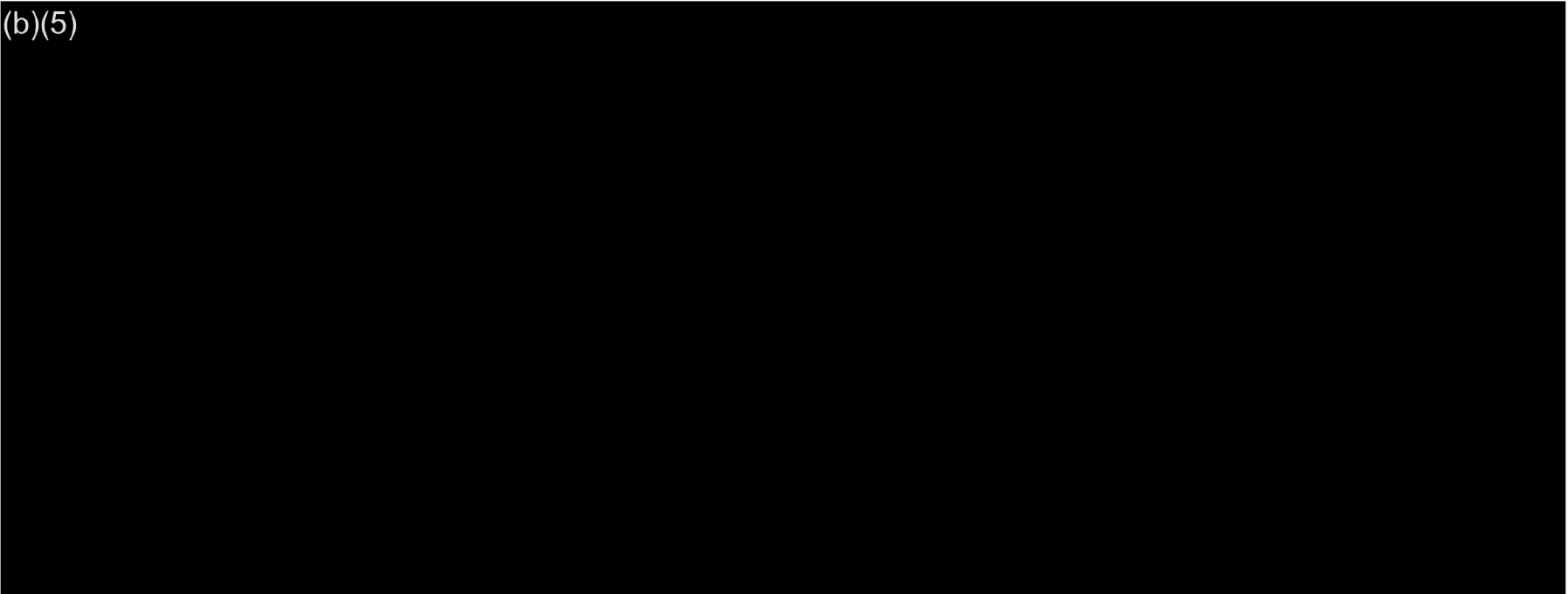
To: Key, Philip S (BPA) - LN-7; Ball, Crystal A (BPA) - EW-4; Welch, Dorothy W (BPA) - E-4

Subject: RE: March 2021 long-term successor agreement meeting written materials

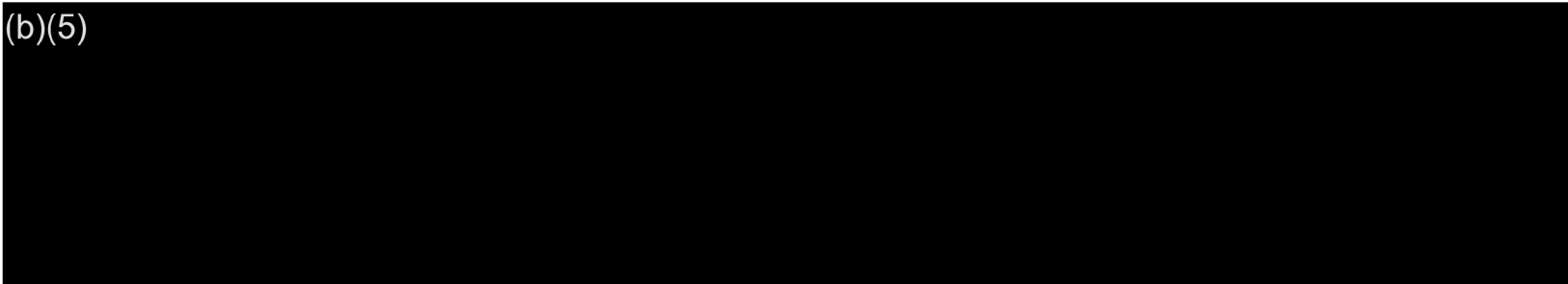
Importance: Normal

***Attorney-client communication; privileged and confidential***

(b)(5)



(b)(5)



**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-5968

**From:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Sent:** Wednesday, March 10, 2021 8:15 AM

**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>

**Subject:** RE: March 2021 long-term successor agreement meeting written materials

Me three.

**From:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>

**Sent:** Wednesday, March 10, 2021 7:11 AM

**To:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Subject:** RE: March 2021 long-term successor agreement meeting written materials

I'm available at 12:30

**From:** Welch, Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>

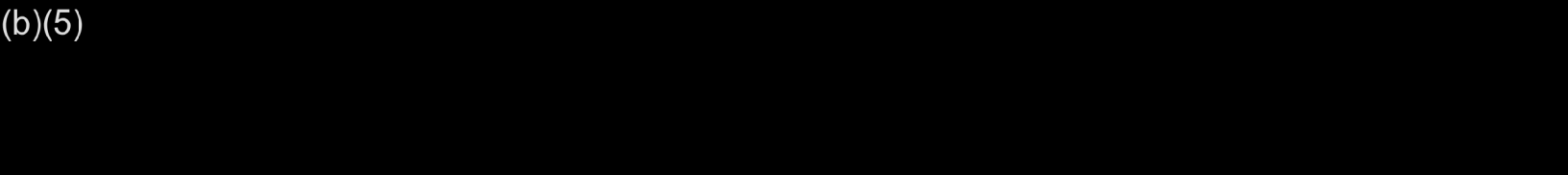
**Sent:** Tuesday, March 9, 2021 5:51 PM

**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Subject:** FW: March 2021 long-term successor agreement meeting written materials

***Confidential/FOIA-exempt***

(b)(5)



Do we want to try to find some time to chat about this before the meeting? Maybe at 12:30?



(b)(5)

Thanks, Dorie

**From:** Welch,Dorothy W (BPA) - E-4  
**Sent:** Tuesday, March 9, 2021 8:09 AM  
**To:** Armentrout,Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Ball,Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Zelinsky,Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>; Miles,Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Key,Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Foster,Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>  
**Cc:** Cummings,Adam H (CONTR) - EW-4 <[ahcummings@bpa.gov](mailto:ahcummings@bpa.gov)>  
**Subject:** FW: March 2021 long-term successor agreement meeting written materials

FYI

**From:** Charles Brushwood (FNW) <[Charles.Brushwood@colvilletribes.com](mailto:Charles.Brushwood@colvilletribes.com)>  
**Sent:** Monday, March 8, 2021 7:25 PM  
**To:** Welch,Dorothy W (BPA) - E-4 <[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Dykstra, Timothy A CIV USARMY CENWD (US) (<[Timothy.A.Dykstra@usace.army.mil](mailto:Timothy.A.Dykstra@usace.army.mil)> <[Timothy.A.Dykstra@usace.army.mil](mailto:Timothy.A.Dykstra@usace.army.mil)>); Hoefler, Scott E (<[SHoefler@usbr.gov](mailto:SHoefler@usbr.gov)> <[SHoefler@usbr.gov](mailto:SHoefler@usbr.gov)>)  
**Cc:** Cody Desautel (L&P ADM) <[Cody.Desautel@colvilletribes.com](mailto:Cody.Desautel@colvilletribes.com)>; Joe Peone (FNW)

<[Joe.Peone.FNW@colvilletribes.com](mailto:Joe.Peone.FNW@colvilletribes.com)>; Brian Gruber ([bgruber@ziontzchestnut.com](mailto:bgruber@ziontzchestnut.com))  
<[bgruber@ziontzchestnut.com](mailto:bgruber@ziontzchestnut.com)>; Cummings,Adam H (CONTR) - EW-4 <[ahcummings@bpa.gov](mailto:ahcummings@bpa.gov)>  
**Subject:** [EXTERNAL] March 2021 long-term successor agreement meeting written materials

Good evening Accords point-of-contact,

Please see the attached documents: 1) a draft agenda for our long-term successor agreement meeting scheduled for 3:00 – 4:30 this Wednesday afternoon; 2) a CTCR current Accord negotiation priorities discussion draft memo; and 3) an April 2020 scenarios memo regarding the possible use of Chief Joseph Hatchery fish in the blocked area above Chief Joseph and Grand Coulee Dams.

Please let us know if you have any questions or thoughts in response to these materials, otherwise we look forward to meeting with you this Wednesday.

Best,

Charles (Chuck) Brushwood

Fish & Wildlife Policy Analyst

Colville Confederated Tribes

Office: (509) 422-7749

Cell: (b)(6)

Fax: (509) 422-7443

From: Key, Philip S (BPA) - LN-7

Sent: Thu Aug 05 14:29:29 2021

To: Kavanagh, Maureen A (BPA) - EWP-4; Ball, Crystal A (BPA) - EW-4; Zelinsky, Benjamin D (BPA) - E-4; Welch, Dorothy W (BPA) - E-4; Jule, Kristen R (BPA) - EWP-4; Sweet, Jason C (BPA) - PGB-5; Johnston, Kenneth H (BPA) - DIT-7; Cogswell, Peter (BPA) - DI-7; Foster, Marchelle M (BPA) - DI-7

Cc: Miles, Tucker (BPA) - LN-7; Armentrout, Scott G (BPA) - E-4; Senters, Anne E (BPA) - LN-7

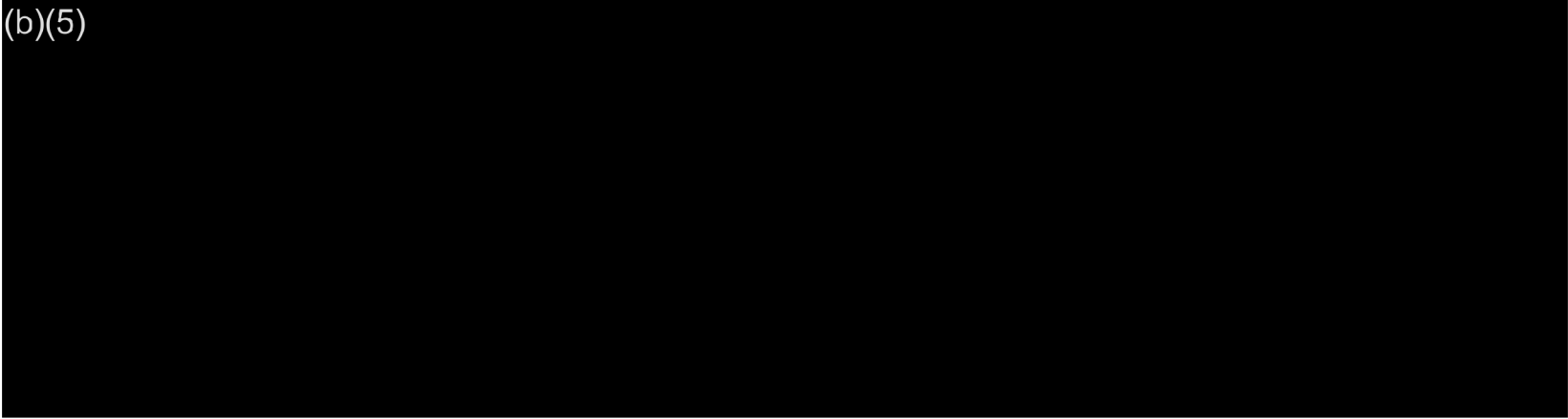
Subject: RE: No Surprises Outreach From CCT--2018 Accord Violation

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

**ATTORNEY CLIENT/DELIBERATIVE PROCESS COMMUNICATIONS**

(b)(5)



(b)(5)


Philip

**From:** Kavanagh, Maureen A (BPA) - EWP-4 <makavanagh@bpa.gov>  
**Sent:** Thursday, August 5, 2021 8:35 AM  
**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Ball, Crystal A (BPA) - EW-4 <caball@bpa.gov>;  
Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Welch, Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>;  
Jule, Kristen R (BPA) - EWP-4 <krjule@bpa.gov>; Sweet, Jason C (BPA) - PGB-5 <jcsweet@bpa.gov>;  
Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>;  
Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>  
**Cc:** Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>;  
Senters, Anne E (BPA) - LN-7 <aesenters@bpa.gov>  
**Subject:** RE: No Surprises Outreach From CCT--2018 Accord Violation

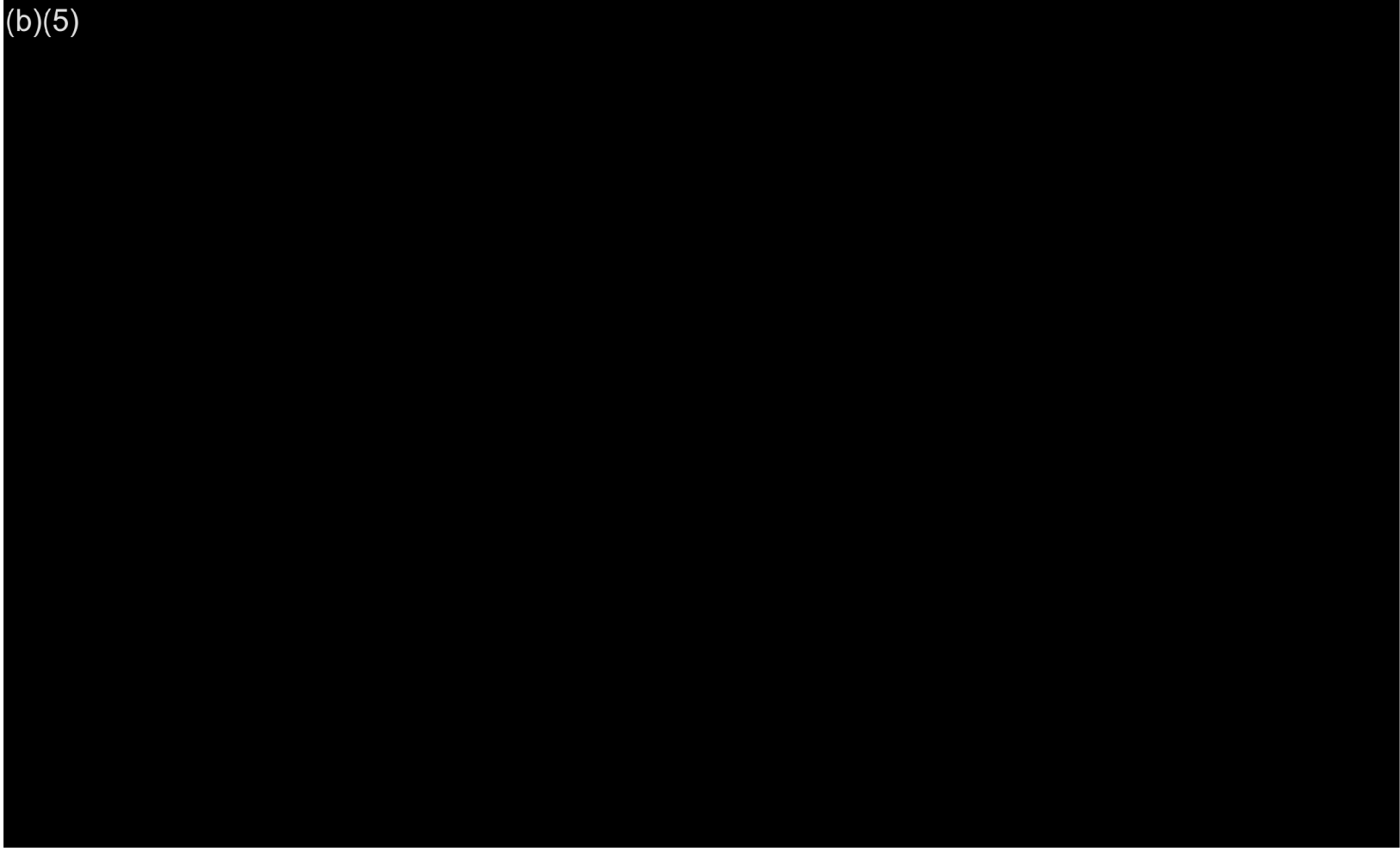
Good morning,

(b)(5)

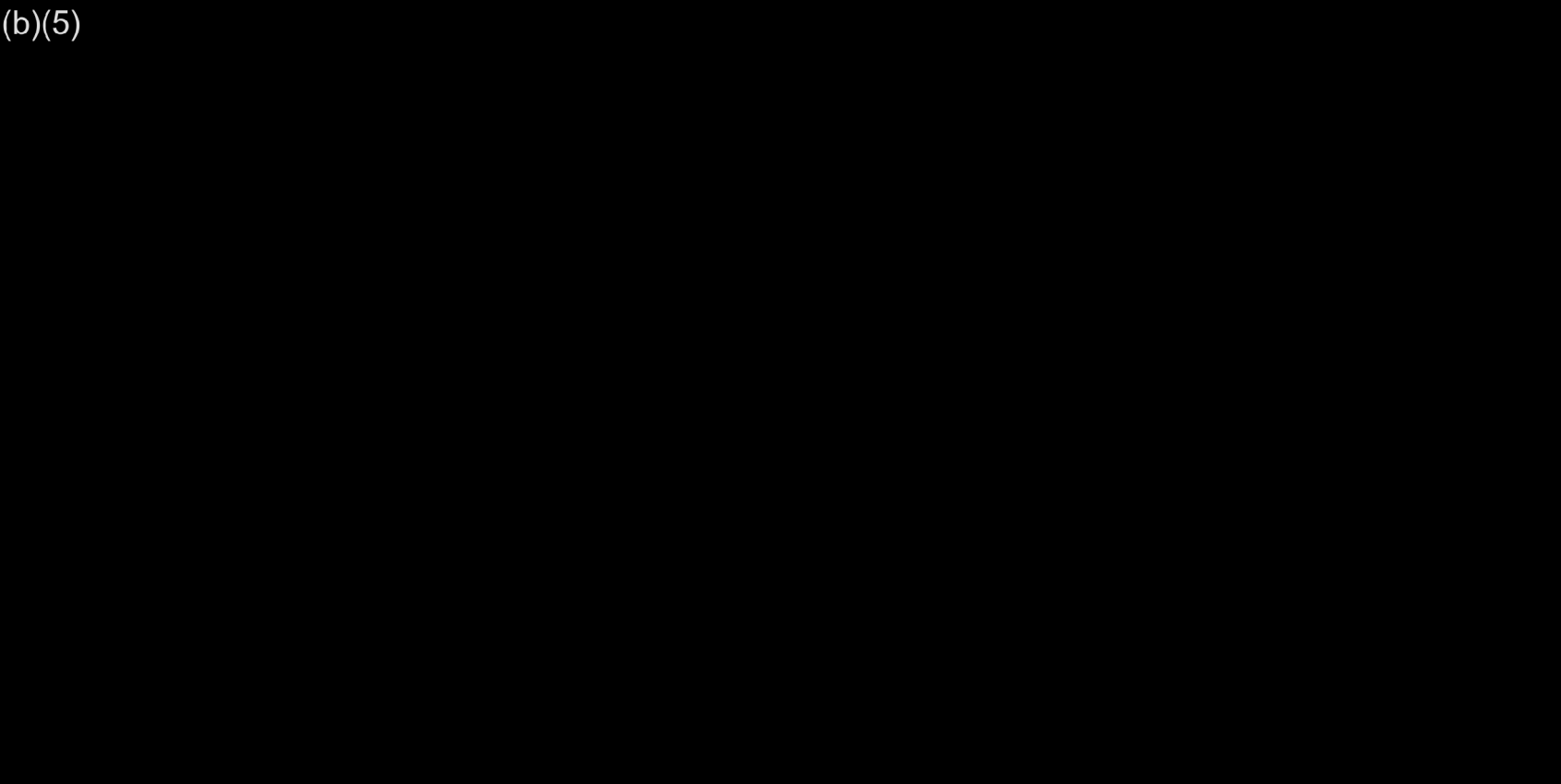
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Maureen

**Maureen Kavanagh**

Environment, Fish, and Wildlife

**Bonneville Power Administration**

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><((( '> ><((( '> ><((( '>



From: Hairston,John L (BPA) - K-7

Sent: Thu Sep 24 15:33:52 2020

To: Key,Philip S (BPA) - LN-7; Armentrout,Scott G (BPA) - E-4; Ball,Crystal A (BPA) - EW-4; Zelinsky,Benjamin D (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Miles,Tucker (BPA) - LN-7; Senters,Anne E (BPA) - LN-7

Subject: RE: The Council on reintroduction in blocked areas

Importance: Normal

Thanks Phillip, much appreciated.

John

**From:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Thursday, September 24, 2020 3:27 PM

**To:** Hairston,John L (BPA) - K-7 <jlhairston@bpa.gov>; Armentrout,Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Ball,Crystal A (BPA) - EW-4 <caball@bpa.gov>; Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>

**Subject:** The Council on reintroduction in blocked areas

John,

Crystal and I put together some background on the Council's call for passage and reintroduction of anadromous fish into the area above Chief Joseph Dam to follow up our meeting on the subject last week. Please let us know if you would like further information on this subject.

Thank you,

Philip

---

---

The Council has supported reintroduction of anadromous fish to blocked areas since the 2000 revision of the fish and wildlife program, recommending that reintroduction be pursued where it is determined to be feasible. Consistent with the Power Act, the Council believes that the abundance of native fish species should be restored throughout blocked areas where original habitat conditions exist or can be feasibly restored or improved.

The Anadromous Fish Mitigation in Blocked Areas Strategy in the Council's 2014 Fish and Wildlife Program calls for a science-based, phased approach to investigate reintroduction of anadromous fish in the blocked U.S. waters of the Upper Columbia River.

<https://www.nwcouncil.org/fish-and-wildlife/topics/reintroduction-anadromous-fish-above-chief-joseph-and-grand-coulee>

Phase I of this investigation includes:

- Evaluate information from passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams
- Investigate habitat availability, suitability and salmon survival potential in habitats above Grand Coulee. This might include selective releases of salmon and steelhead. Investigate the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead. Before funding new investigations, provide the Council with a report for consideration of subsequent work to advance the fish passage planning process.
- As part of Phase 1, the Council will engage in discussions with tribal, state, and federal agencies and others regarding the purpose, scope and progress of reintroduction efforts above Chief Joseph and Grand Coulee dams.

**The reintroduction report prepared by the UCUT was presented to the Council in May 2019**

<https://secureservercdn.net/104.238.71.140/b63.d34.myftpupload.com/wp-content/uploads/2019/05/Fish-Passage-and-Reintroduction-Phase-1-Report.pdf>

**The ISRP reviewed the report in November 2019** <https://www.nwcouncil.org/reports/isab2019-3>

- “The 2014 Fish and Wildlife Program identifies several key steps in a phased approach to reintroduction of

anadromous fish above Chief Joseph and Grand Coulee dams to mainstem reaches and tributaries in the United States. The Program specifically calls for 1) evaluation of information from passage studies at Grand Coulee and Chief Joseph dams and other blockages, 2) assessment of habitat availability, suitability and salmon survival potential above Grand Coulee, and 3) investigation of the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead. The Reintroduction Report addressed all these elements except for cost of passage options and provided a general proof of concept.”

· “While it is reasonable to expect that reintroduction could be successful to some extent, there is great uncertainty about the numbers of adults that will return and the types of management that will be required to maintain them. A strategic plan for future steps and an adaptive management process will be needed to address these uncertainties. The ISAB encourages the UCUT and the Council to make decisions conservatively or with caution because of the very wide ranges of estimates of capacity and habitat availability. While the ISAB recommends careful development of future decisions and actions, it is clear the UCUT and their collaborators put a lot of thought and effort into this assessment and make the fundamental issues and management alternatives accessible to many stakeholders.”

Senior staff at the Council confirm they have not advanced the work beyond the ISRP review. She also says there isn't a bright line between Phase I and Phase II.

### **Bonneville's Public Comments**

During the Council's recent process for amending its F&W Program, Bonneville commented on recommendations made by fisheries managers regarding passage and reintroduction. Excerpts from the letter Scott sent the Council in February 2019 are below.

“Many of the recommendations to the Council support the Program’s three-phase approach to passage and reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams. Bonneville appreciates the importance of passage and reintroduction to the region’s tribes and other fish and wildlife managers. We helped fund the phase 1 habitat study and we look forward to analyzing the results and discussing what next steps, if any, they warrant Bonneville taking. To help inform that discussion, we offer several points.”

- Considerations of anadromous fish passage and reintroduction above Grand Coulee and Chief Joseph dams affect two countries, four states, a dozen tribes, and at least five Executive Branch departments. Long-term solutions will take years to develop and require congressional approval. The scope of the issues raised suggests that the Program may not have the necessary breadth to accommodate the range of considerations necessary for the region to address these issues. Therefore, Bonneville and its federal partners would like to work with the region to identify a forum appropriate for considering the sensitive cultural, political, economic, and legal issues raised by the passage and reintroduction amendment recommendations.
- Financial considerations and related tradeoffs should be discussed and clearly understood before moving forward.
- We need more information about how reintroduction may interact with the existing and future activities of fish and wildlife managers. Clearly many managers in the region support the initiative, but it is unclear how it complements their plans to address northern pike in Lake Roosevelt, system operations already agreed to for fish mitigation purposes, or some of the many other priorities suggested for Bonneville funding in this amendment process.
- Bonneville will look to the Council to evaluate the data and analysis supporting the recommendations for passage and reintroduction above Grand Coulee and Chief Joseph dams. We are interested in understanding the analysis supporting some of the recommendations such as the “initial set of assumptions,” “preliminary modeling,” and the unsupported affirmations that “prior studies have been reviewed for relevance on this effort.”

From: Ball, Crystal A (BPA) - EW-4

Sent: Fri Jun 14 12:29:41 2019

To: Key, Philip S (BPA) - LN-7; Zelinsky, Benjamin D (BPA) - E-4; Welch, Dorothy W (BPA) - E-4; Armentrout, Scott G (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Sweet, Jason C (BPA) - PGB-5; Jule, Kristen R (BPA) - EWP-4; Lofy, Peter T (BPA) - EWU-4

Cc: Renner, Marcella P (BPA) - E-4; McDaniel, Kandi L (CONTR) - A-7

Subject: UCUT technical presentation

Importance: Normal

This link should take you to a copy of the UCUT's technical presentation, which I think is a good summary of the UCUT report.

<https://nwcouncil.box.com/s/540c6cpnrbavnwn5rq9338iee1lf9nlm>

## **Crystal Ball**

Executive Manager, Fish and Wildlife Program

**Bonneville Power Administration**

[caball@bpa.gov](mailto:caball@bpa.gov) | P 503-230-3991 | C (b)(6)



**From:** Donahue,Scott L (BPA) - EWP-4

**Sent:** Thu Jun 13 13:52:42 2019

**To:** Key,Philip S (BPA) - LN-7

**Subject:** RE: Spokane submittal?par **Importance:** Normal

**Attachments:** Fish-Passage-and-Reintroduction-Phase-1-Report.pdf

Hi Philip,

Here you go!

Scott

**From:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Thursday, June 13, 2019 12:33 PM

**To:** Donahue,Scott L (BPA) - EWP-4 <sldonahue@bpa.gov>

**Subject:** Spokane submittal?

Hey Scott,



I can't open the link on the Council's site to the UCUT submittal on phase 1. Do you have the report? I'd love a copy asap if you do. Thanks!

PK

Fish Passage and Reintroduction Phase 1 Report:  
Investigations Upstream of Chief Joseph and  
Grand Coulee Dams

Prepared by the Upper Columbia United Tribes

May 2, 2019

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## Executive Summary

At the turn of the 20<sup>th</sup> century, salmon runs into the upper Columbia River watershed supported the culture and livelihood of indigenous peoples and provided an immeasurable ecological benefit throughout the region. Upon completion of multiple hydroelectric facilities including Grand Coulee Dam in 1941 and Chief Joseph Dam in 1961, salmon runs were extirpated from the upper Columbia River and sovereign tribes experienced a complete loss of their way of life.

In 2015, the Columbia Basin Tribes and First Nations developed the Joint Paper “Fish Passage and Reintroduction into the U.S. and Canadian Upper Columbia Basin” (CBTFN 2015) to inform the federal governments, and other sovereigns and stakeholders on how anadromous salmon can be reintroduced into the upper Columbia River Basin. This paper outlined a phased approach to reintroduction which was further refined and adopted by the Northwest Power and Conservation Council (NPCC) in the 2014 Columbia River Basin Fish and Wildlife Program. The intent of this approach is to pursue reintroduction using the knowledge gained and successful outcomes derived from sequential phases of research and evaluation as listed below:

- Phase 1: Pre-assessment planning for reintroduction and fish passage.
- Phase 2: Experimental, pilot-scale salmon reintroductions and interim passage facilities.
- Phase 3: Construct permanent juvenile and adult passage facilities and supporting propagation facilities. Implement priority habitat improvements.
- Phase 4: Monitoring, evaluation, and adaptive management. Continue needed habitat improvements.

The Upper Columbia United Tribes (UCUT) – which include Coeur d’Alene Tribe of Indians, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, Kootenai Tribe of Idaho, and Spokane Tribe of Indians – with support from the United States Geological Survey (USGS) and Washington Department of Fish and Wildlife (WDFW), have initiated an extensive investigation into the reintroduction of anadromous fish to accessible habitats upstream of Chief Joseph and Grand Coulee dams. This report presents the findings of research activities consistent with Phase 1: Pre-assessment planning for reintroduction and fish passage.

Two goals for reintroduction that were initially identified in the Joint Paper (CBTFN 2015) are addressed in this report:

1. Restore naturally spawning and hatchery-based runs of Sockeye and Chinook Salmon into the upper Columbia River basin, above Chief Joseph, Grand Coulee and Canadian dams to meet native peoples' cultural and spiritual values and benefits for all, including subsistence and harvest opportunities.
2. Establish and increase ceremonial and subsistence, sport and commercial fish harvest opportunities for all communities and citizens along the Columbia River in the U.S. and Canada – for the benefit of all.

These goals were considered for the U.S. portion of the basin only, with respect to:

- Riverine and reservoir habitat condition;
- Donor stock availability;
- Reintroduction risk to resident species;
- Key assumptions regarding fish survival, life cycle modeling and potential passage facilities;
- Effectiveness of state-of-the-art juvenile and adult passage technology; and
- Current dam operations.

#### *Habitat Assessments*

Evaluation of habitat availability and its suitability for salmon spawning, rearing and migration are foundational in assessing the feasibility of reintroducing anadromous species to the waters upstream of Chief Joseph and Grand Coulee dams. Multiple models were utilized to assess the current and potential habitat conditions for anadromous fish throughout the blocked area using the best available data. Output from these models was then used to inform the Life Cycle Model (LCM) developed specifically for the reintroduction effort.

Intrinsic potential modeling was performed to provide an estimate of potential tributary habitat for spring Chinook and steelhead. Results from this model revealed significant amounts of habitat within the U.S. portion of the blocked area, totaling 711 miles for spring Chinook and 1,610 miles for summer steelhead for spawning, rearing, and migration. In addition, 80% of the spring Chinook habitat and 53% of the steelhead habitat was rated as having moderate to high intrinsic productivity potential.

Ecosystem Diagnosis and Treatment (EDT) modeling was used to summarize the potential performance of spring and summer/fall Chinook, as well as steelhead, given current habitat conditions in select tributaries.

Extensive habitat data along with regional fisheries expertise and assumed survival rates during passage through Chief Joseph and Grand Coulee dams were used to populate this model. Results of EDT analyses suggest that currently accessible tributary habitats may produce 2,300 natural origin adult steelhead, 600 spring Chinook and 8,500 summer/fall Chinook.

Large river spawning habitat was estimated throughout the free-flowing stretches of the Columbia River upstream of Chief Joseph and Grand Coulee dams using hydraulic data, riverbed morphology, substrate composition, water temperature and known redd characteristics. Spawner capacities for summer/fall Chinook were then developed for the mainstem habitats present in Rufus Woods Lake and the Transboundary reach. These two areas – Rufus Woods Lake and the Transboundary reach – could support 800–15,000 and 5,000–61,000 adult spawners, respectively.

Sockeye spawning habitat availability was estimated in the Sanpoil River using extensive habitat measurements originally intended to estimate kokanee spawning habitat. The model was adjusted to reflect habitat preferences and spawning characteristics of Sockeye Salmon. Results indicate adult Sockeye production for the Sanpoil River and associated tributaries could range from 34,000 to 216,000 depending on assumptions regarding habitat utilization.

An assessment of limnological characteristics in Lake Roosevelt was used to determine potential rearing capacity for juvenile Sockeye Salmon. Based on the results of the euphotic volume model, Sockeye smolt capacity for Lake Roosevelt ranges from 12 million to 49 million.

#### *Life Cycle Modeling of Summer/Fall Chinook and Sockeye Adult Production*

Life cycle modeling was performed for populations of summer/fall Chinook and Sockeye that may colonize habitats made accessible by providing fish passage at only Chief Joseph and Grand Coulee dams. These habitats include Rufus Woods Lake, the Sanpoil River and tributaries, the Transboundary reach of the mainstem Columbia from the head of Lake Roosevelt to Hugh L. Keenlyside Dam, and Christina Lake (British Columbia) as well as tributaries to Lake Roosevelt. Canadian habitats were included in the analysis as it is expected that adults will ultimately use those habitats once passage at Grand Coulee is provided. Fish passage at Canadian dams was not included in this analysis. Life cycle modeling is essential for projecting the survival and productivity at all life stages within the blocked area under a variety of scenarios and to determine the limiting factors associated with the survival of reintroduced salmon. Reintroduced populations in the Spokane subbasin have not yet been assessed with the life cycle model as the presence of multiple hydroelectric dams on the Spokane River will require a unique modeling scenario that is under development.

Results from life cycle modeling of a baseline scenario estimate an additional 41,000 (+24%) and 76,000 (+37%) summer/fall Chinook and Sockeye, respectively. Under the baseline scenario annual outplants of 3,000 adult summer/fall Chinook and 2,000 Sockeye occur, supplemented with local hatchery production of 1.5 million and 6.5 million juvenile summer/fall chinook and Sockeye. It was assumed that river reach mortality will be greater than that currently experienced downstream reaches of the mainstem Columbia; that fish passage facilities for juveniles and adults are present at Chief Joseph and Grand Coulee dams with survival rates similar to those at other high-head passage facilities; and that fish are harvested at their current rates in existing fisheries, with new harvest fisheries included in the blocked area. Under this and other scenarios the model consistently predicted thousands of adults escaping to the newly accessible spawning grounds.

#### *Donor Stock Sources and Risk Assessment*

An assessment of potential donor stocks and the risks associated with reintroducing these stocks was conducted to guide UCUT and other action agencies to stocks of fish which would be readily available and have the highest potential for successful reintroduction. Each stock of salmon was additionally evaluated on their endangered or threatened status, ancestry, local adaptation, life history and their potential for ecological impacts to the upper Columbia River basin.

Potentially-available spring Chinook from upper Columbia River segregated hatchery programs pose a genetic risk to extant upper Columbia populations. Additionally, constraints associated with natural and hatchery origin ESA-listed stocks of spring Chinook are expected to be burdensome and would likely constrain reintroduction efforts. Steelhead pose unique disease and genetic risks to native Redband Trout. Because these risks and policies are still poorly understood, this Phase 1 report and the subsequent Phase 2 studies should be specific to summer/fall Chinook and Sockeye and exclude spring Chinook and steelhead salmon, at least until there is better understanding of these issues.

Multiple donor sources are available for the reintroduction of summer/fall Chinook and Sockeye to areas upstream of Chief Joseph Dam and Grand Coulee Dam. Most stocks from within the Columbia River Evolutionarily Significant Unit (ESU) had similar scores and would be acceptable donors, if or when they are available. Natural origin fish are preferable with respect to genetics and productivity, but generally are not available in sufficient numbers in most years.

The Chief Joseph Hatchery summer/fall Chinook population is the highest ranked stock available for reintroduction. This program uses a high proportion of natural-origin broodstock from the Okanogan River which is the nearest neighbor to the blocked area. Chief Joseph hatchery has also been meeting the Hatchery

Scientific Review Group targets for percent hatchery-origin spawners (pHOS) and proportionate natural influence (PNI), which should improve productivity of the natural-origin (NOR) spawners.

Lake Roosevelt native kokanee were the highest ranked donor stock for Sockeye due to their local adaptation, low genetic risk, and low disease risk. However, Lake Roosevelt kokanee are not readily available as a brood source making them impractical as a donor stock for feasibility testing. The second highest ranked donor was the Okanogan River natural-origin Sockeye Salmon (followed by the Lake Wenatchee Sockeye Salmon and the Penticton Hatchery (Okanogan River) Sockeye Salmon).

The ecological implications of reintroducing anadromous fish will be widespread. Competition between resident species and reintroduced salmonids for space likely will occur in tributary habitats, whereas competition for food is more likely to occur in reservoir habitats. Competition between Redband Trout and reintroduced salmonids is more likely in tributary habitats, whereas competition between reintroduced salmonids and kokanee would occur in reservoir habitats. Current data suggests that food is not limiting to planktivores in Lake Roosevelt. Predation risk to introduced juvenile salmon probably will be high overall but will vary greatly depending on spatial and temporal overlap with potential predators. Smallmouth Bass, Walleye, and Northern Pike were identified as the primary predators of juvenile salmon in Lake Roosevelt and its tributaries.

#### *Adult and Juvenile Fish Passage*

The environmental, operational and structural conditions at Chief Joseph Dam and Grand Coulee Dam are conducive for a system that provides safe, timely and effective fish passage for summer/fall Chinook and Sockeye Salmon. Recent analyses of existing floating surface collectors (FSC) indicate that fish collection efficiency (FCE) is higher for systems located at projects with an effective forebay size of less than 50 acres. The effective forebay size at Chief Joseph and Grand Coulee dams are 51 acres, and 11 acres, respectively. Thus, an FSC operated at either project has potential to exhibit high collection efficiency; especially if attraction flow created by these systems is sufficient ( $>1,000$  cfs).

Migration timing and survival of emigrants through reservoirs is directly correlated to water retention time and the starting location of juvenile salmon using the reservoir. Water travel time through Rufus Woods Lake and Lake Roosevelt ranges from about 2-6 days and 30-80 days, respectively. Although, during high flow years water travel time can be as low as 14 days. Dam operations at Chief Joseph and Grand Coulee dams are compatible with expected juvenile migration periods (spring/early summer). Draw down reduces reservoir capacity which results in the fastest water travel times of the year.

Adult migrations through hydrosystems without integrated volitional passage currently rely on labor-intensive trap and haul methods. However current and upcoming technologies are available and could lead to low long-term costs and reduced handling exposure of adult salmonids. There is a need to investigate all options for efficient and cost-effective passage of adults across Chief Joseph and Grand Coulee dams. Multiple options are outlined in this report in order to guide likely studies that will need to be implemented in the future which include but are not limited to retrofitted fish ladders, a negative pressure salmon transport system, or a combination of the two. The studies will provide important data for selecting preferred fish passage alternatives for further scoping, engineering and development.

### *Recommendations and Future Field Studies*

Life cycle model results indicate that summer/fall Chinook and Sockeye adult production could be substantial under the baseline scenario. Actual adult production depends on the accuracy of the assumptions that went into modeling and the level of hatchery supplementation that occurs. The key assumptions used in modeling form the working hypotheses that capture our understanding of how the system may work to achieve identified goals. Studies in the future would be focused on testing those assumptions and associated metrics that 1) affect management decisions, 2) are uncertain and 3) are feasible to observe and estimate. The key assumptions to be tested are associated with juvenile and adult fish passage, early life stage and migratory survival, and spawner success.

A degree of infrastructure will be necessary to support future studies and begin the salmon reintroduction program. Recommended facilities include:

- Hatchery capacity for incubation and early rearing of summer/fall Chinook and Sockeye.
- Net pens for rearing fish needed for testing and production.
- Prototype juvenile and adult collection/transport/bypass systems at dams.

### *Conclusion*

This Phase 1 report confirms that the reintroduction of salmon to the United States portion of the upper Columbia River upstream of Chief Joseph Dam is likely to achieve identified tribal goals given current dam operations, existing riverine and reservoir habitat conditions, donor stock availability, risks to resident fish species, and the likely effectiveness of state-of-the-art juvenile and adult passage technology that could be built at both Chief Joseph Dam and Grand Coulee Dam.

Results from the investigations have shown that reintroduction is viable for these species of salmon. The



UCUT and their partners will proceed to a second phase of research where field studies will be implemented to address key assumptions and, with Federal Action Agency involvement, interim passage facilities will be built, operated and tested to further evaluate the reintroduction effort. The UCUT will present the findings of this report to the NPCC and looks forward to discussions regarding next steps and timeline for NPCC and federal partners to join us in future studies.

## 1.0 INTRODUCTION

Since time immemorial, indigenous peoples in the Columbia basin lived a culture – a way of life – that was sustained by a healthy ecosystem. Fish were a mainstay of their diet – sustaining them physically, and spiritually. The Columbia basin tribes have suffered the loss of anadromous and other migrating fish due to dam construction and reservoir inundation since the early 20<sup>th</sup> century. The magnitude of the loss progressively increases with each successive upstream project. Large storage dams in the upper basin completely blocked fish runs. Directly proportional to diminished and eliminated fish runs is cultural loss, genocide, of the sovereign tribes – the very way of life that uniquely identifies and sustains each culture. Salmon reintroduction is critical to restoring indigenous peoples’ cultural and spiritual values and harvest of First Foods taken through river development for power and flood risk management. Fish passage technology has improved significantly in the past several years, particularly for juvenile fish. These newer technologies have recently been successfully implemented at several other dams in the Pacific Northwest. Also, improvements to the scientific tools for monitoring fish survival now provide the means to plan and design passage and reintroduction with greater certainty of success (see Future of Our Salmon Conference, [www.critfc.org/future](http://www.critfc.org/future)). These passage technologies allow existing project operations to continue largely unencumbered by these new fish passage, reintroduction, and monitoring facilities.

The Columbia Basin Tribes and First Nations developed the Joint Paper “Fish Passage and Reintroduction into the U.S. and Canadian Upper Columbia Basin” (CBTFN 2015) to inform the federal governments, and other sovereigns and stakeholders on how anadromous salmon can be reintroduced into the upper Columbia River basin. The Joint Paper of the Tribes and First Nations proposed reintroduction of salmon through a pragmatic and phased approach of planning, research, testing, and design/construction followed by monitoring, evaluation, and adaptive management. Each phase of this effort would be pursued based on the knowledge gained and successful outcomes from previous phases.

- Phase 1: Pre-assessment planning for reintroduction and fish passage.
- Phase 2: Experimental, pilot-scale salmon reintroductions and interim passage facilities.
- Phase 3: Construct permanent juvenile and adult passage facilities and supporting propagation facilities. Implement priority habitat improvements.
- Phase 4: Monitoring, evaluation, and adaptive management. Continue needed habitat improvements.

The CBTFN paper (2015) developed reintroduction goals and identified the analyses needed in Phase 1 to determine if the goals were achievable. The analyses basically fell into the following topics:

- Existing dam operations.
- Riverine and reservoir habitat conditions and expected fish production upstream of Chief Joseph and Grand Coulee dams.
- Theoretical effectiveness of fish passage facilities.
- Donor stock availability and reintroduction risk to native species.

Building on a late draft of the tribes' Joint Paper, The Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program has identified measures that support fish passage above/through man-caused barriers for decades. During the 2014/2024 Columbia River Treaty Review, the NPCC (representing the States) specifically addressed losses of salmon in blocked areas of the Columbia River basin that historically supported anadromous fish (NPCC 2014) with direct, in-kind/in-place "anadromous fish mitigation in blocked areas." Specifically, the program identified the need to investigate the feasibility of reintroducing anadromous fish upstream of Chief Joseph and Grand Coulee dams on the Columbia River. The rationale for undertaking this effort is that substantial anadromous fish production was lost with the construction of these projects. An estimated 11% of steelhead, 15% of spring Chinook, 17% of summer Chinook, 14% of fall Chinook, and 65% of the basin's Sockeye production originated upstream of Chief Joseph Dam (CBTFN 2015). Estimated historical Columbia basin tribes and Canada First Nations annual harvest of salmon that originated from the upper Columbia River is estimated at 86,500–803,000 steelhead, 1,076,000–1,564,000 chinook, and 1,987,000–3,448,000 Sockeye (CBTFN 2015).

Based on the recommendations from the Region's fish and wildlife managers, including many tribes and tribal organizations that developed the CBTFN fish passage paper (CBTFN 2015), the Council adopted a three phased process for determining the feasibility of reintroducing anadromous fish upstream of Chief Joseph and Grand Coulee dams. In Phase 1, an analysis on habitat conditions, donor stock identification and effectiveness of upstream and downstream fish passage facilities at other projects was called for among other tasks including selective releases. If the results of Phase 1 showed promise, Phase 2 activities would consist of the design and testing of salmon reintroduction activities and interim fish passage facilities at Chief Joseph Dam and Grand Coulee Dam. Given a successful outcome of Phase 2 work, the Council would work with state, federal and tribal entities to determine whether and how to proceed to Phase 3 wherein fish

reintroduction, fish passage and monitoring and evaluation structures and activities would be fully implemented and funded.

In general, the NPCC adopted the phased approach from the CBTFN (2015) and suggested that in Phase 1 of the NPCC Fish and Wildlife Program, the following tasks are to be undertaken:

1. Evaluate information from fish passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams.
2. Investigate habitat availability, suitability and salmon survival potential in habitat upstream of Grand Coulee dam. This might include selective releases of salmon and steelhead. Investigate the scientific feasibility and possible cost of upstream and downstream passage options for salmon and steelhead. Before funding new investigations, provide the Council with a report for consideration of subsequent work to advance the fish passage planning process.
3. As part of Phase 1, the Council will engage discussion with tribal, state and federal agencies and others regarding the purpose, scope and progress of reintroduction efforts above Chief Joseph and Grand Coulee dams.

Based on the results in the first phase, the Council in collaboration with the relevant entities will decide how to proceed to Phase 2.

Phase 2 activities may include one or more of the following:

- Design and test salmon and steelhead reintroduction strategies and interim fish passage facilities at Chief Joseph and Grand Coulee dams.
- Investigate alternative approaches to passage.
- Identify additional studies necessary to advance the fish passage planning process.
- Salmon reintroduction pilot projects to address key assumptions
- Monitoring, evaluation and adaptive management of the Phase 2 activities.

Phase 3 is based on the results of Phase 2. The Council in collaboration with the other relevant entities will decide whether and how to proceed to implement and fund reintroduction measures as a permanent part of the program. This would include the construction and operation of passage facilities, monitor, evaluate, and

adaptively manage the reintroduction efforts.

In a subsequent report, Council staff began Phase 1 activities by reviewing regional fish passage facilities, their effectiveness and associated costs (NPCC 2016). This report effectively completed Task 1 of Phase 1 with partial completion of the cost's analysis called for in Task 2.

UCUT with their partners WDFW and USGS have largely performed analyses to meet the goals presented in their 2015 framework and the remaining Phase 1 tasks of the Council's approach. These analyses and their findings have been briefly summarized and presented by UCUT in this report. Each of the studies herein are described in more detail in individual technical reports that can be found at [www.UCUT.org](http://www.UCUT.org).

## 1.1 REFERENCES

- Columbia Basin Tribes & First Nations (CBTFN). 2015. Fish Passage and Reintroduction into the U.S. and Canadian Upper Columbia Basin.
- Northwest Power and Conservation Council (NPCC). 2014. Columbia River Basin Fish and Wildlife Program. Portland, OR. <https://www.nwcouncil.org/fw/program/2014-12/program>
- Northwest Power and Conservation Council (NPCC). 2016. Staff Paper: Review of Fish Passage Technologies at High Head Dams. Final: December 2016. Document Number 2016-14.

## **2.0 PURPOSE**

The purpose of this analysis is to determine if the reintroduction of salmon to the United States portion of the upper Columbia River upstream of Chief Joseph Dam is likely to achieve identified goals given current dam operations, riverine and reservoir habitat condition, donor stock availability, reintroduction risk to native species and effectiveness of state-of-the-art juvenile and adult passage technology.

### 3.0 GOALS

The Joint Paper (CBTFN 2015) identifies four initial goals for reintroducing anadromous salmon to habitat located upstream of Chief Joseph and Grand Coulee dams. Although goals 2 and 4 are indirectly assisted by efforts to provide fish passage and salmon reintroduction above these two dams, this Report does not specifically address these two goals. The four goals are:

1. Restore naturally spawning and hatchery-based runs of Sockeye and Chinook Salmon into the upper Columbia River basin, above Chief Joseph, Grand Coulee and Canadian dams to meet native peoples' cultural and spiritual values and benefits for all, including subsistence and harvest opportunities.
2. Increase Columbia River basin fish abundance, habitat diversity, ecosystem health and long-term sustainability of salmon and other fish species.
3. Establish and increase ceremonial and subsistence, sport and commercial fish harvest opportunities for all communities and citizens along the Columbia River in the U.S. and Canada – for the benefit of all.
4. Restoring access and population structure of resident bull trout, lamprey, sturgeon and other native fish species to historical habitat.

This report examines spring and summer/fall Chinook, Sockeye, and steelhead; however, the possible achievement of goals is specific to summer/fall Chinook and Sockeye Salmon while considering passage at only Chief Joseph and Grand Coulee dams. Passage at Spokane River and Canadian dams, and resulting population dynamics, has not yet been assessed with life cycle modeling but will be analyzed as part of future work in appropriate forums<sup>1</sup>.

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<sup>1</sup> The Spokane River has not yet been assessed with the LCM; however, an analysis of habitat quantity and quality present in this subbasin are presented in Section 5

The goals will be achieved by providing salmon access to the hundreds of miles of stream habitat in areas of the upper Columbia River basin currently blocked by Chief Joseph and Grand Coulee dams. Ideally, this will be accomplished by providing adult and juvenile fish passage at all anthropogenic barriers that currently prevent Chinook, Sockeye, Coho and steelhead access to historical habitat. The UCUUT recognizes that the development of such a system will require stepwise feasibility studies and take substantial time to implement due to funding limitations. However, extensive advancements have been made in fish passage technology for both juvenile and adult salmon in recent years. Interim actions to meet cultural needs (e.g., trap and haul) can be implemented to partially achieve the goals in the short-term. This can occur concurrent with testing feasibility in future studies and building support and funding opportunities for permanent passage facilities (if warranted based on the feasibility testing).

An important component of this effort is to further develop the sources of fish needed for the reintroduction. It is envisioned that a combination of hatchery production and translocation of surplus adults returning to rivers and hatchery facilities located downstream of Chief Joseph Dam will be the methods of choice but may vary by species. Natural and hatchery production of fish from the blocked area will then generate more fish returning to CJD which will increase the abundance of fish available to further seed the reintroduction effort. Whenever and wherever possible, methods that utilize existing riverine and reservoir habitats to rear and produce fish will be preferred. This approach is expected to reduce costs associated with the reintroduction effort.

Both Grand Coulee Dam and Chief Joseph Dam operations provide significant flood control, irrigation and power benefits to the region. Therefore, an important consideration of the effort is to minimize any negative impacts the reintroduction effort may have on these benefits, while still achieving identified goals to the extent possible.

The creation of abundant salmon runs in the upper Columbia River will support tribal ceremonies, rights, and traditions, increase First Foods abundance and bolster tribal and local economies. It will increase harvest opportunities for downstream tribes, sport and commercial fishermen in river and ocean fisheries. It will provide food to the struggling Southern Resident Killer Whale population that desperately needs more Chinook Salmon to improve their survival. It will begin to address the issue of inadequate mitigation for the people most affected by the Federal Columbia River Power System. Finally, it will begin the healing process from a historic wrong that the United States Government has bestowed upon the native people of the region when they decided not to provide fish passage at Chief Joseph and Grand Coulee dams.



## 4.0 DONOR STOCK AND RISK ASSESSMENT

The UCUT and WDFW collaborated with the U.S. Geological Survey (USGS) to assess risks to resident taxa and reintroduced salmon associated with their reintroduction to historical stream and reservoir habitat upstream of Chief Joseph Dam and Grand Coulee Dam (Hardiman et al. 2017). A brief description of the methods used and results of the USGS study are presented below. Much of the text for this section came directly from the USGS report.

### 4.1 GENERAL METHODS

Donor sources of anadromous Redband Trout (steelhead: *Oncorhynchus mykiss gairdneri*), Chinook Salmon (*O. tshawytscha*), Sockeye Salmon (*O. nerka*), and Coho salmon (*O. kisutch*) were identified and ranked in two workshops by regional scientists.

In workshop 1, attendees identified resident fish species of interest and their primary habitat uses by life stage, population status, pathogen concern, primary location and additional information needs. A species was deemed of interest based on resource management (conservation or harvest) and competition and predation (ecological) interactions with the reintroduced species. Attendees ranked the following risks to resident species that might result from reintroduction:

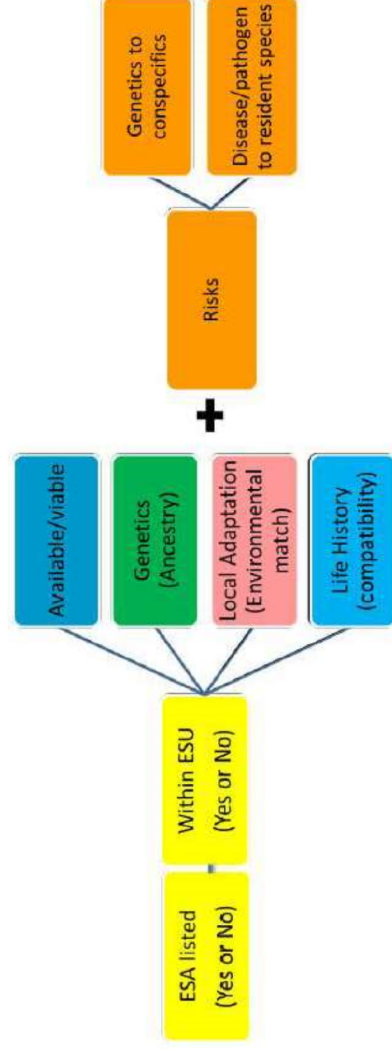
- Pathogen risks to resident species,
- Genetic risks to resident and downstream anadromous conspecifics,
- Competition with resident species, and
- Predation on reintroduced salmonids by resident species.

In workshop 2, a list of possible donor stocks was developed by species and each donor source was ranked based on:

- Abundance/Viability – demographic risk to source and feasibility of collection,
- Ancestral/Genetic similarity – evolutionary similarity to historical populations,
- Local adaptation – geographic proximity/similarity of source habitat conditions to reintroduction habitat conditions, and

- Life history compatibility – including migration; spawn timing; and relative usage of reservoir, main-stem, or tributary habitats with environmental conditions in the reintroduction area

The attributes and risks were assigned a rank (0-5) with higher scores indicating a better match for donor selection. Weights were assigned to each attribute based on their importance, as defined by attendees, for a species reintroduction (Chinook, Sockeye, etc.). The ranking process was summarized in synthesis tables for each species using the decision support framework shown in Figure 4-1. Predation and competition risks were not included in these tables because attendees were unable to differentiate between these risks among donor stocks of the same species.



**Figure 4-1. Conceptual diagram of a decision support framework incorporating attribute and risk considerations for donor selection. (ESA – Endangered Species Act, ESU – Evolutionary Significant Unit). (Source USGS 2017)**

For the ecological effects (competition and predation), two methods were used to characterize risks to resident fish with the reintroduction of anadromous salmonids to habitat upstream of Chief Joseph and Grand Coulee dams:

- Subjective scores of a group of fisheries professionals with working knowledge of the reintroduction area (summarized in tabular format following Pearsons and Hopley (1999)).
- Literature review summarizing mostly peer-reviewed literature on fish species identified as important by workshop attendees through the ranking process.
- Separate tables were formulated for competition and predation risks. For competition, risks to individual resident fish species from the introduction of specific salmon life stages (fry, smolts,

etc.) were identified by fisheries professionals. For predation, scores represent a risk to salmon from a particular predator species.

## 4.2 RESULTS

### 4.2.1 Donor Sources

Donor sources were identified and ranked for steelhead, Chinook (spring and summer/fall), coho, and Sockeye. Results are presented herein only for summer/fall Chinook and Sockeye as these are the two species with the least risk that appear available for testing feasibility in future studies. ESA listing, genetics and disease concerns with steelhead from downstream sources suggest with the least risk that they should not be utilized for testing. Spring Chinook may have important near-term objectives related to cultural and educational objectives for some UCUT tribes, so non-ESA stocks (Leavenworth National Fish Hatchery and Chief Joseph Hatchery) may be pursued under a parallel path of cultural releases.

#### 4.2.1.1 *Summer/Fall Chinook*

Ten summer/fall Chinook donors were identified. All but one of the summer/fall Chinook donors were in the UCR ESU and all were not ESA listed. The exception was the Lower Snake River fall Chinook from the Lyons Ferry/Nez Perce Hatchery programs, which are ESA listed as threatened.

Chief Joseph Hatchery stock were the highest-ranked donor source for the summer/fall Chinook. The fact that these fish are abundant and readily available at the hatchery ladder immediately downstream of Chief Joseph Dam factored into their high score. Additionally, this program uses a high proportion of natural-origin broodstock from the Okanogan River and has been meeting the Hatchery Scientific Review Group targets for percent hatchery-origin spawners (pHOS) and proportionate natural influence (PNI), which should improve productivity of natural-origin spawners. However, it was noted that fall Chinook Salmon in the Hanford Reach has had record high escapement numbers for three consecutive years (2013, 2014, and 2015; Richards and Pearsons 2016) and abundance may have been under-ranked in the donor synthesis table of the Hanford Reach upriver bright Chinook Salmon (Table 4-1). An additional consideration would be to add a donor source for collection at Priest Rapids Hatchery of natural- and hatchery-origin summer/fall Chinook Salmon, which may have surplus fish available. Another factor not assessed in this risk assessment that could affect the decision in choosing between these two stocks is flesh quality. It was noted that summer Chinook Salmon arrive earlier and have higher flesh quality in the terminal fishing areas than Hanford Reach upriver bright, and therefore, may be more desirable to tribal fishermen.

The remaining stocks scored fairly close to each other on a continuum that was driven by a combination of factors including availability, geographic proximity, and disease history (Table 4-1). The only stock that was separated from the group by a considerable margin was Lyons Ferry, which is from outside the ESU. In general, hatchery stocks scored higher than natural stocks with respect to availability because, in most years, there is not an over-escapement of natural-origin fish so mining spawners from those populations would pose some demographic risk to the extant population. Conversely, natural-origin stocks scored higher than hatchery stocks with respect to genetics and local adaptation. Finally, stocks that were closer (geographically) to the blocked area tended to score higher for local adaptation and life history compatibility.

#### 4.2.1.2 *Sockeye*

Four Sockeye and three kokanee donors were reviewed (Table 4-2). Three Sockeye populations were in the UCR ESU and not ESA listed. Redfish Lake Sockeye Salmon (Springfield Hatchery on the Salmon River, Idaho), located outside the UCR ESU and listed as endangered under the ESA, were not further considered for reintroduction to the UCR. Three native kokanee populations in the UCR were reviewed as donors because of the potential presence of an anadromous life history trait. Chain Lake kokanee were considered genetically unique, divergent from other populations (Kassler and others, 2010) and with low abundance/viability. Therefore, they were excluded from further consideration as a viable donor.

**Table 4-1. Synthesis table for summer/fall Chinook Salmon donors. Attributes and risk rankings for summer/fall Chinook Salmon donors. Highest grand total and weighted grand total scores imply the more suitable donor selection, and were consecutively ranked as the most suitable choice (that is, 1). Weights are assigned to attributes and risks considered more important for species reintroduction. *Within UCR*: Within upper Columbia River. *ESA status*: Endangered Species Act status. *NFH*: National Fish hatchery**

Attribute weights (1, 2, or 3)				2.00	1.00	1.00	1.00	0.5	2.00					
				Attributes rank 0–5, low to high					Risk rank 5–0, low to high			Grand total	Weighted grand total	Selection rank
Locality source	Population run designation	Within UCR	ESA status	Abundance/ Viability	Ancestry (genetics)	Local adaptation	Life history	Sub-total	Genetic risk to resident species	Disease risk to resident species	Sub-total			
Chief Joseph Hatchery	Okanogan River	Yes	Not	5.0	3.8	4.5	4.0	17.25	4.0	4.0	8.00	25.25	32.25	1
Priest Rapids and Ringold Hatcheries —Columbia River Hanford Reach	Columbia River—Hanford Reach- Upriver bright Chinook	Yes	Not	3.5	3.5	4.5	4.5	16.00	4.0	3.0	7.00	23.00	27.50	2
Eastbank /Wenatchee River Hatchery programs	Wenatchee River	Yes	Not	3.0	3.5	4.0	3.5	14.00	4.0	3.0	7.00	21.00	25.00	3
Okanogan River Natural Run	Okanogan River natural-origin	Yes	Not	2.0	4.0	4.5	4.0	14.50	4.0	3.0	7.00	21.50	24.50	4
Wenatchee River Natural Run	Wenatchee River natural-origin	Yes	Not	2.0	4.0	4.3	4.0	14.25	4.0	3.0	7.00	21.25	24.25	5
Wells Hatchery (and Carlton Rearing Pond) — Columbia River	Methow River /Okanogan River	Yes	Not	3.0	3.0	3.0	3.0	12.00	4.0	3.0	7.00	19.00	23.00	6

Attribute weights (1, 2, or 3)				2.00	1.00	1.00	1.00	0.5	2.00					
Locality source	Population run designation	Within UCR	ESA status	Attributes rank 0–5, low to high					Risk rank 5–0, low to high			Grand total	Weighted grand total	Selection rank
				Abundance/ Viability	Ancestry (genetics)	Local adaptation	Life history	Sub- total	Genetic risk to resident species	Disease risk to resident species	Sub- total			
Chelan Falls Hatchery— Columbia River	Columbia River	Yes	Not	3.0	3.0	3.0	3.0	12.00	4.0	3.0	7.00	19.00	23.00	6
Methow River natural run	Methow River natural-origin	Yes	Not	1.0	4.0	4.5	4.0	13.50	4.0	3.0	7.00	20.50	22.50	8
Entiat NFH	Entiat River	Yes	Not	2.0	3.0	3.0	3.0	11.00	4.0	1.0	5.00	16.00	17.00	9
Snake River fall— Lyons Ferry and Nez Perce Hatchery programs	Lower Snake River fall Chinook	No	Threat- ened	1.0	1.0	0.5	2.5	5.00	2.0	1.0	3.00	8.00	9.00	10

Lake Roosevelt native kokanee were the highest ranked donor stock because of their local adaptation, low genetic risk, and low disease risk (but only by a very narrow margin over Okanogan Sockeye). However, Lake Roosevelt kokanee are not readily available as a brood source making them impractical as a donor source for conducting feasibility tests. The second-highest ranked donor was the Okanogan River natural-origin Sockeye Salmon, followed by the Lake Wenatchee Sockeye and the Penticton Hatchery (Okanogan River) Sockeye (Table 4-2). Okanogan Sockeye are very abundant in some years and a mixed stock of Okanogan and Wenatchee Sockeye are already being mined to supply adults for reintroduction into Lake Cle Elum, Washington. The Penticton hatchery uses brood from the Okanogan River and does not externally mark their releases so it would not be possible to intentionally collect only hatchery fish to support the reintroduction.

#### **4.2.2 Ecological Impacts**

Summary tables for competition and predation risks resident species pose to introduced salmon are provided in Table 4-3 and Table 4-4. Redband Trout, kokanee and triploid rainbow trout were identified as the primary competitors of reintroduced salmonids.

Competition for space likely will occur in tributary habitats, whereas competition for food is more likely to occur in reservoir habitats. Sockeye Salmon are the only species that are likely to spend an entire year feeding in Lake Roosevelt, potentially competing with kokanee and Redband Trout for zooplankton. Other smolts and transient parr may feed for days to months while migrating through the reservoirs. Estimating the prey demand for a hypothesized population of Sockeye Salmon relative to other fish that consume zooplankton, although not estimated as part of this risk assessment, would characterize the rearing capacity for both resident and introduced salmonids. However, current data suggests that food is not limiting to planktivores in Lake Roosevelt.

**Table 4-2. Synthesis table for Sockeye donors. Attributes and risk rankings for Sockeye Salmon donors. Highest grand total and weighted grand total scores imply the more suitable donor selection and were consecutively ranked as the most suitable choice (that is, 1). Weights are assigned to attributes and risks considered more important for species reintroduction. Within UCR: Within upper Columbia River. *ESA status*: Endangered Species Act status**

Attribute weights (1, 2, or 3)		2.00	1.00	1.00	2.00	1.00	1.50							
		Attributes rank 0–5, low to high						Risk rank 5–0, low to high						
Locality source	Population run designation	Within UCR	ESA status	Abundance/viability	Ancestry (genetics)	Local adaptation	Life history	Sub-total	Genetic risk to resident species	Disease risk to resident species	Sub-total	Grand total	Weighted grand total	Selection rank
Lake Roosevelt	Native, kokanee	Yes	Not	3.0	4.5	4.5	3.0	15.00	5.0	3.0	8.00	23.00	30.50	1
Okanogan River	Okanogan River Natural-origin, Sockeye	Yes	Not	4.0	4.0	4.0	4.0	16.00	3.0	2.0	5.00	21.00	30.00	2
Lake Wenatchee	Wenatchee River Sockeye/kokanee	Yes	Not	3.3	3.0	3.0	4.0	13.25	3.0	2.0	5.00	18.25	26.50	3
Penticton Hatchery	Okanogan River Sockeye	Yes	Not	2.0	3.0	4.0	4.0	13.00	2.0	2.0	4.00	17.00	24.00	4
Arrow Lakes	Arrow Lakes kokanee	Yes	Not	1.0	3.0	3.0	3.0	10.00	3.0	3.0	6.00	16.00	21.50	5
Snake River programs—Springfield Hatchery Salmon River	Redfish Sockeye	No	Endangered	1.0	1.0	2.0	2.0	6.00	2.0	2.0	4.00	10.00	14.00	6
Chain Lake	Native, kokanee	Yes	Not	0.0	1.0	1.0	1.0	3.00	4.0	3.0	7.00	10.00	12.50	7



Predation risk to introduced juvenile salmon probably will be high overall, but will vary greatly depending on spatial and temporal overlap with potential predators. Smallmouth Bass, Walleye, and Northern Pike were identified as the primary predators of juvenile salmon in Lake Roosevelt and its tributaries. Unfortunately, few formal studies document the predator population's abundance, age structure, diet and consumption rate. Even if data existed on current diet and consumption rates, there would be considerable uncertainty in potential overlap in time and space with re-introduced salmon. In the lower Columbia River, Rieman and others (1991) did an analysis of juvenile salmonid predation loss in John Day Reservoir and estimated 2.7 million salmonids were consumed annually. Of the mean total, 78% were consumed by Northern Pikeminnow, 12% by Walleyes, and 9% by Smallmouth Bass. Overall, 14% of all juvenile salmonids were consumed and predation was highest for Chinook Salmon juveniles during July and August—presumably, sub-yearlings.

#### **4.2.3 Summary**

Disease, genetic, and policy constraints associated with ESA have led managers to focus on summer/fall Chinook and Sockeye Salmon for reintroduction activities.

There are multiple donor sources available for reintroducing summer/fall Chinook and Sockeye to areas upstream of Chief Joseph and Grand Coulee. Most stocks from within the ESU had similar scores and would be acceptable donors, if/when they are available. Natural origin fish are preferable with respect to genetics and productivity, but generally are not available in enough numbers in most years.

The Chief Joseph hatchery population of summer/fall Chinook was the highest ranked stock because the program uses a high proportion of natural-origin broodstock from the Okanogan River and high abundances. Hanford Reach and Wenatchee River hatchery programs were the next highest ranked donor stocks for summer/fall Chinook followed by natural-origin Okanogan River fish, which were ranked lower due to limited availability.

Lake Roosevelt native kokanee were the highest ranked donor stock because of their local adaptation, low genetic risk, and low disease risk (but only by a very narrow margin over Okanogan Sockeye). However, Lake Roosevelt kokanee are not readily available as a brood source making them impractical as a donor source for testing feasibility. The second-highest ranked donor was the Okanogan River natural-origin Sockeye Salmon, followed by the Lake Wenatchee Sockeye Salmon and the Penticton Hatchery (Okanogan River) Sockeye Salmon (Table 4-2).

Table 4-3. Ecological Impacts—Competition for Food and Space

Resident taxa	Introduced salmonid				Life stage of introduced	Competition risk with resident	Location and intensity of interaction			Mean location risk	Overall negative impact (decrease in fitness) rank (0–5) (low to high)	Uncertainty rank (0–5) (low to high)
	Sockeye	Chinook	Coho	steelhead			Rank (0,1,2...5) (low to high)					
							Trib-utaries	Main-stem	Reser-voir			
Adult Redband Trout	X	X	X	X	Fry, parr, smolt, adult	Food, space, behavior	4.0	2.0	2.0	2.7	3.0	4.0
Juvenile Redband Trout	X	X	X	X	Fry, parr, smolt	Food, behavior	4.0	2.5	2.0	2.8	3.0	4.5
Adult kokanee (natural)	X				Fry, parr, smolt, adult	Food, space	1.0	2.0	5.0	2.7	3.0	4.0
Juvenile kokanee (natural)	X	X	X	X	Fry, parr, smolt	Food	1.0	2.0	5.0	2.7	2.0	3.0
Juvenile kokanee (hatchery)	X	X	X	X	Fry, parr, smolt	Food	1.0	2.0	5.0	2.7	2.0	3.0
Juvenile Rainbow Trout (hatchery)	X	X	X	X	Fry, parr, smolt	Food	1.0	2.0	5.0	2.7	2.0	3.0
Burbot	X	X	X	X	Fry, parr, smolt	Food	0.0	1.0	2.0	1.0	1.5	4.0

Table 4-4. Ecological Impacts—Predator Prey Relationships

Predator taxa	Prey taxa				Prey life stage	Risk to introduced salmonid	Location and intensity of predation rank (0–5) (low to high)			Mean location risk	Uncertainty rank (0–5) (low to high)
	Sockeye	Chinook	Coho	steelhead			Trib-utaries	Main-stem	Reservoir		
Adult steelhead	X	X	X	X	Fry, parr, smolt	Predation	1.0	1.0	1.0	1.0	NA
White Sturgeon	X	X	X	X	Eggs, fry, parr, smolt, adults	Predation	0.0	4.5	2.0	2.2	3.0
Redband Trout	X	X	X	X	Eggs, fry, parr	Predation	2.0	2.0	2.0	2.0	4.0
kokanee (natural)	X	X	X	X	Fry	Predation	0.0	0.0	0.0	0.0	4.0
Burbot	X	X	X	X	Eggs, fry, parr, smolt	Predation	1.0	2.0	3.0	2.0	3.0
Northern Pikeminnow	X	X	X	X	Eggs, fry, parr, smolt	Predation	1.0	1.5	1.5	1.3	1.0
Northern Pike	X	X	X	X	Fry, parr, smolt	Predation	1.0	3.3	4.5	2.9	1.0
Triploid Rainbow Trout	X	X	X	X	Eggs, fry, parr, smolt	Predation	0.0	1.0	1.0	0.7	1.0
Smallmouth Bass	X	X	X	X	Fry, parr, smolt	Predation	4.0	5.0	5.0	4.7	1.0
Largemouth Bass	X	X	X	X	Fry, parr, smolt	Predation	0.0	0.5	0.5	0.3	1.0
Yellow Perch	X	X	X	X	Fry, parr	Predation	1.0	1.0	1.0	1.0	2.0
Walleye	X	X	X	X	Fry, parr, smolt	Predation	2.0	5.0	5.0	4.0	1.0
Brown Trout	X	X	X	X	Eggs, fry, parr, smolt	Predation	1.0	1.0	1.0	1.0	1.0
Brook Trout	X	X	X	X	Eggs, fry, parr	Predation	3.0	0.0	0.0	1.0	1.0



One factor not considered during the risk assessment was using a collection location that would yield a mixed stock. Given salmon propensity to wander and stray (particularly Chinook from the multiple hatchery programs downstream), it would be nearly impossible to select only one stock or entirely eliminate the possibility of excluding a particular stock. Fortunately, there did not appear to be any ‘red flags’ with the summer/fall Chinook stocks that were evaluated (except perhaps the out-of-ESU stock from Lyons Ferry) and therefore feasibility, logistics, availability and preferences of co-managers are likely to be the determining factors on which (or collection locations) to use.

Genetic and disease concerns for resident Redband Trout suggest managers should not utilize steelhead from downstream sources at this time. Additionally, the downstream steelhead stocks are all ESA-listed, and the UCUT remain committed to implementing reintroduction testing with fish that are not ESA-listed.

Competition between resident species and reintroduced salmonids for space likely will occur in tributary habitats, whereas competition for food is more likely to occur in reservoir habitats. Competition between Redband Trout and reintroduced salmonids is more likely in tributary habitats, whereas competition between reintroduced salmonids and kokanee would occur in reservoir habitats.

Predation risk to introduced juvenile salmon probably will be high overall but will vary greatly depending on spatial and temporal overlap with potential predators. Smallmouth Bass, Walleye, and Northern Pike were identified as the primary predators of juvenile salmon in Lake Roosevelt and its tributaries.

### 4.3 REFERENCES

- Hardiman, J.M., Breyta, R.B., Haskell, C.A., Osberg, C.O., Hatten, J.R., and Connolly, P.J., 2017, Risk assessment for the reintroduction of anadromous salmonids upstream of Chief Joseph and Grand Coulee Dams, northeastern Washington: U.S. Geological Survey Open-File Report 2017–1113, 87 p., <https://doi.org/10.3133/ofr20171113>.
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Rieman, B.E., Beamesderfer, R.C., Vigg, S., and Poe, T.P., 1991. Estimated loss of juvenile salmonids to predation by Northern Squawfish, Walleyes, and Smallmouth Bass in John Day Reservoir, Columbia River: Transactions of the American Fisheries Society, v. 120, p. 448–458.

## 5.0 HABITAT ASSESSMENTS

### 5.1 INTRODUCTION

Habitat availability and suitability are foundational in evaluating the feasibility of reintroducing anadromous species to the waters upstream of Chief Joseph and Grand Coulee dams. A multitude of studies were performed to assess specific areas for one or more species as a means to determine the quantity and suitability of tributary, mainstem, and reservoir habitats for anadromous salmonids. Models had to be employed because the species do not exist in their anadromous life history forms in the blocked area. Assumptions were made and uncertainties were identified within each method. These assumptions can be verified, and the uncertainties will be filled with empirical data with the implementation of experimental reintroduction. Results from these habitat assessments have been included as inputs to life cycle modeling, which further evaluates density dependence and mortality across multiple life stages (presented in Section 6).

There are five subsections in this section of the report which cover the various methods and analyses (assessments) used to evaluate the habitats. Comprehensive reports for each of the assessments can be found at [www.UCUT.org](http://www.UCUT.org).

The habitat assessments include:

1. Intrinsic potential model of tributary habitats to identify and quantify streams and reaches that may support spawning and rearing activity for Chinook and steelhead (Giorgi 2018).
2. An Ecosystem Diagnosis and Treatment (EDT) model to summarize the potential performance of spring Chinook, summer/fall Chinook and steelhead in select tributaries, given current habitat conditions (ICF 2017 and 2018).
3. An assessment of the quantity of potential spawning habitat for summer/fall Chinook in free-flowing large mainstem sections of the Columbia River, in Lake Rufus Woods and the Transboundary reach (Hanrahan et al. 2004, Baldwin and Bellgraph 2017, Garavelli et al. *in prep*, Golder Associates 2016 and 2017).
4. Estimations of potential Sockeye spawner abundance in the Sampoil River (Baldwin 2018).
5. An assessment of the rearing capacity of Lake Roosevelt for juvenile Sockeye based on recent trends of reservoir productivity (Giorgi and Kain 2018).

The final section presented in this section deals with possible climate change effects to habitat upstream of Chief Joseph and Grand Coulee dams and its importance for long term salmon production in the Columbia River basin.

## **5.2 INTRINSIC POTENTIAL FOR CHINOOK AND STEELHEAD**

An intrinsic potential stream habitat model was used to identify tributaries and quantify spawning and early rearing habitats for stream-type spring Chinook and steelhead within the United States portion of the blocked area of the upper Columbia River (Figure 5-1 through Figure 5-4). Intrinsic potential is a coarse-scale geographic information systems (GIS) based model that evaluates stream reaches and their relative potential to support spawning and rearing activity dependent on geomorphic constraints. The model was originally developed by the Northwest Fisheries Science Center (NWFSC) and used in the recovery planning process of the mid-2000's (e.g., ICTRT 2005, 2006, and 2007)

Using publicly available GIS data, measures of stream bank full width, gradient, and valley confinement are calculated for each 200m stream reach. The model aligns these habitat parameters with species specific habitat criteria to assign a reach-level rating of relative habitat potential. The species-specific habitat criteria were developed by the ICTRT, informed by adult spawner and juvenile distribution data collected within the Interior Columbia. Stream reaches are rated as having none/negligible, low, moderate, or high relative potential dependent on the values of each parameter for a given reach. Additional habitat screens for sedimentation and water velocity are then applied to the reach network to identify habitats that, although fitting the criteria, may be unsuitable for spawning and rearing. Where violations of the habitat screens are found the model adjusts the habitat ratings accordingly. The model does not account for anthropogenic changes to the environment and thus is not considered an assessment of current stream condition but is more representative of historic fish distribution and population productivity.

The Spokane Tribe of Indians (STI) and co-managers of the blocked area reviewed the NWFSC intrinsic potential model. It was determined that the original model did not adequately account for natural barriers to fish passage. Eleven fish passage barrier data sets were reviewed and filtered to isolate natural features that pose a complete barrier to fish passage. The natural fish passage barrier data set was mapped using GIS and presented to regional co-managers and biologists who confirmed the presence, status, and location of each feature and provided additional information if available. Features that lacked supporting information were considered complete barriers to fish passage. The finalized natural fish passage barrier data set, which included more features than originally modeled, was sent to the NWFSC for inclusion into an updated intrinsic potential model run.



Habitat metrics of reach length and streambed area from the updated model were summarized by subbasin under two scenarios. The first scenario is inclusive of all tributary habitats within the U.S. portion of the currently blocked area. Additional anthropogenic barriers upstream of Chief Joseph and Grand Coulee dams will constrict the potential distribution of anadromous adults translocated to mainstem reservoirs. The second scenario considers these additional anthropogenic barriers and is specific to habitats immediately accessible from Lake Rufus Woods and Lake Roosevelt.

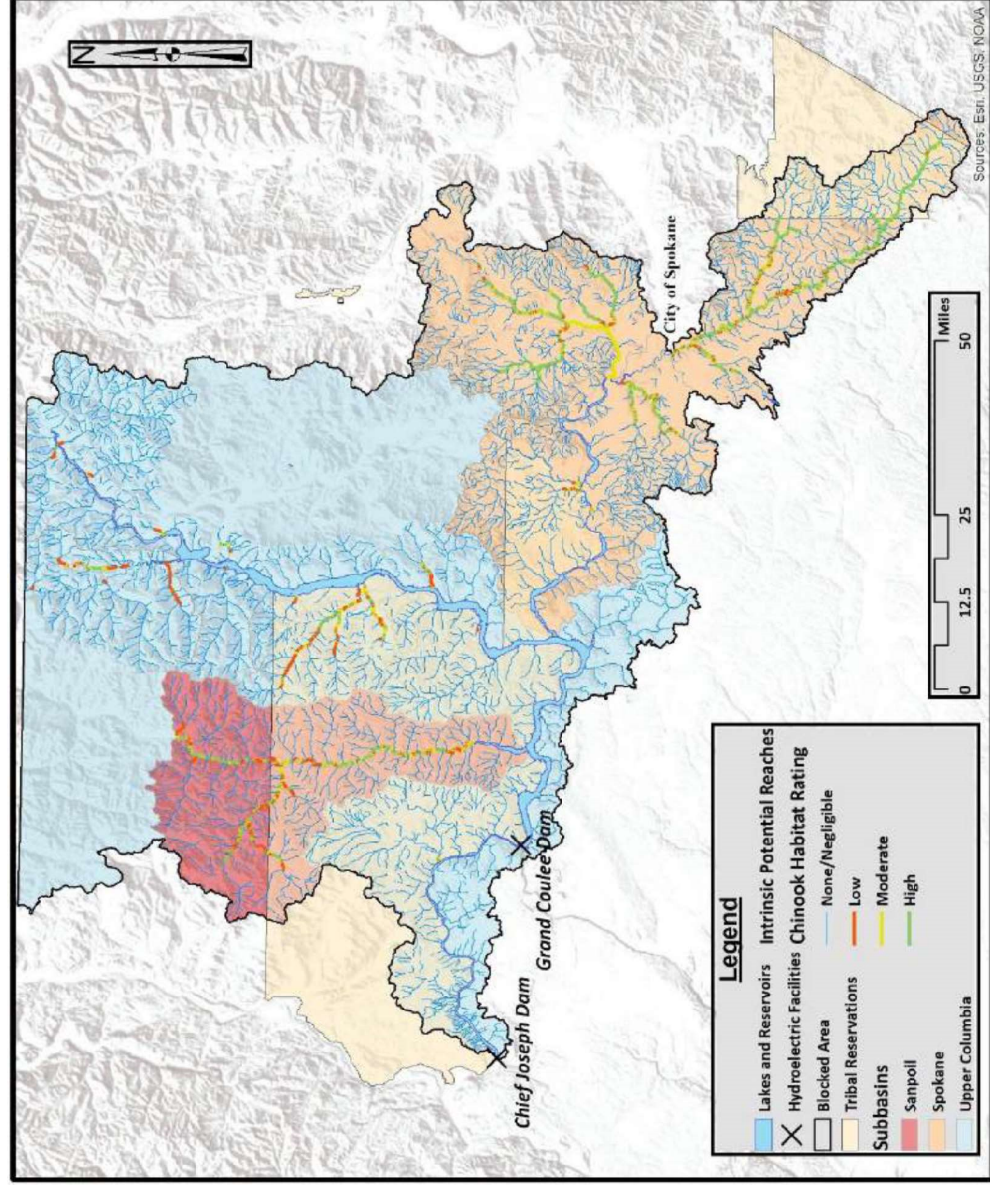
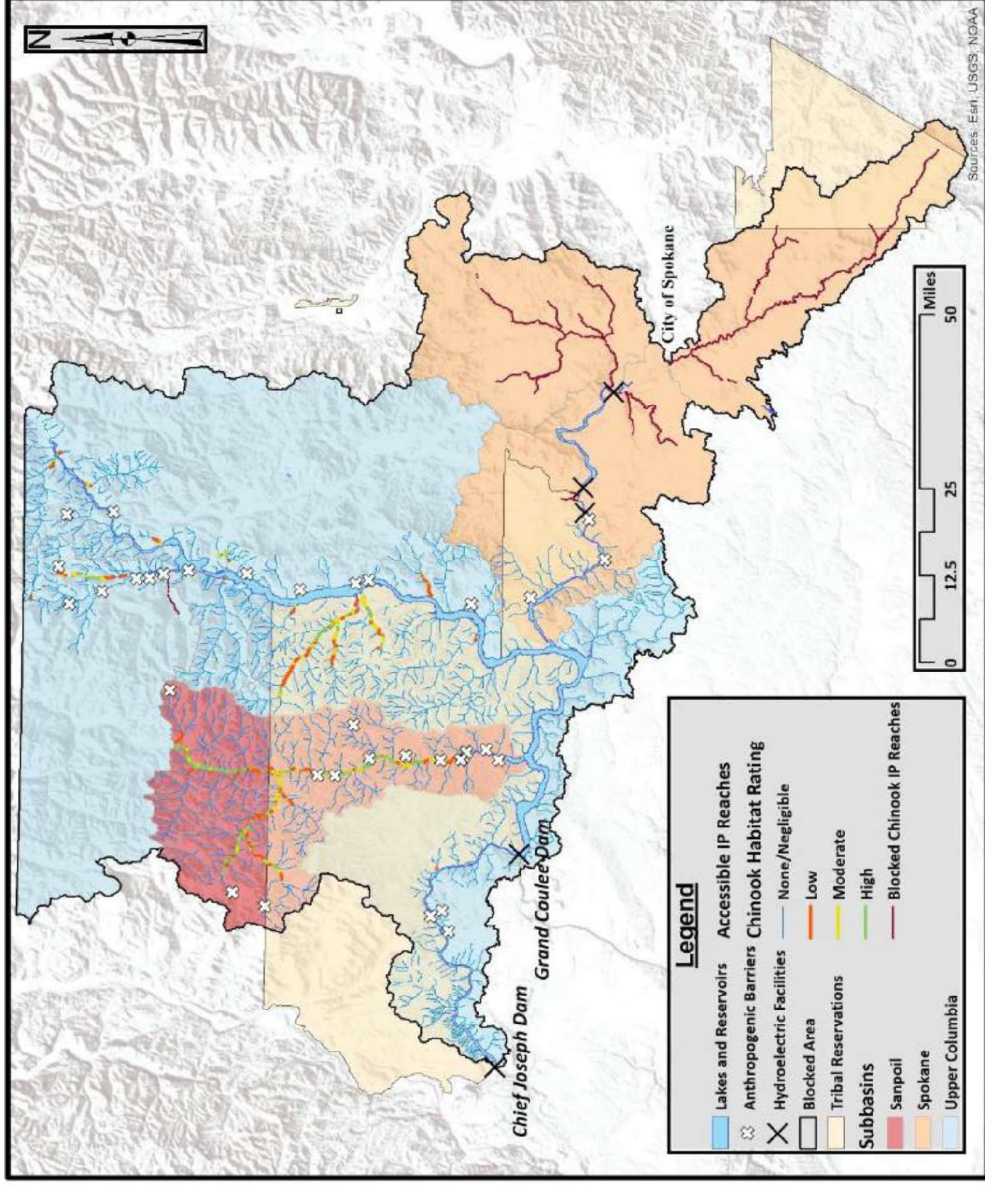


Figure 5-1. All intrinsic potential stream reaches and habitat ratings for spring Chinook within the U.S. portion of the currently blocked area.



**Figure 5-2. Intrinsic potential stream reaches and habitat ratings for spring Chinook immediately accessible from Rufus Woods Reservoir and Lake Roosevelt. Blocked intrinsic potential (IP) habitats are those that scored higher than “low” production potential but are blocked by at least one anthropogenic barrier. Many barriers are located on smaller tributaries. The habitats they block are indicated by black stream reaches.**

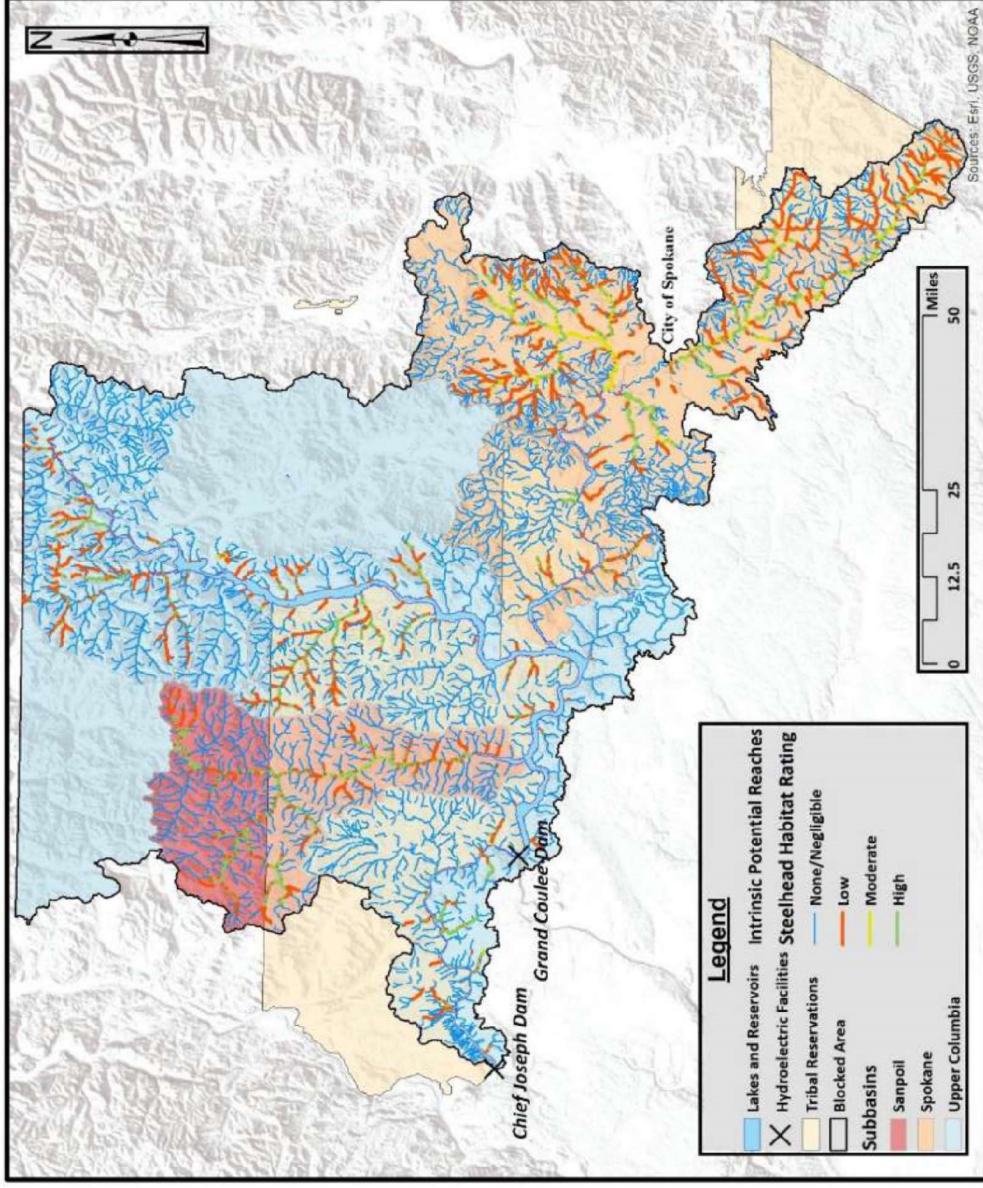
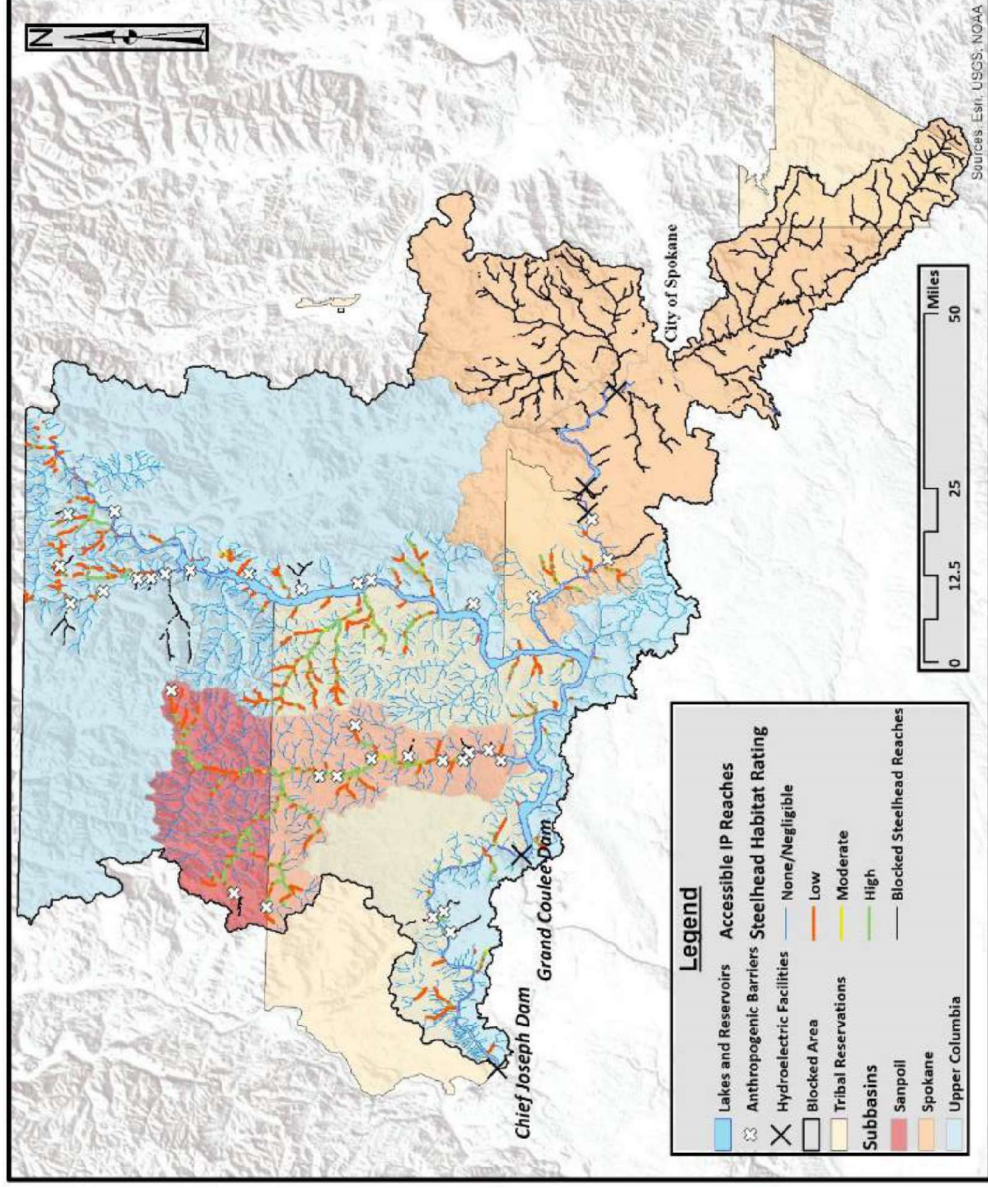


Figure 5-3. All intrinsic potential stream reaches and habitat ratings for steelhead within the U.S. portion of the blocked area.



**Figure 5-4. Intrinsic potential stream reaches and habitat ratings for steelhead immediately accessible from Rufus Woods Reservoir and Lake Roosevelt. Blocked intrinsic potential (IP) habitats are those that scored higher than “low” production potential but are currently blocked by at least one anthropogenic barrier. Many barriers are located on smaller tributaries. The habitats they block are indicated by black stream reaches.**

The intrinsic potential modeling revealed significant amounts of habitat for spring Chinook and steelhead within the U.S. portion of the currently blocked area: a total of 711 mi of spring Chinook and 1,610 mi of steelhead habitat for spawning, rearing, and migration. The model estimates there are 356 mi of spring Chinook and 1,162 mi of steelhead habitat rated as having low, moderate, or high potential for spawning and rearing. Modeled streambed area of these habitats is 1.8 mi<sup>2</sup> and 5.6 mi<sup>2</sup> for spring Chinook and steelhead, respectively (Table 5-1 and Table 5-2). Considering additional anthropogenic barriers in the

region, the amount of low, moderate, and high rated tributary habitat immediately accessible from Lake Rufus Woods and Lake Roosevelt is 136 mi (0.7 mi<sup>2</sup>) for spring Chinook and 452 mi (1.3 mi<sup>2</sup>) for steelhead.

**Table 5-1. Summary of stream reach lengths and streambed areas for spring Chinook habitats identified by the intrinsic potential model, by subbasin, for the entirety of the study area and habitats immediately accessible from Rufus Woods Reservoir and Lake Roosevelt. Migratory corridors have not been included.**

Subbasin	Total Habitats		Immediately Accessible Habitats	
	Reach Length (mi)	Streambed Area (mi <sup>2</sup> )	Reach Length (mi)	Streambed Area (mi <sup>2</sup> )
Sanpoil	82.2	0.48	82.2	0.48
Spokane	214.4	1.11	0.3	0.00
Upper Columbia	59.2	0.20	53.6	0.19
<b>Blocked Area Total</b>	<b>356</b>	<b>1.8</b>	<b>136</b>	<b>0.67</b>

**Table 5-2. Summary of stream reach lengths and streambed areas for steelhead habitats identified by the intrinsic potential model, by subbasin, for the entirety of the study area and habitats immediately accessible from Rufus Woods Reservoir and Lake Roosevelt. Migratory corridors have not been included.**

Subbasin	Total Habitats		Immediately Accessible Habitats	
	Reach Length (mi)	Streambed Area (mi <sup>2</sup> )	Reach Length (mi)	Streambed Area (mi <sup>2</sup> )
Sanpoil	187.7	1.1	176.0	0.64
Spokane	661.9	3.2	19.5	0.02
Upper Columbia	311.9	1.3	256.2	0.62
<b>Blocked Area Total</b>	<b>1,161</b>	<b>5.6</b>	<b>452</b>	<b>1.3</b>

Of all rated habitats in the region, 49% of the spring Chinook habitat, by streambed area, is rated as high and 36% of steelhead habitat, by streambed area, is rated as high. The greatest amounts of highly rated habitats are located within the Spokane subbasin, 35% and 17% of all spring Chinook and steelhead habitats, respectively. Of habitats immediately accessible from mainstem reservoirs, 37% of the streambed area for spring Chinook are rated as high and 46% for steelhead are rated as high; most of these habitats are within the Sanpoil River subbasin (Table 5-3 and Table 5-4).

**Table 5-3. Percent of total streambed area for all and immediately accessible spring Chinook habitats by rating and subbasin.**

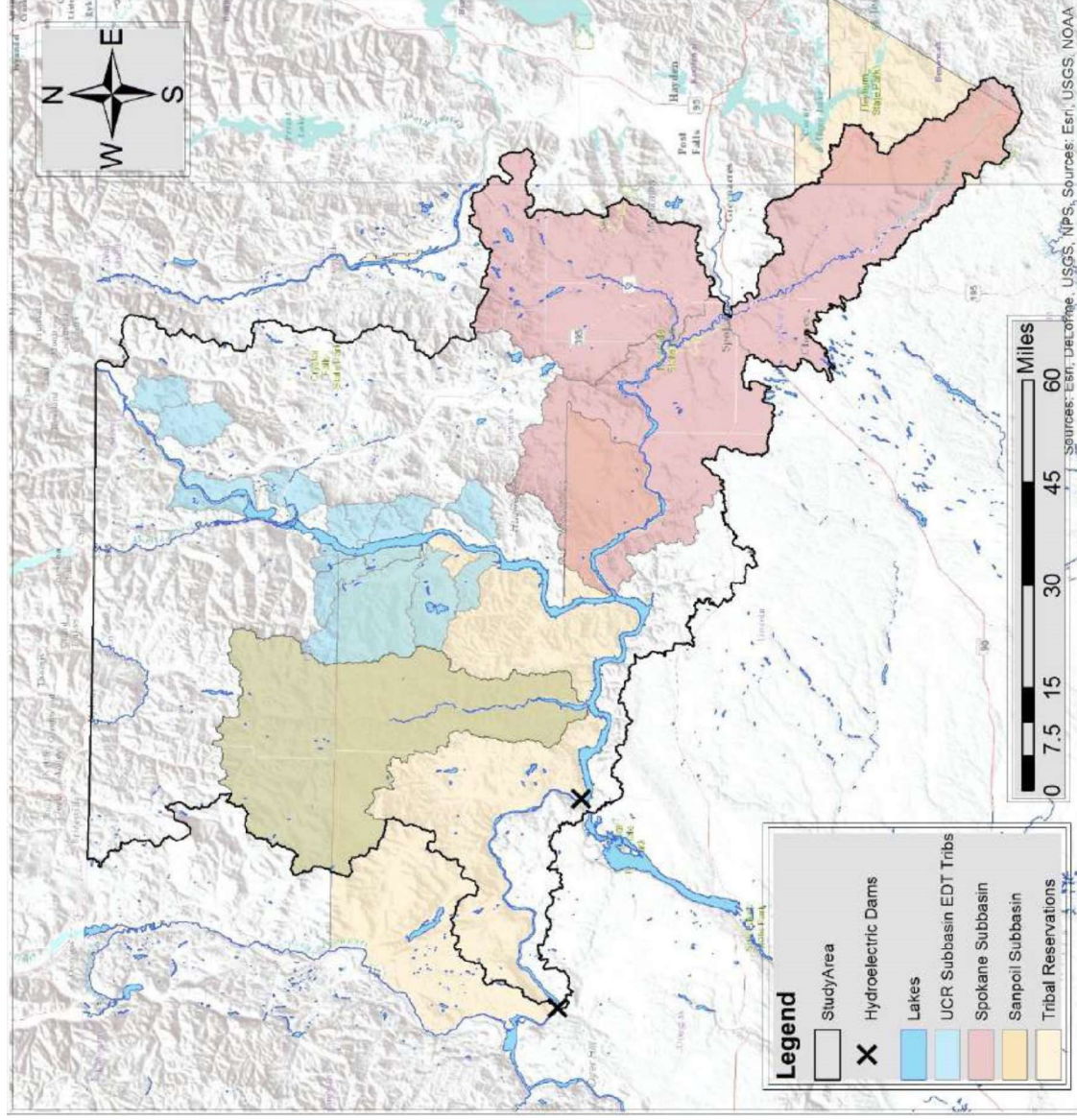
Subbasin	All Rated Habitats				Immediately Accessible Rated Habitats			
	Low	Moderate	High	Total	Low	Moderate	High	Total
Sanpoil	8%	8%	11%	27%	20%	21%	31%	72%
Spokane	7%	20%	35%	62%	0%	0%	0%	0%
Upper Columbia	6%	3%	2%	11%	13%	8%	7%	28%
<b>Grand Total</b>	<b>20%</b>	<b>31%</b>	<b>49%</b>	<b>100%</b>	<b>34%</b>	<b>29%</b>	<b>37%</b>	<b>100%</b>

**Table 5-4. Percent of total streambed area for all and immediately accessible steelhead habitats by rating and subbasin.**

Subbasin	All Rated Habitats				Immediately Accessible Rated Habitats			
	Low	Moderate	High	Total	Low	Moderate	High	Total
Sanpoil	7%	1%	11%	20%	17%	3%	28%	48%
Spokane	25%	15%	17%	57%	2%	0%	1%	2%
Upper Columbia	15%	1%	8%	23%	32%	2%	16%	50%
<b>Grand Total</b>	<b>47%</b>	<b>17%</b>	<b>36%</b>	<b>100%</b>	<b>50%</b>	<b>5%</b>	<b>45%</b>	<b>100%</b>

### 5.3 EDT MODELING OF CHINOOK AND STEELHEAD IN SELECT TRIBUTARIES

The Colville Confederated Tribes (CCT) have developed an assessment of habitat potential for reintroduction of summer steelhead, summer/fall and spring Chinook Salmon to the CCT reservation in the Sampoil River subbasin and four select tributary watersheds to west Lake Roosevelt in the upper Columbia subbasin. The STL performed a similar assessment in the Spokane subbasin and nine tributary watersheds to east Lake Roosevelt in the upper Columbia subbasin (Figure 5-5).



**Figure 5-5. Study areas for EDT modeling within the currently blocked area of the upper Columbia River.**

The CCT assessment was conducted using existing Sanpoil and Upper Columbia Ecosystem Diagnosis and Treatment (EDT) models previously built to support resident fish conservation efforts. Extensive data sets documenting current habitat conditions in these watersheds were used to populate the model. The adaptation of these existing EDT models required the development of hypothetical populations of steelhead, summer/fall Chinook and spring Chinook. ICF, the modeling subcontractor, and the CCT hosted a life history model workshop with regional fisheries experts to define probable age composition and life stage timing as well as distribution and behavioral characteristics based on knowledge of remaining extant populations in the upper Columbia region. The information gained from this workshop was used to parameterize EDT model populations used in both the CCT and STI initial reintroduction analyses.

ICF relied on the consensus opinion of workshop attendees and National Marine Fisheries Service intrinsic potential model criteria to define the extent of probable habitat for steelhead, spring and summer/fall Chinook Salmon in each subbasin.

ICF applied three different sets of assumptions about Grand Coulee Dam and Chief Joseph Dam passage survival to evaluate reintroduction potential. These scenarios use the following passage survival rates for juvenile migrants moving downstream and adult migrants moving upstream:

- Biological opinion (BiOp) survival: 95% juvenile downstream, 98% adult upstream survival at both dams.
- Moderate survival: 90% juvenile downstream, 97% adult upstream survival at both dams.
- Low survival: 85% juvenile downstream, 95% adult upstream survival at both dams.

These passage survival scenarios apply to Grand Coulee Dam and Chief Joseph Dam. The BiOp survival assumption is consistent with Federal Columbia River Power System (FCRPS) biological opinion survival standards for other federally-operated dams on the Columbia River mainstem. The moderate and low survival assumptions are provided to evaluate habitat potential at survival rates below BiOp standards. ICF calibrated juvenile and adult migrant survival in the remainder of the Columbia River migration corridor and Pacific Ocean to match recent observations for extant species, emphasizing data collected after 2008 when significant changes in federal hydropower system operations and other system improvements were implemented to increase juvenile migrant survival.

The STI assessment involved the construction of new EDT models for the Spokane subbasin and tributaries east of Lake Roosevelt. These models were populated with existing habitat data previously collected by a multitude of agencies and organizations independent of this investigation. Missing habitat parameters or



gaps in spatial coverage were filled using products from 3<sup>rd</sup> party models, interpretation of aerial imagery, or interpolation from comparable watersheds. Species and life history information developed through the CCT workshops were applied to the STI EDT models. The three scenarios of passage survival at GCD and CJD were run, but for each, passage survival at Spokane River hydroelectric dams was maintained at BiOp passage survival rates (95% juvenile downstream, 98% adult upstream survival) assuming that, due to the size and nature of those facilities, BiOp passage rates are achievable. Additional anthropogenic barriers, such as road crossings, within the study area were assumed to be resolved following future restoration actions.

A summary of EDT-estimated habitat potential for summer steelhead and spring Chinook in the Sampoil River and west Lake Roosevelt tributaries and summer/fall Chinook in the Sampoil River is presented in ICF (2017) (Table 5-5 and 5-6). Summaries for the Spokane subbasin and east Lake Roosevelt tributaries is found in ICF (2018). The take home messages from these documents are as follows:

- There is substantial potential for summer steelhead reintroduction in the total blocked area:
- Blocked area tributaries may support populations of approximately 2,300 adult steelhead under current habitat conditions and BiOp passage scenarios, assuming that all manmade passage barriers are resolved (Table 5-5).
- The Spokane and Sampoil subbasins contain the vast majority of production potential in the region, although Lake Roosevelt tributaries appear to have enough habitat to support small spawning aggregates of steelhead.
- Steelhead life stage survival metrics are consistent with observed survival rates in other functional watersheds in the Columbia basin.
- Egg-to-parr survival<sup>2</sup> in the blocked area ranges from 3.4% to 7.9% under current conditions across

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<sup>2</sup> Egg-to-parr survival in this study means survival from the beginning of incubation through the end of the first summer of active rearing.

all subpopulations and life history strategies.

**Table 5-5. EDT performance metrics for steelhead populations within the various subbasins modeled.**

Passage Survival Scenario	Subbasin Population	EDT Performance Metric by Watershed Habitat Scenario		
		Productivity	Capacity	Equilibrium Abundance
<b>BiOp</b>	Sanpoil River	2.2	1,719	947
	Spokane River	2.4	2,064	1,213
	UCR - E. Roosevelt Tributaries	2.3	145	81
	UCR - W. Roosevelt Tributaries	2.0	240	119
<b>Moderate</b>	Sanpoil River	2.1	1,513	783
	Spokane River	2.3	1,816	1,019
	UCR - E. Roosevelt Tributaries	2.1	128	68
	UCR - W. Roosevelt Tributaries	1.9	212	99
<b>Low</b>	Sanpoil River	1.9	1,296	622
	Spokane River	2.1	1,555	824
	UCR - E. Roosevelt Tributaries	2.0	109	54
	UCR - W. Roosevelt Tributaries	1.8	181	78

There is substantial potential for summer/fall Chinook reintroduction in the blocked area:

- Blocked area tributaries could potentially support an equilibrium abundance of more than 8,500 summer/fall Chinook with productivities between 3.3 and 3.6 for all populations modeled under current conditions and the BiOp passage survival scenario (Table 5-6).
- Even under the most conservative (lowest) hydrosystem passage survival assumptions, the model predicted an equilibrium abundance of nearly 6,000 adult spawners with productivities between 2.6 and 2.9 under current conditions.
- Summer/fall Chinook habitat potential would likely benefit from restoration of thermal refugia and holding habitat in the Sanpoil mainstem.

**Table 5-6. EDT performance metrics for summer/fall Chinook populations within the various subbasins modeled.**

Passage Survival Scenario	EDT Performance Metric by Watershed Habitat Scenario			
	Subbasin Population	Productivity	Capacity	Equilibrium Abundance
<b>BiOp</b>	Sanpoil River	3.6	2,206	1,594
	Spokane River	3.4	9,535	6,729
	UCR - E. Roosevelt Tributaries	3.3	397	275
<b>Moderate</b>	Sanpoil River	3.3	1,954	1,352
	Spokane River	3.1	8,451	5,707
	UCR - E. Roosevelt Tributaries	2.9	351	231
<b>Low</b>	Sanpoil River	2.9	1,684	1,099
	Spokane River	2.7	7,291	4,634
	UCR - E. Roosevelt Tributaries	2.6	303	185

Spring Chinook habitat potential is relatively modest, specifically:

- Equilibrium abundance for blocked area tributaries under current conditions and the BiOp passage scenario is approximately 600 with productivities ranging between 1.8 and 2.3 (Table 5-7).
- The Sanpoil and Spokane watersheds contain the majority of spring Chinook habitat capacity, compared to the Lake Roosevelt tributaries.
- EDT-estimated spring Chinook egg-to-parr survival in the blocked area under current conditions ranges from 8.3% to 14.8% among subpopulations and life history strategies.
- EDT Performance Report and life stage integration results from the CCT spring Chinook analysis reflect broader trends for extant populations in the upper Columbia region, suggesting that the assessment results provide a reasonable interpretation of habitat potential and Spring Chinook performance.

**Table 5-7. EDT performance metrics for spring Chinook populations within the various subbasins modeled.**

Passage Scenario	Survival	Subbasin Population	EDT Performance Metric by Watershed Habitat Scenario		
			Productivity	Capacity	Equilibrium Abundance
<b>BIOP</b>		Sanpoil River	2.3	498	277
		Spokane River	1.8	543	246
		UCR - E. Roosevelt Tributaries	2.2	32	17
		UCR - W. Roosevelt Tributaries	2.3	128	73
		Sanpoil River	2.2	437	234
<b>Moderate</b>		Spokane River	1.7	476	198
		UCR - E. Roosevelt Tributaries	2	28	14
		UCR - W. Roosevelt Tributaries	2.2	112	61
<b>Low</b>		Sanpoil River	2	374	186
		Spokane River	1.6	407	148
		UCR - E. Roosevelt Tributaries	1.8	24	11
		UCR - W. Roosevelt Tributaries	2	96	47

Overall, the EDT modeling for select blocked area tributaries suggests there is adequate habitat that is currently accessible and with the productive capacity to support anadromous salmonid populations, with total life cycle survival rates that are less than downstream populations. The EDT effort modeled three alternatives for survival through GCD and CJD, two of which were more pessimistic than the current standards for federal dams in the Columbia River. Additionally, we modeled a reach mortality rate from the natal tributary to Wells Dam that was twice as high as the mortality rate from Wells Dam to McNary. Although EDT is capable of modeling alternative scenarios for hydro survival, it is cumbersome and the focus of these analyses was to evaluate the habitat, not the hydro system, therefore populations should be further assessed using life-cycle modeling (see Section 6).

Models for the Spokane Subbasin and east tributaries to Lake Roosevelt used the best available information to populate the modeling environment. However, due to the paucity of needed habitat parameters and geographic coverage, the model is heavily reliant on sources with high degrees of uncertainty. Continued and focused habitat monitoring, and inclusion of newly collected data will improve robustness of the model.

#### **5.4 LARGE RIVER CHINOOK SPAWNING HABITAT AND REDD CAPACITY**

Neither intrinsic potential nor EDT was deemed suitable for evaluating the potential for Chinook spawning in large mainstem habitat such as the more riverine sections of the Columbia River at the heads of Rufus

Woods Lake and Lake Roosevelt. Instead, the substantial habitat and population analysis methods used in the Hanford Reach and Snake River were conducted to determine Chinook spawning potential in large river habitats. Reaches evaluated include a 17-mile portion of Rufus Woods Lake downstream of Grand Coulee Dam (Hanrahan et al. 2004) and several sections of the Transboundary Reach. The Transboundary Reach is an approximately 60-mile-long free-flowing section of the Columbia River between Lake Roosevelt and Hugh L. Keenlyside Dam in British Columbia, Canada. Garavelli and others (*in prep*) evaluated a 40-mile section from Kettle Falls to the U.S./Canadian border. The Canadian Columbia River Inter-Tribal Fisheries Commission contracted a similar analysis in a three-mile segment of the Transboundary Reach in and around the confluence of the Kootenay and Columbia rivers (Golder 2016 and 2017).

The approaches used for each of these analyses are similar in that they all employed 2-D hydraulic modeling for depth, velocity, substrate, and channel slope. However, the exact methods for estimating the quantity and quality of each potential spawning area were slightly different for each area.

**Rufus Woods** (see Hanrahan et al. 2004 for full details): Two potential spawning areas were identified in the upper reaches of Lake Rufus Woods by a geomorphic analysis. A binary analysis was applied to each area that classified each 3m×3m cell within the areas as either “Suitable” or “Not Suitable” based on published criteria defining suitable fall Chinook spawning habitat (i.e., depth, velocity, substrate, and channel-bed slope; see Table 1 in Hanrahan et al. 2004). Lastly, of the potential habitat calculated as “Suitable,” a suitability index analysis was performed to rate the quality of this habitat on a scale from 0 (poor) to 1 (optimum).

Once the locations and areas (m<sup>2</sup>) of suitable habitats were quantified, redd capacity was calculated using four different methods that accounted for suitable habitat, the percent of available habitat utilized by spawners, average redd size and inter-redd spacing.

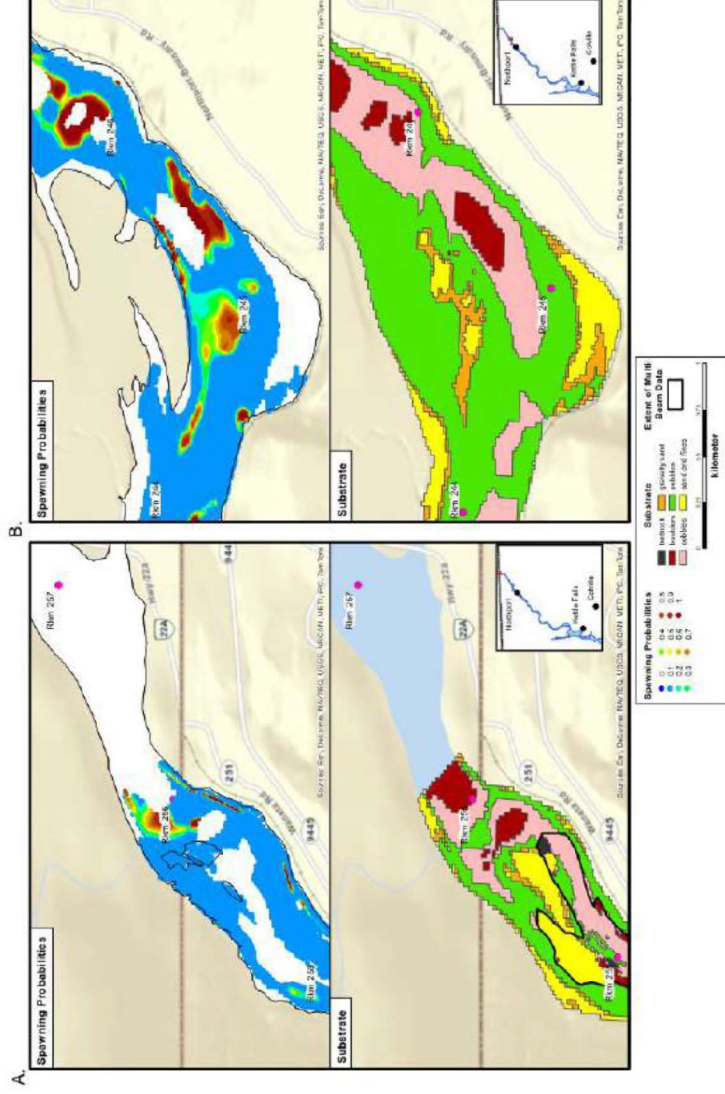
**Transboundary Reach** (U.S. habitat; see *Garavelli et al. in prep.*, for full details): Current velocity, depth, and riverbed slope of the study area were estimated using a spatially explicit grid-based hydrodynamic model simulating flow and temperature in two dimensions, the Modular Aquatic Simulation System in 2-dimensions MASS2 (Perkins et al., 2007a; Perkins et al., 2007b). To determine the spawning habitat availability of Chinook Salmon in the study reach, a logistic regression model was developed using data of physical habitat attributes and spawning habitat from Geist et al. (2008) in the Hanford Reach of the Columbia River. Spawning probabilities were calculated for the three exceedance flow levels (10%, 50%, and 90%) and for three substrate categories in each 3×3m habitat cells from Kettle Falls to the Canadian border for a total of nine habitat estimates. Four estimates of redd size were used to calculate redd capacity,

which was based on data from the Hanford Reach of the Columbia River population of fall Chinook Salmon and included: 1) redds without accounting for inter-redd spacing—from a low of 17 m<sup>2</sup> (from Chapman et al., 1986) to a high of 23 m<sup>2</sup> (Visser, 2000); and 2) redds including inter-redd spacing of 2.8 m (Visser, 2000) and 3.4 m (Geist et al., 1997), which equate to a total redd area (including spacing) of 43.6 m<sup>2</sup> and 61.0 m<sup>2</sup>.

## 5.5 CHINOOK REDD AND ADULT SPAWNER CAPACITY ESTIMATES

In the transboundary reach of the Columbia River, the majority of potential Chinook spawning habitat was in a 15 km stretch between the U.S. Canadian border and the town of Northport. Model output can be easily visualized utilizing maps of spawning probabilities and substrates. Detailed maps were generated for the entire transboundary reach, with a couple of the most compelling areas shown in Figure 5-6. In Lake Rufus Woods, all of the high probability potential spawning habitat was in two areas (Buckley and Nespelem bars) where alluvial deposits had accumulated appropriate sized spawning substrates and depth and velocities fell within preferred ranges for Chinook spawning.

The methodologies from the two studies resulted in a wide range of redd capacity estimates for each study area depending on environmental conditions and assumptions regarding redd size, inter-redd spacing and substrate. In Lake Rufus Woods, Hanrahan et al. (2004) limited their summary to ‘high quality’ habitat having greater than 75% probability of spawning and with the various assumptions regarding flow, redd size, and inter-redd spacing estimated a capacity between 270-5,035 redds (Table 5-8). In the transboundary reach of the Columbia River, Garavelli et al. (*in prep.*), were more generous with their spawning probability limit (>50%) and estimated a redd capacity from 1,705-20,351 depending on flow, redd size, inter-redd spacing and substrate utilization assumptions (Table 5-9).



**Figure 5-6. Predicted locations of the Chinook Salmon spawning habitat for the 50% exceedance flow level and substrate category #3 (pebble, cobble, and boulder). Predicted locations are defined by their spawning probabilities (upper panels), from 0 (blue) to 1 (red), at the U.S.-Canada international border (A.; RKM 255–256) and upstream of Northport (B.; RKM 245–246). Substrate types for the same locations are shown in the lower panels. Inset maps show the locations (represented by a red square) relative to the study area in the Columbia River (Washington State).**

**Table 5-8. Lake Rufus Woods redd capacity of highly suitable (composite index 0.76-1.0) potential Fall Chinook Salmon spawning habitat based on redd sizes and inter-redd spacing. This table was re-created from Hanrahan et al. 2004.**

Redd Size (m <sup>2</sup> )	Redd Capacity at Flow Level (Q)		
	Q <sub>10</sub>	Q <sub>50</sub>	Q <sub>90</sub>
21	5,035	4,566	1,506
23	4597	4169	1375
Area used (m <sup>2</sup> )	Q <sub>10</sub>	Q <sub>50</sub>	Q <sub>90</sub>
91	1,159	1,051	347
117	902	818	270

**Table 5-9. Redd capacity of areas with greater than 50% spawning probability on the Transboundary reach of the Columbia River at 3 flow levels (Q10 = 10% exceedance or high flow) and substrate categories (S3 = most inclusive, S1 least inclusive) and with 2 different redd size and inter-redd spacing assumptions.**

Redd Size (m <sup>2</sup> )	Inter-redd Distance (m)	Redd Capacity at Flow Level and Substrate Category		
		Q <sub>10</sub> /S3	Q <sub>50</sub> /S2	Q <sub>50</sub> /S3
17	0	20,351	10,347	6,096
23	0	15,042	7,648	4,506
17	2.8	8,046	4,091	2,410
23	3.4	5,690	2,893	1,705

Estimates of spawner capacity can be extrapolated from these redd capacities. This is particularly helpful as spawner capacity is one of the inputs for life cycle modeling and adult abundance is a common currency across many planning efforts. Spawner capacity estimates are dependent on an assumed number of spawners per redd. It is estimated that the mean number of spawners per redd in the Hanford Reach from 1964–2014, based on escapement values and yearly flights to enumerate redds, was 9.2 (SD = 6.5), with a median of 8.4 (unpublished data). Summer/Fall Chinook spawning in tributaries downstream of Chief Joseph dam generally have fewer fish per redd. For example, CCT and WDFW use the sex ratio at Wells Dam to estimate fish per redd in the Methow and Okanogan which averaged 2.98 between 1989 and 2015 (Hillman et al. 2016). Combining the two areas and applying the more conservative estimate of adult spawners per redd (3 fish/redd) to the range of redd capacities (approximately 2,000 – 25,000) yields estimates of spawner capacities between 6,000 and 75,000 adults.

### **5.5.1 Caveats and Considerations**

It is important to consider that these analyses used several assumptions based on the Hanford Reach fall Chinook Salmon population. Although it could be argued that summer-fall Chinook Salmon spawning in Lake Rufus Woods or Roosevelt may ultimately differ from Hanford Reach fall Chinook spawners, the amount of high-quality data from the Hanford Reach and the proximity of the population to Lake Rufus Woods and Roosevelt makes it a reasonable surrogate for modeling purposes.

The methods and assumptions were not the same between the study areas and therefore the results from the two studies should not be directly compared; however, each area showed considerable potential for quality Chinook spawning habitat. We chose to show a range of potential redd capacities consistent with the



approach of the study authors because of the difficulty of selecting the ‘best’ value for each model input. There is considerable uncertainty in selecting the best single estimate of capacity due to unknown direction and magnitude of the difference between the model prediction and the biological truth (which can only be evaluated after fish are reintroduced). If, or when, fine-tuning a single estimate for a biological target for spawning escapement becomes important, we recommend that a technical workgroup take a closer look at the two studies, add in any pertinent empirical data (from these reaches or surrogates) and develop a recommendation. For now, the ranges provided by these studies appear to adequately answer the management question regarding the availability and suitability of habitat in the reaches studied.

## **5.6 POTENTIAL SOCKEYE SALMON SPAWNER CAPACITY IN THE SANPOIL SUBBASIN**

The techniques used for other tributary habitat assessments are not parameterized to evaluate habitat suitability with respect to Sockeye Salmon. Existing habitat data for the Sanpoil subbasin enabled the estimation of potential spawner capacity using two different methods: one based on spawner densities, the other based on redd sizes. This analysis is specific to the Sanpoil subbasin because adequate habitat data sets are not available for other tributaries in the region are expected to support Sockeye spawning.

Extensive habitat surveys were conducted by the CCT in the Sanpoil River in 2009 (Wolvert and Nine 2010). One of the objectives for this work was to estimate the quantity of potential spawning habitat for kokanee, the non-anadromous form of *O. nerka*. Wolvert and Nine (2010) estimated there is over 340,000 m<sup>2</sup> of habitat of glide, pool tailout, and small cobble/gravel riffle in the lower 65 km of Sanpoil River. The estimates of habitat area (m<sup>2</sup>) for various habitat types enables potential spawner capacity to be calculated using two techniques, applying separate assumptions to each: one based on spawner density for a given area, the other based on redd size and number of spawners per redd.

It was estimated that Sanpoil habitats could support between 238k and 1.7 million kokanee spawners, depending on the density of spawners. The literature reviewed by Wolvert and Nine (2010) suggested that kokanee spawner densities could be between 0.7 and 5.0 fish/m<sup>2</sup> and that a large proportion of kokanee redds may be found in glides. A literature review in Hyatt and Rankin (1999) suggested a similar spawning density for Sockeye in streams of British Columbia, Canada, which was between 1.1 and 4.0 fish per m<sup>2</sup>. Similar densities have been observed in the Okanagan River for the Lake Osoyoos population (K. Hyatt, personal communication). Calculations in Wolvert and Nine (2010) did not make adjustments for portions of the available habitat that may not be utilized by *O. nerka* spawners. Although *O. nerka* spawning may occur in each of the three habitat unit types, it is unlikely that fish would use 100% of any available habitat

type. However, in the absence of empirical data regarding where Sockeye prefer to spawn in the Sanpoil, we used a matrix approach to evaluate the potential quantity of spawning habitats given different sets of assumptions regarding the utilization of habitat (25% - 75%) and the density of spawners (Table 5-9). The mid-range estimate for both spawner density (2.96 fish/m<sup>2</sup>) and habitat utilization (50%) yielded a capacity of 373,094 Sockeye Salmon spawners. The capacity ranged from 70,585 to 756,272 depending on the assumptions regarding fish density and the percent of each habitat type that may be utilized (Table 5-10).

**Table 5-10. Matrix of potential Sockeye Salmon abundance given various rates of utilization of each habitat type in the Sanpoil and three possible densities of spawners. The quantity of habitat available in the Sanpoil comes from Wolvert and Nine (2010). The range of potential Sockeye spawner densities comes from Hyatt and Rankin (1999), which were affirmed with more current information from the Okanogan River (Hyatt, personal communication).**

Habitat Unit	Habitat unit %	Habitat Utilization Multiplier	Adjusted area (m <sup>2</sup> )	Abundance if density (fish/m <sup>2</sup> ) =		
				1.12	2.96	
Pool tailout	1.8%	25%	1,533	1,717	4,538	6,132
		50%	3,066	3,434	9,075	12,264
		75%	4,599	5,151	13,613	18,396
Small cobble/ gravel riffle	25.7%	25%	21,888	24,514	64,787	87,550
		50%	43,775	49,028	129,575	175,101
		75%	65,663	73,542	194,362	262,651
Glide	46.5%	25%	39,602	44,354	117,222	158,408
		50%	79,204	88,709	234,444	316,817
		75%	118,806	133,063	351,666	475,225
Sum of 25%			63,023	70,585	186,547	252,091
Sum of 50%			126,045	141,171	373,094	504,181
Sum of 75%			189,068	211,756	559,641	756,272

The USBR (2007) performed a spawner capacity estimate for the Cle Elum River, a tributary of the Yakima River in central Washington. Authors estimated number of redds, based on redd size, for a given habitat area, then applied an assumed number of spawners per redd. Their literature review suggested that the minimum area required for a Sockeye Salmon redd is 1.75 m<sup>2</sup>, and that a female territory averages about 3.7 m<sup>2</sup> when in competition with other females (Bocking and Gaboury 2003; Burner 1951). With a sex ratio of 1 male per female and assuming Sockeye would utilize between 25%-75% of potential habitat available in the Sanpoil, these redd areas result in a spawner abundance potential of 34,066 to 216,078 (Table 5-11).

**Table 5-11. Matrix of potential Sockeye Salmon abundance in the Sanpoil River given various rates of utilization of each habitat type in the Sanpoil and two potential estimates of redd area. The quantity of habitat available in the Sanpoil comes from Wolvert and Nine (2010) and the range of potential Sockeye spawner area per redd comes from USBR (2007), which summarized estimates from Bocking and Gaboury (2003), Burner (1951) and Forester (1968).**

Habitat Unit	Habitat unit %	Habitat Utilization Multiplier	Adjusted area (m <sup>2</sup> )	Abundance if area (m <sup>2</sup> ) per redd	
				3.7	1.75
Pool tailout	1.8%	25%	1,533	829	1,752
		50%	3,066	1,657	3,504
		75%	4,599	2,486	5,256
Small cobble/gravel riffle	25.7%	25%	21,888	11,831	25,014
		50%	43,775	23,662	50,029
		75%	65,663	35,493	75,043
Glide	46.5%	25%	39,602	21,407	45,260
		50%	79,204	42,813	90,519
		75%	118,806	64,220	135,779
Sum of 25%			63,023	34,066	72,026
Sum of 50%			126,045	66,133	144,052
Sum of 75 %			189,068	102,199	216,078

The uncertainty regarding what percentage of available habitat would be utilized by Sockeye spawners and the assumptions regarding redd size or spawner density lead to a wide range of potential spawner abundance for the Sanpoil River. For the purposes of these investigations it is not important to select one set of assumptions or develop a specific hypothesis regarding Sockeye spawner densities and habitat utilization. Rather, to demonstrate the range of potential present under current conditions. Results from this analysis have been used as life cycle modeling inputs and will be further refined for research and testing of behavior and survival of other life stages elucidate the assumptions made in both habitat and life cycle modeling analyses.

### 5.7 SOCKEYE SALMON REARING CAPACITY OF LAKE ROOSEVELT

An assessment of limnological characteristics in Lake Roosevelt was used to determine potential rearing capacity for Sockeye Salmon reintroduced to the blocked area of the upper Columbia River. Reservoir production or capacity has been calculated for anadromous species on a multitude of waterbodies for a variety of purposes. Limnological-based techniques have been integral components of anadromous reintroduction feasibility assessments (e.g., Ackerman et al. 2002, Bocking and Gaboury 2003, Gaboury and Bocking 2004, Bussanich and Bocking 2006, USBR 2007a, USBR 2007b, Sorel 2017).

The STI Lake Roosevelt Fisheries Evaluation Program (LRFEP; BPA Project No. 1994-043-00) has been collecting limnological data for Lake Roosevelt since 1988. The 152-mile-long reservoir is annually surveyed across five reaches (Lower, Middle, and Upper mainstem Columbia, Spokane Arm and Sanpoil Arm) during the productive season (May through October). Based on the types and continuity of data available for Lake Roosevelt, the Euphotic Volume (EV) model was used to estimate Sockeye Salmon smolt rearing capacity (Hume et al 1996). This model has been used in other anadromous reintroduction feasibility evaluations in the Willamette, Yakima, and Fraser River watersheds (Bocking and Gaboury 2003, Gaboury and Bocking 2004, Bussanich and Bocking 2006, BOR 2007a, BOR 2007b, Sorel 2017).

Euphotic volume for Lake Roosevelt was calculated as:

$$EV = EZZD_t(m) \times SA_t (km^2)$$

Where:  $EZZD$  = Euphotic Zone Depth at time  $t$ ; and  $SA$  = Surface Area at time  $t$

Euphotic zone depth is defined as the portion of the water column extending from the surface to the depth where one percent of ambient light penetrates (Schindler 1971). It approximates depths where nearly all primary production occurs in typical freshwater systems. Applying these depths to the surface area of the lake or reservoir approximates the productive volume, in EV units, of waterbody as a whole. Assumptions on how many smolts an EV unit can support are then used to estimate capacity of the reservoir.

Euphotic zone depths were calculated for May, July, and October for all years from 1997 through 2006. These months coincide with the early, middle, and late periods within the productive season; they also align with annual hydro-operations events: flood control maximum drawdown, full pool upon refill, and full pool following late-season drawdown. Reservoir-wide mean EZZD for each month was multiplied by the corresponding surface area to determine the EV for each month and year. The 10-year mean EV for each month was then used to determine Sockeye smolt rearing capacity.

Three scenarios were considered in calculating potential Sockeye smolt capacity for Lake Roosevelt: low, moderate, and high. These scenarios are differentiated by the assumed number of smolts supported by an EV unit. The Bureau of Reclamation used average smolt yield estimates from Lake Wenatchee as the number of smolts per EV unit in both Cle Elum Lake and Bumping Lake capacity estimates. Smolt yield estimates derived from Lake Wenatchee were similarly applied to Lake Roosevelt, where low = 6,780 smolts per EV unit, moderate = 8,531 smolts per EV unit, and high = 10,455 smolts per EV unit (BioAnalysis 2000, Murdoch and Petersen 2000, BOR 2007a, BOR 2007b). The various levels of assumed smolt yield were then multiplied by the 10-year mean EV for each month.

Euphotic volumes increased during the productive season, with May having the lowest 10-year mean EV and October having the highest. Dependent on the assumed number of smolts per EV, rearing capacity estimates ranged from 12 million in May to 48.5 million in October (Table 5-12).

**Table 5-12. 10-year mean smolt capacities for Lake Roosevelt (1997 – 2006), by month, under various assumed smolt yields per Euphotic Volume (EV) unit.**

	Assumed Smolt Yield		
	Low (6,780/EV Unit)	Moderate (8,531/EV Unit)	High (10,455/EV Unit)
May	12,046,000	15,157,000	18,576,000
July	23,833,000	29,988,000	36,751,000
October	31,506,000	39,643,000	48,564,000

The euphotic volume model has produced overestimations of capacity when it was applied more broadly. Koenig and Kyle (1997) pioneered the technique in southeast Alaskan lakes. Conditions in these lake systems led to a positive correlation between EZD and photosynthetic rate. When Shortreed and others (2000) applied this technique to coastal and interior British Columbia lakes, they found a negative correlation which led to overestimations of Sockeye capacity. Both studies relied on the relationship between EZD and primary production to estimate smolt biomass production. Instead of calculating biomass per EV unit, the present analysis used somewhat local empirical data from Lake Wenatchee to estimate number of smolts per EV unit, instead of biomass produced. Lake Wenatchee supports a self-sustaining run of Sockeye Salmon but is relatively cold and less productive when compared to Lake Roosevelt. Given the robust zooplankton community of Lake Roosevelt, along with its warmer water temperatures, an EV unit in Lake Roosevelt may be expected to support more than an EV unit in Lake Wenatchee.

Despite limitations of the EV model and unique characteristics of lake and reservoir systems, previous reintroduction efforts have used EV as fundamental information necessary to evaluate the feasibility of reintroducing anadromous species to reservoirs. Estimates generated in the present analysis provide evidence of substantial capacity within Lake Roosevelt to support reintroduced Sockeye.

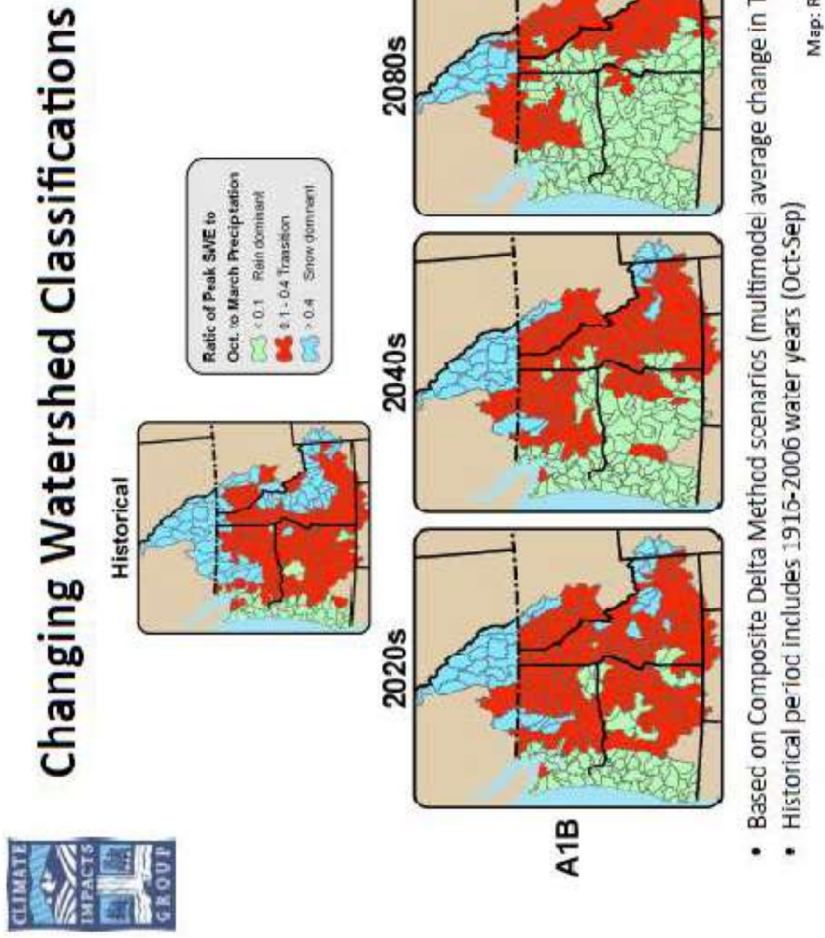
## 5.8 CLIMATE CHANGE

Climate change is identified as one of the major threats to salmon, steelhead, Pacific Lamprey and other aquatic resources in the Columbia River basin. Efforts to assess and provide adaptation to future climate change are a major current focus for tribes and other managers of aquatic resources in the region.

The best available scientific information from updated global circulation models forecast substantial climate-driven changes to Columbia basin hydrology, as well as increased air and stream temperatures. By the end of this century summer air temperatures could on average increase by more than 10 degrees Fahrenheit (Rupp 2017). Increasing summer and winter temperature is expected to change snow-rain transient areas over most of the U.S. portion of the Columbia River basin to rain dominated systems. This portion of the basin will experience higher winter and summer stream temperatures and more frequent droughts that will stress native aquatic biota and result in increased salmon adult and juvenile mortality as evidenced by loss of thousands of adult Sockeye in 2015 caused by low flows and warm river temperatures (FPC 2016).

In the Canadian portion of the basin, although there will be a substantial reduction in glacier size, the area will remain for the most part snow/transition-dominated (Figure 5-7). Therefore, stream temperature and river flows in this portion of the basin are expected to provide more suitable habitat for salmonids than most of the subbasins located below Chief Joseph Dam.

The reintroduction of salmon to areas upstream of Chief Joseph Dam and Grand Coulee Dam will allow fish access to habitat that will be the most resilient to climate change effects expected over the next 80 years. Beginning the reintroduction process now provides enough lead time to conduct needed research, build and test fish passage facilities and develop donor stocks prior to the onset of substantial climate change effects on salmon habitat.



**Figure 5-7. Global Circulation Model (GCM) outputs downscaled for the Columbia basin illustrating projected changes in Columbia basin transient snow-rain dominated watersheds to rain-dominated watersheds over the 21<sup>st</sup> Century. By the 2080s only the Canadian portion of the basin will remain snow/transition dominated. Temperature increases are the key driver no matter which precipitation GCM is considered.**



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## 6.0 LIFE-CYCLE MODELING

### 6.1 INTRODUCTION

The UCUT contracted with DJ Warren and Associates to build a reconnaissance-level, life cycle model (LCM). The LCM is designed to help managers determine whether conservation and harvest goals can be met for each species in various geographic areas by providing estimates of escapement and harvest, given best available scientific information and an initial set of assumptions regarding release numbers, survival, habitat productivity and hatchery releases. For example, the LCM may be used to compare the outcomes of different management strategies and sets of assumptions (e.g., different numbers of hatchery releases or different fish passage options). The assumptions and modeling scenarios are not intended as recommended management targets (e.g., hatchery release numbers), rather, it is a starting point to evaluate potential outcomes given an initial set of model inputs.

The LCM was developed to help managers answer key management questions such as:

- What role can hatchery releases play in starting and sustaining the reintroduced population?
- What role can translocation of adult salmon play in starting and sustaining the reintroduced population?
- What might be the adult spawning escapement and harvest benefits from such reintroduction efforts?
- What are the key assumptions and research needs?

The LCM was built in EXCEL and can be run in real-time in technical and policy settings ([www.UCUT.org](http://www.UCUT.org)) This feature was deemed important as it allows managers the ability to change inputs and see results immediately thus facilitating discussion and reducing concerns over “selected values.”

Specifically, the LCM produces estimates of the following parameters (Table 6-1):

- Spring migrant (fry/subyearling), fall migrant (age-0), yearling migrant (age-1) and Age 2+ migrant abundance.
- Adult run-size before and after harvest, adults arriving at Chief Joseph dam and escapement to spawning grounds.
- Numbers of juveniles (natural and hatchery) successfully migrating below Chief Joseph Dam.
- Number of fish harvested in marine and freshwater fisheries, including new fisheries upstream of Chief Joseph Dam.
- Smolt-to-adult survival rate.
- pHOS, PNI and pNOB.

UCUT hosted an Ad Hoc Modeling Group of U.S. and Canadian biologists to populate the model with required LCM input data (Table 6-2). The LCM was used to evaluate baseline scenarios, variations of those baseline scenarios, and perform sensitivity analyses on model input using a Monte Carlo approach. For each scenario and species, the Group created a Parameter Document Sheet with all model inputs, the source of those inputs and any relevant notes ([www.UCUT.org](http://www.UCUT.org)). These sheets are working documents that will be updated over time as new information is collected as part of possible future research downstream and upstream of Chief Joseph Dam.

Table 6-1. Example of LCM output table for the three summer/fall Chinook populations (Baseline).

Model Results (after 100 generations)					
Juvenile Production	Rufus	Sanpoil	Transboundary	Total	
Natural Fry Production (before Passage)	3,751,969	223,662	4,762,606	8,738,237	
Hatchery releases - Subyearlings	0	500,000	1,000,000	1,500,000	
Hatchery releases - Yearlings	0	0	0	0	
Natural Spring Migrants below CJD	2,673,861	60,266	2,651,722	5,385,848	
Natural Fall Migrants below CJD	200,090	9,447	240,872	450,409	
Natural Yearling Migrants below CJD	17,026	3,272	20,428	40,726	
Natural Age 2 Migrants below CJD	3	0	6	9	
Hatchery subyearlings below CJD	0	486,750	925,539	1,412,289	
Hatchery yearlings below CJD	0	0	1,429	1,429	
Total Juveniles below CJD	2,890,980	559,735	3,839,995	7,290,710	
Total Juveniles below BON	802,340	152,616	1,067,633	2,022,589	
Adult Production	Rufus	Sanpoil	Transboundary	Total	
Adult Runsize (before Harvest and Passage)	16,329	3,049	21,769	41,146	
Adult Runsize (before Harvest and Passage) - NORs	16,329	447	16,624	33,399	
Adult Runsize (before Harvest and Passage) - HORs	0	2,602	5,145	7,747	
Adult Runsize to below CJD	6,451	1,195	8,581	16,226	
Total Adult Loss to Passage	1,705	367	3,016	5,088	
Broodstock Removal - NORs	0	73	59	132	
Broodstock Removal - HORs	0	221	529	750	
Adult Outplants - NORs	0	0	0	0	
Adult Outplants - HORs	1000	0	2000	3000	
Spawning Escapement - NORs	5,220	42	4,535	9,797	
Spawning Escapement - HORs	1,000	359	2,803	4,161	
Fitness Effects (Yes, or No)	n	n	n	n	
	<a href="#">Go To Fitness</a>	<a href="#">Go To Fitness</a>	<a href="#">Go To Fitness</a>		
Harvest	Rufus	Sanpoil	Transboundary	Total	
Ocean Harvest	4,980	930	6,639	12,550	
Estuary to Bonneville	817	153	1,089	2,059	
Bonneville to Wells	2,759	527	3,702	6,988	
Upstream of Wells	847	259	403	1,510	
Upstream Grand Coulee	0	118	994	1,112	
Above Waneta	0	0	0	0	
Above Sevenmile	0	0	0	0	
Above Hugh L. Keenleyside	0	0	0	0	
Above Brilliant Dam	0	0	0	0	
Total Harvest	9,404	1,987	12,827	24,217	
SARs--CJD to CJD	Rufus	Sanpoil	Transboundary		
NOR Spring Migrants	0.44%	0.44%	0.44%		
NOR Fall Migrants	0.76%	0.76%	0.76%		
NOR Yearling Migrants	0.96%	0.96%	0.96%		
NOR Age 2 Migrants	0.96%	0.96%	0.96%		
HOR subyearlings	-	0.44%	0.46%		
HOR yearlings	-	0.96%	0.96%		
pNOB	0%	25%	10%		
Effective PHOS	13%	87%	33%		
PNI	29%	26%	32%		

**Table 6-2. LCM species, habitat, hydro, hatchery and harvest inputs.**

	Model Inputs
<b>Species Inputs</b>	<ul style="list-style-type: none"> <li>In-hatchery assumptions (fecundity, % females, pre-spawning survival, egg-to-smolt survival)</li> <li>Natural spawning assumptions</li> </ul>
<b>Habitat</b>	<ul style="list-style-type: none"> <li>Life stage specific productivity and capacity</li> <li>Juvenile life history pathways (% migrating as fry (spring migrant), 0-age (fall migrant), yearling, and 2+)</li> <li>Reservoir rearing and survival assumptions</li> </ul>
<b>Hydro</b>	<ul style="list-style-type: none"> <li>Adult fish passage survival</li> <li>Adult collection, passage and transport options</li> <li>Juvenile fish passage survival</li> <li>Juvenile collection efficiency</li> <li>Juvenile transport and bypass options</li> </ul>
<b>Hatchery</b>	<ul style="list-style-type: none"> <li>Subyearling and yearling release numbers and release locations</li> <li>pNOB<sup>1</sup> and NOR broodstock mining constraint</li> <li>Adult outplants (NOR, HOR) (modeled as fry equivalent)</li> </ul>
<b>Harvest</b>	<p>Harvest rates for:</p> <ul style="list-style-type: none"> <li>Ocean</li> <li>Estuary to Bonneville</li> <li>Bonneville to Wells</li> <li>Upstream of Wells</li> <li>Upstream of Chief Joseph Dam</li> </ul>

<sup>1</sup> – Proportion of broodstock consisting of natural origin adults



In general, LCM inputs were based on scientific literature on fish populations residing below Chief Joseph dam, FCRPS juvenile and adult survival and passage studies, results of surface collector research conducted in the region, and habitat evaluations conducted specifically for this analysis (See Habitat section).

The LCM was used to evaluate fish performance in three geographic areas (referred to as populations) for summer/fall Chinook and Sockeye. These populations are specific to habitats that are immediately accessible from Rufus Woods Lake and Lake Roosevelt including habitats in Canada. These Canadian habitats were included to most accurately reflect the potential of the region barring further intervention once passage at GCD is facilitated. Although habitat modeling was performed for the Spokane River and its tributaries, the Spokane Subbasin was not included in the LCM. Multiple hydroelectric projects on the Spokane River complicate its inclusion into the model as it's currently configured. Plans to include the Spokane into the LCM are being developed at present.

The summer/fall Chinook populations modeled are:

1. Rufus Woods Lake – (Chief Joseph Dam to Grand Coulee Dam).
2. Sanpoil River – (Lake Roosevelt, Sanpoil River, Kettle River and other small tributaries).
3. Mainstem Columbia River upstream of Lake Roosevelt to Hugh L. Keenlyside Dam in British Columbia (i.e., Transboundary Reach).

The Sockeye populations modeled are:

1. Sanpoil River.
2. Christina Lake (in British Columbia, contributing to the Kettle River).
3. Mainstem Columbia River upstream of Lake Roosevelt to Hugh L. Keenlyside Dam in British Columbia (i.e., Transboundary Reach).

The amount of habitat in each of these areas by species, and how it was derived, is presented in the Habitat Assessments section of this report.

The LCM was run to evaluate the Baseline scenario and variants of the Baseline for each species (Tables 6-3 to 6-5). The Baseline represents the combination of fish passage facilities, hatchery production and other reintroduction actions the AD Hoc Modeling Group identified as a starting point to achieve identified goals given current knowledge. The variants explore how reintroduction outcomes differ with the

elimination of some juvenile passage facilities and change in hatchery production or life stage released. Model run results are described in more detail in working memos provided at ([www.UCUT.org](http://www.UCUT.org)) and summarized below. The variants also provide insights into the possible sequencing of fish passage facilities and propagation actions to optimize benefits and costs.

**Table 6-3. Baseline scenario and variants modeled for summer/fall Chinook reintroduction to Chief Joseph Dam (Rufus Woods Lake) Only.**

Scenario/Variant	Description
Chief Joseph Baseline Scenario– FSC and 1,000 HOR Adults	<p>This option assumes adult fish passage at Chief Joseph Dam and a floating surface collector (FSC) to collect and pass juvenile fish from Rufus Woods Lake to tailrace of Chief Joseph Dam. The FSC would be located at the powerhouse and may use exclusion nets linking the FSC to the dam and left bank. The modeled reintroduction program assumes the annual release of 1,000 hatchery-origin summer/fall Chinook adults and no other artificial propagation programs. Ocean and river fisheries would continue as currently managed, with an added salmon fishery in Rufus Woods Lake.</p> <p>Escaping fish would spawn in identified habitat in the upper reaches of Rufus Woods Lake. Emerging fry would rear in the reservoir with emigrants passing via the FSC or powerhouse/spillway primarily as sub-yearlings in the spring and early summer, and a much lesser number in the fall and as yearlings the following spring.</p>
Chief Joseph Variant #1 – No FSC at Chief Joseph Dam, 1,000 HOR Adults	<p>This option is the same as the Baseline Scenario except there is no FSC facility. Emigrating juvenile fish would pass via the spillway or powerhouse. This variant, when compared to the Baseline, indicates the potential benefit of an FSC facility on anadromous fish runs and harvest. This variant also shows the potential effects of a pilot reintroduction that would be conducted prior to installation of any juvenile fish passage facility.</p>
Chief Joseph Variant #2 – FSC, 1,000 HOR adults and 500,000 Pen-reared juveniles	<p>This option is the same as the Baseline Scenario except that it includes artificial propagation of 500,000 pen-reared summer/fall Chinook juveniles to be released in Rufus Woods Lake.</p>

**Table 6-4. Baseline scenario and variants modeled for summer/fall Chinook reintroduction to Chief Joseph Dam (Rufus Woods Lake) and Grand Coulee (Lake Roosevelt) combined.**

Scenario/Variant	Description
Chief Joseph Dam and Grand Coulee Dam (Grand Coulee Dam) Baseline Scenario	<p>Chief Joseph Dam (Chief Joseph Dam) – Adult fish passage facilities, an FSC to collect juveniles, and an annual release of 1,000 adult hatchery origin summer/fall Chinook.</p> <p>Grand Coulee Dam (Grand Coulee Dam) – Adult fish passage facilities and two FSCs; one located above the third powerhouse and one located near head-of-reservoir (HR). The third powerhouse FSC may have guidance nets linking the FSC to the right bank and diverting most fish attracted to the third powerhouse inflows. The HR FSC is assumed to be located downstream of the Kettle Falls Bridge (near Rickey Point) with an exclusion net linking the FSC to the right bank and another net extending partially towards the left bank. Juvenile fish produced in historical habitats upstream of the HR FSC would be mostly collected at that facility, transported down reservoir to the dam, and released into the third powerhouse FSC for passage. Larger resident trout and kokanee that are collected in the third powerhouse FSC would/could be transported back up reservoir and released to improve viability of resident fish populations and fisheries. Juvenile fish produced in tributaries downstream of the HR FSC would be collected at the third powerhouse FSC and passed down into Rufus Woods Lake to continue their migration. In Lake Roosevelt, the modeled reintroduction scenario assumes an annual release of 2,000 hatchery-origin summer/fall Chinook adults and propagation of 1,500,000 pen-reared summer/fall Chinook sub-yearlings (transported to and released into the third powerhouse FSC).</p>
Chief Joseph Dam and Grand Coulee Dam Variant #1 – No Chief Joseph Dam FSC	This option is the same as the Baseline Scenario except that it excludes the FSC at Chief Joseph Dam. The variant when compared to the Baseline, indicates the potential benefits of this FSC.
Variant #2 – 500,000 sub-yearlings to Rufus Woods Lake	Baseline conditions with an additional 500,000 sub-yearling juvenile hatchery release is included with the 1,000 adult out-plant in Rufus Woods Lake. Juveniles would be reared and acclimated in net pens in Rufus Woods Lake, transported through the reservoir and then released into the FSC at the dam. This assessment indicates the potential value of added hatchery production to increase the terminal run, harvest and the likelihood of achieving sufficient hatchery-origin adults for the annual adult plantings in Rufus Woods Lake and Lake Roosevelt.
Chief Joseph Dam and Grand Coulee Dam Variant #3 – No HR FSC at Grand Coulee Dam	This option is the same as the Baseline Scenario except that it excludes the HR FSC. This variant, when compared to the Baseline, indicates the potential benefits of the second FSC and appurtenant transportation program to limit mortality associated with reservoir passage.
Chief Joseph Dam and Grand Coulee Dam Variant #4 – No Grand Coulee Dam FSC 3 <sup>rd</sup> Powerhouse	This option is the same as the Baseline Scenario except that it excludes the FSC at the Grand Coulee Dam third powerhouse.
Chief Joseph Dam and Grand Coulee Dam Variant #5 – 3 <sup>rd</sup> FSC at Grand Coulee Dam	This option is the same as the Baseline Scenario except that it includes a third FSC located at Grand Coulee Dam near the John Keys Pumping Station. This variant, when compared to the Baseline, indicates the potential benefits of increasing collection efficiency for juvenile salmon migrating near the left bank and attracted to flows entering the first and second powerhouses and the pump station.
Chief Joseph Dam and Grand Coulee Dam Variant #6 – No Hatchery Production	This option is the same as the Baseline Scenario except that it excludes artificial propagation of juvenile summer/fall Chinook. The Sanpoil and Spokane rivers are seeded with 500 Chinook adult outplants each, and the transboundary reach is out-planted with 1,000 Chinook adults. This variant, when compared to the Baseline, indicates the potential effects of the hatchery program on the resulting anadromous fish runs and harvests

**Table 6-5. Baseline scenario and variants modeled for Sockeye reintroduction to Grand Coulee (Lake Roosevelt) Only.**

Scenario/Variant	Description
Chief Joseph Dam and Grand Coulee Dam Baseline Scenario	Chief Joseph Dam – Adult fish passage facilities and an FSC at Chief Joseph Dam. This option assumes adult fish passage at Chief Joseph Dam and a floating surface collector (FSC) to collect and pass juvenile fish from Rufus Woods Lake to tailrace of Chief Joseph Dam. The FSC would be located upstream of the powerhouse with exclusion nets linking the FSC to the dam and left bank. For Grand Coulee Dam, the Baseline Scenario assumes an FSC near head-of-reservoir (HR) and a second one in front of the third powerhouse on the right bank. Conceptually, the HR FSC would be located near Ricky Point, several miles below the Kettle Falls Bridge, and include guidance nets from one bank, extending across most, but not all, of the reservoir. Fish collected at the HR FSC would be placed in floating net pens which would then be transported down reservoir within a barge-like vessel. The Third powerhouse FSC would include guidance nets, but not totally exclude fish from turbine passage. Fish would also have passage access through powerhouses 1 and 2, as well as the spillway and the Banks Lake pumping station. Adult passage at the dam is also assumed with collection on both the right and left banks. Hatchery planting would include 1.5 million fry planted into Christina Lake (Kettle River watershed) by Canadian entities. For Lake Roosevelt, 2 million parr would be acclimated in floating net pens in the Sanpoil Arm, 1 million in the Spokane Arm and 2 million near the confluence of the Kettle River prior to release. The Baseline Scenario also includes out-planting 1,000 adults to the Sanpoil River and 1,000 adults to the mainstem Columbia. These adults would likely come from the Okanogan River population.
Chief Joseph Dam and Grand Coulee Dam Variant #1 – No Chief Joseph Dam FSC	This option is the same as the Baseline Scenario except that it excludes the FSC at Chief Joseph Dam. The variant when compared to the Baseline, indicates the potential benefits of this FSC.
Chief Joseph Dam and Grand Coulee Dam Variant #2 – No HR FSC at Grand Coulee Dam	This option is the same as the Baseline Scenario except that it excludes the HR FSC. This variant, when compared to the Baseline, indicates the potential benefits of the second FSC and appurtenant transportation program to limit mortality associated with reservoir passage.
Chief Joseph Dam and Grand Coulee Dam Variant #3 – No Grand Coulee Dam FSC 3 <sup>rd</sup> Powerhouse	This option is the same as the Baseline Scenario except that it excludes the FSC at the Grand Coulee Dam third powerhouse.
Chief Joseph Dam and Grand Coulee Dam Variant #4 – Lake Roosevelt Reduced Parr Plants	Same as baseline except that hatchery production is reduced from 5 million to 1 million with the production split between the Sanpoil Arm and upper reservoir near the confluence of the Kettle River. It demonstrates the potential contribution of propagation to Sockeye reintroduction. The 1.5 million Sockeye fry are still released into Christina Lake. The adult out-plant of 1,000 adults into the Sanpoil also continues
Chief Joseph Dam and Grand Coulee Dam Variant #5 – Increased Parr Plants to Lake Roosevelt	Same as baseline except this variant increases hatchery production in Lake Roosevelt from 5 million Sockeye parr to 10 million, with the increased production going to the upper reservoir near the confluence of the Kettle River and the Spokane arm. It demonstrates the potential contribution of added propagation to Sockeye reintroduction. The 1.5 million Sockeye fry are still released into Christina Lake and the 2 million parr are released in the Sanpoil Arm. The adult out-plant of 1,000 adults into the Sanpoil also continues.

## 6.2 OVERVIEW OF LCM

The LCM follows summer/fall Chinook and Sockeye through all life stages and tracks the number of natural and hatchery-origin fish that survive from one life stage to the next, accounting for both natural sources of mortality as well as mortality due to fish passage and harvest.

### 6.2.1 Natural Production

Survival of natural-origin fish and hatchery fish released into the river depends on:

- Quantity and quality of habitat used by the population.
- Fish passage survival in the Columbia mainstem.
- Estuarine and ocean survival conditions.
- Fitness of the natural population.
- Relative ability of hatchery fish to spawn and their progeny to survive.

The number of juveniles produced by naturally spawning adults is computed using the two parameter, multi-stage B-H survival function (Beverton and Holt 1957; Mousalli and Hilborn 1986). The survival function contains life stage-specific parameters for productivity (density-independent survival) and capacity (maximum number of fish that can survive). Life stages include:

- Spawning.
- Incubation.
- Fry colonization.
- Fry to migration from the spawning reach (spring migrant, fall migrant, yearling migrant, or age 2 migrant).

The model assumes that the number of fish alive at any life stage is determined by the Beverton-Holt (B&H) survival function, i.e.,

$$N_{i+1} = \frac{N_i + p_i}{1 + \frac{N_i + p_i}{C_i}}$$

where:

$N_i$  = Number of fish alive at the beginning of life stage  $i$

$N_{i+1}$  = Number of fish alive at end of life stage  $i+1$

$P_i$  = Density-independent survival for life stage  $i$

$C_i$  = Capacity for life stage  $i$  (maximum number fish surviving)

Productivity is defined as density independent survival and is affected by habitat quality and population fitness. Capacity is a measure of the quantity and quality of the habitat available for a specified life stage. Capacity determines the effects of density dependence on population survival. The productivity and capacity values for each freshwater life stage used in the model come from the habitat analyses (Section 4)

The model applies productivity and capacity assumptions to the B-H survival function, taking the number of eggs per spawner and converting them to fry based on spawning and incubation survival rates. The survival of fry to various ages (spring migrant, fall migrant, yearling, or age 2) is then calculated based on user-entered assumptions about juvenile migration strategies (proportion migrating at each age class).

Next, the model uses a B-H function to apply assumptions about reservoir productivity and capacity (for those fish that remain and rear in the reservoir before migrating downstream) to juveniles migrating out of the spawning reaches into the mainstem upper Columbia River reservoirs, Lake Roosevelt and Rufus Lake. Juveniles that do not migrate downstream immediately after leaving the spawning/rearing reaches are assumed to remain in the reservoirs until they reach a specific age class before migrating to the ocean. The model applies user-supplied assumptions about the fraction of juveniles converting to each age class in the reservoirs to determine how long juveniles remain in the reservoir (i.e., the fraction of juveniles entering the reservoir as fry and leaving at age 0, 1, or 2; or entering at age 0 and leaving at age 1 or 2; or entering at age 1 and leaving at age 2).

Assumptions about the fraction of natural-origin juveniles rearing in the reservoirs are also applied to

hatchery juveniles. For example, juveniles released as subyearlings may remain in the reservoir and rear until age 1 or 2 before migrating downstream.

Finally, the number of hatchery-origin fish spawning naturally are adjusted to account for the relative reproductive success of hatchery-origin adults as compared with natural-origin adults. The relative reproductive success of HORs is a correction factor that accounts for the assumed lower reproductive success of HORs (relative to NORs). It reflects the reduced reproductive success of first-generation hatchery-origin fish due to behavioral differences between natural and hatchery-origin fish in terms of spawn timing and/or location.

Reproductive success is measured in terms of the number of returning adults produced per spawner. If the correction factor is set to 1.0, there is no difference between the number of returning adults produced per spawning NOR and HOR. If RRS is set to 0.8, HOR spawners produce only 80% as many returning adults (per spawner) as NORs. The RRS is applied such that the total number of spawners,  $N_i$ , is:

$$N_i = N_{i,natural} + N_{i,hatchery} \times RRS_{i,hatchery}$$

where:

$N_{i,natural}$  = Number of progeny from natural-origin spawners in life stage  $i$

$N_{i,hatchery}$  = Number of progeny from hatchery-origin spawners in life stage  $i$

$RRS_{i,hatchery}$  = An estimate of the phenotype impact of hatchery rearing on natural productivity for life stage  $i$

The version of the LCM used in this analysis does not include adult age. This feature will be added in future versions of the model as funds allow.

### 6.2.2 Hatchery Production

The in-hatchery fecundity and survival assumptions are used to calculate the number of broodstock required to produce the number of hatchery subyearlings and/or yearlings specified by the user. In addition, the model applies several user-supplied assumptions about the hatchery strategy:

- Hatchery smolt release locations.
- Number of adult outplants in each spawning population (NORs and/or HORs transported from below Chief Joseph Dam and released into each spawning reach).
- pNOB and maximum percentage of NORs removed for broodstock (NOR mining constraint).

Adult outplants are counted as part of the natural spawning population to account for density-dependent effects on the spawning grounds. If adult outplants are HORs, the RRS factor described above is applied to HOR outplants when calculating the total number of spawners.

### **6.2.3 Harvest**

Harvest is estimated for four major fisheries (defined by harvest area) as a function of user-supplied harvest rates and the estimated number of HOR and NOR fish available in each fishery. Mark-selective fisheries on hatchery fish were analyzed by imposing differential harvest rates on NORs and HORs. The model does not incorporate age-specific harvest rates; harvest rates represent total harvest over all ages.

The number of fish harvested is calculated sequentially, beginning with the number of fish harvested in ocean fisheries. The number of fish harvested in the lower Columbia, the upper Columbia, and inside the subbasins of origin is then calculated sequentially, with each successive harvest removing a fraction of the fish remaining after previous harvests.

The model uses assumptions about harvest rates for NORs and HORs in the ocean, lower Columbia<sup>3</sup>, upper Columbia<sup>4</sup>, and terminal<sup>5</sup> fisheries. These are entered as harvest rates, which are calculated based on the

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<sup>3</sup> Lower Columbia is defined as the mainstem Columbia River below Bonneville Dam.

<sup>4</sup> Upper Columbia is defined as the mainstem Columbia River between Bonneville and McNary Dams.

<sup>5</sup> Terminal fisheries are those that occur in the mainstem Columbia upstream of McNary Dam and inside the subbasin of origin.



number of fish entering the geographic area, as opposed to exploitation rates, which are calculated based on the total run size. The LCM is also able to model harvest using maximum sustainable yield (MSY), a target NOR adult escapement goal or MSY escapement.

If the Harvest Rate option is selected, the harvest rates entered above will be applied. If the MSY Rate or MSY Escapement options are selected, the model will calibrate harvest at each location to meet the MSY goals, respectively. If Escapement Goal is selected, harvest will be calibrated to meet the desired NOR escapement level. For this analysis a set harvest rate was used for all fisheries.

#### **6.2.4 Fish Passage**

The model uses a set of assumptions about juvenile and adult fish passage survival. Juvenile and adult survival rates in the mainstem Columbia River from Bonneville through Wells Dam are documented in the FCRPS BiOp (NOAA 2010) and are applied in the model.

Upstream of Chief Joseph and Grand Coulee dams, the model applies the following user-supplied assumptions about juvenile and adult fish passage:

- Assumptions about juvenile migration survival during migration from the rearing areas to the collectors upstream of Grand Coulee Dam and Chief Joseph Dam.
- Assumptions about juvenile collection efficiency and transport survival.
- For those fish not captured in the juvenile fish collectors, assumptions about the fraction of juveniles that 1) migrate directly to the head of the dam, or 2) rear in the reservoir to the age class specified in the reservoir assumptions (above) before migrating to the head of the dam.
- Assumptions about bypass and spill/turbine survival for fish that migrate to the head of the dam.
- For returning adults, assumptions about adult collection efficiency at Chief Joseph Dam and Grand Coulee Dam, transport survival, and migration survival through the reservoirs.

All of these collection and survival rates are applied as simple multipliers to the number of individuals surviving to that life stage.

### **6.2.5 Monte Carlo Sensitivity Analysis**

The LCM uses a Monte Carlo approach for conducting sensitivity analyses. This type of analysis is used to help managers understand the probability of meeting escapement and harvest goals under different management options and sets of assumptions. For example, the analysis may be used to compare:

- Management options in terms of the number of smolts released, HOR adults outplanted, and terminal harvest rates.
- Program outcomes based on assumptions about juvenile fish collection efficiency and passage survival.
- Program outcomes based on assumptions about terminal harvest rates.

The sensitivity analysis is used to compare model outcomes from a set of baseline assumptions to a set of alternative assumptions (the scenario). The scenario assumptions are associated with a range of values representing uncertainty around the parameter estimate.

The model uses Monte Carlo simulation to draw values from the specified range for each parameter. Values are drawn randomly from a triangular distribution, which uses assumptions about the minimum, maximum, and most likely value (mode) for the parameter. The randomly drawn values are used to recalculate model outcomes.

The results presented from the sensitivity analysis include the median outcome and the range (minimum and maximum) of values from all model runs in the Monte Carlo simulation. Results also include a histogram displaying the scenario results from all model runs for key model outputs (NOS, terminal catch, pHOS and PNI).

For some analyses, instead of using the Monte Carlo feature modelers simply increased or decreased the parameter of interest by a set percentage and then reported the median value.

### **6.3 BASELINE SCENARIOS AND KEY LCM MODELING ASSUMPTIONS**

The LCM steps each species through life stages associated with spawning, incubation juvenile rearing and migration (juvenile and adult) through the FCRPS (including Chief Joseph and Grand Coulee dams), ocean and fisheries. All assumptions and inputs used in conducting life cycle modeling are documented in parameter documentation sheets ([www.UCUT.org](http://www.UCUT.org)).

Three baseline scenarios were run in the LCM. One for summer/fall Chinook in Rufus Woods Lake, where fish passage is provided at Chief Joseph Dam only. Another for summer/fall Chinook in Rufus Woods Lake, Lake Roosevelt and the Transboundary Reach, where passage is provided at both Chief Joseph and Grand Coulee. The last models Sockeye within the Sanpoil (including Lake Roosevelt), the Transboundary Reach and Christina Lake, where passage is provided at both Chief Joseph and Grand Coulee. Each of these scenarios has variants, where alternative management actions (e.g., fish passage facilities, juvenile releases, adult outplants) are considered.

The analysis assumes that hydro operations at Chief Joseph Dam and Grand Coulee do not substantially change with the implementation of fish passage structures.

The key assumptions regarding Chinook and Sockeye natural production, hydro operations and fish passage, harvest and hatchery production are presented below.

### **6.3.1 Natural Production**

Key natural production assumptions used in LCM modeling for summer/fall Chinook are provided in Table 6-6 and for Sockeye in Table 6-7.

### **6.3.2 Hydro Operations and Fish Passage**

As migrating fish enter reservoirs or approach dams, they are routed into collection systems, or pass through spillways and turbines where mortality rate may be quite high. If collected, fish may be transported downstream or bypassed back to the river to continue their migration. To be successful, juvenile and adult survival rates to and from the ocean must be sufficiently high to produce spawners. The key hydro assumptions of the analysis therefore pertain to the effectiveness of fish passage facilities, juvenile survival rate through spill/turbines and juvenile and adult survival rates through reservoirs associated with Chief Joseph and Grand Coulee dams (Table 6-8).

### **6.3.3 Harvest**

Harvest rates by area for summer/fall Chinook and Sockeye used in the analysis are presented in Table 6-9 and reflect, at least for areas downstream of Chief Joseph Dam, current harvest rates.

**Table 6-6. Key natural production modeling assumptions for summer/fall Chinook**

Parameter	Values	Source
<b>Spawning Capacity</b>		
Chief Joseph/Rufus Woods Summer Fall Chinook	20,000	Baldwin Technical Memo 7/24/2017. Calculation from Hanrahan et al. 2004.
Grand Coulee (Sanpoil and other tributaries)	104,422	Value calculated from EDT analysis for the Sanpoil River and small tributaries (ICF 2017, ICF 2018).
Grand Coulee (mainstem Columbia River and Kettle River)	95,200	Based on a review of Golder 2017; Warnock assumption for Canada, and Garavelli et al. <i>in prep</i> estimates from the U.S. transboundary reach (documentation pending).
<b>Incubation and Juvenile Life Stages</b>		
Percent Spring Migrant, Fall Migrant, Yearling Migrant	Spring Migrant = 85%, Fall Migrant 10%, Yearling Migrant = 5%	Based on summer/fall Chinook population life history for the population below Chief Joseph dam.
Incubation * Fry Colonization* Spring Migrant (pre-smolt) Productivity/Survival.	42% for Chief Joseph and upstream of Lake Roosevelt (Transboundary); 13.4% for Roosevelt tributaries. In the LCM, the values are survival rate at low density (i.e., density independent survival)	42% value was selected to match Hanford Reach Chinook egg-to-pre-smolt survival rate of 42% as reported in Harmish et al. 2013. The 13.4% value was calculated from the EDT Sanpoil analysis (ICF 2017).
Incubation, Fry Colonization, Spring Migrant Capacity Values	100,000,000 for Chief Joseph and Lake Roosevelt (Mainstem and Kettle River); Lake Roosevelt (Sanpoil and tributaries) value vary by life stage	A value of 100,000,000 was used because capacity is assumed to be unlimited due to the extensive space in the reservoir and short timeframe of subyearling rearing and migration. Density dependence occurs only at the spawning stage. Lake Roosevelt life stage values were calculated from EDT (ICF 2017).
<b>Chief Joseph and Grand Coulee Reservoir Rearing</b>		
Rufus Woods Lake Rearing Capacity for Fall and Yearling Migrants	26 to 242 million juveniles dependent on fish size and amount of time juveniles rear in reservoir	Values were calculated from EDT habitat analysis (ICF 2017).
Lake Roosevelt Rearing Capacity for Fall and Yearling Migrants	77 to 688 million dependent on fish size and length of time juveniles rear in reservoir	Values were calculated from EDT habitat analysis (ICF 2017).
<b>Ocean Survival Rate (Bonneville to Bonneville)</b>		
Bonneville to Bonneville	Spring Migrant = 1.98%; Fall Migrant = 2.53%; Yearling Migrant = 2.53%. Applied to HOR and NOR	The Spring migrant data are from the Chief Joseph Hatchery program. Fall and yearling migrant values are for Snake River fall Chinook as measured from Lower Granite Dam to Lower Granite Dam.
<b>Juvenile to Adult Survival Rate Chief Joseph Dam to Chief Joseph Dam (No Harvest)</b>		
Spring Migrants (HOR and NOR)	0.44%	Calculated values based on ocean survival and juvenile and adult passage survival rates through FCRPS. See Table 6-8 for passage survival rates.
Fall Migrants (HOR and NOR)	0.76%	
Yearling Migrants (HOR and NOR)	0.96%	

**Table 6-7. Key natural production modeling assumptions for Sockeye.**

Parameter	Values	Source
<b>Spawning Capacity</b>		
Sanpoil River	50,000	CCT analysis (Baldwin tech memo, November 2018).
Columbia River Mainstem	5,000	Rich Bussanich memo (February 2018).
Christina Lake (Kettle River)	3,000	Combination of lake shoreline and tributary spawning habitat. Tributary spawning habitat is limited (468 pairs). Bussanich memo (June 25, 2018) states that kokanee population in lake may have 3,000 to 8,000 spawners.
<b>Incubation and Juvenile Life Stages</b>		
Juvenile Life Stage at Migration	Yearling = 100%	Although Sockeye may migrate over a range of ages, to simplify modeling only a yearling pattern was examined.
Egg-to-yearling Survival Rate	4%	The egg incubation to yearling survival values in the Spawning-Rearing Area (Sanpoil) and in Lake Roosevelt are assumed in order to achieve the 4% egg to yearling smolt survival, with range of 0.1% to 21%, that Hyatt recommended as the long-term average from over 30 Sockeye populations (from ONA Sockeye Workshop).
Fry and Juvenile Capacity	100,000,000	Model capacity limitation is set at the adult spawning stage.
<b>Chief Joseph and Grand Coulee Reservoir Rearing</b>		
Chief Joseph/Rufus Woods Lake	Unlimited for Yearling Migrants	The analysis assumes that Sockeye rear only in Lake Roosevelt and actively migrate through Rufus Woods Lake.
Grand Coulee/Lake Roosevelt	Pre-smolts (Fall) = 80 million, Yearling = 29 million	Lake Roosevelt Sockeye Salmon Rearing Capacity memo (Giorgi and Kain, March 2018). Smolt yield estimates are highest for the October period (40 million at moderate level). Value is doubled to account for smaller pre-smolts in the fall.
<b>Ocean Survival Rate (Bonneville to Bonneville)</b>		
All Populations (HOR and NOR)	5.0%	Based on Okanogan River Sockeye data. Range of 4-8%, with maximum value of 20%.
<b>Juvenile to Adult Survival Rate Chief Joseph Dam to Chief Joseph Dam (No Harvest)</b>		
All Populations (Yearling Migrant) (HOR and NOR)	1.56%	Calculated using ocean survival rate and adult and juvenile survival rates through FCRPS.

**Table 6-8. Key fish passage modeling assumptions for summer/fall Chinook.**

Parameter	Values	Source
Juvenile migration survival rate Grand Coulee (Lake Roosevelt) and Chief Joseph (Rufus Woods)	0.15% to 0.25% loss per kilometer of reservoir. With larger fish having higher survival.	May 7, 2018 Steve Smith Memo. Based on data for Sockeye from Rock Island dam to Bonneville Dam (0.1% loss per km); EDT model summer fall Chinook (0.11% per km); Hanford Reach to McNary Dam (0.2% per km).
Turbine/Spillway Survival	<p><u>Summer/Fall</u></p> <p>Grand Coulee 44% to 50% (assumes minimal spill). Chief Joseph Dam 44% to 88%. Highest value occurs during spring period of migration when spill occurs.</p> <p><u>Sockeye</u></p> <p>Grand Coulee 44% (assumes minimal spill). Chief Joseph Dam 44% to 88%. Highest value occurs during spring period of migration when spill occurs.</p>	Hansen, Amy, T. Kock, G. Hansen; 2017.
Chief Joseph Dam to Bonneville Dam Juvenile Survival	Summer/Fall – 27% to 45.6%, with larger juveniles having higher survival rates	Chief Joseph Hatchery Program Data Set and Cheilan PUD Report (2017, Table 4).
Bonneville to Chief Joseph Dam Adult Survival	Sockeye Yearlings– 41% Summer/Fall = 83%, Sockeye 76%	Chief Joseph Hatchery Program Data and Fish Passage Center data sets. Based primarily on PIT Tag analyses.
Adult Migration Reservoir Survival Grand Coulee and Chief Joseph	95% to 99%	BiOP and assumption of low adult fallback rate at both dams.
Floating Surface Collector (FSC) (~1,000 cfs) for Juveniles	70-87%, lower value for system with no net guidance system.	North Fork Clackamas, Baker River, and Swift Reservoir FSC's.

**Table 6-9. Harvest rates for hatchery origin (HOR) and natural origin (NOR) summer/fall Chinook and Sockeye.**

Harvest Area	HOR Rate	NOR Rate	Source
<b>Sockeye</b>			
Ocean	0.5%	0.5%	
Estuary to Bonneville Dam	2%	2%	
Bonneville Dam to Wells Dam	12.4%	12.4%	Rich Bussanich 2/15/18 Analysis (E-mail)
Upstream of Wells Dam	5.2%	5.2%	
Upstream of Grand Coulee Dam	10%	10%	
Exploitation Rate	27.1%	27.1%	
<b>Summer/Fall Chinook</b>			
Ocean	30.5%	30.5%	Chief Joseph Hatchery summer/fall Chinook data set (via TAC estimates) for areas downstream of Chief Joseph Dam. Analysis assumptions used for areas upstream of Chief Joseph Dam. Sanpoil River harvest rate at 58%.
Estuary to Bonneville Dam	7.2%	7.2%	
Bonneville Dam to Wells Dam	26.9%	26.2%	
Upstream of Wells Dam	19.3%	19.3%	
Upstream of Grand Coulee Dam	10%	10%	
Exploitation Rate	65.7%	61.8%	

### **6.3.4 Hatchery**

For the initial analysis it is simply assumed that hatchery fish and the facilities to produce them are available. The hatchery adult summer/fall Chinook used for translocation and seeding habitat will come from surplus fish at downstream hatchery facilities. Sockeye adults may come from Lake Roosevelt (kokanee) Canadian hatcheries or from natural origin fish returning to the Okanogan River.

The LCM converts adult HOR outplants to fry based on spawning and incubation survival rates so that density effects to the natural population can be tested in modeling.

## 6.4 LCM RESULTS

The modeling exercises provided reconnaissance level information on the potential outcome of providing fish passage and implementing related reintroduction actions. Modeling results are presented for the Baseline condition for summer/fall Chinook and Sockeye in Table 6-10. LCM outputs for the variants are provided for the Chief Joseph and Grand Coulee projects separately for the two species in Tables 6-11 to 6-13. Again, these results are not intended to establish management targets or numerical goals for the reintroduction. The purpose of the modeling output was to document assumptions, evaluate possibilities given those assumptions and provide a science-based set of working hypotheses that could be used to guide critical research needs for future investigations.

### 6.4.1 Baseline LCM Results for Summer/Fall Chinook and Sockeye

LCM results for Baseline conditions compared to current conditions for extant population of upper Columbia River summer/fall Chinook and Sockeye are provided in Table 6-10. Current conditions represent 2007-2016 estimated adult returns to the upper Columbia River. Sockeye numbers include fish returning to the Wenatchee River and Okanogan River.

Baseline model results show that the reintroduction effort may result in a substantial increase in juvenile and adult production. Total juvenile production, as measured at Bonneville Dam, is 2.0 million and 1.5 million, summer/fall Chinook and Sockeye, respectively. The Bonneville fish numbers are based on the assumption that 27% of the Summer/fall Chinook and 41% of the Sockeye juveniles survive passage and migration from Chief Joseph Dam to Bonneville Dam.

Total adult production (pre-harvest) is estimated at 41,000 summer/fall Chinook and 76,000 Sockeye.

The reintroduction effort has the potential to increase the number of summer/fall Chinook harvested in all fisheries by 24,000 fish and for Sockeye the number is 21,000 fish. These values represent a 37% and 54% increase in harvest over current for summer/fall Chinook and Sockeye, respectively.



**Table 6-10. LCM results for Chief Joseph and Grand Coulee Projects Baseline compared to Current Conditions for upper Columbia River summer/fall Chinook and Sockeye. Harvest rates for fisheries downstream of Chief Joseph Dam are based on current harvest policy.**

	Upper Columbia River Summer/Fall Chinook			Upper Columbia River Sockeye		
	Summer/Fall Chinook Baseline Scenario	Current Condition	Percent Increase <sup>1</sup>	Sockeye Baseline Scenario	Current Condition	Percent Increase
Total # Juveniles to Below Chief Joseph Dam	7,300,000	-		3,700,000		
Total # Juveniles to Below Bonneville Dam	2,000,000	-		1,500,000		
Total Adult Production (Pre-Harvest)	41,000	110,000	37%	76,000	322,000 <sup>2</sup>	24%
Total Harvest	24,000	66,000	37%	21,000	38,900	54%
Ocean Harvest	12,500	36,000	35%	400	1,600	25%
River Harvest Below Bonneville	2,100	6,100	34%	1,500	1,500	100%
River Harvest Bonneville to Wells	7,000	20,000	36%	9,200	20,500 <sup>3</sup>	52%
River Harvest Upstream Wells Dam	1,500	4,700	32%	3,300	18,400 <sup>4</sup>	18%
River Harvest Upstream Grand Coulee Dam	1,000	0		6,100	0	
NOR Adult Escapement	9,800	NA		17,000	NA	
HOR Adult Escapement	4,200	NA		8,600	NA	

<sup>1</sup> Data (10-year average) from 3/28/18 memo Smith to Pearl, Harvest Rates of Upper Columbia Summer/Fall Chinook

<sup>2</sup> Run at Columbia River Mouth, 2007-2016 10-year average.; Table 18, 2017 Joint Staff Report of ODFW & WDFW

<sup>3</sup> Total of Zones 1-6 Treaty and non-Treaty harvest, 2007-2016 10-year average; Table 18, 2017 Joint Staff Report of ODFW & WDFW

<sup>4</sup> From Baldwin 6/28/18; 10-yr average 2006-2015

The number of additional fish caught in fisheries located Upstream of Wells Dam and Grand Coulee Dam combined is approximately 2,500 summer/fall Chinook and 9,400 Sockeye.

The total number of adults spawning naturally is estimated at 14,000 summer/fall Chinook and 25,600 Sockeye. Natural spawners include a combination of hatchery and natural-origin fish. These spawners would help to restore ecosystem function to streams where they spawn.

The LCM generated a Beverton-Holt production function for each of the populations associated with each geographic area (Table 6-11). Of the three summer/fall Chinook populations, the Sanpoil and Tributaries has the lowest productivity (1.01). At this low a productivity, natural summer/fall Chinook production from this area is not sustainable without continued hatchery supplementation<sup>6</sup>. In contrast, the EDT analysis for this population estimated the Beverton-Holt productivity parameter at ~3.0 dependent on passage assumptions (ICF 2017). However, it appears that in the EDT analysis the summer/fall Chinook SAR was substantially higher than in the LCM. Interestingly, both methods forecast adult production at about 1,400 adults.

For Sockeye, the Christina Lake population had the lowest productivity value. Productivity values for the other two populations were identical as modeling assumptions were also identical. Capacity was higher for the Sanpoil population than for the transboundary population. This result occurred because capacity values for the egg-to-migrant life stages for the Sanpoil were based on EDT results, while for the Transboundary reach capacity was limited at the spawning stage only.

A key assumption of the Sockeye analysis is that juveniles rearing in Lake Roosevelt produces most of the Sockeye production from the U.S. portion of the upper Columbia River Basin.

A second key point from the data in Table 6-11 is the modeled harvest rate is substantially higher than the MSY value for all the populations. Harvest rate therefore has a large effect on natural production potential for each population.

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<sup>6</sup> If fish that rear in the reservoir grow larger than stream reared fish – then survival to adult may be higher and increase the probability of achieving sustainable natural production (See Section 7).

**Table 6-11. LCM derived Beverton-Holt production function parameters for summer/fall Chinook and Sockeye.**

Summer/Fall Chinook					
Parameter	Chief Joseph – Rufus Woods Lake	Sanpoil River and Tributaries	Mainstem Columbia River Upstream Lake Roosevelt (Transboundary)		
Productivity	2.92	1.01			2.13
Capacity	46,447	129,364			61,690
NEQ	30,527	1,502			32,732
RMSY	19,254	753			19,424
Escapement	11,273	749			13,308
MSY Harvest Rate	0.41	0.01			0.31
Modeled Harvest Rate	0.58	0.62			0.58
Sockeye					
Parameter	Christina Lake	Sanpoil River			Mainstem Columbia River Upstream Lake Roosevelt (Transboundary)
Productivity	1.13	1.58			1.58
Capacity	4,228	84,165			12,172
NEQ	487	30,832			4,458
RMSY	251	17,167			2,482
Escapement	236	13,665			1,976
MSY Harvest Rate	0.06	0.20			0.20
Modeled Harvest Rate	0.27	0.27			0.27

NEQ – Equilibrium Adult Abundance; RMSY – Adult Recruits at Maximum Sustainable Yield; MSY – Maximum Sustainable Yield.

#### **6.4.2 Summer/Fall Chinook Modeling Variants**

LCM results for the summer/fall Chinook reintroduction effort for Chief Joseph Only and Chief Joseph and Grand Coulee combined variants are provided in Table 6-12 and Table 6-13, respectively.

#### 6.4.2.1 *Reintroduction above Chief Joseph Only*

LCM results for the Baseline show that providing fish passage at Chief Joseph Dam only, could result in the production of 16,000 adult summer/fall Chinook (Table 6-12).

The results for Variant #1 provide insights into the value of investing in a state-of-the-art Chief Joseph Dam juvenile collector and bypass facility and the benefits it could provide to a Chinook reintroduction. When the FSC at the dam is eliminated, all juvenile fish passing the dam must go through the spillway or turbines. Without the FSC, total potential juveniles arriving to below Chief Joseph Dam declines from 2.9 million to 520,000. Total potential adult production declines from 16,000 to about 2,900 and spawning escapement to 940 (Table 6-12). The spawning escapement value is less than the 1,000-hatchery fish that were planted; however, if the adult transplants are surplus fish that would otherwise be removed from the river there is still a net benefit to overall production.

Variant #2 examines the effect increased hatchery production has on resulting adult production. As was expected, releasing more hatchery fish produces more returning adults. However, the LCM analysis does not account for any density dependence that may occur in river reaches downstream of Chief Joseph Dam as reintroduced fish interact with other salmon populations. If density dependence does occur in these reaches, expected benefits of increased production may be less.

Adding a component of juvenile Chinook hatchery production into Rufus Woods Lake appears to add significant benefits (Variant #2). Such a program might be initiated early to increase the supply of returning adult Chinook for subsequent use as broodstock and adult outplants for reintroductions above Grand Coulee Dam. Alternatively, reprogramming existing hatchery production from mainstem releases below Chief Joseph Dam to Rufus Woods Lake could increase overall regional production and harvest benefits by providing escapement to unused spawning habitat.

**Table 6-12. LCM results for summer/fall Chinook reintroduction for the area upstream of Chief Joseph dam but downstream of Grand Coulee Dam compared to Baseline.**

Scenario/Variant	Total # NOR Juveniles to Below Chief Joseph Dam	# Of Adults	% Change in Adults from Baseline	# Adults Harvested	Adult Escapement #
Baseline Scenario	2.9 million	16,000		9,400	6,200
Chief Joseph Variant #1 – No FSC at Chief Joseph Dam, 1,000 HOR Adults	520,000	2,900	-82%	1,700	940
Chief Joseph Variant #2 – FSC, 1,000 HOR adults and 500,000 Pen-reared juveniles	3.7 million	21,000	27%	12,000	7,200

**Table 6-13. LCM results for summer/fall Chinook reintroduction for areas upstream of Chief Joseph and Grand Coulee dams combined compared to Baseline.**

Scenario/Variant	Total # Juveniles to Below Chief Joseph Dam	# of Adults	% Change in Adults from Baseline	# Adults Harvested	Adult Escapement #
Baseline Scenario	7.3 million	41,000		24,000	14,000
Chief Joseph Dam and Grand Coulee Dam Variant #1 – No Chief Joseph Dam FSC	1.8 million	9,900	-76%	5,900	4,900
Variant #2 – 500,000 sub-yearlings to Rufus Woods Lake	8.1 million	46,000	12%	27,000	15,000
Chief Joseph Dam and Grand Coulee Dam Variant #3 – No HR FSC at Grand Coulee Dam	5.6 million	32,000	-22%	18,000	12,000
Chief Joseph Dam and Grand Coulee Dam Variant #4 – No Grand Coulee Dam FSC 3 <sup>rd</sup> Powerhouse	3.8 million	21,000	-49%	12,000	8,900
Chief Joseph Dam and Grand Coulee Dam Variant #5 – 3 <sup>rd</sup> FSC at Grand Coulee Dam	7.4 million	42,000	2%	24,000	14,000
Chief Joseph Dam and Grand Coulee Dam Variant #6 – No Hatchery Production	5.5 million	31,000	-24%	18,000	13,000

#### 6.4.2.2 *Reintroduction into Chief Joseph and Grand Coulee*

A more comprehensive Chinook reintroduction effort, wherein summer/fall Chinook are stocked above both Chief Joseph and Grand Coulee dams, provides significantly more potential summer/fall Chinook than the Chief Joseph Only (Table 6-13). Under the Baseline scenario, total adult summer/fall Chinook production is estimated at 41,000 adults.

##### 6.4.2.2.1 Variant #1

Without the FSC at Chief Joseph Dam, total potential juveniles arriving to below Chief Joseph Dam declines from 7.3 million to 1.8 million (Table 6-13). Total potential adult production declines from 41,000 to about 9,900 and added fish harvest declines from 24,000 to 5,900. Potential escapement declines from about 14,000 to 4,900. In all, Chinook production is reduced by about 76% from the Baseline scenario. A key assumption in this analysis is that juvenile survival passing through turbines and spill combined ranges from 40% to 50%.

##### 6.4.2.2.2 Variant #2

In Variant #2, an additional 500,000 sub-yearling juvenile hatchery release is included with the 1,000 adult out-plant in Rufus Woods Lake. These juveniles would be reared and acclimated in net pens in Rufus Woods, transported through the reservoir and then released into the FSC at the dam. This assessment indicates the potential value of added hatchery production to increase the terminal run, harvest and the likelihood of achieving sufficient hatchery-origin adults for the annual adult plantings in Rufus Woods Lake and Lake Roosevelt. With the added hatchery production above Chief Joseph Dam, total potential juveniles arriving to below this dam increases from 7.3 million to 8.1 million (increased hatchery-origin salmon escapement also leads to increased natural juvenile production in future generations). Total potential adult production increases from 41,000 to about 46,000 and added fish harvest increases from 24,000 to 27,000 (Table 6-13). Potential escapement increases from about 14,000 to about 15,000. In all, benefits are increased by about 12%.

##### 6.4.2.2.3 Variant #3

Variant #3 shows the potential benefits of the Lake Roosevelt head-of-reservoir FSC to a comprehensive Chinook reintroduction at the two U.S. dams. Without a head-of-reservoir FSC, all juveniles produced in upper Lake Roosevelt and in the Canadian mainstem reach would need to migrate to Grand Coulee Dam before collection. This would affect production from the mainstem Columbia River, Kettle River and a few

small, eastside tributaries.

Eliminating an FSC at the head of Lake Roosevelt reduces total potential juveniles arriving to below Chief Joseph Dam from 7.3 million to 5.6 million (Table 6-13). Total potential adult production decreases from 41,000 to about 32,000 and added fish harvest decreases from 24,000 to 18,000. Potential escapement decreases from about 14,000 to about 12,000. In all, benefits are decreased by about 22% from the Baseline Scenario.

An FSC near the head of Lake Roosevelt appears to offer significant benefits to a Chinook reintroduction. Potential benefits of this facility would increase substantially with any Canadian reintroduction above its dams.

#### 6.4.2.2.4 Variant #4

Variant #4 demonstrates the potential value of an FSC located above the Grand Coulee Third Powerhouse to the viability of Chinook reintroduction. Considering this variant with the no head-of-reservoir FSC variant (#3), above provides insights on a possible sequence of FSC installation above Grand Coulee Dam.

Without an FSC at Grand Coulee Dam, all juvenile fish arriving at Grand Coulee Dam would emigrate from Lake Roosevelt via one of the three powerhouses (mostly through the third powerhouse), the Keys Pump Station to Banks Lake, or occasionally the spillway. In addition to the more obvious increase in mortality caused by powerhouse passage, there is also likely to be delay in passage which could subsequently reduce survival at ocean entry (not assessed here).

Under Variant #4, total potential juveniles arriving to below Chief Joseph Dam declines from 7.3 million to 3.8 million (Table 6-13). Total potential adult production declines from 41,000 to about 21,000 and added fish harvest declines from 24,000 to 12,000. Potential escapement declines from about 14,000 to about 8,900. In all, Chinook reintroduction benefits are reduced by about 49% from the Baseline Scenario, with 77% of the remaining benefits arising from the Chief Joseph Dam reintroduction.

The Rufus Woods Lake population still has the potential to provide a viable reintroduction as the FSC at Grand Coulee Dam does not affect this population. But, the Sampoil and Columbia River mainstem populations would potentially not be viable. The Sampoil population only achieves an escapement of 7 adults while the mainstem population produces an escapement of 710 natural-origin salmon from the annual out-planting of the 2,000 hatchery-origin adults.

From this assessment, it appears that an FSC located at Grand Coulee Dam would be an essential element of a reintroduction strategy above Grand Coulee Dam.

#### 6.4.2.2.5 Variant #5

This variant examines the potential benefits of including a third FSC located near the left bank to capture fish attracted to the first powerhouse, spillway and John Keys Pump Station. This facility would increase collection efficiency for those fish arriving at Grand Coulee Dam and offer a second facility to collect and pass juveniles transported down reservoir from the head-of-reservoir collector and hatchery net pens.

For modeling purposes, this variant is assumed to increase fish collection efficiency at the Grand Coulee Dam from 75% to 85% for all Chinook populations originating upstream of the dam.

With the added FSC at Grand Coulee Dam, total potential juveniles arriving to below Chief Joseph Dam increases from 7.3 million to 7.4 million (Table 6-13). Total potential adult production increases to 42,000 and added fish harvest increases to slightly more than 24,000. Potential escapement increases to slightly more than 14,000. In summary, there is little net benefit (2%) from a third FSC at Grand Coulee Dam. It would appear that this added FSC might only have meaningful benefit if collection efficiencies at Third Powerhouse are significantly less than assumed in this assessment. This could occur if juveniles' approach to the powerhouse is skewed to the left bank.

#### 6.4.2.2.6 Variant #6

This variant eliminates hatchery production of 1.5 million juvenile summer/fall Chinook. It demonstrates the potential contribution of this propagation program to reintroduction. To seed the Sampoil River habitat, the 500,000 juveniles acclimated at this site are replaced with out-planting of 500 hatchery-origin adults.

With removal of the juvenile hatchery production above Grand Coulee Dam, total potential juveniles arriving to below Chief Joseph Dam decreases from 7.3 million to 5.5 million (decreased hatchery-origin salmon escapement also leads to decreased natural production of juveniles in future generations). Total potential adult production decreases from 41,000 to about 31,000 and added fish harvest decreases from 24,000 to 18,000. Potential adult escapement decreases from about 14,000 to about 13,000. In all, benefits are decreased by about 24% (Table 6-13).

This variant provides insights on the potential of using only adult outplants to at least initiate a reintroduction program. This situation could arise if hatchery facilities are not initially available and adult out-planting results in successful spawning.



### 6.4.3 Sockeye Modeling Variants

Sockeye reintroduction will only occur upstream of Grand Coulee Dam under the assumption that Rufus Woods Lake does not provide habitat for Sockeye spawning or rearing. The results of LCM Sockeye modeling for the Variants is provided in Table 6-14. Results for each variant is compared to Baseline conditions that produced 76,000 total adults.

**Table 6-14. LCM results for Sockeye reintroduction upstream of Grand Coulee Dam compared to Baseline.**

Scenario/Variant	Total # Juveniles to Below Chief Joseph Dam	# Adults	% Change in Adults from Baseline	# Adults Harvested	Adult Escapement #
Baseline	3.7 million	76,000		21,000	26,000
Chief Joseph Dam and Grand Coulee Dam Variant #1 – No Chief Joseph Dam FSC	1.3 million	26,000	-65%	7,100	4,600
Chief Joseph Dam and Grand Coulee Dam Variant #2 – No HFR FSC at Grand Coulee Dam	3.6 million	74,000	-3%	20,000	25,000
Chief Joseph Dam and Grand Coulee Dam Variant #3 – No Grand Coulee Dam FSC 3 <sup>rd</sup>	0.5 million	9,400	-82%	1,500	100
Chief Joseph Dam and Grand Coulee Dam Variant #4 – Lake Roosevelt Reduced Parr Plants	2.2 million	44,000	-42%	12,000	16,000
Chief Joseph Dam and Grand Coulee Dam Variant #5 – Increased Parr Plants to Lake Roosevelt	4.9 million	100,000	33%	27,000	31,000

#### 6.4.3.1 *Reintroduction above Grand Coulee*

Modeling results for each of the five variants examined are provided below.

##### 6.4.3.1.1 Variant #1

In Variant #1, the FSC at Chief Joseph Dam is eliminated requiring all juvenile fish to pass the dam through the spillway or turbines. Without the FSC at Chief Joseph Dam, total potential juveniles arriving to below the dam declines from 3.7 million to 1.3 million. Total potential adult production declines from 76,000 to about 26,000 and added fish harvest declines from 21,000 to 7,100. Potential escapement declines from about 26,000 to about 4,600. In all, benefits in adult Sockeye Salmon production are reduced by about 65% from the Baseline Scenario (Table 6-14).

For the Christina Lake population, all adult escapement is required for broodstock and there is no fish available to seed natural habitat.

From this assessment, it appears that an FSC located above Chief Joseph Dam powerhouse would be an important element of any Sockeye reintroduction strategy in the upper Columbia Basin that avoids trucking smolts around dams.

##### 6.4.3.1.2 Variant #2

This variant is assessed to show the potential benefits of the head-of-reservoir FSC to a comprehensive Sockeye reintroduction at the two U.S. dams. Without a head-of-reservoir FSC, all yearling juveniles produced in the Kettle River watershed would need to migrate to Grand Coulee Dam before collection. This would affect production from the Christina Lake population, but not the Sanpoil River and mainstem Columbia River (the latter are assumed too small and young for collection).

Eliminating an FSC at the head of Lake Roosevelt reduces total potential juveniles arriving to below Chief Joseph Dam from 3.7 million to 3.6 million. Total potential adult production decreases from 76,000 to about 74,000 and added fish harvest decreases from 21,000 to 20,000. Potential escapement decreases from about 26,000 to about 25,000. In all, benefits decrease by about 3% relative to the Baseline Scenario.

Modeling indicates that based on current assumptions, the head-of-reservoir FSC may not add much value to Sockeye reintroduction above Grand Coulee Dam. This FSC should show more potential value when later modeling is undertaken on Sockeye reintroductions above Canadian dams in assessing the U.S. Tribes' and First Nations' 6-dam, comprehensive reintroduction concept.

#### 6.4.3.1.3 Variant #3

This variant demonstrates the potential value of an FSC located above the Grand Coulee Dam Third Powerhouse to the viability of Sockeye reintroduction.

Without an FSC at Grand Coulee Dam, all juvenile fish arriving at the project would emigrate from Lake Roosevelt via one of the three powerhouses (mostly through the third powerhouse), the Keys Pump Station to Banks Lake, or occasionally the spillway. In addition to the more obvious increase in mortality caused by powerhouse passage, there is also likely to be delay in passage which could subsequently reduce survival at ocean entry (not assessed here).

As modeled here, the Grand Coulee Dam FSC would not be available as a passage facility for all juvenile fish collected at and transported downstream from the head-of-reservoir FSC. In an actual pilot reintroduction, these transported fish would likely be transferred from the net pens at Grand Coulee Dam and passed the dam to the tailrace and not be subjected to turbine passage.

Without the FSC at Grand Coulee Dam, total potential juveniles arriving to below Chief Joseph Dam declines from 3.7 million to 0.5 million. Total potential adult production declines from 76,000 to about 9,400; added fish harvest declines from 21,000 to 1,500. Potential escapement declines from about 26,000 to about 100. In all, Sockeye reintroduction benefits are reduced by about 82% compared to the Baseline scenario.

Without a Grand Coulee Dam FSC, the Christina Lake reintroduction fails, providing no harvest or escapement. Additionally, few fish return to spawn in the Sanpoil River and there is no escapement to the mainstem Columbia River habitat.

#### 6.4.3.1.4 Variant #4

This variant reduces hatchery production in Lake Roosevelt from 5 million Sockeye parr to 1 million, with production split between the Sanpoil Arm and upper reservoir near the confluence of the Kettle River. It demonstrates the potential contribution of propagation to Sockeye reintroduction. The 1.5 million Sockeye fry are still released into Christina Lake. The adult out-plant of 1,000 adults into the Sanpoil also continues.

With this reduction of the hatchery production in Lake Roosevelt, total potential juveniles arriving to below Chief Joseph Dam decreases from 3.7 million to 2.2 million. Total potential adult production decreases from 76,000 to about 44,000 and added fish harvest decreases from 21,000 to 12,000. Potential escapement decreases from about 26,000 to about 16,000. In all, benefits are decreased by about 42% relative to the Baseline Scenario.

With significant reductions in releases of hatchery juveniles in Lake Roosevelt, the reintroduction still appears viable, but with reduced benefits.

#### 6.4.3.1.5 Variant #5

This variant increases hatchery production in Lake Roosevelt from 5 million Sockeye parr to 10 million, with the increased production going to the upper reservoir near the confluence of the Kettle River and the Spokane River arm. It demonstrates the potential contribution of added propagation to Sockeye reintroduction. The 1.5 million Sockeye fry are still released into Christina Lake and the 2 million parr are released in the Sanpoil River arm. The adult out-plant of 1,000 adults into the Sanpoil River also continues.

With the increased hatchery production in Lake Roosevelt, total potential juveniles arriving to below Chief Joseph Dam increases from 3.7 million to 4.9 million. Total potential adult production increases from 76,000 to about 100,000 and added fish harvest increases from 21,000 to 27,000. Potential escapement increases from about 26,000 to about 31,000. In all, benefits are increased by about 33% compared to the Baseline Scenario.

It appears the model's Beverton-Holt productivity function (accounting for density dependence) reduces survival of the hatchery juveniles rearing in Lake Roosevelt. The increase in hatchery production does not produce a corresponding increase in juveniles emigrating below Chief Joseph Dam.

#### 6.4.4 Sensitivity Analysis for Summer/Fall Chinook and Sockeye

A sensitivity analysis was conducted to identify the key uncertainties that can be prioritized and addressed in future research. Data collected from this research can then be used to update model assumptions and results. The sensitivity analysis was performed by modeling a range of values for each LCM input of interest.

The sensitivity analysis was performed on the following LCM inputs:

- Chief Joseph Dam FSC Fish Collection Efficiency.
- Egg to Pre-migrant Survival (summer/fall Chinook).
- Egg to Yearling Survival (Sockeye).
- Harvest Rates (summer/fall Chinook).
- Mortality Rate on Juveniles Migrating through Reservoirs (summer/fall Chinook).
- Fitness Factor for Hatchery Origin Adults (summer/fall Chinook).
- Improved Juvenile Fish Passage at Mainstem Columbia River Dams downstream of Chief Joseph Dam (summer/fall Chinook).
- Improved Juvenile Fish Passage at Mainstem Columbia River Dams downstream of Chief Joseph Dam (Sockeye).
- Smolt-to-adult return rate (SAR).
- Pre-smolt passage at Grand Coulee Dam (Sockeye).
- Juvenile Survival (Sockeye).

The results of the sensitivity analysis are provided on the web at [www.UCUT.org](http://www.UCUT.org). It should be noted that for some sensitivity analyses modelers simply increased or decreased the parameter by a set percentage instead of using the Monte Carlo feature which was still being developed and tested.

Key conclusions from this analysis are provided below.

#### 6.4.4.1 *Summer/Fall Chinook Sensitivity Analysis Conclusions*

Modeling indicates that the success of the reintroduction program, regarding total adult summer/fall Chinook production, could be significantly affected by the performance of hatchery-origin adults relative to their natural origin counterparts. If hatchery origin adults have lower relative reproductive success than modeled in the newly available habitat, resulting adult production may be reduced by over 50%. This decrease in adult abundance might be mitigated by using, to the extent feasible, natural origin summer/fall

adults from below Chief Joseph Dam. However, negative effects to those populations from such an action would need to be considered.

The fish collection efficiency (FCE) of the FSC at Chief Joseph Dam can be as low as 50% and production of adult summer/fall Chinook can still be large. Benefits would further increase if juvenile survival through Chief Joseph Dam turbines and spillways is higher than the 40%-50% assumed. Developing estimates of juvenile survival through these structures would be a priority of the program. If survival rates exceed 75%, the FCE of collection systems can be lower than modeled and still achieve goals.

Given the low adult productivity value for Sanpoil summer/fall Chinook (1.01) virtually any decrease in survival at any life stage or location reduces natural adult production to unsustainable levels. This in turn means that the expected adult production benefits from operating an integrated hatchery program would not materialize as natural origin fish would be unavailable for use as broodstock.

Current harvest rates on each of the three summer/fall Chinook populations exceed their MSY value by a substantial amount. Changing the harvest rate on these populations had small effects on the success of the reintroduction effort primarily due to continued supplementation with hatchery fish. It should be noted that the existing Okanogan River population (downstream of Chief Joseph Dam) consistently outperforms EDT model expectations even given the high harvest rates that population experiences.

Resulting adult production is entirely dependent on the overall survival rate from spawning to return as adult in future years. Thus, a decrease in survival at one location or life stage, can be mitigated by an increase at another. Because one objective of the reintroduction effort is to minimize impacts to project operations at Chief Joseph and Grand Coulee dams, assumptions regarding juvenile survival rates through reservoirs and dams should be tested early. To illustrate, because of the importance of flood control operations at Grand Coulee, it is unlikely that reservoir operations can be altered to improve juvenile migration survival. If survival rates are substantially less than modeled, then the effectiveness of the effort will be reduced. If on the other hand, survival rates are much higher, the effectiveness and number of juvenile collection systems required may be reduced.

#### 6.4.4.2 *Sockeye Sensitivity Analysis Conclusions*

The Sockeye sensitivity analysis showed that even when the FCE of juvenile collection facilities was reduced by 50% compared to Baseline assumptions, total adult production was greater than 32,000 adults. However, under a lower FCE no natural origin fish returned to Christina Lake.

The Baseline assumes an egg-to-smolt survival rate of 4.3%. When the assumption is reduced to 1%, total adult production is reduced from 76,000 to 34,000 adult Sockeye. In contrast, if this value is increased to 10% total adult production increases to 149,000. Program success does not appear to be heavily reliant on the egg-to-smolt survival value so long as it's greater than ~1%.

One issue with having a larger egg-to-smolt survival rate than anticipated is the impact to adult fish passage facilities. Facilities and systems must be sized to accommodate expected adult returns. If the number of adults returning gets too large than options such as trapping and hauling adults around projects may be impractical. Properly sizing juvenile and adult passage facilities would also account for potential reintroductions above Canadian dams. This added restoration could contribute substantially to numbers of emigrating juveniles and returning adults.

In regard to SAR, the analysis showed that as SAR (Bonneville to Bonneville) increased from the assumed 5% to 8%, total adult Sockeye production increased from 76,000 to 182,000. The 8% value is realistic as it is based on data for the Okanogan River Sockeye population. These results show the importance of not only looking at average survival conditions but also the range of survival when quantifying program outcomes.

Finally, improving juvenile survival rates as they pass the 9-mainstem dams below Chief Joseph Dam by 10%, results in a 21% increase in adult production. This finding is important for it points out that if survival targets upstream of Chief Joseph Dam cannot be met, or the cost is prohibitive, then improvement at downstream dams may help achieve reintroduction goals while at the same time increasing abundance of downstream salmon populations. Also, survival rates downstream could continue to improve with further implementation of BiOp actions.

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## 7.0 ADULT AND JUVENILE FISH PASSAGE

### 7.1 INTRODUCTION

LCM results show that habitat of enough quality and quantity exist upstream of Chief Joseph Dam to produce large numbers of both summer/fall Chinook and Sockeye Salmon. However, the scale of the adult production possible depends on the effectiveness of proposed upstream and downstream fish passage facilities and migration survival through reservoirs.

A properly designed fish passage facility provides fish, safe, timely, and effective passage defined as:

1. Safe – High survival rate through the structure.
2. Timely – Minimum migration delay when approaching, passing through, and exiting the structure.
3. Effective – High fish collection efficiency (FCE) over the entire fish migration period.

These characteristics are achieved in the fish passage design process where careful thought is given to the type of facility proposed, its location, size, the species to be passed, and interaction with dam project operations such as flood control and power peaking.

When restoring fish passage at a series of dams, strategic consideration must be given to the implementation sequence of juvenile and adult passage facilities. Scheduling the sequence of facility construction and operation can affect budgetary planning and a cost-effective reintroduction strategy.

In the phased implementation approach outlined in the NPCC Fish and Wildlife Program, interim fish passage facilities are necessary during Phase 2 investigations to allow evaluation of reintroduction. Should pilot reintroductions and investigations show efficacy, then long-term, permanent facilities can be pursued in Phase 3, as needed.

### 7.2 ADULT PASSAGE FACILITIES

Facilities used to pass adult salmon and other species over dams is well described in the NPCC (2016) Staff Paper and Linnansaari et al. (2015). Overall, adult passage facilities can be readily designed to achieve the safe, timely and effective criteria as established by NMFS (2011). A brief summary on possible fish passage systems that could be used to pass fish at Chief Joseph Dam and Grand Coulee Dam are presented below.

For more detailed information on these facilities the reader should review the aforementioned reports. Additional insight to fish passage facilities specific to Chief Joseph and Grand Coulee dams is expected to be part of future investigations.

NPCC (2016) describes five options for passing adult anadromous and resident fish over high-head dams:

- **Trap and Haul:** consists of a collection facility (i.e., a short fish ladder) and trap at the downstream base of a dam. Trapped fish are then loaded into tanker trucks to be transported to site(s) upstream of the blockage.
- **Fish Ladder:** consists of a sloped weir or baffled raceways that create a staircase of pools over or through which the fish pass to gain the elevation needed to surmount the dam. Ladders include attraction flows at their downstream entrance, suitable flows through the ladder, and an exit located so that fish can easily continue their upstream migration and not be entrained back through or over the dam.
- **Fish Elevator and Locks:** consist of an attraction flow at the downstream base of the dam leading to a hopper where fish are trapped and lifted in a water filled vessel or directed into a series of locks leading to the forebay where fish are released to continue their upstream migration.
- **Whoosh Salmon Cannon:** an emerging technology that consists of attraction flow leading to a “false waterfall,” directing fish to volitionally enter a flexible tube. Fish pass up the suspended tube under negative pressure to an exit in the forebay.
- **Natural Channel Fishways:** consist of a long artificial channel resembling a natural stream that attracts fish and allows them to migrate up the channel, around the dam, to exit into the forebay.
- **Combination Passage Facilities:** one or more of the above options combined to increase passage effectiveness and or reduce capital and O&M costs.

Any of these systems could be operated to pass adults at the two dams. For large dams such as Grand Coulee and Chief Joseph, adult collection facilities are likely needed on both banks of the tailrace to improve collection efficiency and avoid fish migration delay. Delay is particularly important in the upper Columbia as salmon will have already migrated over 550 miles, passed nine dams, and may be subjected to warming water temperatures as the season progresses. All these factors reduce the fish’s energy reserves that, upon arrival to spawning grounds, must be sufficient to complete the spawning process.

### 7.3 JUVENILE PASSAGE FACILITIES

Detailed descriptions of juvenile (i.e., downstream) collection, exclusion and bypass facilities can be found in NPCC (2016) and U.S. Department of Interior (USDOI; 2006). Information on surface collector technology that may be the most applicable technology for passage at Grand Coulee and Chief Joseph dams is presented in the Surface Bypass Program Compendium (ENSR 2007) and the effectiveness of such systems in Kock et al. (2017 Draft Report). The key information on FSC technology is briefly summarized below.

#### 7.3.1 The Floating Surface Collector (FSC)

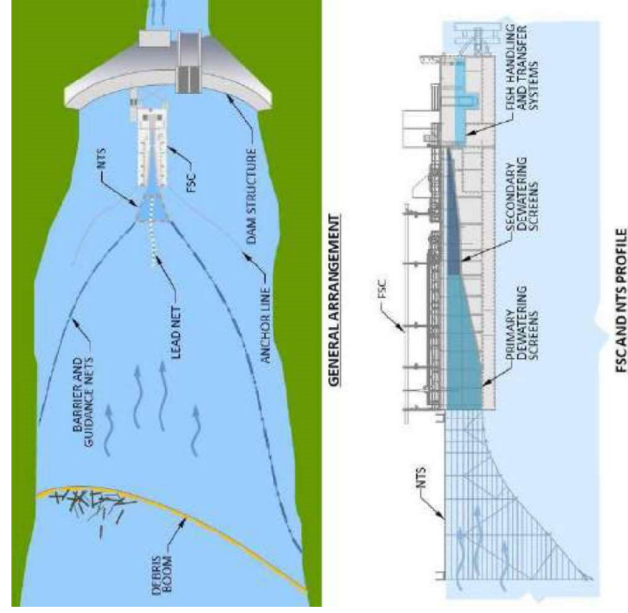
The FSC is a barge-like device that floats on the surface of a reservoir allowing it to operate under a range of reservoir water elevations. The FSC technology continues to evolve and improve in function and cost as evidenced from designs installed at Puget Sound Energy's (PSE) Upper Baker Dam in 2008, PacifiCorp's Swift Dam on the Lewis River in 2012, and versions installed at Portland General Electric's North Fork Projects located on the Clackamas River in 2015. The Corps of Engineers is currently in the process of designing FSC's at Cougar and Detroit dams on the Willamette River.

The FSC uses water pumps, or gravity flow, to create a surface-oriented flow field upstream of the floating structure that takes advantage of juvenile salmonids tendency to migrate near the surface of reservoirs when water temperatures are suitable (<16° C). Fish may be guided to the FSC using nets that lead the fish to the FSC net transition structure (NTS), and entrance where they are collected using a series of dewatering screens (Figure 7-1). Total flow used for fish attraction is generally around 500 cfs to 1,000 cfs, but larger surface attraction systems have been built or are being designed (Kock et al. (2017 Draft). FSC's have been operated at Projects with reservoir elevations that fluctuate up to 10 meters (32.8 ft.) and are being designed for larger fluctuations (>100 ft.) at Cougar Dam on the Willamette River.

Currently, the only FSC that is collecting Sockeye is located on the Baker River, although kokanee are being collected at the Round Butte project in Oregon. The FCE of the upper and lower Baker FSCs has been greater than 75% for Sockeye entering the forebay of the project (Kock et al. 2017 (Draft)).

Spring Chinook FCE for the River Mill FSC (Clackamas River) was greater than 95% for fish entering the reservoir. In contrast, spring Chinook FCE at Swift Dam has been less than 25%, although 47% entered the NTS (PacifiCorp 2018). The FCE Round Butte Surface Collector (non-floating) for spring Chinook has been estimated at 31.5% (Kock et al. 2017 (Draft)).

Based on their review of FSC performance at multiple locations, Kock et al. (2017 (Draft)) concluded that two factors, inflow (higher) to the FSC and effective forebay area (smaller), were strong predictors of fish collection success. Effective forebay area is the surface area of the forebay minus areas excluded by a barrier net (Figure 7-1)<sup>7</sup>. As inflow to the collector increased, and effective forebay area decreased, FCE improved substantially. In general, inflows of greater than 1,000 cfs and effective forebay areas less than 50 acres exhibit the highest FCE. But before fish can be collected at a dam they must successfully migrate through the reservoir.



**Figure 7-1. Generic drawing of a floating surface collector and associated structures (NTS = net transition structure, FSC = floating surface collector). Reproduced from Kock et al. (2017 (Draft)).**

<sup>7</sup> In Figure 7-1, the portion of the forebay downstream of the barrier and guidance net would not be counted in the calculation of effective forebay size.

Importantly to reintroduction in the upper Columbia basin, it should be noted that Koch et al. did not consider flow net through a reservoir towards the dams in their evaluation of factors contributing to fish passage. While the reservoirs created by Chief Joseph and Grand Coulee dams are very large, they are also subject to substantially higher flows than other reservoirs that were evaluated. This added flow cue should be important in the success of reservoir migration towards any FSC at the two dams.

The effects of reservoirs on fish migration survival are discussed next.

#### **7.4 RESERVOIR PASSAGE AND SURVIVAL**

The collection of juvenile salmon and steelhead from large reservoirs created by dams is perhaps the greatest challenge to the successful reintroduction of anadromous fish runs to historical habitats. In contrast, adult salmonids appear to be very successful in their ability to migrate through reservoirs associated with dams such as those in the lower mainstem Columbia River.

Large reservoirs can minimize or eliminate the flow cues that salmon rely upon to direct their migration in a timely manner. For juveniles, this potential lack of downstream water velocity cues will, to varying extents (depending on species), reduce the attraction of juveniles to collection facilities.

Large reservoirs also provide habitat for other fish species that prey on juvenile salmon as they rear and migrate through the reservoir to the dam. Predation mortality rates on migrating salmonid juveniles can be quite large. Rieman et al. (1991) estimated that three predator species consumed 14% of all juvenile salmon that entered John Day Reservoir. This led to the implementation of successful predator control programs that reduced predation effects on migrating salmon<sup>8</sup>. (<http://www.pikeminnow.org/wp-content/uploads/2017/03/2014-Pikeminnow-AR.pdf>)

The size and length of reservoirs, as well as how they are operated, may affect juvenile migration success (i.e., survival and travel time). For mainstem Columbia River Projects, combined dam and reservoir juvenile

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<sup>8</sup> The Colville Tribes have been removing non-native species from Lake Roosevelt since 2011. To date thousands of predators of salmon have been removed from the lake (Wolvert et al. 2018)

salmon survival rates are generally greater than 90% (Faulkner et al. 2017).

Examples of the survival rate and travel time required for juvenile salmonids migrating through some of the largest hydroelectric facilities and reservoirs studied to date are provided below.

#### 7.4.1.1 *John Day Dam, Columbia River*

John Day Dam has a reservoir (Umatilla Lake) which is 76.4 miles long. The time required for salmon juveniles to migrate through this reservoir in the spring has been estimated at less than 5-days with overall project survival of ~90% (Faulkner et. al 2017). Water travel time through the Lake at a flow of 250,000 cfs is also about 5-days<sup>9</sup>. Data collected by the Fish Passage Center indicates that faster water travel times result in higher juvenile salmon survival (Figure 7-2).

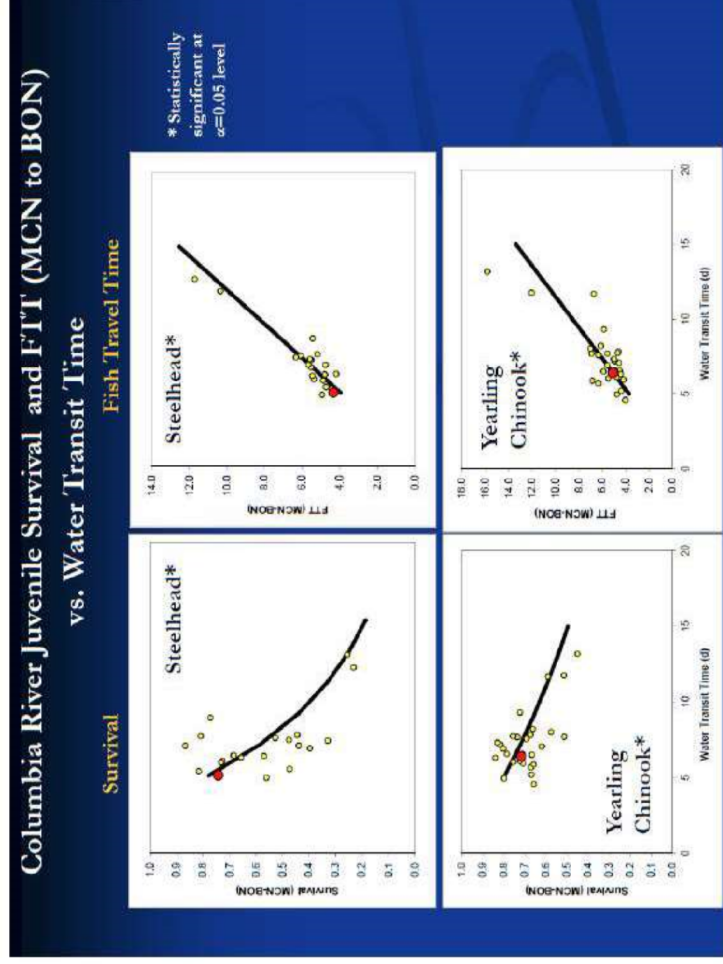
#### 7.4.1.2 *Mosbyrock Dam, Cowlitz River*

Mosbyrock Dam forms Riffe Lake, a 23.5-mile reservoir with a storage capacity of 1.69-million-acre ft. and an average inflow of 5,000 cfs. The project is operated for flood control and power generation and seasonal reservoir elevation changes are large.

The results of radio-tag studies conducted in the 1990's indicated that no Chinook, but 32-48% of the steelhead, successfully migrated through the reservoir (Tacoma Power 1997). Successful juveniles required 3-10 days to migrate through the lake.

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<sup>9</sup> Water travel time (or transit time) in John Day was calculated as  $WTT \text{ (seconds)} = \text{Reservoir Volume (ft}^3\text{)}/\text{Flow (ft}^3\text{/second)}$



**Figure 7-2. Columbia River juvenile Chinook and steelhead survival rate and fish travel time (McNary Dam to Bonneville Dam) vs. water transit time (Reproduced from FPC presentation 2013)**

In a similar study conducted in 2010, 84% of the steelhead and 36% of the coho juveniles released successfully migrated through Riffe Lake. The average travel time for steelhead and coho juveniles to reach the dam was 6.2 days and 16.2 days, respectively. Again, the researchers found that no tagged Chinook were detected at the dam when the tags were operational (USGS 2010).

The average water travel time for Riffe Lake is 168 days, extending to 315 days in dry summers (FERC 2001). These results indicate that other factors besides water travel time affect the time required for juveniles to migrate through a reservoir.

#### 7.4.1.3 Shasta Dam, Shasta River

Shasta Dam forms the largest reservoir (Shasta Lake) in California, with a surface area of 29,500 acres and a volume of 4.55-million-acre ft. Average water travel time is 217 days. Hatchery late-fall juvenile Chinook migration success over a 37 km study reach was 70% in February and just 1% in November of 2017 (Adams et al. 2018). The major difference in study conditions between the two releases was that river flow at Shasta Dam during the first release was up to 75,000 cfs compared to 5,100 cfs for the second. Average travel time

from fish release to detection at Shasta River Dam forebay was about 50 days for each release. Therefore, river flow did not appear to have a large effect on juvenile travel time, at least for successful migrants within the life span of the acoustic tag.

#### 7.4.1.4 *Juvenile Reservoir Rearing*

One potential benefit of a large reservoir is that it can supply expansive, almost unlimited, juvenile salmonid rearing habitat beyond that of tributary streams and rivers that may significantly enhance the survival of salmon fry and parr (especially for Sockeye). For Chinook, Giorgi and Malone (2013) summarized this species survival and behavior in reservoirs and lakes from studies conducted primarily in the Willamette River basin (many at high head dams). They found that Chinook fry to migrant survival for reservoirs and lakes ranged from 10% to 30%. Recently, Kock et al. (2018) conducted a Chinook fry survival study at Lookout Point Reservoir (Willamette River, Oregon) and estimated hatchery origin fry-to-juvenile survival for the period April to October at 18.8%. These values are similar to those measured on the Skagit River, where Chinook egg-to-migrant survival rates were estimated at 4.5% to 21.5%, depending on river flow (Zimmerman et al. 2015). Thus, the juvenile Chinook survival rate in the reservoir is expected to be similar or higher than those observed in the riverine environment. Because of the size of a reservoir, rearing capacity is expected to be substantially larger on a per mile basis for reservoir habitat compared to riverine habitat.

Reservoirs can also provide thermal conditions and food supplies that produce larger emigrating Chinook smolts that may survive to adulthood at rates higher than those reared in colder, native streams (Monzyk et al. 2015).

In the life cycle modeling analysis, it is assumed that reservoirs associated with Chief Joseph Dam and Grand Coulee Dam can provide extensive juvenile rearing habitat for both Sockeye and Chinook (Section 6).



## 7.5 CHIEF JOSEPH PROJECT CONDITIONS AND IMPLICATIONS FOR FISH PASSAGE

### 7.5.1 Project Conditions

Chief Joseph Dam is a 236 ft. high run-of-river<sup>10</sup> project located at river mile (RM) 545 on the Columbia River. The dam forms the ~50-mile Rufus Woods Lake (Figure 7-3). The storage capacity of Rufus Woods Lake is 590,000 acre-ft., with a mean water travel time of approximately 3 -days (USACE 2005) (Figure 7-4). Chief Joseph Dam has 19-spillbays and 27 Francis turbines. The turbine openings are approximately 75-80 ft. below the surface of the lake.

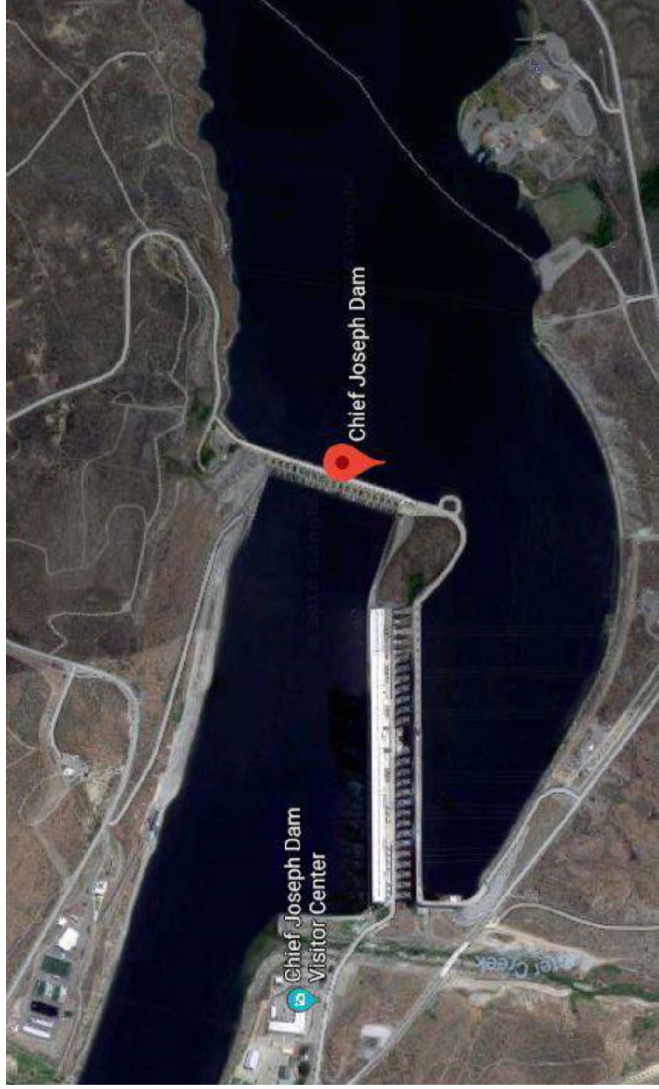
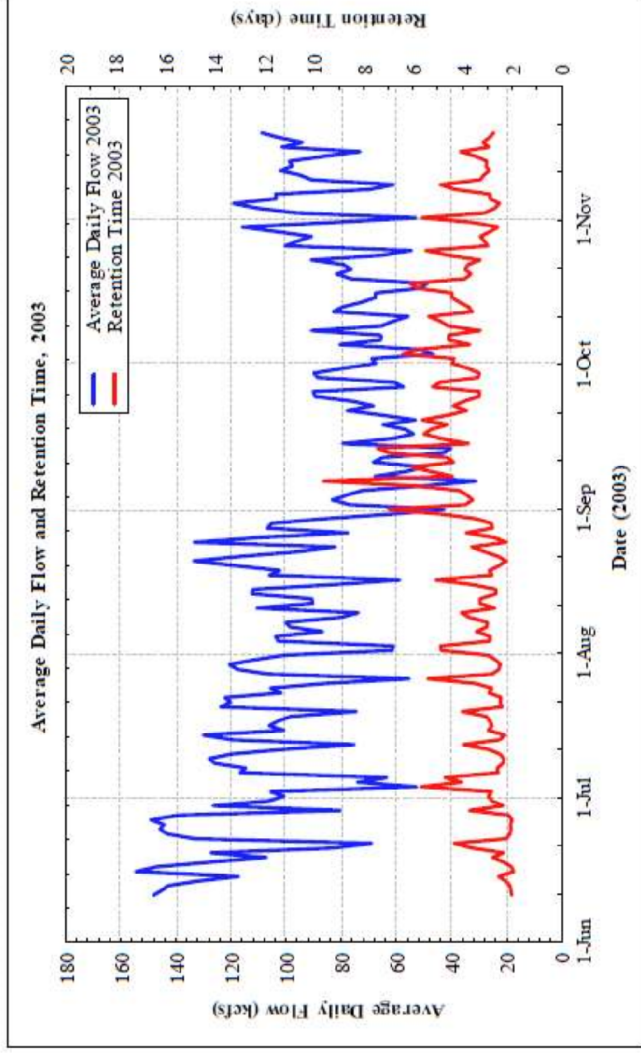


Figure 7-3. Chief Joseph Dam (Google Maps)

<sup>10</sup> Run-of-river meaning that it has little capacity to store water.



**Figure 7-4. Average daily flow and average water retention (travel) time for Chief Joseph Dam – June to December 2003. (Source: USACE 2005).**

The average monthly flow, water temperature and Rufus Woods Lake elevation are presented in Figure 7-5. In general, river flows are highest in the spring and lowest in the fall months. Rufus Woods Lake elevation remains relatively constant throughout the year. Data on river temperature as measured in the turbine scroll case varies between 3°C and 19°C. The reservoir generally fluctuates seasonally within a 6 ft. band. Fish arriving at Chief Joseph Dam may pass through both turbines and spillways. The average percent spill by month at Chief Joseph Dam is presented in Figure 7-6.

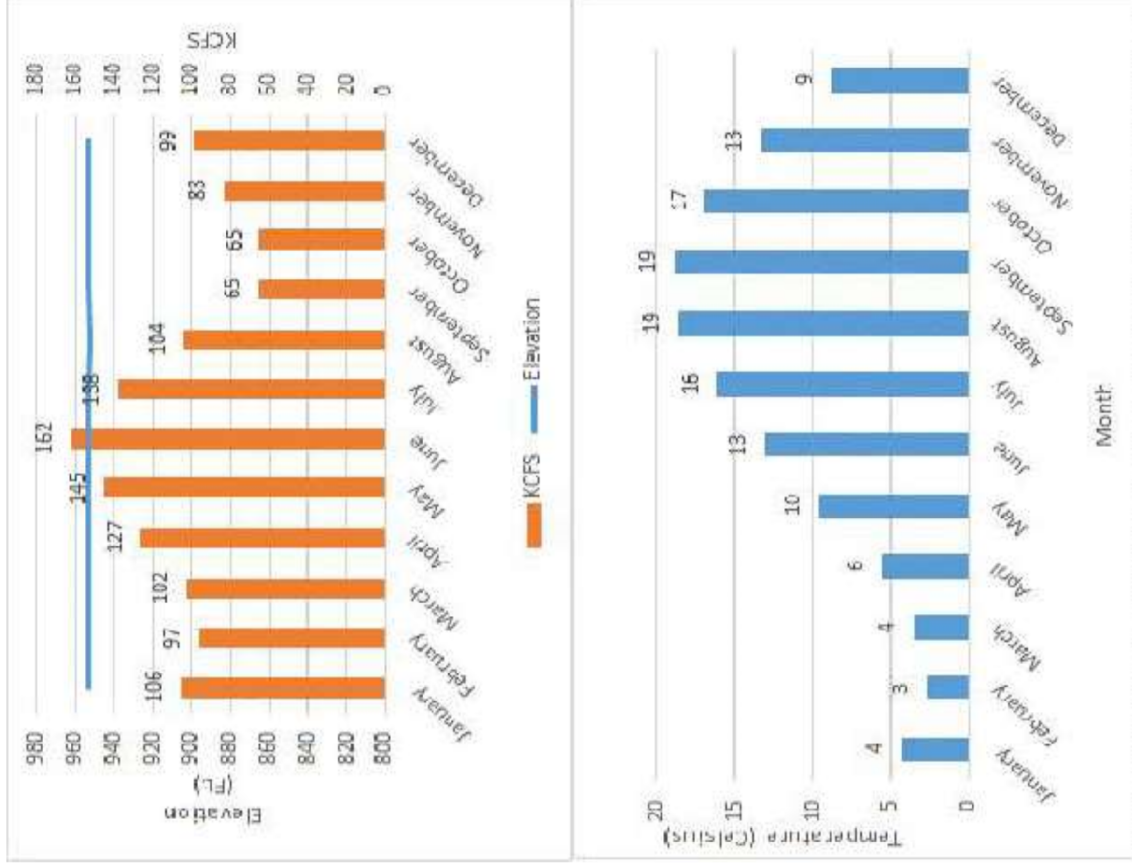
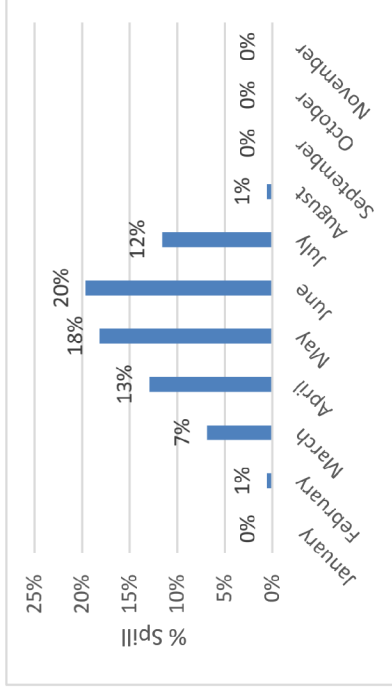


Figure 7-5. Average monthly flow (KCFS), Rufus Woods Lake elevation (ft.) and water temperature (2005/6-2017/18) (Source: DART database) ([http://www.cbr.washington.edu/dart/query/river\\_graph\\_text](http://www.cbr.washington.edu/dart/query/river_graph_text)).



**Figure 7-6. Average percent of total river flow spilled by month for Chief Joseph Dam (2008-2017) (Source Dart Database) ([http://www.cbr.washington.edu/dart/query/river\\_graph\\_text](http://www.cbr.washington.edu/dart/query/river_graph_text)).**

**7.5.2 Implications for Fish Passage**

For juvenile fish there has been concern that migration survival rate through the 50-mile-long Rufus Woods Lake may be quite low. However, the data presented in Figure 7-5 show that water temperatures for spring migrating fish are, on average,  $\leq 16^{\circ}\text{C}$  through July. This temperature falls within the EPA recommended  $16^{\circ}\text{C}$  value<sup>11</sup> for juvenile rearing and migration life stages (EPA 2003). Thus, temperature conditions should be suitable for summer/fall Chinook and Sockeye juveniles migrating through the lake for most of the spring and early summer juvenile migration period.

Water retention time of Rufus Woods Lake on average is  $\sim 3$ -days (Figure 7-4). Retention is the amount of time required for a particle of water entering the lake to pass through the lake and the term is used interchangeably with water travel time. If fish migrate at the same rate as a particle of water, then they should be able to migrate through the lake in a similar amount of time. Although river flow is higher at John Day Dam, juveniles are still able to migrate through the 76.4-mile Lake Umatilla in  $\sim 5$ -days (Faulkner et al. 2017) when water retention time is approximately 5-days. These data indicate reservoir conditions of Rufus Woods Lake are like those of Lake Umatilla and that juvenile travel time through the Rufus Woods

<sup>11</sup> Measured as the 7 Day Average of the Daily Maximum (DADM).

may also be similar.

Spill operations at Chief Joseph Dam occur primarily in the spring, the same time frame when juvenile fish are migrating. If it is assumed that the percentage of juveniles using spillways for passage is equal to the percent of total project discharge passing via the spillway, then from 1% to 20% of the juveniles may pass via the spillway from March to July. Juvenile survival rate for the Chief Joseph Dam spillway is unknown.

Adult summer/fall Chinook are expected to arrive at Chief Joseph Dam from late June to early-November; Sockeye from mid-June to early-September. Water temperatures on average during this period will still likely be below the 20°C DADM EPA recommended value (EPA 2003) (Figure 7-5). Nearly every year a portion of the Okanogan River summer/fall Chinook and Sockeye adults must hold near the confluence of the Columbia and Okanogan Rivers about 18 km downstream of Chief Joseph Dam until Okanogan River temperatures drop in the early fall. These fish experience warmer water (~24°C) from the Okanogan as well as the cooler water (~19°C) of the Columbia River for up to several weeks before finishing their migration. Despite this challenging thermal block in the adult migration, the Okanogan River has the most robust populations of Sockeye and summer/fall Chinook in the Columbia River basin. However, there will be years (such as 2015) when the Columbia River heats up earlier and/or exceeds 20°C for an extended period and fish losses will be higher. Although 2015 was devastating to adult migration survival of Sockeye, summer/fall Chinook did very well with the highest estimated spawner abundance in recent times (Pearl et al. 2017).

### **7.5.3 Initial Juvenile Passage Facility Concept at Chief Joseph Dam**

The following options are initial concepts that will need to be further developed and evaluated with and by the dam owners and operators (Army Corp of Engineers, Bonneville Power Administration). We present some options herein as part of this report to provide readers with some options that might be applicable and to help guide likely studies that will need to be implemented early in the next steps. The studies will provide important data for selecting preferred alternatives for further scoping, engineering, and development of interim passage facilities, if appropriate

An initial juvenile passage concept for Chief Joseph Dam is the placement of an FSC at the downstream end of the powerhouse (Figure 7-7). At this location the shape of the forebay and powerhouse are expected to naturally guide fish to the FSC. Guide nets could be used to move fish closer to the bank across from the powerhouse (bottom of Figure 7-7) or trashracks with narrower spacing (and possibly angled) used to direct fish down the face of the powerhouse similar to the configuration at River Mill Dam. FCE of the River Mill FSC for Chinook is greater than 95% (Kock et al. 2017 (Draft)). However, additional studies will

need to be performed to 1) confirm the approach juveniles are likely to make towards Chief Joseph Dam, and 2) inform FSC and guide net placement.

The total effective forebay area for the FSC is 51 acres. Kock et al. (2017 Draft) found that FSCs' with effective forebay areas of less than 50 acres have substantially higher collection efficiency than those systems with effective forebay areas >50 acres.

The FSC would have an attraction of flow of at least 1,000 cfs. If possible, attraction flow would be screened and routed through the turbines to maintain power benefits. Since the turbine intake opening is approximately 75 ft. below the surface of the lake, fish attraction to turbine flow should be less than to the

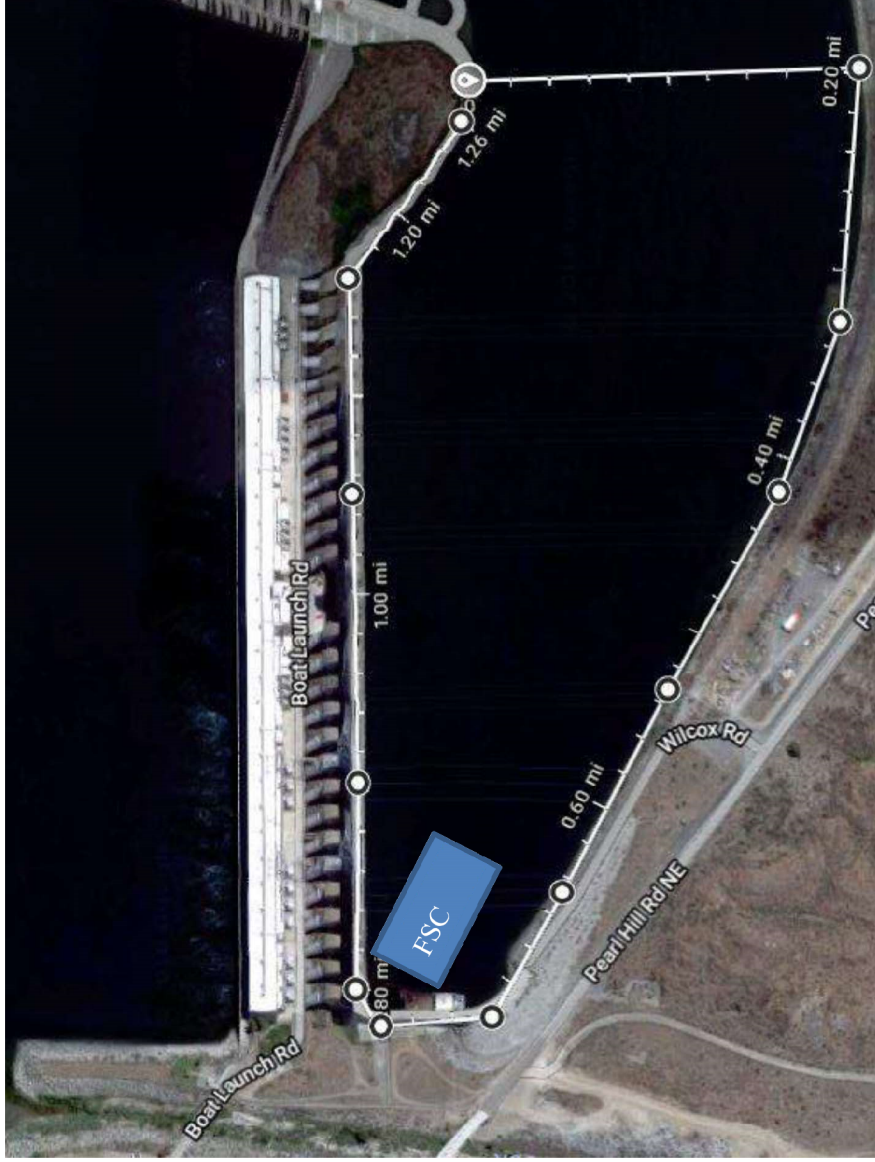


Figure 7-7. Concept for possible Location of Chief Joseph FSC (blue box). White line denotes powerhouse effective forebay area. Total effective forebay area is 51 acres.

FSC as juvenile salmon generally migrate near the surface at water temperatures of 16°C or less (occurs through July at Chief Joseph). A second spot for consideration for an FSC location is near the upstream end of the forebay area. For this site to be effective, nets would likely have to be used guide fish to the FSC and prevent fish from passing under or around the FSC. Guide nets would need to withstand river flows of over 150 kcfs which is an order of magnitude greater flow than required by netting systems at existing FSCs<sup>12</sup>.

Because Rufus Woods Lake elevation generally varies less than 5 ft., a second concept that may work in place of the FSC would be a Rocky Reach Dam style corner collector. Chelan County PUD, using this type of collector with an attraction flow of 6,000 cfs, combined with spill, has achieved project survival rates >93% for Sockeye and Chinook. The effective forebay size where the collector is located is 12 acres (Figure 7-8). ([http://www.chelanpud.org/docs/default-source/default-document-library/er\\_project\\_updates.pdf](http://www.chelanpud.org/docs/default-source/default-document-library/er_project_updates.pdf)).

Other juvenile fish passage system concepts that may be implemented at Chief Joseph Dam can be found in a report written in 2000 (Battelle Northwest 2000). The report looks at a range of concepts and provides cost data as well. The study concluded that a feasibility study should be undertaken to address fish behavior and reservoir hydraulics, and that a successful system is likely to combine several options.

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<sup>12</sup> A detailed description of a head of reservoir FSC with guide nets concept was developed for Lookout Point Dam, Willamette. See Section 5 of the following report for more info (USACE 2011)



**Figure 7-8. Aerial view of Rocky Reach corner collector. White line denotes effective forebay area (12 acres). Corner collector is in the lower left corner of the figure.**

The FCE required for the FSC would be dependent on fish survival rate to the tailrace of Grand Coulee Dam, through Rufus Woods Lake, turbines and spillways. The higher the survival rate for these passage routes, the lower the FCE can be and still achieve reintroduction goals and objectives. The studies needed to collect this data would be a priority in the next phase of the project.

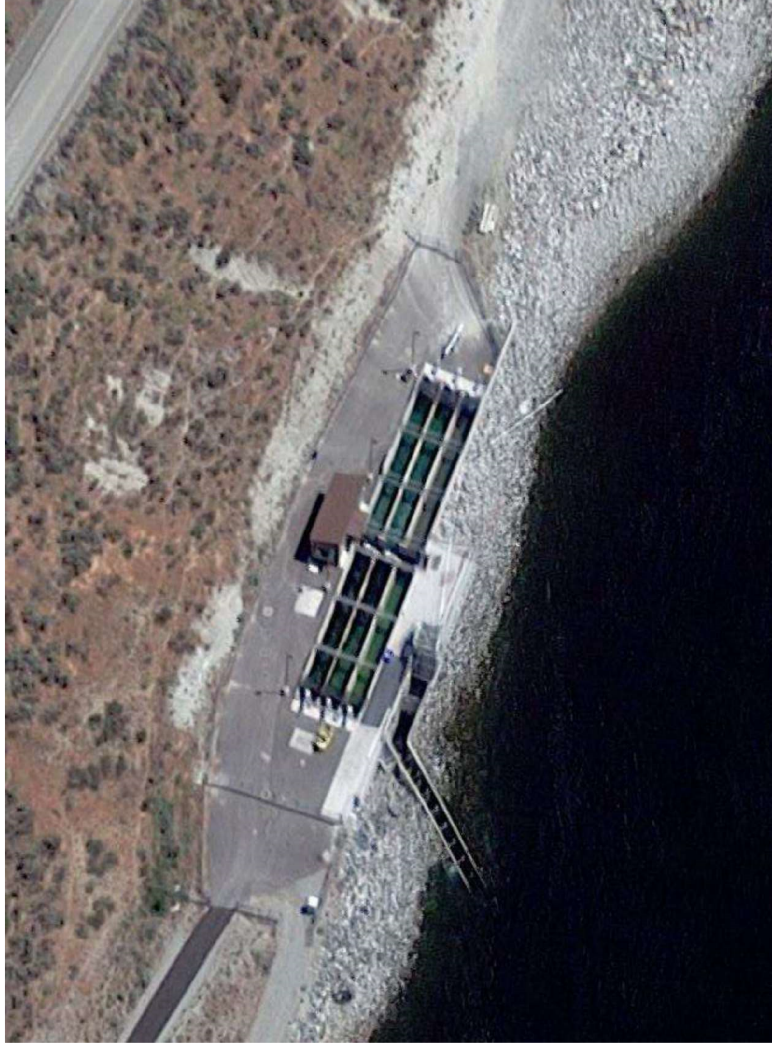
#### **7.5.4 Initial Adult Passage Facility Concept at Chief Joseph Dam**

The following concepts should be considered very preliminary and we anticipate a process that includes multiple stakeholders (federal, state, tribal) to review preliminary future study results, consider the site-specific details, fully analyze engineering opportunities and challenges and develop interim fish passage facilities.

A range of adult passage alternatives was examined for Chief Joseph Dam in 2000 (Battelle Northwest 2000). Since that time a ladder at Chief Joseph Hatchery was built on the right bank of the river (looking downstream) about 0.5 miles below Chief Joseph Dam (Figure 7-9).



The initial adult fish passage concept for Chief Joseph Dam assumes that the existing right bank hatchery ladder will attract and capture some fish originating from upstream of Chief Joseph Dam. This is also where salmon can be collected and possibly used as adult outplants upstream of Chief Joseph Dam (depending on donor stock preferences, risks and stock specific goals).



**Figure 7-9. Aerial view of Chief Joseph Hatchery adult fish ladder. The fish ladder is located on the right bank 0.5 miles downstream of Chief Joseph Dam.**

For initial trap and haul efforts we expect the Chief Joseph Hatchery ladder to be effective as thousands of summer/fall Chinook are already collected there each year (Pearl et al. 2017). It is unclear at this time if long-term goals would need to include an additional adult collection option on the right bank (presumably upstream of the hatchery ladder) or if the ladder at Chief Joseph Hatchery would be enough. Further understanding of the efficiency, capacity and interactions with hatchery and dam operations will be an important component of future investigations.



**Figure 7-10. Aerial view of possible adult fish ladder at Foster Creek with secondary entrance in tailrace. Line in red shows site of adult fish ladder and entrances. Facility would be like that shown in Figure 7-9.**

The adult passage concept might also include a ladder and/or new technology systems being placed at Foster Creek, located just below Chief Joseph Dam on the left bank. Fish would either enter the ladder at Foster Creek or possibly a second ladder entrance located just downstream of the turbines on the left bank (Figure 7-10). Attraction water for the ladder entrance(s) could be provided by tailrace pumps, from wells or gravity flow from forebay.

The ladder may extend upstream to the forebay, as described in Battelle Northwest (2000), or optimized by incorporating other passage structures such as Whooshh. Under this configuration the ladder may terminate well before reaching the forebay. At the terminus point fish would be 1) diverted into a Whoosh system, or 2) collected for transport via trap and haul for release at an existing site such as Fisher Road boat ramp or

a location to be determined in the future. The release site would be located to reduce the probability of adults “falling back” over the dam through turbines and spillways. Some studies of adult behavior in the reservoir should be conducted to understand the optimal location for release of bypassed adult salmon upstream of Chief Joseph Dam.

## 7.6 GRAND COULEE DAM PROJECT CONDITIONS AND IMPLICATIONS FOR FISH PASSAGE

### 7.6.1 Project Conditions

Grand Coulee Dam is located on the Columbia River at RM 597. The 550 ft. high dam forms Lake Roosevelt which is ~152 miles long. The difference in elevation between the tailrace and full pool is 320 ft.

Lake Roosevelt has an active storage capacity of 5.2 million acre-ft. and a total capacity of 9.6 million acre-ft. The dam is equipped with 27 Francis turbines, six pump turbine generators and 11 spill bays (Figure 7-11). The openings for the turbines range from 110 ft. to 230 ft. deep, dependent on lake elevation. The left and right bank turbine openings are at elevation ~1050 ft. The elevation of the third powerhouse turbine intakes is at ~1150 ft. Due primarily to flood control operations, Lake Roosevelt may fluctuate up to 82 ft. over the course of the year, but the average is less than 50 ft. (Figure 7-12).

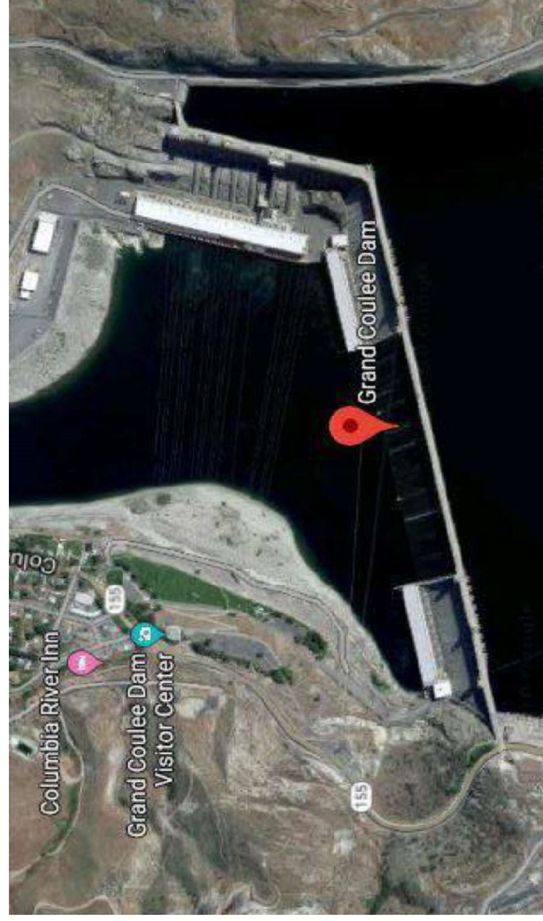


Figure 7-11. Grand Coulee Dam (Google Maps)

Water temperature and river flow at Grand Coulee Dam are like Chief Joseph Dam. The major difference in operations between the two projects is Lake Roosevelt elevations vary on average about 50 ft annually. (Figure 7-12). In high flow years the elevation of the lake may fluctuate even more. Lake Roosevelt is drawn down from February to May in order to meet flood control obligations. Refill begins in May with the lake reaching full pool (elevation ~1,290 feet) by July.

The percent spill by month for Grand Coulee is presented in Figure 7-13. Percent spill at Grand Coulee Dam ranges from 1% to 8% from April through July.

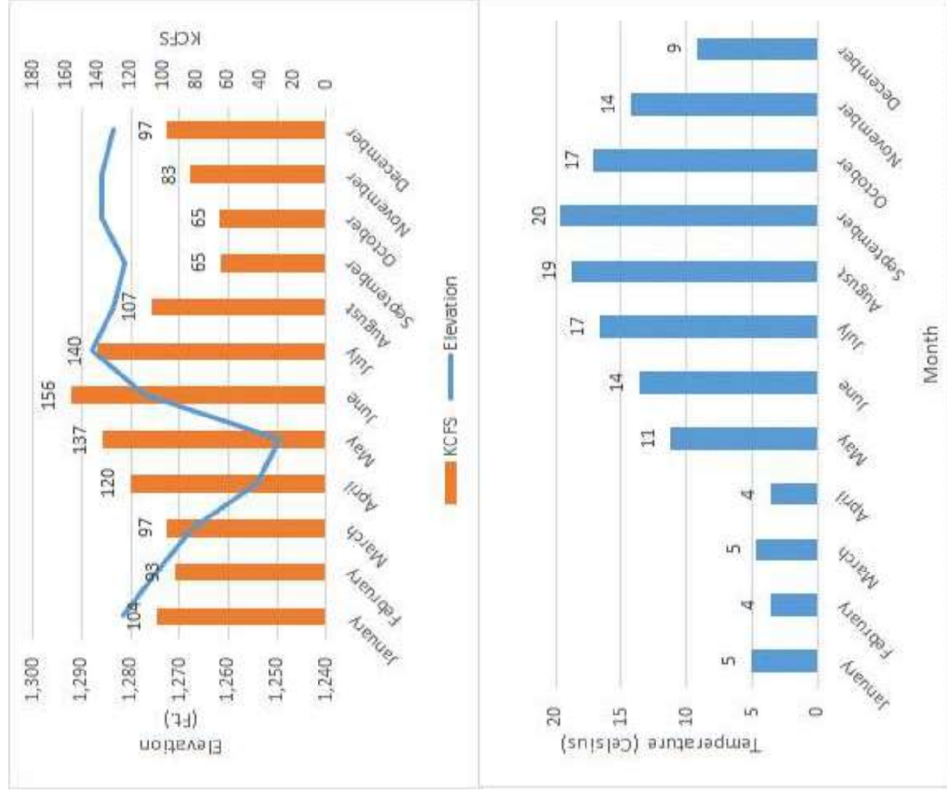
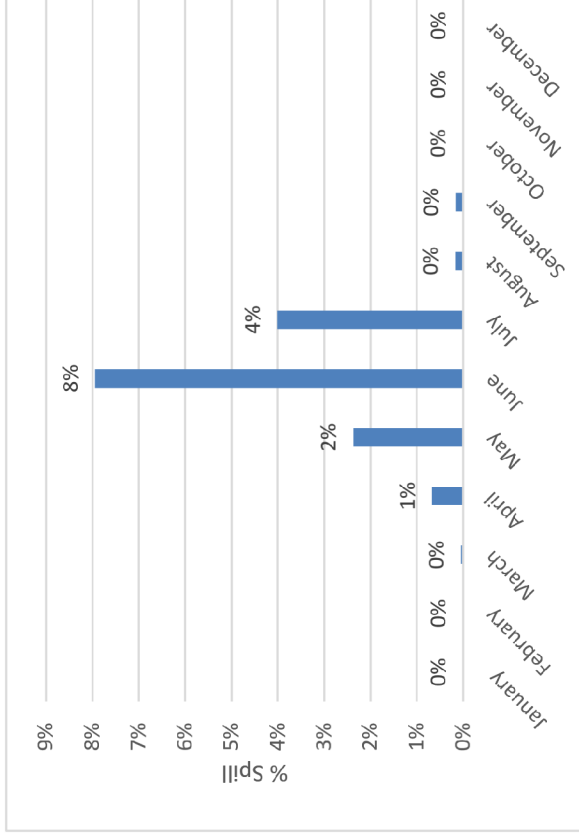


Figure 7-12. Average monthly flow (KCFS), Lake Roosevelt elevation (ft.) and water temperature (°C) (2007-2016).



**Figure 7-13. Average percent of total river flow spilled by month for Grand Coulee Dam (2007-2016) (Source: Dart Database). ([http://www.cbr.washington.edu/dart/query/river\\_graph\\_text](http://www.cbr.washington.edu/dart/query/river_graph_text))**

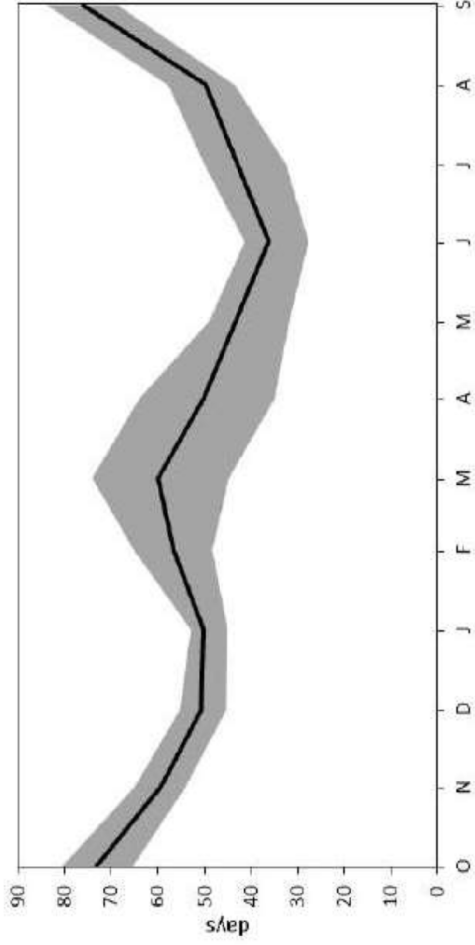
**7.6.2 Implications for Fish Passage**

The effects Grand Coulee water temperatures have on juvenile/adult salmonids and fish passage is like those described for Chief Joseph Dam and are therefore not repeated here. The reservoir does develop some weak thermal stratification, with temperatures generally decreasing with depth, but it lacks a well-defined epi- and hypolimnion.

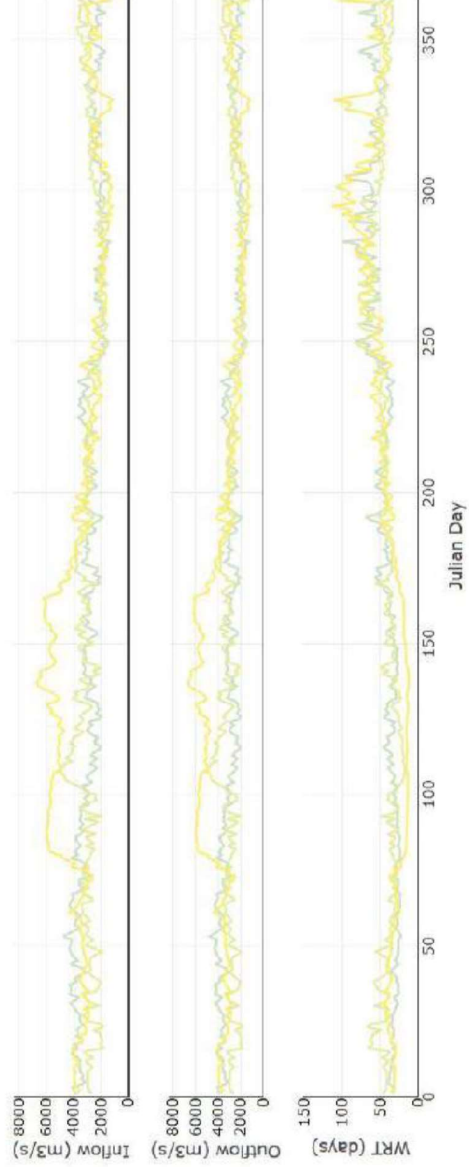
The 152-mile length of Lake Roosevelt may reduce the migration success of juvenile salmonids. Lake Roosevelt's length is approximately double that of Lake Umatilla (John Day) and average water retention time ranges from 30 to 80 days (Figure 7-14). However, in some years water residence time can be as low as 14 days. Of the three parameters, the time required for juveniles to migrate may be the most critical uncertainty and there will be considerable variance depending on species, life stage and location within the reservoir (Sanpoil, Spokane, transboundary). Most juvenile fish emigration should occur during the lower end of the range in water retention time.

Active juvenile migrants originating from the Sanpoil River would have to migrate through less than 30

miles of Lake Roosevelt. Juvenile survival rate and travel time through this shorter section of reservoir should approach those observed for lower mainstem Columbia River projects such as John Day Dam (90% survival rate, 5-day travel time).



**Figure 7-14. Average monthly water retention time of Lake Roosevelt presented in terms of the ratio between storage volume and flow rate for the 2000-2015 water years. Gray bounds represent the 20<sup>th</sup>- and 80<sup>th</sup>-percentile bounds. (Reproduced from USDOI 2018).**



**Figure 7-15. Inflow, outflow and water retention time for Grand Coulee Dam for years 2015 to 2017. The range of water retention time for the period March 1 to June 1 ranged from 22-45 days, 16-50 days and 14-31 days for years 2015, 2016 and 2017, respectively. (<http://spokaneTRIBalfisheries.droppages.com/>)**

A key point here is that the majority of Sanpoil River Sockeye are expected to migrate into Lake Roosevelt as fry and rear for one year before migrating to the dam. As they rear, they will distribute themselves in a currently unknown distribution in Lake Roosevelt. Thus, the distance these juveniles would have to migrate to reach the dam will likely vary, with some having to migrate a few miles and others 10's of miles. Since this distribution is not known, migration mortality these fish experienced was captured in modeling assumptions for the rearing life stage.

The rearing conditions Sanpoil River Sockeye experience could have a major effect on outcomes as LCM results forecast that 86% of the Sockeye NOR and HOR production modeled is associated with this population.

The 50 ft. Lake Roosevelt surface elevation change may pose design problems for both juvenile and adult passage facilities. Juvenile facilities will have to effectively function over this range of elevation because the flood control drawdown and refill occurs concurrently with juvenile outmigration. For returning adults, considerably less flexibility may be needed depending on which species are included and if objectives can be met with less than 100% temporal coverage during high water years. The largest change in lake elevations occurs during the spring from March to June (Figure 7-12). This period will coincide with the expected migration window for spring migrating juveniles. This decrease in lake elevation, and increase in river flow, results in the lowest water retention time for the lake (Figure 7-14 and 7-15). Fish migrating in mid-May to July 1 will encounter a reservoir that is filling and exhibiting longer retention time.

The percent of total project discharge passing via the spillway is less than about 8%. If percent flow equals percent fish using that route, then less than 8% of the juveniles migrating from April to May will pass via the spillway. Juvenile survival rate for the Grand Coulee spillway is unknown.

Because the project does spill in the spring, there could be an opportunity to route this flow through a secondary juvenile collector located at or near the spillway without decreasing power generation.

#### **7.6.3 Initial Juvenile Passage Facility Concept at Grand Coulee Dam**

As was the case for Chief Joseph Dam, the following options are initial concepts that will need to be further developed and evaluated with and by the dam owners and operators (USBR, Bonneville Power Administration) during future studies.

The initial concept modeled assumes the use of two FSCs to collect juvenile migrants upstream of Grand Coulee Dam. The first would be located at the Third Powerhouse and the second at the head of reservoir (i.e., in Lake Roosevelt, perhaps 100 miles upstream).

The Third Powerhouse FSC could be located at the downstream terminus of the powerhouse (Figure 7-16)<sup>13</sup>. This location in the forebay is like that of the Rocky Reach Corner Collector. The effective forebay area associated with the FSC is approximately 11 acres; therefore, FCE should be high based on results from other FSCs with similar effective forebay area in the region (Kock et al. 2017 (draft)). For example, River Mill and North Fork Dam (Clackamas River) have an effective forebay area ranging from 7-17 acres and FCE is generally greater than 95% for Chinook, Coho and steelhead. Having a turbine entrance depth of 100 ft. below the FSC should reduce turbine flow competition with the FSC flow which may further enhance FCE.

Johnson et al. (2005) reported that flow entering the forebay moved parallel to the Third Powerhouse, toward where the FSC could be located. Water velocities varied with flow through the powerhouse and were relatively high (up to 0.8 m/s). Hydroacoustic surveys conducted at the same time indicated that fish were located toward the back (downstream) end of the forebay (see FSC location in Figure 7-16). The authors noted that this was a favorite area for anglers to fish.

Hydroacoustic based estimates of resident fish entrainment conducted at Grand Coulee Dam in the 1990's estimated that 85% of all fish entrainment over a three-year period occurred at the Third Powerhouse (Figure 7-17) (LeCaire 2000), providing additional support for placing an FSC at this location.

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<sup>13</sup> The FSC could also be located at the entrance to the powerhouse if it was possible to use a guidance structure such as partial netting to prevent fish from entering the forebay. The results of fish behavior studies at the project would be used to select a preferred location.



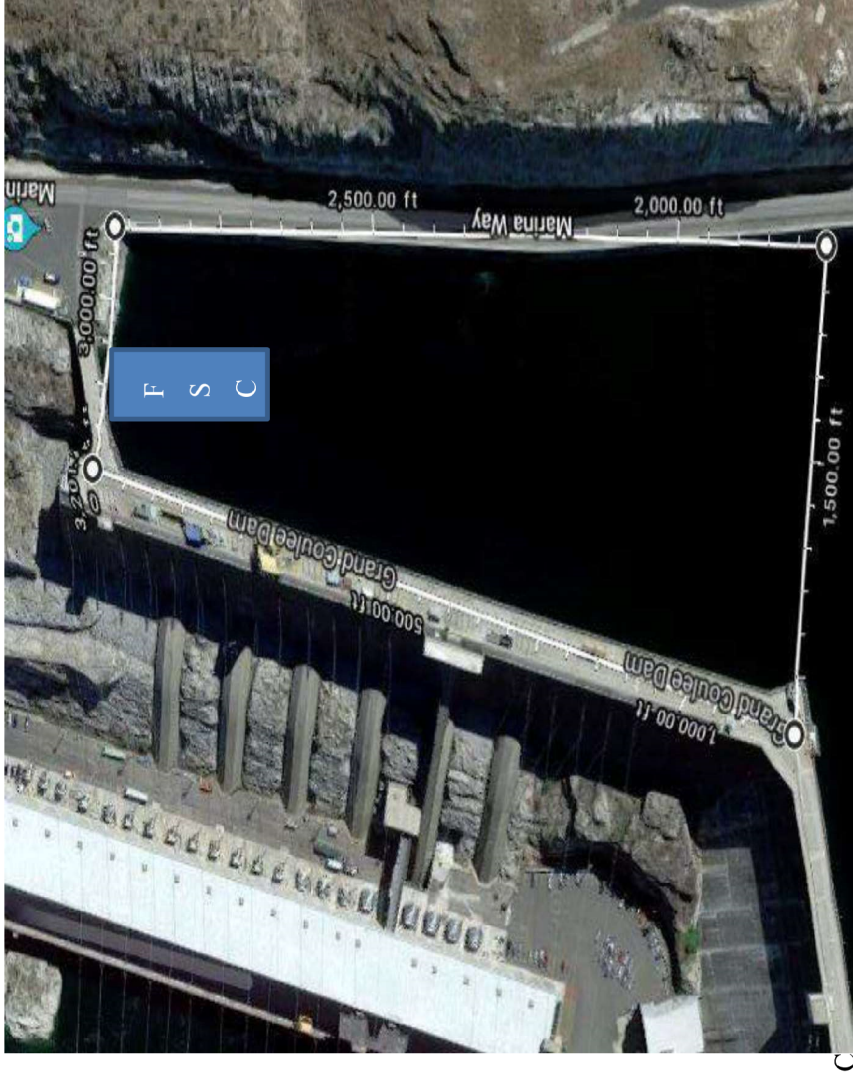


Figure 7-16. Possible location of Grand Coulee Third Powerhouse FSC (blue box). White line denotes effective forebay area. Total effective forebay area is 11 acres.

Total Monthly Entrainment with dam ops Left, Right and Third Powerplants

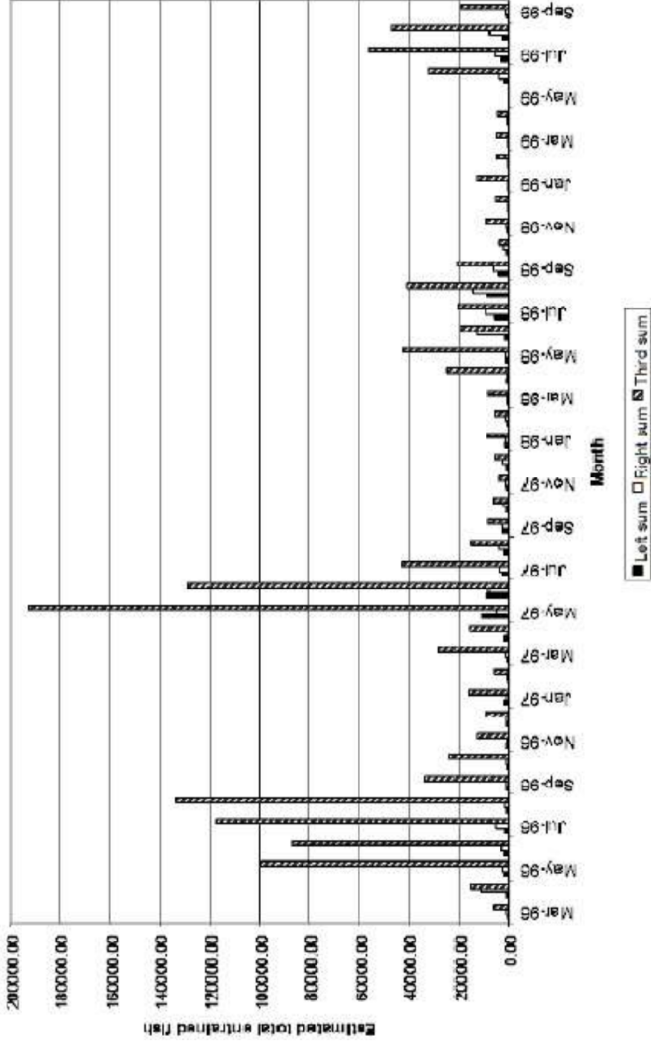


Figure 7-17. Total monthly fish entrainment by power plants at Grand Coulee Dam (1996-1999) (reproduced from LeCaire 2000).

If juvenile fish enter the pump turbines providing water to Banks Lake, and survive at a high rate, then a screening system could be constructed in the canal to catch and then bypass fish back to the Grand Coulee tailrace. Studies conducted by Carlson et al. (2005) using sensor fish estimated that 90% of the pumped kokanee would arrive in Banks Lake without significant injury (did not include possible injury due to pressure effects). These investigations would use HI-Z Turb<sup>TM</sup> tags could be conducted to estimate survival of entrained fish.

As was the case for guide nets at the dam FSC, river flow entering Lake Roosevelt will be quite high (upwards of 150 kcfs). Operating and maintaining a large net system under these flow conditions and changing reservoir length due to reservoir flood control operations will be challenging. Therefore, the head-of-reservoir FSC would likely resemble more of a passive Merwin Trap with lead nets than a true FSC with pumped attraction flow.

The need for an FSC at a head-of-reservoir site would be based on investigations on juvenile survival through the reservoir and dam FSC collection of juveniles originating from mainstem and upper basin

spawning habitats. Fish collected and retained at an FSC could be transferred to floating net pens or barges and transported down reservoir for release into the FSC at the Third Powerhouse to avoid reservoir related mortality. This approach (barging) was used at Mossyrock Dam on the Cowlitz River in the late 1960's (WDF 1970). The Corps of Engineers is exploring using a vessel to transfer fish from the proposed Cougar Dam FSC to a release point in the tailrace.

At Grand Coulee and Chief Joseph dams, FSCs could also be used to collect and relocate resident fish species (i.e., trout and kokanee) back into the reservoir to prevent their entrainment through the turbines and loss to the local fisheries. These larger, resident fish could be screened, automatically sorted, and diverted to floating net pens or barges for later transport and release up reservoir. At Grand Coulee Dam alone, this could save 100's of thousands of fish annually that are currently lost to the reservoir fisheries. FSCs might also be useful in managing non-indigenous, predatory game fish (i.e., Walleye, bass and Northern Pike).

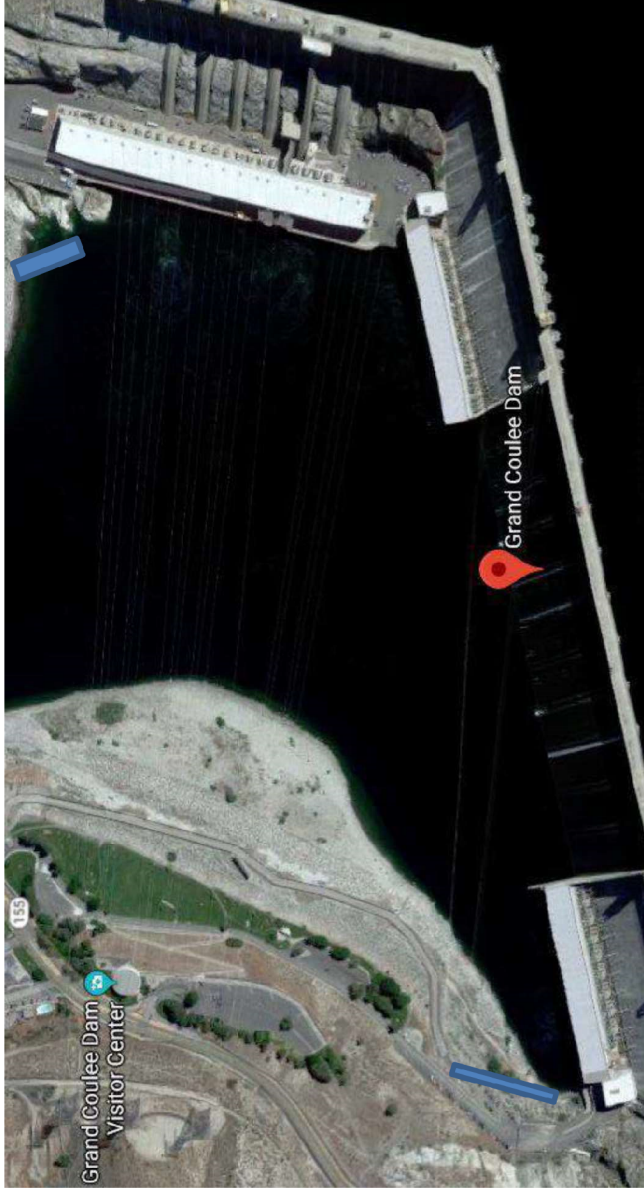
#### **7.6.4 Initial Adult Passage Facility Concept at Grand Coulee Dam**

The following concepts should be considered very preliminary and we anticipate a process that includes multiple stakeholders (federal, state, tribal) to review preliminary study results, consider the site-specific details, fully analyze engineering opportunities and challenges and develop interim fish passage facilities.

Interim, steep pass fish collectors (or other structures yet to be determined) could be installed on each river bank downstream of Grand Coulee Dam and operated with pumped tailrace flows (Figure 7-18). Pumping would be needed during the adult passage season for summer/fall Chinook and Sockeye Salmon. Pumped water would include that necessary for operation of the ladders and a greater quantity for attraction flows.

Each interim steep pass adult collection structure could terminate at a landing below the dam where fish could enter a Whooshh system and be lifted to the forebay and released ([www.whooshh.com](http://www.whooshh.com)). If such a system was not practical, then fish could be loaded into trucks and transported upstream of the dam. The release point would be chosen to prevent adult fish from passing back downstream (fallback) through spill bays and turbines.

Interim facilities need to be enough to allow assessment of the viability of a salmon reintroduction. Passage performance improvement to desired, longer-term standards could be deferred to a decision on any permanent facilities. By that time, there should be enough local and regional information on the efficacy of the Whooshh system, compared to trap-and-haul or traditional concrete ladders. Or perhaps other adult fish passage technologies will be developed as testing is underway.



**Figure 7-18. Possible locations of Grand Coulee left and right bank fish ladders (blue rectangles).**

## **7.7 FISH PASSAGE FINDINGS**

The major findings of the fish passage analysis are provided below for Chief Joseph Dam and Grand Coulee Dam.

### **7.7.1 Chief Joseph Dam**

Major fish passage findings for Chief Joseph Dam are:

1. The effective forebay area of Chief Joseph Dam powerhouse is ~ 51 acres. Data collected by researchers at other FSCs indicate systems installed in forebays with effective areas of < 50 acres generally have higher FCE than those with larger effective forebay areas.
2. The use of nets to guide fish to juvenile collection systems may pose significant operational problems. Flows at Chief Joseph Dam exceed 150 kcfs which is an order of magnitude greater than handled by netting systems at other projects. Other fish guidance systems (e.g., louvers) may need to be explored if nets are not feasible but fish passage efficiency does not meet objectives.
3. An alternative juvenile collection system with high FCE potential for Chief Joseph Dam is a Rocky Reach style corner collector. The corner collector creates an attraction flow of 6,000 cfs.

- The Chelan County PUD has been able to achieve total project survival rates for Chinook and Sockeye of greater than 93% using this system combined with spill.
4. Water retention time in Rufus Woods Lake is estimated at less than 5-days, which is similar to John Day Dam (Lake Umatilla). Juvenile travel time and survival rate at this project are 5-days and ~90%, respectively. The 90% value includes both dam and reservoir (i.e., lake) survival.
  5. Water temperature conditions in Rufus Woods Lake are good for juvenile migration and rearing through at least July. As summer progresses lake temperatures increase, but average monthly temperature is less than approximately 20° C. Modeling results assume that 85% of the summer/fall Chinook leave as spring migrants so summer water temperatures will not be an issue for this life history type.
  6. Spill operations at Chief Joseph Dam occur primarily in the same period as juvenile fish are migrating in the spring. If it is assumed that the percentage of juveniles using spillways for passage is equal to the percent of total project discharge passing via the spillway, then from 1% to 20% of the juveniles may pass via the spillway from March to July. Juvenile survival rate for the spillway, as well as turbines, is unknown.
  7. Adult summer/fall Chinook are expected to arrive at Chief Joseph Dam from late June to early November; Sockeye from mid-June to early September. Water temperatures on average during this period will still likely be below or near the 20°C DADM EPA recommended value. In recent years, Okanogan River summer/fall Chinook and Sockeye adults have done very well despite having to pre-spawn hold in the Columbia River due to a thermal barrier at the mouth of the Okanogan River.
  8. There is an existing fish ladder downstream of Chief Joseph Dam at the Chief Joseph Hatchery. This ladder may be used to collect migrating adults and pass them upstream. The collection efficiency of this ladder for fish not originating from the hatchery is unknown, however, thousands of summer/fall Chinook are collected there each year and many of them are not from that hatchery.
  9. A second ladder could be readily constructed at Foster Creek on the left bank below Chief Joseph Dam. Additional ladder entrances could be in the tailrace of the powerhouse. A Whoosh system could provide the means to pass fish from a partial ladder to a release point in the forebay.

It appears that the environmental, operational and structural conditions at Chief Joseph Dam show good potential to produce a system that provides safe, timely and effective fish passage for summer/fall Chinook and Sockeye Salmon

### **7.7.2 Grand Coulee Dam**

Major fish passage findings for Grand Coulee Dam are:

1. The effective forebay area of Grand Coulee Dam Third Powerhouse is ~ 11 acres, therefore FCE should be high based on results from other FSCs in the region. For example, River Mill and North Fork Dam (Clackamas River) have effective forebay area ranging from 7-17 acres and FCE is generally greater than 95% for Chinook, Coho and steelhead.
2. Hydroacoustic studies conducted at Grand Coulee in the 1990's indicated that 85% of fish entrained at the project was via the Third Powerhouse, providing evidence that an FSC located at this location may exhibit high FCE.
3. While an FSC located at the Third Powerhouse may be effective (high FCE), there are two other powerhouses that may attract and pass fish when operating. The proportion of the fish passing each of the three powerhouses may or may not be related to total flow through each and it's not known if a single collector would be enough to achieve goals. Fish behavior studies would need to be undertaken to document how summer/fall Chinook and Sockeye approach and pass the dam to determine if additional juvenile collection or guidance systems are needed.
4. Based on sensor fish data, fish survival through pump/generators diverting water to Banks Lake may survive at a high rate (90%). Siting a juvenile collection system in the canal may be an option if fish entrainment rate is high.
5. The average 50 ft. seasonal Lake Roosevelt surface elevation change must be considered, particularly for juvenile passage facilities. It is possible that adult collection and bypass facilities could function over a much narrower range of elevation changes that occur from late June to early November, particularly for summer/fall Chinook and Sockeye.
6. The largest change in lake elevations occurs during the spring from March to June. This period will coincide with the expected migration window for spring migrating juveniles. The decrease in lake elevation, and increase in river flow, results in the lowest water retention time for the lake (Figure 7-14 and 7-15). Thus, project operations are compatible with fish migration needs

through mid-May.

7. The use of nets to guide fish to juvenile collection systems has the potential to increase FCE but may pose operational problems. Flows at Grand Coulee Dam exceed 150 kcfs which is an order of magnitude greater than handled by netting systems at other projects.
8. The need for an FSC at a head-of-reservoir site would be based on investigations on survival and dam FSC collection of juveniles originating from mainstem and upper basin spawning habitats and migrating through the long reservoir. Also, other complimentary reintroduction efforts in Canada could influence the need for such an FSC.
9. The 20- to 80 percentile bounds for water retention time in the 152-mile Lake Roosevelt ranges between 30-80 days. In high flow years water retention time may be as low as two weeks. If water retention time predicts the amount of time juveniles require to migrate through the lake, then the achievement of timely passage and survival may be difficult to achieve for actively migrating smolts. Predation rate on migrating juveniles is unknown due to uncertainties in species and life stage specific abundance and their potential overlap in time and space. If survival and behavior do not meet objectives, then specific studies to understand the roles and interactions of water retention time and predation should be considered along with the siting of a head of reservoir FSC.
10. Actively migrating fish from the Sanpoil River would only have to migrate through 30 miles of Lake Roosevelt to reach the dam. Of high importance is the quality of the juvenile Sockeye rearing habitat provided by the lake, as the Sanpoil River population is expected to produce 86% of the total Sockeye production for the area modeled.
11. The ability of juvenile summer/fall Chinook and Sockeye to migrate through Lake Roosevelt at a high survival rate is not as critical as it seems for achievement of goals, at least for the U.S. populations modeled. Both summer/fall Chinook and Sockeye are expected to spawn in riverine habitat and resulting fry rear in Lake Roosevelt. As they rear, they will distribute themselves in a currently unknown distribution in Lake Roosevelt. Thus, the distance these juveniles would have to migrate to reach the dam will likely vary, with some having to migrate a few miles and others 10's of miles
12. Water temperature conditions in Lake Roosevelt are good for juvenile migration and rearing through at least July. As summer progresses, lake temperatures increase, but average monthly temperature is less than approximately 20°C and fish are expected to be able to find thermal refugia at depth (Sockeye) or in tributaries and reservoirs (Chinook).

13. Spill operations at Grand Coulee occur primarily in the same period as juvenile fish are migrating in the spring. If it is assumed that the percentage of juveniles using spillways for passage is equal to the percent of total project discharge passing via the spillway, then less than 8% of the juveniles may pass via the spillway from April to July. Juvenile survival rate for the spillway, as well as turbines, is unknown.
14. Because the project spills during the spring, this flow could be routed into a juvenile collector system without impacting power operations.
15. Adult summer/fall Chinook are expected to arrive at Grand Coulee Dam from late June to early November; Sockeye from mid-June to mid-September. Water temperatures on average during this period will still likely be below or near the 20°C DADM EPA recommended value. In recent years, Okanogan River summer/fall Chinook and Sockeye adults have done very well despite having to pre-spawn hold in the Columbia River due to a thermal barrier at the mouth of the Okanogan River.
16. Project structures and operations appear to be conducive for building a juvenile collection system with potential high FCE at the Grand Coulee Dam Third Powerhouse. The effective forebay area at the Third Powerhouse is only 11 acres. Data collected at other FSC locations show that FCE can be greater than 95% when effective forebay size ranges from about 7-50 acres (Kock et al. 2017 (Draft)). Additionally, fish entrainment studies conducted at the dam indicated that 85% of the fish entrainment occurred at the Third Powerhouse.
17. It appears feasible to build interim adult passage facilities in the tailrace of Grand Coulee Dam. The facilities may consist of a short steep pass ladder that terminates 50 ft. or above the tailrace water level into a holding facility. Here fish could be lifted over the dam using a Whooshh system or transported and released upstream. Ladder and attraction flow could be provided by pumps located in the tailrace.
18. It appears that fish facilities and reintroduction could be successfully attained with minimal or no impacts to current project purposes and benefits.

In conclusion, environmental, operational and structural conditions at Grand Coulee Dam show good potential to produce a fish passage system that provides safe, timely and effective fish passage for summer/fall Chinook and Sockeye Salmon.



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## 8.0 FUTURE FIELD STUDIES AND RECOMMENDATIONS

As stated at the beginning of this report, its purpose is to determine if the reintroduction of salmon to the United States portion of the upper Columbia River upstream of Chief Joseph Dam is likely to achieve identified goals given current hydrologic operations, riverine and reservoir habitat condition, donor stock availability, reintroduction risk to native species and effectiveness of state-of-the-art juvenile and adult passage technology. A positive determination will lead to field studies will be implemented to address key assumptions, and interim passage facilities operated and tested to begin the reintroduction effort.

The analyses provided in this report show that a positive determination is warranted and therefore additional field studies could commence to address key assumptions and develop, and test needed interim facilities. An initial set of possible activities and interim facilities are described in this section for both Chief Joseph Dam and Grand Coulee Dam. We expect this section to evolve with further science and policy review during the finalization of this report and throughout future study development.

It should be noted that detailed study methods would be developed once the decision is made to proceed and resources are provided to carry out the work.

### 8.1 CHIEF JOSEPH ACTIVITIES

Future activities will be focused on testing the key assumptions for the Baseline condition for summer/fall Chinook described below. The interim facilities needed to conduct the studies and begin the reintroduction effort are also discussed.

#### 8.1.1 Testing Key Assumptions

LCM results showed that the Chief Joseph Dam only Baseline scenario produced approximately 16,000 summer/fall Chinook adults, of which 9,400 were harvested and 6,200 returned to spawn. Whether or not this adult production is realized depends on the accuracy of the assumptions that went into modeling. The key assumptions used in modeling form the working hypothesis that captures our understanding of how the system is supposed to work to achieve identified goals. Studies will be focused on testing those assumptions and their associated metrics that, 1) affect management decisions, 2) are uncertain and 3) are feasible to observe and estimate in a reasonable period.

The key assumptions to be tested are:

1. **Fallback rate, spawning and reproductive success of hatchery origin summer/fall Chinook.**  
The key assumption here is that the adult pre-spawn salmon will stay in the reservoir, find the available habitat, and that the habitat produces similar egg to spring migrant survival rates as the Hanford Reach (0.42) and adult pre-spawn survival is at least 72%.
2. **Juvenile Chinook survival rate through Rufus Woods Lake, Chief Joseph turbines and spillways.** Survival rates are expected to be high (>90%) for the lake and approximately 50% for turbines and spillways. The higher the survival rate for these areas the lower the FCE of the proposed FSC can be and still achieve program goals.
3. **Juvenile survival rate from Chief Joseph Dam to Bonneville Dam.** The assumption is that juvenile survival rates are like those observed for Okanogan River summer/fall Chinook (27%).
4. **Adult survival rate from Bonneville Dam to Chief Joseph Dam/Wells Dam.** The assumption is that adult survival rates are similar to those observed for Okanogan River summer/fall Chinook (83%).
5. **Adult collection efficiency of Chief Joseph hatchery ladder.** The hatchery ladder currently provides a location where returning adults can be collected and passed upstream<sup>14</sup>. If the collection efficiency of this facility is high (95%) then an additional adult collection facility below Chief Joseph Dam may not be needed.
6. **Adult behavior Chief Joseph tailrace.** How fish approach and congregate in the tailrace will be used to inform possible sites for the placement of a fish ladder and associated entrances.

The methods used to conduct the studies (Table 8-1) will also provide needed information on juvenile fish behavior as they approach and pass Chief Joseph Dam under both spill and no spill conditions. This data will be used to help site the proposed FSC at the dam and infer how effective such a system might be given

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<sup>14</sup> Wells Dam may provide an additional site to capture returning adults if they were PIT Tagged as juveniles.

passage results at the more surface-oriented spillways.

### **8.1.2 Interim Fish Facilities**

The interim facilities required are those needed to conduct the studies and begin the reintroduction program.

For Chief Joseph Dam these include:

- Hatchery for incubation and early rearing of summer/fall Chinook juveniles.
- Net pens.
- Prototype juvenile collection system at powerhouse.
- Adult collection/transport system at Chief Joseph tailrace.

As called for in the Baseline scenario, 1,000 hatchery origin adults would be released upstream of Chief Joseph Dam as soon as feasible. These adults and their offspring are not only needed for testing key assumptions but also to begin the reintroduction program. LCM results for variant #1 showed that even with existing assumptions regarding juvenile survival rate through turbines and spill bays, an adult release of 1,000 fish produces 2,900 total adults in the next generation.

Depending on study protocols, a small Merwin style juvenile collection system (or other type trap) may be needed in the forebay. This system would be used to collect fish to determine juvenile migration timing, size, and for additional tagging or detection if needed.

Engineering work would start on the design of possible fish ladder and juvenile collection systems for Chief Joseph Dam as well. Final design and construction would not begin until biological testing was complete.

**Table 8-1. Studies proposed to address key assumptions for the Chief Joseph Dam only summer/fall reintroduction effort.**

Study	Key Assumption	Methods
Spawning and Reproductive Success of Summer/Fall Chinook	42% egg-to-spring migrant survival, pre-spawn survival rate of at least 72%	Similar methods as described in Harnish et al. (2013). Spawning surveys, virtual population technique (Cohort reconstruction). Adults will be acoustically tagged and their behavior (e.g., fall back at the dam) and spawning location determined.
Reservoir Migration Survival Rate	>90%	Acoustic tagging following methods similar to those described in Beeman et al. (2014)
Juvenile Survival Rate Through Turbines and Spillways	Turbine $\geq$ 50% Spillway $\geq$ 50%	HI-Z Turb'n Tag evaluation (Mathur et al. 2011)
Juvenile behavior Chief Joseph Dam	No criterion	Acoustic tagged juveniles will provide information for locating a juvenile collection system at Chief Joseph Dam
Juvenile survival rate from Chief Joseph Dam to Bonneville Dam	27% Subyearlings 45% Yearlings	PIT Tags (Faulkner et al. 2017)
Adult Survival from Bonneville Dam to Chief Joseph Dam	83% Summer/Fall 76% Sockeye	PIT Tags (Crozier et al. 2014)
Adult Collection Efficiency Chief Joseph Hatchery Ladder.	95%	PIT Tags. Calculated as the number of PIT Tags detected at the hatchery ladder divided by the number of PIT Tags detected at Wells Dam.
Adult Behavior Chief Joseph tailrace	No criterion for behavior, 95% collection efficiency for installed facility.	Chief Joseph origin adults will be collected at Wells Dam, acoustically-tagged and tracked at receivers located across the tailrace and at the Chief Joseph Hatchery ladder.

## 8.2 GRAND COULEE DAM ACTIVITIES

Both summer/fall Chinook and Sockeye will be reintroduced to habitat upstream of Grand Coulee Dam as part of the reintroduction effort. Studies will be focused on testing the key assumptions for the Baseline conditions for each species. The facilities need for conducting the studies and raising fish for reintroduction are describe below.

### 8.2.1 Testing Key Assumptions

#### 8.2.1.1 *Summer/Fall Chinook*

Summer/Fall Chinook production comes from the Sanpoil River and the Transboundary reach. The key modeling assumptions that affect outcomes are fish passage survival rates through Grand Coulee Dam and Lake Roosevelt, reproductive success of HOR adult outplants, and net pen rearing survival of hatchery juveniles.

The LCM modeling results for the Baseline scenario showed that hatchery inputs to the system are likely

needed over the long term to maintain adult production. This result occurs because expected harvest rate (0.58-0.62) is much larger than the MSY harvest rate for the two natural populations (0.01 and 0.31) given modeling estimates of adult productivity (Table 8-2). Modeling indicates for expected harvest rates, the hatchery component will still produce sufficient adult returns to meet broodstock needs to continue the stocking program and achieve harvest goals.

The Baseline scenario also uses net pens to rear summer/fall Chinook juveniles. The net pens provide a means to acclimate and imprint fish to identified areas. The use of net pens allows the rearing of large numbers of hatchery juveniles without the construction of major hatchery facilities. Survival rate for these pen reared fish is expected to be > 90%.



**Table 8-2. LCM derived Beverton-Holt production function parameters for Sanpoil River and Transboundary summer/fall Chinook.**

Parameter	Sanpoil River and Tributaries	Mainstem Columbia River Upstream Lake Roosevelt (Transboundary)
Productivity	1.01	2.13
Capacity	129,364	61,690
Equilibrium Abundance (NEQ)	1,502	32,732
RMSY	753	19,424
Adult Escapement	749	13,308
MSY Harvest rate	0.01	0.31
Modeled Harvest Rate	0.62	0.58

The key assumptions to be tested are:

1. **Fallback rate, spawning and reproductive success of hatchery origin summer/fall Chinook for both the Sanpoil River and Transboundary populations.** Needed to provide information on effectiveness of adult releases to produce juveniles.
2. **Survival rate of net pen reared summer/fall Chinook.** Net pens are proposed for rearing juvenile Chinook. The expected survival rate for fish reared in these pens is > 90%.
3. **Juvenile Chinook survival rate through Lake Roosevelt, Grand Coulee Dam turbines and spillways.** Survival rates are expected to be approximately 60% for Transboundary and > 90% for Sanpoil River, populations. Juvenile survival rate passing through turbines and spillways > 50%. Juvenile survival rate for fish pumped into Banks Lake (>90%). The higher the survival rate for these areas the lower the FCE of the proposed FSC can be and still achieve program goals.
4. **Juvenile travel time through Lake Roosevelt.** Hypothesized that juvenile travel time is similar to water travel time. The length of time fish take to reach the ocean may affect their ability to transition from freshwater to saltwater, thereby reducing survival.
5. **Juvenile collection efficiency of prototype head of Lake Roosevelt juvenile collection system.**  
A Merwin or other type of juvenile collection system will be tested if juvenile survival rate through Lake Roosevelt is less than 60%. The baseline scenario assumes that a collection system can be built at the head of the reservoir that will achieve an FCE of 70%.
6. **Juvenile collection efficiency of prototype Third Powerhouse juvenile collection system.**

Because of the likely costs of an FSC, a prototype system (e.g., Merwin Trap) would be tested to determine likely success of a full system. The system selected for testing would be dependent on the ability to operate guide nets and costs of a prototype compared to a full system.

7. **Juvenile behavior at Grand Coulee Dam.** No criterion. Acoustic tags used to determine fish behavior at dam. This data used to locate FSC at Grand Coulee Dam
8. **Juvenile survival rate from Chief Joseph Dam to Bonneville Dam.** The assumption is that juvenile survival rates are similar to those observed for Okanogan River summer/fall Chinook (27%).
9. **Adult survival rate from Bonneville Dam to Chief Joseph Dam.** Similar to Okanogan River summer/fall Chinook (83%)
10. **Adult survival rate Chief Joseph Dam and Grand Coulee Dam.** Model assumption of 94% and 90% survival rate for Chief Joseph and Grand Coulee dams, respectively.
11. **Adult behavior Grand Coulee Dam tailrace and Lake Roosevelt.** How fish approach and congregate in the tailrace will be used to inform possible sites for the placement of a fish collection/bypass facility and associated entrances. Fish behavior in the reservoir will inform release locations for hatchery and naturally produced fish.

The methods used to conduct the studies (Table 8-3) will also provide needed information on juvenile fish behavior as they approach and pass Grand Coulee Dam under both spill and no spill conditions. This data will be used to help site the proposed FSC at the dam and infer how effective such a system might be given passage results at the more surface-oriented spillways. Estimates of the percentage of migrants entrained into the Banks Lake canal and their survival rate will also be developed to determine if a collection system can be in the canal.

For Chief Joseph Dam, a cohort reconstruction method was chosen as a likely candidate approach for determining spawning success and resultant production of juveniles and adults. This approach could be used because survival through Chief Joseph Dam is expected to be high enough to produce returning adults even without juvenile collection facilities. This is not expected to be the case for Grand Coulee.

For Grand Coulee, the spawning success and resultant juvenile production in the riverine environment would use a combination of spawner surveys and trapping of juvenile fish. This method would provide an estimate for the number of fish entering Lake Roosevelt but not for survival once they entered the lake.

To estimate juvenile survival in Lake Roosevelt a study such as that described by Kock et al. (2018) may be undertaken. The authors used a staggered-release recovery model and a parentage-based tagging (PBT) N-mixture model to determine reservoir survival probability of juvenile spring Chinook fry at Lookout Point Dam (Willamette River). However, Lookout Point Reservoir is only 10 miles long. It may be infeasible to conduct such a study in the 152-mile Lake Roosevelt.

**Table 8-3. Studies proposed to address key assumptions for Sanpoil River summer/fall reintroduction effort.**

Study	Key Assumption	Methods
Spawning and Reproductive Success of Summer/Fall Chinook	Egg-to-spring migrant survival Transboundary = 42% Sanpoil = 13% Pre-spawn survival rate of at least 72%	Similar methods as described in Harmish et al. (2013). Spawning surveys, virtual population technique (Cohort reconstruction). Investigate use of Kock et al. (2018) staggered release strategy or PBT N-mixture. Acoustically tag adults and track behavior (e.g., fall back at the dam) and spawning location.
Survival rate of net pen reared summer/fall Chinook	>90%	Simple enumeration of fish and out.
FCE head of reservoir (Lake Roosevelt) prototype juvenile collector	FCE of > 30%	Tested if juvenile survival rate through Lake Roosevelt is < 60%.
Reservoir Migration Survival Rate	>90% for active migrants entering from Sanpoil, 60% for Transboundary	Acoustic tagging following methods similar to those described in Beeman et al. (2014)
Juvenile travel time through Lake Roosevelt	Similar to water travel time	Acoustic Tagging – Beeman et al. (2014).
Juvenile Fish Behavior Grand Coulee Dam	No criterion	Acoustic Tagging – track juvenile migration behavior as they approach and pass Grand Coulee Dam and Chief Joseph Dam if tag life permits.
FCE of Third Powerhouse juvenile collection system	FCE > 37%	Capture rate of acoustic – tagged fish. The 37% value is approximately 50% of FSC value modeled in Baseline. Substantial adult production still results from this lower FCE value.
Juvenile Survival Rate Through Turbines and Spillways	Turbine > 45% Spillway > 45% Banks Lake Canal > 90%	HI-Z Turb'n Tag evaluation (Mathur et al. 2011)
Juvenile survival rate from Chief Joseph Dam to Bonneville Dam	27% Subyearlings 45% Yearlings	PIT Tags (Faulkner et al. 2017)
Adult Survival from Bonneville Dam to Chief Joseph Dam	83%	PIT Tags (Crozier et al. 2014)

<p>Adult Survival Chief Joseph Dam and Grand Coulee Dam</p>	<p>Chief Joseph = 94% Grand Coulee = 90%</p>	<p>PIT Tags (Crozier et al. 2014). The criteria are based on combined dam and reservoir survival.</p>
<p>Adult Behavior Grand Coulee Tailrace</p>	<p>No Criterion for behavior, 95% collection efficiency for installed facility.</p>	<p>Grand Coulee/Chief Joseph origin PIT Tagged adults will be collected at Wells Dam; acoustically-tagged, transported and released upstream of Chief Joseph Dam and tracked at receivers located across the tailrace.</p>

### 8.2.1.2 *Sockeye*

Sockeye production will originate from the Sampoil, Christina Lake (Kettle River) and the Transboundary reach, with the most production originating from the Sampoil River (Table 8-4). For the Sampoil River and Transboundary reach, it's assumed that fish spawn in the river environment and resulting fry migrate into Lake Roosevelt to rear for one year before migrating to the dam. In contrast, Christina Lake fry rear in the lake and then migrate to Lake Roosevelt as 1+ juveniles. Because of the difference in life history assumptions for the populations, the key assumptions also differ to some degree.

For Christina Lake, 1+ juvenile migration success to Grand Coulee is important, while for the other two populations it is rearing survival in Lake Roosevelt. How important 1+ juvenile migration survival rate through the reservoir is dependent on whether the fish that do not arrive at the dam are actual mortalities or are alive and may possibly migrate as 2+ fish.

Regarding fish passage assumptions, the results of the LCM sensitivity analysis showed that adult Sockeye returns to Grand Coulee dam were still substantial (average of 32,000) even when FCE was reduced from the baseline assumption of ~75% to 37%. This result occurs because of the assumed fry/parr to yearling survival rate to below Chief Joseph Dam of 25% for the 5 million hatchery fish released to Lake Roosevelt<sup>15</sup>. This results in approximately 1.3 million HOR Sockeye juveniles surviving to the tailrace of Chief Joseph Dam. For Christina Lake Sockeye, a lower FCE at the dams has little effect on production, as its assumed that 70% of the 1+ juvenile migrants arriving at Lake Roosevelt are caught at the head of reservoir juvenile collector.

Net pens will be used to rear hatchery Sockeye in Lake Roosevelt. Fish reared in these net pens are expected to have a survival rate of > 90% prior to their release.

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<sup>15</sup> Modeling assumed an egg to yearling migrant survival rate of 41%. The value was based on results from the Skaha hatchery where 25-60% of the fry released survived to the yearling stage (Bussanich 6/15 memo on Skaha Lake program).

**Table 8-4. LCM derived Beverton-Holt production function parameters for modeled Sockeye populations.**

Parameter	Christina Lake	Sanpoil River	Mainstem Columbia River Upstream Lake Roosevelt (Transboundary)
Productivity	1.13	1.58	1.58
Capacity	4,228	84,165	12,172
Adult Equilibrium Abundance (NEQ)	487	30,832	4,458
RMSY	251	17,167	2,482
Escapement	236	13,665	1,976
MSY Harvest Rate	0.06	0.2	0.2
Modeled Harvest Rate	0.27	0.27	0.27

Based on LCM results the key assumptions to be tested for Sockeye are:

1. **Fry/Parr survival rate for hatchery origin fish released to Lake Roosevelt.** The expected average survival rate to migrant is 41%. The higher the survival rate the larger the number of adults returning to the system.
2. **Survival rate of net pen reared Sockeye.** Net pens are proposed for rearing juvenile Sockeye. The expected survival rate for fish reared in these pens is > 90% prior to release to the lake.
3. **Juvenile Sockeye survival rate through Lake Roosevelt, Grand Coulee Dam turbines and spillways.** Survival rates through Lake Roosevelt are expected to be approximately 60% for Transboundary and Christina Lake – and > 90% for Sanpoil River 1+ juvenile migrants. Juvenile survival rate passing through turbines and spillways is expected to be  $\geq$  45%. Juvenile survival rate for fish pumped into Banks Lake is theorized to be  $\geq$  90%. The higher the survival rate for these facilities the lower the FCE of the proposed FSC can be and still achieve program goals.
4. **Juvenile Sockeye travel time through Lake Roosevelt.** Hypothesized that juvenile travel time is similar to water travel time and faster juvenile travel time results in higher survival rate.
5. **Juvenile Sockeye collection efficiency of prototype head of Lake Roosevelt juvenile**

**collection system.** A Merwin or other type of juvenile collection system will be tested if juvenile survival rate through Lake Roosevelt is less than 60%. The baseline scenario assumes that a collection system can be built at the head of the reservoir that will achieve an FCE of 70%.

6. **Juvenile collection efficiency of prototype Third Powerhouse juvenile collection system.** Because of the likely costs of an FSC, a prototype system (e.g., Merwin Trap) would be tested to determine likely success of a full system. The system selected for testing would be dependent on the ability to operate guide nets and costs of a prototype compared to a full system. FCE target of 37% (approximately 50% of modeled values).
7. **Juvenile behavior at Grand Coulee Dam.** Not criterion. Data from acoustic tagged fish used to locate FSC at Grand Coulee.
8. **Juvenile survival rate from Grand Coulee Dam to Chief Joseph Dam.** Survival rate of 92% for migrants.
9. **Juvenile survival rate from Chief Joseph Dam to Bonneville Dam.** The assumption is that juvenile survival rates are like those observed for lower river yearling Sockeye (41%).
10. **Adult survival rate from Bonneville Dam to Chief Joseph Dam.** Similar to Okanogan River Sockeye (76%)
11. **Adult survival rate Chief Joseph Dam and Grand Coulee Dam.** Model assumption of 93% and 89% survival rate for Chief Joseph and Grand Coulee dams, respectively.
12. **Adult behavior Grand Coulee Dam tailrace.** How fish approach and congregate in the tailrace will be used to inform possible sites for the placement of a fish ladder and associated entrances.
13. **Adult spawning success of out-planted Sockeye hatchery and natural origin adults.** A major assumption is that hatchery- and natural origin fish out-planted as adults will spawn successfully (85% pre-spawn survival rate).



### **8.2.2 Interim Fish Facilities**

The interim facilities needed to conduct studies and begin the reintroduction program above Grand Coulee Dam include:

- Hatchery for incubation and early rearing of Sockeye and summer/fall Chinook juveniles.
- Net pens.
- Prototype juvenile collection system at Third Powerhouse.
- Merwin style juvenile collection system at head of reservoir (Lake Roosevelt).
- Adult collection/transport system in Grand Coulee tailrace.

**Table 8-5. Studies proposed to address key assumptions for the Grand Coulee Dam Sockeye reintroduction effort for Sockeye.**

Study	Key Assumption	Methods
Fry to yearling migrant for hatchery fish stocked in Lake Roosevelt	41%	Investigate use of Kock et al. (2018) staggered release strategy or PBT N-mixture.
Survival rate of net pen reared Sockeye	>90%	Simple enumeration of fish and out.
FCE Head Of Reservoir (Lake Roosevelt) Prototype Juvenile Collector	FCE of > 30%	Tested if juvenile survival rate through Lake Roosevelt is < 60%.
Reservoir Migration Survival Rate	≥ 90% for active yearling migrants entering from Sanpoil, 60% for Transboundary	Acoustic tagging following methods similar to those described in Beeman et al. (2014).
Juvenile travel time through Lake Roosevelt	Similar to water travel time	Acoustic Tagging – Beeman et al. (2014).
Juvenile Fish Behavior Grand Coulee Dam	No criterion	Acoustic Tagging – track juvenile migration behavior as they approach and pass Grand Coulee Dam and Chief Joseph Dam if tag life permits.
FCE of Third Powerhouse juvenile collection system	FCE > 30%	Capture rate of acoustic – tagged fish.
Juvenile Survival Rate Through Turbines and Spillways	Turbine ≥ 45% Spillway ≥ 45% Banks Lake Canal > 90%	HI-Z Turb'n Tag evaluation (Mathur et al. 2011)
Juvenile survival rate from Chief Joseph Dam to Bonneville Dam	41% Yearlings	PIT Tags (Faulkner et al. 2017)
Adult Survival from Bonneville Dam to Chief Joseph Dam	83%	PIT Tags (Crozier et al. 2014)
Adult Survival Chief Joseph Dam and Grand Coulee Dam	Chief Joseph = 94% Grand Coulee = 90%	PIT Tags (Crozier et al. 2014). The criteria are based on combined dam and reservoir survival.
Adult Behavior Grand Coulee Dam Tailrace and Lake Roosevelt	No Criterion for behavior, 95% collection efficiency for installed facility.	Grand Coulee/Chief Joseph origin PIT Tagged adults will be collected at Wells Dam, acoustically-tagged, transported and released upstream of Chief Joseph Dam and Grand Coulee Dam.
Adult NOR and HOR Spawning Success	85%	Fish out-planted will be tagged with acoustic tags and their behavior and ultimate spawning location determined. Spawning surveys would be used to determine if the fish successfully spawned. Receivers would be placed at the dam to determine if fish fall back over the dam.

### 8.3 REFERENCES

- Beeman J., H. Hansel, A. Hansen, S. Evans, P. Haner, T. Halton, E. Kofoot, J. Sprando and D. Smith. 2014. Behavior and Dam Passage of Juvenile Chinook Salmon at Cougar Reservoir and Dam, Oregon, March 2012-February 2013. USGS Open File Report 2014-1177.
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- Faulkner J., D. Widener, S. Smith, T. Marsh and R. Zabel. 2017. Survival Estimates for the Passage of Spring-Migrating Juvenile Salmonids through Snake and Columbia River Dams and Reservoirs, 2016. Fish Passage Center (FPC). 2013. River Flows, Fish Migration and Survival.
- Harnish R., R. Sharma, G. McMichael, R. Langshaw and T. Pearsons. 2013. Effect of hydroelectric dam operations on the freshwater survival of Columbia River fall Chinook salmon. *Can. J. Fish. Aquat. Sci.* 71: 602-615.
- Mathur D., P. Heisey, E. Euston and J. Skalski. 2011. Turbine passage survival estimation for Chinook salmon smolts (*Oncorhynchus tshawytscha*) at a large dam on the Columbia River. *Canadian Journal of Fisheries and Aquatic Sciences* 53(3):542-549 · April 2011
- Pearl A., M. Laramie, C. Baldwin, J. Rohrback and P. Phillips. 2015. The Chief Joseph Hatchery Program 2015 Annual Report.
- U.S. Columbia Basin Tribes and Canadian First Nations, 2015, Fish passage and reintroduction into the U.S. and Canadian Upper Columbia Basin: Joint paper of the U.S. Columbia Basin Tribes and Canadian First Nations, accessed, February 25, 2017, at [https://ucut.org/wp-content/uploads/2016/09/Fish\\_Passage\\_and\\_Reintroduction\\_into\\_the\\_US\\_And\\_Canadian\\_Upper\\_Columbia\\_River4-1.pdf](https://ucut.org/wp-content/uploads/2016/09/Fish_Passage_and_Reintroduction_into_the_US_And_Canadian_Upper_Columbia_River4-1.pdf)
- U.S. Corps of Engineers (USACE). 2011. Alternatives Report: Lookout Point Dam, Middle Fork Willamette River, Oregon. Lookout Point Head of Reservoir Collection alternatives Study. Prepared by CH2MHILL, AECOM and BioAnalysts.

From: Miles,Tucker (BPA) - LN-7

Sent: Mon Mar 15 14:34:07 2021

To: Senters,Anne E (BPA) - LN-7; Key,Philip S (BPA) - LN-7

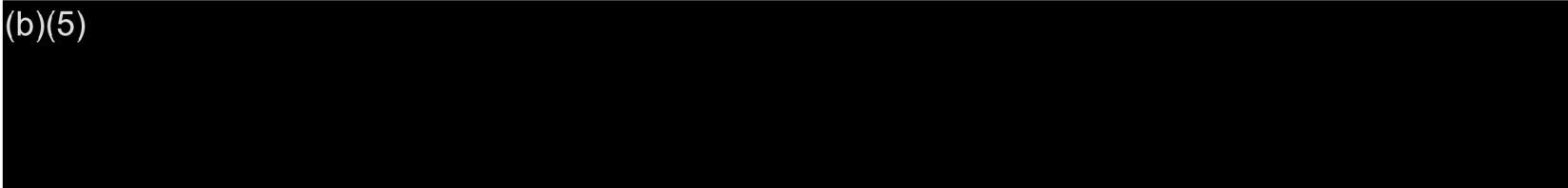
Subject: "final" draft of blocked area charter

Importance: Normal

Attachments: Upper Columbia Blocked Areas Anadromous Fish Working Group Final Draft Charter- 3-10-21 - clean.pdf

Hi. FYI, this is the edit-now-or-forever-hold-your-peace version of the blocked area charter. By “now,” the facilitator means Mar. 24; and by “edit” the facilitator means only if there are major heartburn deal breakers. After that, pending any feedback, the facilitator will re-distribute this to the full group so that each entity’s leadership can confirm willingness to support the charter by May 7. It will not be signed.

(b)(5)



**Tucker Miles**

Attorney-Adviser | Office of General Counsel

**Bonneville Power Administration**  
[bpa.gov](http://bpa.gov) | P 503-230-5968

**FINAL DRAFT CHARTER**  
**FOR THE**  
**UPPER COLUMBIA BLOCKED AREA ANADROMOUS FISH WORKING GROUP**  
*As of March 10, 2021*

**PURPOSE**

The purpose of the Upper Columbia Blocked Area Anadromous Fish Working Group (BAAF Working Group) is to establish and conduct a collaborative effort among Tribes and Federal and State agencies to better share, integrate, organize, understand, and coordinate the Members' views, authorities, plans, and potential actions regarding the reestablishment of anadromous fish above Chief Joseph and Grand Coulee dams, also known as the Upper Columbia River blocked area ("blocked area").

**NEED**

Upper Columbia River tribes, the Northwest Power and Conservation Council (NPCC), the State of Washington, and others in the region have been exploring the feasibility of anadromous fish passage and reintroduction into the blocked area by conducting studies, coordinating, and initiating small-scale releases. The goal is to restore culturally, spiritually, nutritionally, ecologically, and economically important salmon and steelhead to their historical range. Passage and reintroduction issues have arisen in several forums, including in (1) the Columbia River System Operations Environmental Impact Statement; (2) the NPCC Fish and Wildlife Program; and (3) the Columbia River Treaty. The BAAF Working Group is convened as a US forum to enhance dialogue, regional coordination, and potential action on the issue of reestablishment of anadromous fish in the blocked area.

**SCOPE**

The geographic scope of re-establishment activities under this Charter is that portion of the Upper Columbia River basin which lies above Chief Joseph and Grand Coulee dams. The term "re-establishment of anadromous fish in the blocked area" refers to any actions, including studies, that one or more of the Members may consider taking, whether in support of statutory mitigation or discretionary efforts, to restore anadromous fish to currently inaccessible habitat in the blocked area. The BAAF Working Group will not address issues related to harvest allocation.

**TOPICS AND TASKS**

Anticipated topics and tasks could include:

- Gather and summarize goals established in other forums for anadromous fish passage, reintroduction, and management in the blocked area and develop additional goals as needed.

- Share information and seek to coordinate plans regarding anadromous fish reestablishment activities in the blocked area consistent with each Member's missions, authorities, and responsibilities.
- Identify and discuss proposed anadromous fish reestablishment activities in the blocked area including, but not limited to, fishery activities, research, studies, education, passage, and reintroduction implementation. As mentioned above, this does not include harvest management outside of the blocked area.
  - If necessary, identify other forums and processes that may be needed for a more thorough investigation of certain proposed alternative actions.
  - Integrate programs to research, monitor, and evaluate progress toward established goals in order to avoid duplication of effort and expedite deliverables.
- Build on previous and planned studies including those conducted under the NPCC Fish and Wildlife Program's phased approach, or by tribes or others to investigate anadromous fish passage and reintroduction in the blocked area.
- Convene a working team of the Members' fish biologists and other appropriate technical staff to review the results of studies conducted to implement the NPCC Fish and Wildlife Program's phased approach to investigating passage and reintroduction and other completed studies and provide feedback on additional studies being developed by the region's tribal, state, and federal fish and wildlife agencies. The working team would present information about the studies to the Plenary Group for review and potential endorsement.
- Discuss implementation of the NPCC Fish and Wildlife Program's phased approach.
- Coordinate policy positions and strategies as appropriate.
- Develop and coordinate shared messaging and outreach strategies as appropriate.
- Develop a website or sharing platform for documenting and sharing information about the BAAF Working Group, its meetings, background information, and documents developed by Members.
- Coordinate and explore shared opportunities to promote efficiencies and avoid duplication of effort, with the goal of expediting and maximizing deliverables.
- Discuss strategies and pathways for future coordination, participation and support for planning and implementation by each Member.
- Share information and, to the extent possible, summarize concerns regarding the issue of anadromous fish reestablishment in the blocked area, including a Member's applicable legal authorizations, and any specific proposals made by a Member, with the goal of transparency, achieving mutual understanding of the Members' positions, and providing a foundation to identify solutions and a path forward that is supported by all Members.
- Endeavor to agree on an outcome or actionable steps among the Members regarding the implementation of anadromous fish re-establishment in the blocked area that

incorporates studies, implementation actions, funding, and a reasonable timeline for these efforts.

## STRUCTURE

**Plenary Group.** The BAAF Working Group will be the Plenary Group comprised of an elected official or designated representative of the Members.

**Coordinating Team.** The BAAF Working Group will designate a balanced, representative, small group of Members' representatives or staff as a Coordinating Team to address specified process-related tasks and responsibilities in between meetings of the Plenary Group. A core responsibility of the Coordinating Team will be to develop proposed agenda topics and meeting materials with assistance from the Project Team for the BAAF Working Group meetings.

**Project Team.** The Project Team is a small group composed of the consultant team with Reclamation staff on behalf of the Federal Agencies. Its role is to specifically help with process tools and between meeting tasks. The Project Team will have no substantive direction for the group.

**Working Teams.** As needed, the BAAF Working Group may organize one or more Working Teams comprised of designated staff or other representatives of the Members to more deeply explore and develop relevant topics in order to advance the Plenary Group's substantive progress regarding the Topics and Tasks identified in this Charter.

## MEETING PARTICIPATION

### **Principles.**

- Members of the BAAF Working Group will:
  - Be open, transparent, inclusive, and accountable in their actions. They will adhere to the highest ethical standards in their work and deliberations and are committed to using informed judgment and thoughtfulness in their participation.
  - Listen and seek to understand the broad sovereign and stakeholder interests and diversity within the Columbia River basin, with focus on the blocked area.
- Provide input that is strategic and informed by applicable science, policy, legal, financial, and other considerations, and seeks to reflect Columbia River basin-wide interests and long-term implications. While the work of the BAAF Working Group will be accomplished collaboratively whenever possible, when individual Members disagree with a consensus view, they may explain their positions to the full Plenary Group.



- The BAAF Working Group is meant to be a collaborative effort between the Members. As such, no particular Member or Members will hold “leadership” above any other Member or the direction of the BAAF Working Group.

**Process Facilitation.** The Bureau of Reclamation has retained facilitator-consultants to assist in ensuring BAAF Working Group meetings run smoothly and efficiently. The facilitator-consultants will work with the Project Team on behalf of all Members to:

- Develop draft agendas, distribute meeting materials, facilitate meetings, work to resolve any process issues or impasse that may arise, prepare meeting summaries and action items, and other tasks as requested.
- Provide a process that supports constructive, collaborative, and productive dialogue, advances substantive progress, and stays focused on the agreed-upon scope of work for the BAAF Working Group.
- Offer process skills to support open, balanced, respectful dialogue and interest-based BAAF Working Group problem-solving.
- Track areas of alignment and divergence, recommendations, and next steps.
- Send draft documents to BAAF Working Group Members for review, comment, modification, or correction before finalizing.

**Attendance.** Each BAAF Working Group Member will designate one (1) primary individual representative to represent the Member and one or more alternates. The designated representative will make a good faith effort to attend each BAAF Working Group meeting. It is the responsibility of each Member’s designated primary representative to stay fully briefed on all BAAF Working Group meeting discussions and deliberations.

Alternates will represent the designated primary representative, when the primary representative’s attendance is not possible. Primary representatives are expected to keep their designated alternate(s) apprised of the discussion of the Plenary Group, so that the alternate can participate in an informed way.

**Non-member Participation.** Non-members will be available to the BAAF Working Group to provide expertise and resources throughout the process. While they may be invited to present information as a resource to the group, they are not members and cannot provide formal advice or recommendations, in accordance with the Federal Advisory Committee Act.

It is possible that other regional sovereigns have an interest in anadromous fish re-establishment and may be invited to participate.

## **PROCESS GROUND RULES**

- Honor the agenda or modify by agreement.
- Learn from and understand each other's perspective.
- Be respectful, candid, and constructive.
- Provide balanced speaking time.
- Test assumptions by asking questions.
- Provide explanations for views and interests.
- Explore innovative solutions based upon common interests.
- Strive to resolve differences and seek common ground.
- Discuss topics together rather than in isolation.
- Strive for transparency. Limit side conversations.
- Commit to good faith efforts towards achieving substantive progress.
- Any analyses, reports, or recommendations developed through this endeavor will be available to the public.

## **MEMBER PARTICIPATION IN OTHER FORUMS**

Participation in the BAAF Working Group will not limit any Member from taking any actions or asserting any positions in any forum that the Member determines is in its best interest and is consistent with its legal authorities and/or regulatory obligations.

## **RECOMMENDATIONS, SEEKING ALIGNMENT, AND CONSENSUS**

BAAF Working Group Members and will provide input based on their respective interests, mandates, and responsibilities. Members will endeavor to engage in dialogue using a collaborative approach to seek common ground, support shared interests, address differences, and strive to seek alignment and reach consensus on recommendations and other decisions of the BAAF Working Group wherever possible.

## **RESERVATION OF RIGHTS**

Neither this Charter nor participation in the BAAF Working Group will:

- Affect any Member's legal authorities or responsibilities, affect the discretion of any Member, or otherwise alter or affect the statutory and other legal rights of any Member.
- Create any new right to administrative review, judicial review, or any other right, benefit, or trust responsibility.
- Abrogate, modify, impair, or otherwise affect tribal treaty and other federally reserved rights or the federal trust responsibility.
- Waive or otherwise affect any Member's right to assert any claims, defenses or arguments in any forum or proceeding.

## APPROVAL AND ADOPTION

The parties below have agreed by consensus to approve and abide by this Charter, as drafted above, for the Upper Columbia Blocked Areas Anadromous Fish Working Group.

## MEMBERS

Members of this Working Group are sovereigns with management interests and/or authorities related to anadromous fish in the Upper Columbia blocked area. This member list may change during the term of the BAAF Working Group, as sovereigns are added, discontinue participation, or delegate participation to represent them in whole or in part. Each Member may discontinue participation in the BAAF Working Group at any time.

- **Tribes:** Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Confederated Tribes of the Umatilla Indian Reservation, Kalispel Tribe of Indians, Kootenai Tribe of Idaho, Nez Perce Tribe, Confederated Salish and Kootenai Tribes of the Flathead Nation, Spokane Tribe of Indians, Confederated Tribes and Bands of the Yakama Nation.
- **States:** Oregon, Washington, Idaho, and Montana
- **Federal Agencies:** Columbia Pacific Northwest Region, Bureau of Reclamation, Department of the Interior; Northwestern Division, U.S. Army Corps of Engineers, Department of Army; Pacific Northwest Region, U.S. Fish and Wildlife Service, Department of the Interior; West Coast Region, NOAA Fisheries, Department of Commerce; Bonneville Power Administration, Department of the Energy; Northwest Region, Bureau of Indian Affairs, Department of the Interior; and National Park Service, Department of the Interior.

From: Cogswell, Peter (BPA) - DI-7

Sent: Wed May 19 14:47:43 2021

To: Ball, Crystal A (BPA) - EW-4; Armentrout, Scott G (BPA) - E-4; Cook, Joel D (BPA) - K-7; Hairston, John L (BPA) - A-7; Zelinsky, Benjamin D (BPA) - E-4

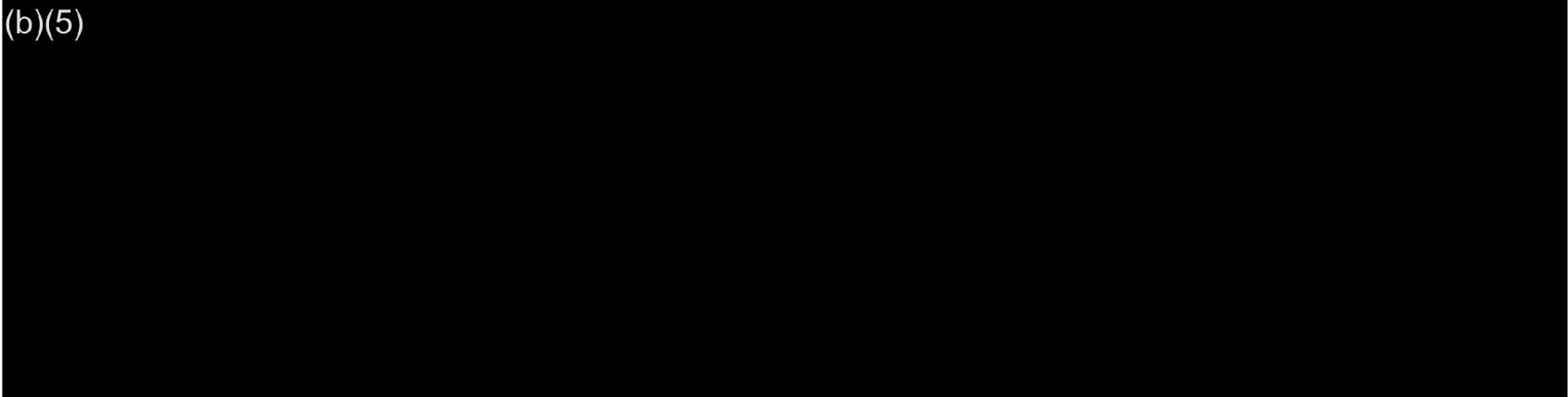
Cc: Baskerville, Sonya L (BPA) - DIN-WASH; Welch, Dorothy W (BPA) - E-4; Johnston, Kenneth H (BPA) - DIT-7

Subject: Colville request for conversation

Importance: Normal

Hey all

(b)(5)



Thanks.

PTC

From: Cook,Joel D (BPA) - K-7

Sent: Wed May 19 17:12:39 2021

To: Cogswell,Peter (BPA) - DI-7; Ball,Crystal A (BPA) - EW-4; Armentrout,Scott G (BPA) - E-4; Hairston,John L (BPA) - A-7; Zelinsky,Benjamin D (BPA) - E-4

Cc: Baskerville,Sonya L (BPA) - DIN-WASH; Welch,Dorothy W (BPA) - E-4; Johnston,Kenneth H (BPA) - DIT-7

Subject: RE: Colville request for conversation

Importance: Normal

Peter,

From my perspective I would have no problem listening to them as long as we don't commit to anything.

**From:** Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Wednesday, May 19, 2021 2:48 PM

**To:** Ball,Crystal A (BPA) - EW-4 <caball@bpa.gov>; Armentrout,Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Cook,Joel D (BPA) - P-6 <jdcook@bpa.gov>; Hairston,John L (BPA) - A-7 <jlhairston@bpa.gov>; Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Cc:** Baskerville,Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>; Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Subject:** Colville request for conversation

Hey all

(b)(5)



Thanks.

PTC

From: Key, Philip S (BPA) - LN-7

Sent: Wed May 19 17:24:29 2021

To: Armentrout, Scott G (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Baskerville, Sonya L (BPA) - DIN-WASH

Cc: Miles, Tucker (BPA) - LN-7; Senters, Anne E (BPA) - LN-7

Subject: RE: Colville request for conversation

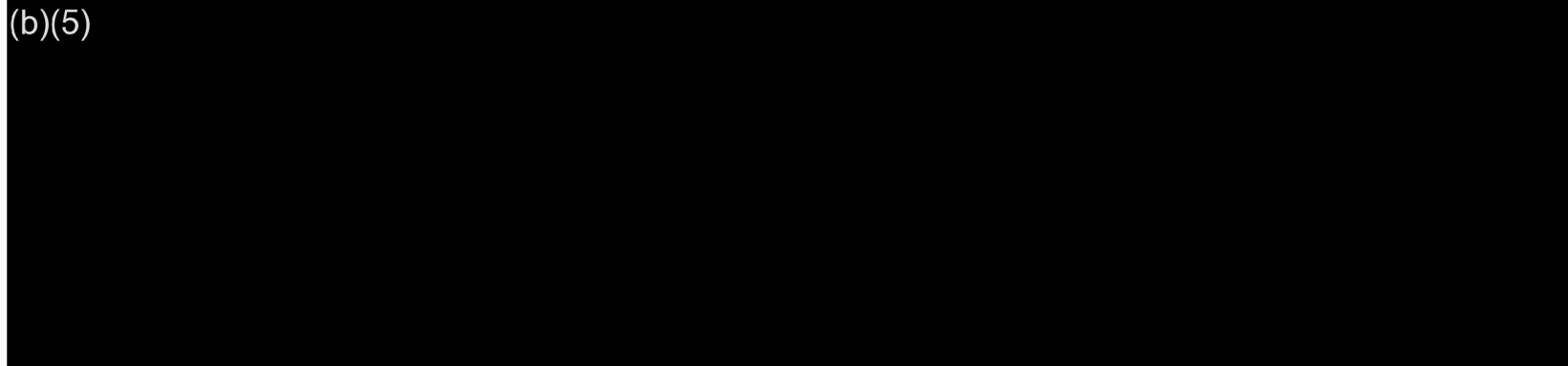
Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

**Attorney Client/Deliberative Process Privileged: Do not release under FOIA**


Yes, Scott, we have a few thoughts.

(b)(5)





(b)(5)



Philip and Tucker

**From:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

**Sent:** Wednesday, May 19, 2021 2:50 PM

**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Senters, Anne E (BPA) - LN-7 <aesenters@bpa.gov>

**Subject:** FW: Colville request for conversation

Hello, do you have any thoughts before I would respond to this? Scott

**SCOTT G ARMENTROUT**

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Sent:** Wednesday, May 19, 2021 2:48 PM

**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>;

Cook, Joel D (BPA) - P-6 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Hairston, John L (BPA) - A-7 <[jlhairston@bpa.gov](mailto:jlhairston@bpa.gov)>;

Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

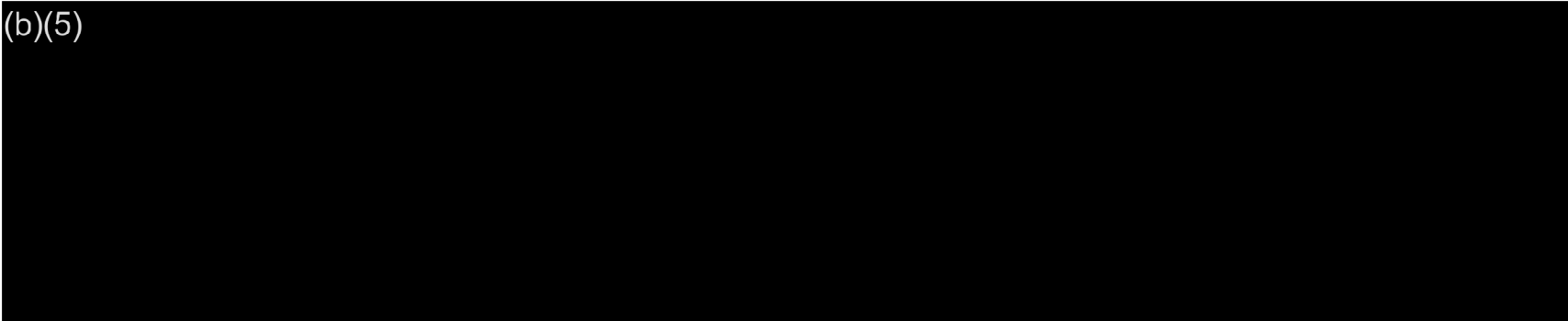
**Cc:** Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>; Welch, Dorothy W (BPA) - E-4

<[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>

**Subject:** Colville request for conversation

Hey all

(b)(5)



(b)(5)

Thanks.

PTC

From: Baskerville, Sonya L (BPA) - DIN-WASH

Sent: Wed May 19 18:15:49 2021

To: Cogswell, Peter (BPA) - DI-7; Armentrout, Scott G (BPA) - E-4; Key, Philip S (BPA) - LN-7

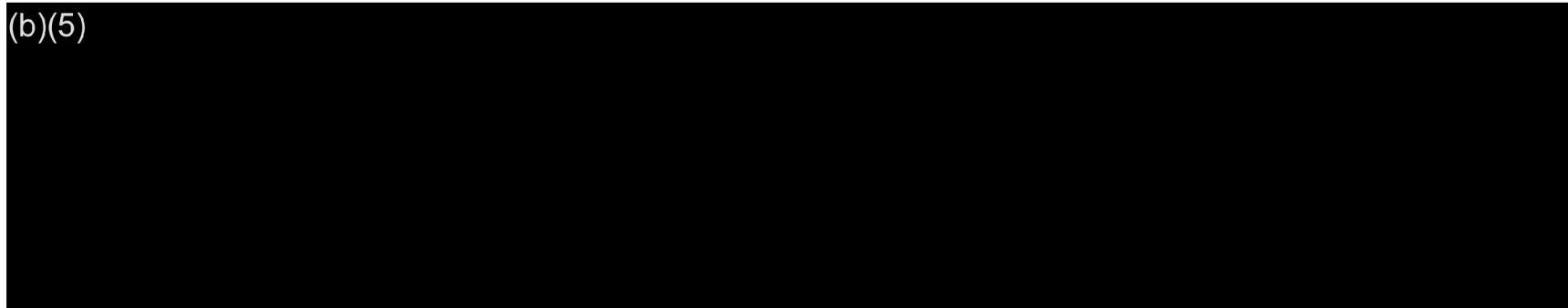
Cc: Senters, Anne E (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

Subject: RE: Colville request for conversation

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

(b)(5)



Thanks.

Sonya Baskerville  
BPA National Relations

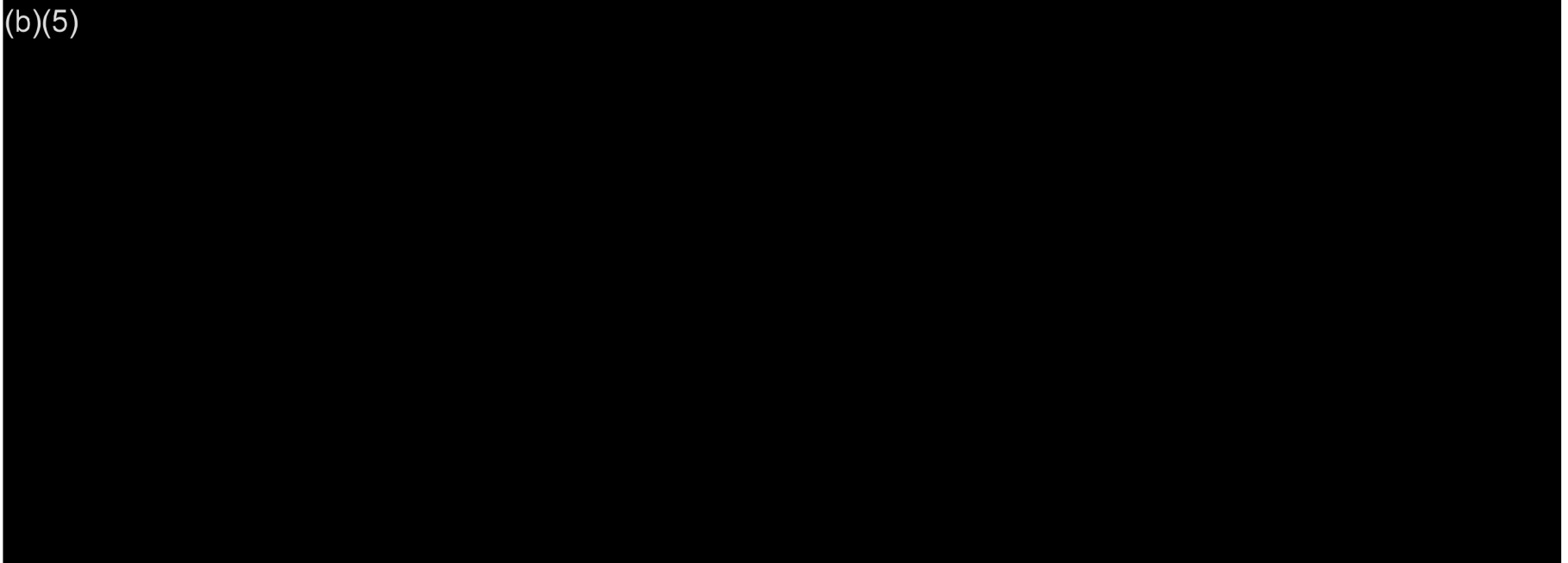
(b)(6) m

On May 19, 2021 8:24 PM, "Key, Philip S (BPA) - LN-7" <pskey@bpa.gov> wrote:

**Attorney Client/Deliberative Process Privileged: Do not release under FOIA**

Yes, Scott, we have a few thoughts.

(b)(5)



Philip and Tucker

**From:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>

**Sent:** Wednesday, May 19, 2021 2:50 PM

**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Senters, Anne E

(BPA) - LN-7 <aesenters@bpa.gov>  
**Subject:** FW: Colville request for conversation

Hello, do you have any thoughts before I would respond to this? Scott

**SCOTT G ARMENTROUT**

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

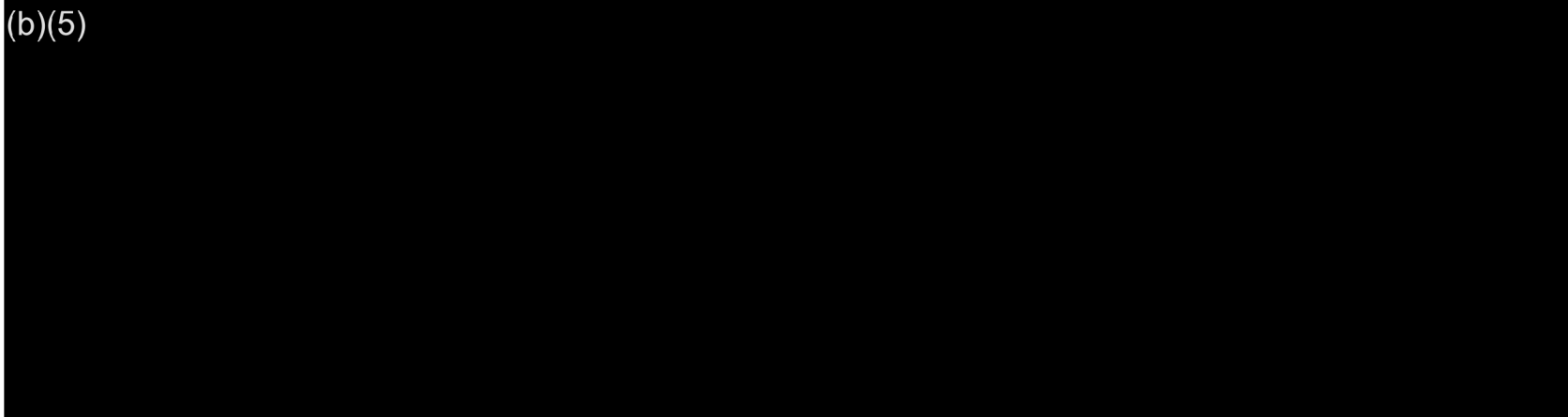
**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Sent:** Wednesday, May 19, 2021 2:48 PM  
**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>;  
Cook, Joel D (BPA) - P-6 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Hairston, John L (BPA) - A-7 <[jlhairston@bpa.gov](mailto:jlhairston@bpa.gov)>;  
Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
**Cc:** Baskerville, Sonya L (BPA) - DIN-WASH <[sibaskerville@bpa.gov](mailto:sibaskerville@bpa.gov)>; Welch, Dorothy W (BPA) - E-4  
<[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>  
**Subject:** Colville request for conversation

Hey all

(b)(5)



Thanks.

PTC

From: Hairston,John L (BPA) - A-7

Sent: Wed May 19 19:43:00 2021

To: Cook,Joel D (BPA) - K-7; Zelinsky,Benjamin D (BPA) - E-4; Cogswell,Peter (BPA) - DI-7; Ball,Crystal A (BPA) - EW-4; Armentrout,Scott G (BPA) - E-4

Cc: Johnston,Kenneth H (BPA) - DIT-7; Welch,Dorothy W (BPA) - E-4; Baskerville,Sonya L (BPA) - DIN-WASH

Subject: Colville request for conversation

Importance: Normal

Thanks Pete,

I am comfortable with you setting up some time to listen to their perspective . I would also like to touch base for a quick preview. Perhaps we can use our next check-in

Thanks  
John

Sent from Workspace ONE Boxer

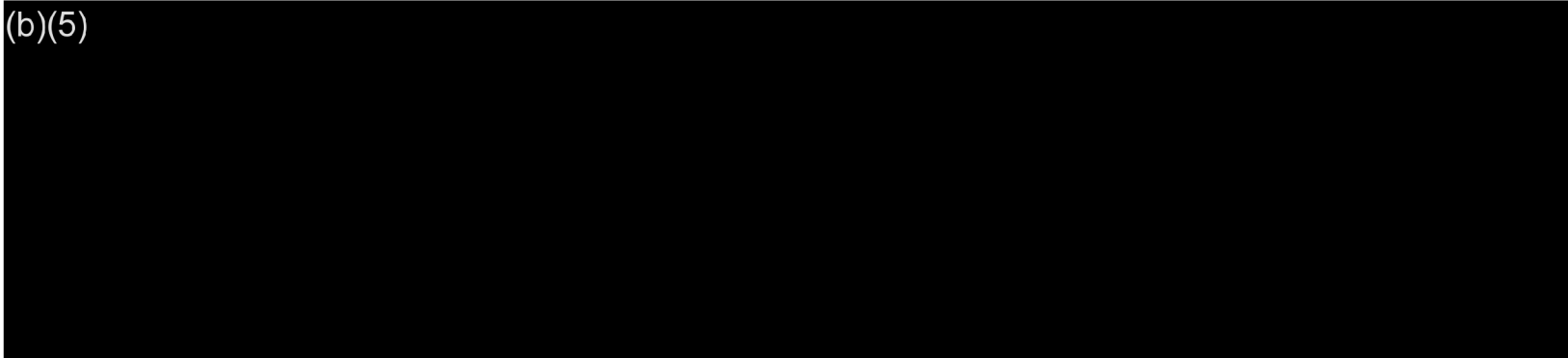
On May 19, 2021 2:47 PM, "Cogswell,Peter (BPA) - DI-7" <ptcogswell@bpa.gov> wrote:

Hey all

(b)(5)



(b)(5)



Thanks.

PTC

From: Senters,Anne E (BPA) - LN-7

Sent: Wed May 19 21:12:06 2021

To: Cogswell,Peter (BPA) - DI-7; Baskerville,Sonya L (BPA) - DIN-WASH; Armentrout,Scott G (BPA) - E-4; Key,Philip S (BPA) - LN-7

Cc: Miles,Tucker (BPA) - LN-7

Subject: RE: Colville request for conversation

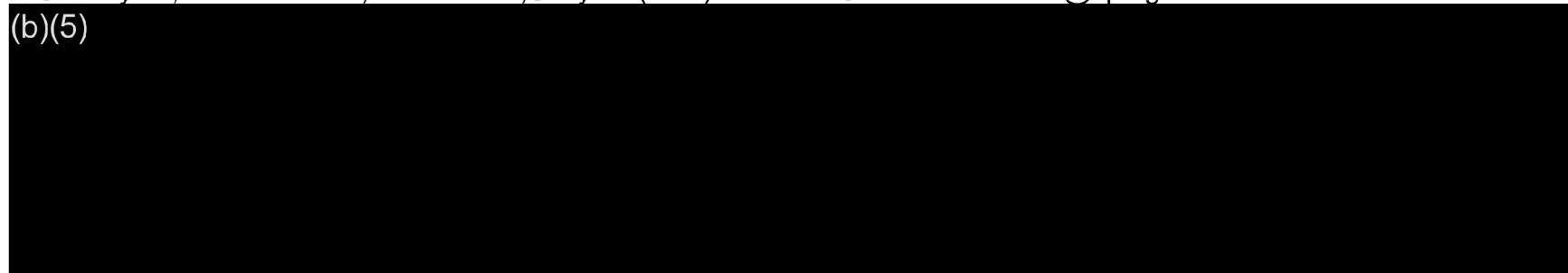
Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

Thanks for the clarification, Sonya.

On May 19, 2021 6:15 PM, "Baskerville,Sonya L (BPA) - DIN-WASH" <slbaskerville@bpa.gov> wrote:

(b)(5)



Thanks.

Sonya Baskerville  
BPA National Relations

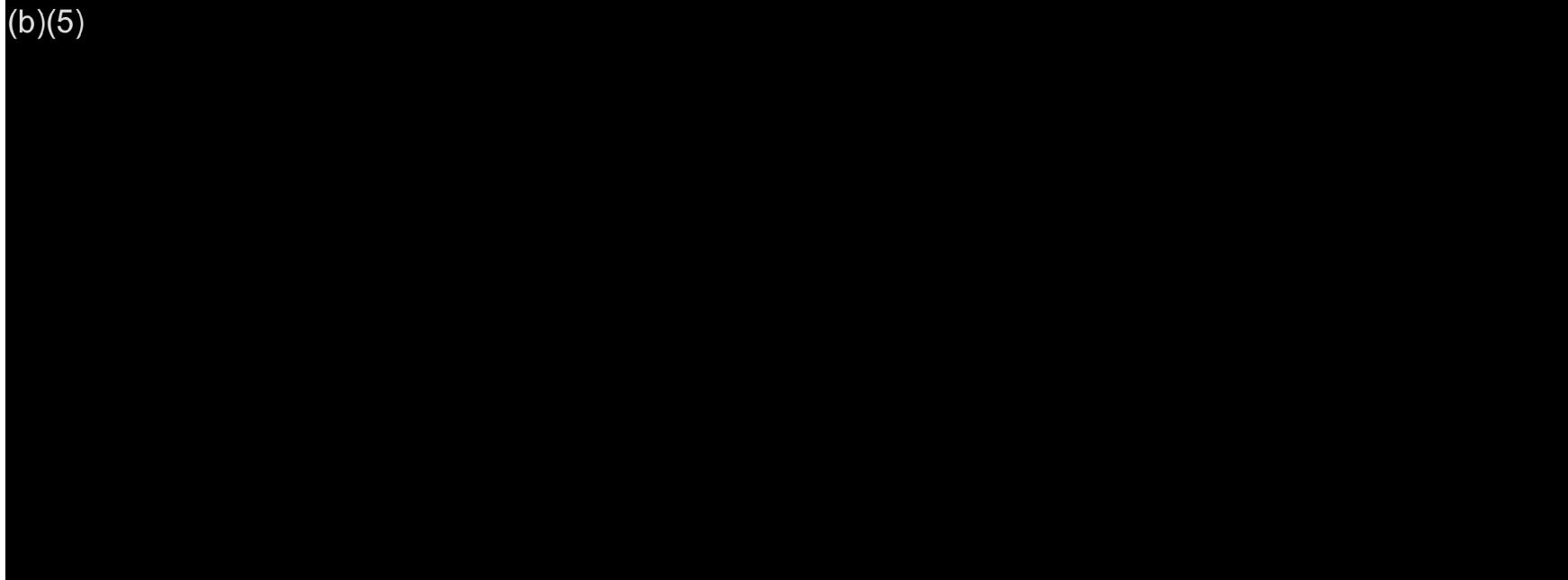
(b)(6) m

On May 19, 2021 8:24 PM, "Key,Philip S (BPA) - LN-7" <pskey@bpa.gov> wrote:

**Attorney Client/Deliberative Process Privileged: Do not release under FOIA**

Yes, Scott, we have a few thoughts.

(b)(5)



Philip and Tucker

**From:** Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>  
**Sent:** Wednesday, May 19, 2021 2:50 PM  
**To:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>; Miles, Tucker (BPA) - LN-7 <[btmiles@bpa.gov](mailto:btmiles@bpa.gov)>; Senters, Anne E (BPA) - LN-7 <[aesenters@bpa.gov](mailto:aesenters@bpa.gov)>  
**Subject:** FW: Colville request for conversation

Hello, do you have any thoughts before I would respond to this? Scott

## SCOTT G ARMENTROUT

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

### Bonneville Power Administration

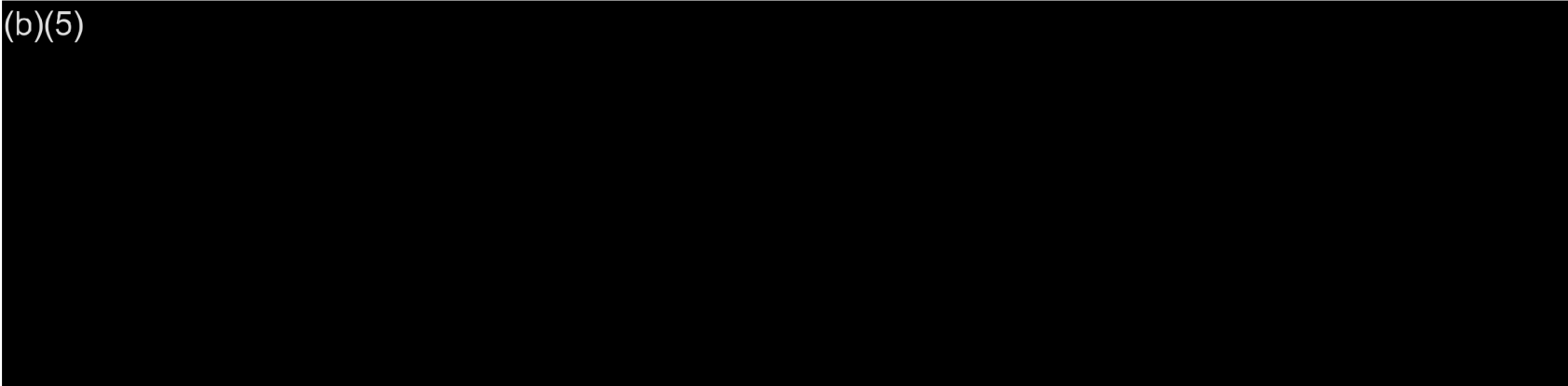
[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Sent:** Wednesday, May 19, 2021 2:48 PM  
**To:** Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>; Cook, Joel D (BPA) - P-6 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Hairston, John L (BPA) - A-7 <[jlhairston@bpa.gov](mailto:jlhairston@bpa.gov)>; Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
**Cc:** Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>; Welch, Dorothy W (BPA) - E-4

<[dwwelch@bpa.gov](mailto:dwwelch@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>  
**Subject:** Colville request for conversation

Hey all

(b)(5)



Thanks.

PTC

From: Key,Philip S (BPA) - LN-7

Sent: Thu May 20 08:24:09 2021

To: Baskerville,Sonya L (BPA) - DIN-WASH

Subject: RE: Colville request for conversation

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

Thank you! I knew it wasn't as clear or short cut as I'd depicted, but couldn't find a definitive statement. Next time I'll ask the expert, duh? Hope all is well. We're doing great here. PK

**From:** Baskerville,Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>

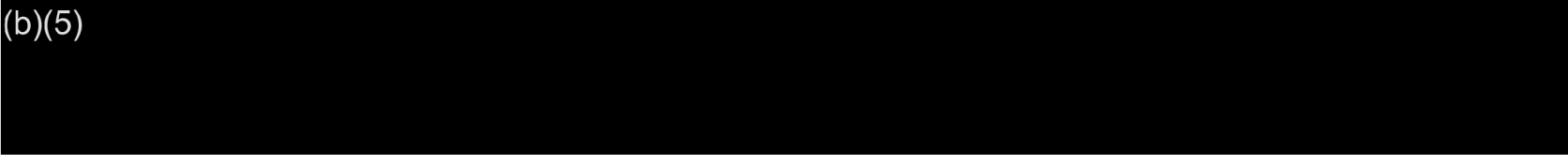
**Sent:** Wednesday, May 19, 2021 6:16 PM

**To:** Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Armentrout,Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Cc:** Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** RE: Colville request for conversation

(b)(5)



(b)(5)

Thanks.

Sonya Baskerville

BPA National Relations

(b)(6) m


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**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

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Cook, Joel D (BPA) - P-6 <[jdcook@bpa.gov](mailto:jdcook@bpa.gov)>; Hairston, John L (BPA) - A-7 <[jlhairston@bpa.gov](mailto:jlhairston@bpa.gov)>;

Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>

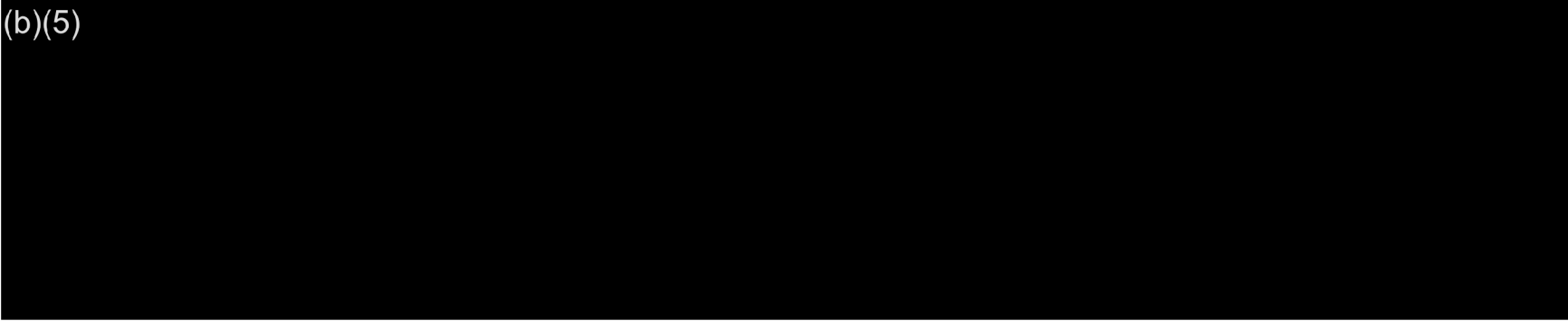
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**Subject:** Colville request for conversation

Hey all

(b)(5)

(b)(5)



Thanks.

PTC

From: Baskerville, Sonya L (BPA) - DIN-WASH

Sent: Mon May 24 12:41:45 2021

To: Downen, Trevor R (BPA) - PGPL-5; Connolly, Kieran P (BPA) - PG-5; Adams, Hub V (BPA) - LN-7

Subject: FW: Lake Roosevelt Forum: Salmon Reintroduction Upper Col.

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

I have no idea why we continue to sponsor this.

Sonya Baskerville  
BPA National Relations

(b)(6) m

On May 24, 2021 3:18 PM, "Connolly, Kieran P (BPA) - PG-5" <kpconnolly@bpa.gov> wrote:

FYI

**Kieran P. Connolly**

Vice President, Generation Asset Management

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-4680

C (b)(6)

**From:** James,Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>  
**Sent:** Monday, May 24, 2021 7:20 AM  
**To:** Connolly,Kieran P (BPA) - PG-5 <[kpconnolly@bpa.gov](mailto:kpconnolly@bpa.gov)>  
**Subject:** FW: Lake Roosevelt Forum: Salmon Reintroduction Upper Col.

FYI-

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**Cc:** Koehler,Birgit G (BPA) - PG-5 <[bgkoehler@bpa.gov](mailto:bgkoehler@bpa.gov)>  
**Subject:** RE: Lake Roosevelt Forum: Salmon Reintroduction Upper Col.

Good Morning-

Attached are some detailed notes on the Lake Roosevelt Forum on the reintroduction topic yesterday. Here are some of the highlights that jumped out to me (commentary in italics that was not provided at the forum):

- Presenters were clear they were not asking for any operational changes or changes to the Columbia River Treaty. The highest quality habitat is upstream of Northport due to velocities per depth. Participant questions kept pushing around what operational changes would help but the presenters want the least resistance to reintroduction by not upsetting Federal Power production at this time. If a stretch under current conditions can support 5k fish in the habitat let's start there. When pressed the speakers said that lower elevation in Lake Roosevelt during the fall would increase habitat. *(This would impact our ability to fill and support Chum flows downstream. This is also dissonant with the Colville Tribes pushing against the CRSO fall operation at GCL of filling to 1283 ft in October rather than by Sept 30).*
- A lot of participant questions around the Columbia River Treaty got sidelined since that would be a topic in itself.
- In answers to funding questions they tried to caveat all the cost numbers down. For all 5 dam facilities (GCL/CHJ and 3 Non-Fed projects) they stated the magnitude for studies was \$100M over 20 years but maybe not as much as needed as studies occur and information is gathered some of the study work might not be needed.

- They did not talk about costs around the passage structures being considered. They did show example of Cle Elem for juvenile fish collection at high passage dam but did state that due to high variability of spring elevations would cause problems at GCL.
- All panelists agreed fish passage was important for tribal cultures and NW economics, it was viable, and have to make sure politics and money don't get in the way. Points raised about paying for F&W costs in power bills already for salmon in Lower River and Snake so it is time they get their salmon even if it raises power bills a few tenths of a percent. Stop looking at cost of passage without capturing cost of ecosystem without salmon. Doesn't have to be either/or can still have flood management and cheap power rates with fish passage. Tribes will continue putting surplus Wells hatchery fish in the blocked areas.

**From:** James,Eve A L (BPA) - PG-5

**Sent:** Thursday, May 13, 2021 2:47 PM

**To:** Klumpp,Elizabeth C (BPA) - DIR-WSGL <[ecklumpp@bpa.gov](mailto:ecklumpp@bpa.gov)>; Carmack,Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>; Sweet,Jason C (BPA) - PGB-5 <[jcsweet@bpa.gov](mailto:jcsweet@bpa.gov)>; Sullivan,Leah S (BPA) - EWP-4 <[ssullivan@bpa.gov](mailto:ssullivan@bpa.gov)>; Lofy,Peter T (BPA) - EWU-4 <[ptlofy@bpa.gov](mailto:ptlofy@bpa.gov)>; Ball,Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Cogswell,Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Subject:** RE: Lake Roosevelt Forum: Salmon Reintroduction Upper Col.

I am registered for this event and can take some notes.

**From:** Klumpp,Elizabeth C (BPA) - DIR-WSGL <[ecklumpp@bpa.gov](mailto:ecklumpp@bpa.gov)>

**Sent:** Thursday, May 13, 2021 2:35 PM

**To:** Carmack,Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>; James,Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>;

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Sharing the agenda for the Lake Roosevelt Forum on Upper Columbia Reintroduction in case you are interested. If one of us is registering for this, could you share some highlights afterwards? Thanks!

From: Connolly,Kieran P (BPA) - PG-5

Sent: Mon May 24 12:59:26 2021

To: Baskerville,Sonya L (BPA) - DIN-WASH

Subject: RE: Lake Roosevelt Forum: Salmon Reintroduction Upper Col.

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

I know my org doesn't budget for it anymore. You might check with your boss ;-')

**Kieran P. Connolly**

Vice President, Generation Asset Management

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-4680

C (b)(6)

**From:** Baskerville,Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>



**Sent:** Monday, May 24, 2021 12:42 PM

**To:** Downen, Trevor R (BPA) - PGPL-5 <trdownen@bpa.gov>; Connolly, Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Adams, Hub V (BPA) - LN-7 <hvadams@bpa.gov>

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Lofy, Peter T (BPA) - EWU-4 <[ptlofy@bpa.gov](mailto:ptlofy@bpa.gov)>; Ball, Crystal A (BPA) - EW-4 <[caball@bpa.gov](mailto:caball@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

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Sent: Mon May 24 14:07:05 2021

To: Claire McGrath - NOAA Federal; Roache, John; 'mike.tehan@noaa.gov'; Downen, Trevor R (BPA) - PGPL-5; Adams, Hub V (BPA) - LN-7; Dickerson, Peter D NWP (Peter.D.Dickerson@usace.army.mil); Lobel, Hannah J; Connolly, Kieran P (BPA) - PG-5; lgray@usbr.gov; 'duane.mecham@sol.doi.gov'; Chris Runyan; Ryan Couch (ryan.couch@noaa.gov); DeRosa, Jason R CIV USARMY CENWD (USA); Peters, Rock D NWD; Walker, Douglas D; clark.miller@sol.doi.gov; Dykstra, Timothy A CIV USARMY CENWD (US); Feil, Daniel H CIV CENWD CENWD (USA); Fitzgerald, Carolyn J CIV USARMY CENWD (US) (Carolyn.J.Fitzgerald@usace.army.mil); Marxen, Sara C CIV USARMY CENWS (US) (Sara.C.Marxen@usace.army.mil); Awsumb, G (Lance) CIV USARMY CENWD (US) (Gordon-Lance.Awsumb@usace.army.mil); Steve Barton; Coffey, Beth (frances.e.coffey@usace.army.mil); Baskerville, Sonya L (BPA) - DIN-WASH; Christenson-Diver, Elizabeth C; Blumenstein, Lev G CIV USARMY CENWD (USA)

Subject: FW: LRF Currents: Salmon Reintroduction Webinar On-line, Visitor Center and Laser Light Show to Reopen

Importance: Normal

Thanks to Michael, here's the link to the LRF workshop.

**From:** Michael Tehan - NOAA Federal <mike.tehan@noaa.gov>

**Sent:** Monday, May 24, 2021 4:58 PM

**To:** Smail, Jill R <SmailJR@state.gov>

**Subject:** Fwd: LRF Currents: Salmon Reintroduction Webinar On-line, Visitor Center and Laser Light Show to Reopen

here's the link

----- Forwarded message -----

From: **Lake Roosevelt Forum** <[info@lrf.org](mailto:info@lrf.org)>

Date: Mon, May 24, 2021 at 1:32 PM

Subject: LRF Currents: Salmon Reintroduction Webinar On-line, Visitor Center and Laser Light Show to Reopen

To: <[mike.tehan@noaa.gov](mailto:mike.tehan@noaa.gov)>

**COMMITTED TO THE ENVIRONMENTAL AND ECONOMIC WELL-BEING OF OUR COMMUNITY**

[www.lrf.org](http://www.lrf.org) • May 24, 2021

## **Salmon Reintroduction Webinar On-line**

[Click here](#) to access last week's Upper Columbia Salmon Reintroduction webinar.

“Presentations,” said Forum Executive Director Andy Dunau, “provided an extraordinary cultural, technical and policy overview filled with hope and promise.” The 200 plus people registered represented a diverse mix of U.S. and Canadian Columbia River Basin interests. Participants included tribes and first nations; federal, state, provincial and local governments; non-government organizations; policy makers and natural resource managers; and the general public.

## **Grand Coulee Dam Visitor Center and Laser Light Show Reopening May 29<sup>th</sup>**

The Bureau of Reclamation announced that starting May 29<sup>th</sup>, the Grand Coulee Dam Visitor Center and “One River, Many Voices” laser light show will be available. The Bureau also announced dam tours will not resume this calendar year.



To safely re-open the visitor center and return the laser light show, Reclamation will follow guidelines from the Centers for Disease Control and Prevention. Fully vaccinated visitors are no longer required to wear a mask. [Read More](#)

[www.lrf.org](http://www.lrf.org)

All things Lake Roosevelt! Check out the [Lake Guide](#) to plan your next fishing, boating, hiking or camping trip.

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**Lake Roosevelt Forum**

**2206 S. Sherman**

**Spokane, WA 99203**

**[www.lrf.org](http://www.lrf.org) • 509-535-7084 • [info@lrf.org](mailto:info@lrf.org)**

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=

[\*Michael P. Tehan\*](#)

[he/him/his \(why is this important? \)](#)

[\*Assistant Regional Administrator, Interior Columbia Basin Office\*](#)

[West Coast Region | NOAA Fisheries | U.S. Department of Commerce](#)

[Office: 503.231.2224; Mobile: 503.758.7917](#)

[www.westcoast.fisheries.noaa.gov](http://www.westcoast.fisheries.noaa.gov)

SENSITIVE BUT UNCLASSIFIED

From: Cogswell, Peter (BPA) - DI-7

Sent: Tue May 25 13:42:19 2021

To: Baskerville, Sonya L (BPA) - DIN-WASH

Subject: FW: CJH fish use

Importance: Normal

FYI, you may also know this history.

**From:** Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>

**Sent:** Tuesday, May 25, 2021 1:34 PM

**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Cc:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Subject:** CJH fish use

Hi Phillip,

DI has a meeting with the Colville tomorrow and we are trying to get background information/institutional history on how the language not allowing use of Chief Joe salmon got into the Congressional authorization of the hatchery? I.e., was it a federal family issue, or Bonneville driven?

Thanks any information you can pass on will be helpful, if you want to call I am available.

Marcy (b)(6)

Marcy Foster

Senior Tribal Account Executive | Bonneville Power Administration | o 503-230-4218 | c (b)(6)

From: Key,Philip S (BPA) - LN-7

Sent: Tue May 25 13:45:08 2021

To: Foster, Marchelle M (BPA) - DI-7; Baskerville, Sonya L (BPA) - DIN-WASH; Johnston, Kenneth H (BPA) - DIT-7; Miles, Tucker (BPA) - LN-7

Cc: Cogswell, Peter (BPA) - DI-7; Zelinsky, Benjamin D (BPA) - E-4; Welch, Dorothy W (BPA) - E-4

Subject: RE: CJH fish use

Importance: Normal

Attachments: FW: Call from Joe P re: Using CJ Hatchery Fish above CJD; FW: Chief Joe Hatchery Funding Authorization

### **Attorney Client Privileged Attachments**

Marcy,

I meant to send you guys something earlier, but my brain is in an administrative record haze. Let me know if you need more than what's included here.

Philip

**From:** Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>  
**Sent:** Tuesday, May 25, 2021 1:34 PM  
**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>  
**Cc:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>  
**Subject:** CJH fish use

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Marcy (b)(6)

Marcy Foster

Senior Tribal Account Executive | Bonneville Power Administration | o 503-230-4218 | c (b)(6)





From: Welch,Dorothy W (BPA) - E-4

Sent: Wed Mar 10 12:35:25 2021

To: Key,Philip S (BPA) - LN-7; Miles,Tucker (BPA) - LN-7; Ball,Crystal A (BPA) - EW-4

Subject: FW: Call from Joe P re: Using CJ Hatchey Fish above CJD

Importance: Normal

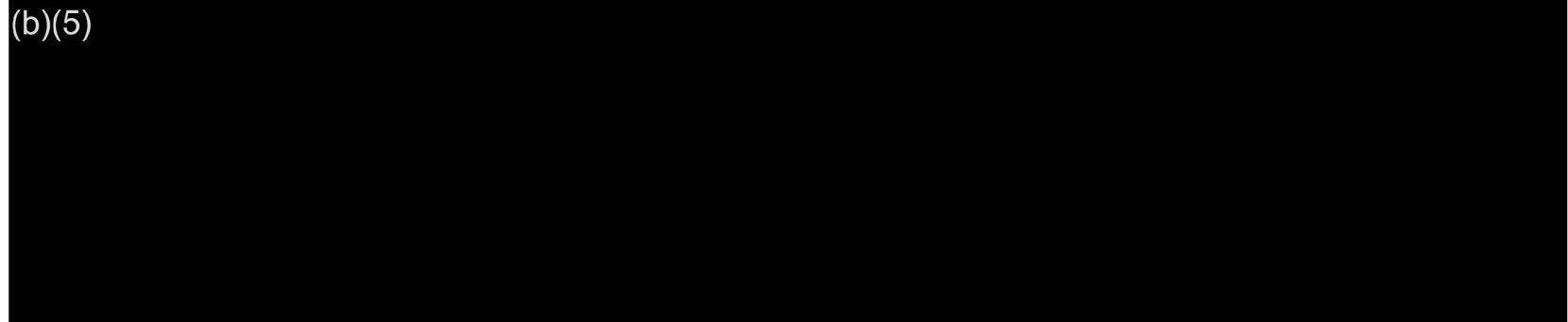
**From:** Key,Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Monday, January 11, 2021 11:54 AM

**To:** Welch,Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>; Zelinsky,Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Senters,Anne E (BPA) - LN-7 <aesenters@bpa.gov>; Miles,Tucker (BPA) - LN-7 <btmiles@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Subject:** Call from Joe P re: Using CJ Hatchey Fish above CJD

(b)(5)



(b)(5)

(b)(5)

Philip

From: Foster, Marchelle M (BPA) - DI-7

Sent: Tue May 25 14:29:50 2021

To: Key, Philip S (BPA) - LN-7; Baskerville, Sonya L (BPA) - DIN-WASH; Johnston, Kenneth H (BPA) - DIT-7; Miles, Tucker (BPA) - LN-7

Cc: Cogswell, Peter (BPA) - DI-7; Zelinsky, Benjamin D (BPA) - E-4; Welch, Dorothy W (BPA) - E-4

Subject: RE: CJH fish use

Importance: Normal

Thanks Phillip, this is very helpful.

Marcy

**From:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Sent:** Tuesday, May 25, 2021 1:45 PM

**To:** Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>; Johnston, Kenneth H (BPA) - DIT-7 <kjohnston@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Cc:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>; Welch, Dorothy W (BPA) - E-4 <dwwelch@bpa.gov>

**Subject:** RE: CJH fish use

**Attorney Client Privileged Attachments**

Marcy,

I meant to send you guys something earlier, but my brain is in an administrative record haze. Let me know if you need more than what's included here.

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**From:** Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>  
**Sent:** Tuesday, May 25, 2021 1:34 PM  
**To:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>  
**Cc:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Subject:** CJH fish use

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how the language not allowing use of Chief Joe salmon got into the Congressional authorization of the hatchery?  
I.e., was it a federal family issue, or Bonneville driven?

Thanks any information you can pass on will be helpful, if you want to call I am available.

Marcy (b)(6)

Marcy Foster

Senior Tribal Account Executive | Bonneville Power Administration | o 503-230-4218 | c (b)(6)

**From:** Baskerville, Sonya L (BPA) - DIN-WASH

**Sent:** Tue May 25 15:15:10 2021

**To:** Cogswell, Peter (BPA) - DI-7

**Subject:** FW: CJH fish use

**Importance:** Normal

Yep, Philip has the info. Thanks.

Sonya Baskerville  
BPA National Relations

(b)(6) m

On May 25, 2021 4:42 PM, "Cogswell, Peter (BPA) - DI-7" <ptcogswell@bpa.gov> wrote:

FYI, you may also know this history.

**From:** Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>

**Sent:** Tuesday, May 25, 2021 1:34 PM

**To:** Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>

**Cc:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Subject:** CJH fish use

Hi Phillip,



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Marcy (b)(6)

Marcy Foster

Senior Tribal Account Executive | Bonneville Power Administration | o 503-230-4218 | c (b)(6)

From: Cogswell, Peter (BPA) - DI-7

Sent: Tue May 25 15:18:12 2021

To: Baskerville, Sonya L (BPA) - DIN-WASH

Subject: RE: CJH fish use

Importance: Normal

Yep, he sent exactly what I needed.

**From:** Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>

**Sent:** Tuesday, May 25, 2021 3:15 PM

**To:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Subject:** FW: CJH fish use

Yep, Philip has the info. Thanks.

Sonya Baskerville

BPA National Relations

(b)(6) m

On May 25, 2021 4:42 PM, "Cogswell, Peter (BPA) - DI-7" <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)> wrote:

FYI, you may also know this history.

**From:** Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>

**Sent:** Tuesday, May 25, 2021 1:34 PM

**To:** Key, Philip S (BPA) - LN-7 <[pskey@bpa.gov](mailto:pskey@bpa.gov)>

**Cc:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>

**Subject:** CJH fish use

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DI has a meeting with the Colville tomorrow and we are trying to get background information/institutional history on how the language not allowing use of Chief Joe salmon got into the Congressional authorization of the hatchery? I.e., was it a federal family issue, or Bonneville driven?

Thanks any information you can pass on will be helpful, if you want to call I am available.

Marcy (b)(6)

Marcy Foster

Senior Tribal Account Executive | Bonneville Power Administration | o 503-230-4218 | c (b)(6)

From: Baskerville, Sonya L (BPA) - DIN-WASH

Sent: Wed May 26 10:41:44 2021

To: Carmack, Corey P (BPA) - DIT-7; Cogswell, Peter (BPA) - DI-7; Foster, Marchelle M (BPA) - DI-7; Johnston, Kenneth H (BPA) - DIT-7

Subject: Re: Prep for Wed. chat with Colville

Importance: Normal

Hey, all. Missed this again. Got caught up in a fire drill that wasn't really even one.

Who should I touch base with beforehand? I'm on that leadership webex now, but I could call on my other phone.

Thanks!

Sonya Baskerville  
BPA National Relations

(b)(6) m

From: Cogswell, Peter (BPA) - DI-7

Sent: Wed May 26 10:47:09 2021

To: Baskerville, Sonya L (BPA) - DIN-WASH

Subject: RE: Prep for Wed. chat with Colville

Importance: Normal

I am pretty much open until 2:00, but we do need to talk beforehand.

**From:** Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>

**Sent:** Wednesday, May 26, 2021 10:42 AM

**To:** Carmack, Corey P (BPA) - DIT-7 <cpcarmack@bpa.gov>; Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>; Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>

**Subject:** Re: Prep for Wed. chat with Colville

Hey, all. Missed this again. Got caught up in a fire drill that wasn't really even one.

Who should I touch base with beforehand? I'm on that leadership webex now, but I could call on my other phone.

Thanks!

Sonya Baskerville

BPA National Relations

(b)(6) m

From: Cogswell, Peter (BPA) - DI-7

Sent: Wed May 26 10:50:23 2021

To: Baskerville, Sonya L (BPA) - DIN-WASH

Subject: RE: Prep for Wed. chat with Colville

Importance: Normal

BPA cell? Please call the (b)(6) number – or get me best number to call you if you are using the x7352 for your other call...

**From:** Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>

**Sent:** Wednesday, May 26, 2021 10:49 AM

**To:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Subject:** RE: Prep for Wed. chat with Colville

Just called your cell phone.

Sonya Baskerville

BPA National Relations

(b)(6) m



On May 26, 2021 1:47 PM, "Cogswell, Peter (BPA) - DI-7" <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)> wrote:

I am pretty much open until 2:00, but we do need to talk beforehand.

**From:** Baskerville, Sonya L (BPA) - DIN-WASH <[slbaskerville@bpa.gov](mailto:slbaskerville@bpa.gov)>

**Sent:** Wednesday, May 26, 2021 10:42 AM

**To:** Carmack, Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>; Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>; Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>; Johnston, Kenneth H (BPA) - DIT-7 <[khjohnston@bpa.gov](mailto:khjohnston@bpa.gov)>

**Subject:** Re: Prep for Wed. chat with Colville

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Who should I touch base with beforehand? I'm on that leadership webex now, but I could call on my other phone.

Thanks!

Sonya Baskerville

BPA National Relations

(b)(6) m

From: Armentrout, Scott G (BPA) - E-4

Sent: Fri May 28 09:04:07 2021

To: Cogswell, Peter (BPA) - DI-7; Zelinsky, Benjamin D (BPA) - E-4

Cc: Cook, Joel D (BPA) - K-7; Ball, Crystal A (BPA) - EW-4; Connolly, Kieran P (BPA) - PG-5; Baskerville, Sonya L (BPA) - DIN-WASH; James, Eve A L (BPA) - PG-5; Johnston, Kenneth H (BPA) - DIT-7; Foster, Marchelle M (BPA) - DI-7; Carmack, Corey P (BPA) - DIT-7; Key, Philip S (BPA) - LN-7; Miles, Tucker (BPA) - LN-7

Subject: RE: Colville conversation summary

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

One quick update from CRS executives meeting this AM. Lorrie requested that any discussions on the “initial list of the different things we believe would need to be addressed” include BOR and COE needs as well. Scott

## **SCOTT G ARMENTROUT**

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Thursday, May 27, 2021 4:00 PM

**To:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Cc:** Cook, Joel D (BPA) - K-7 <jdcook@bpa.gov>; Ball, Crystal A (BPA) - EW-4 <caball@bpa.gov>; Connolly, Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>; James, Eve A L (BPA) - PG-5 <ejames@bpa.gov>; Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>; Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Carmack, Corey P (BPA) - DIT-7 <cpcarmack@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

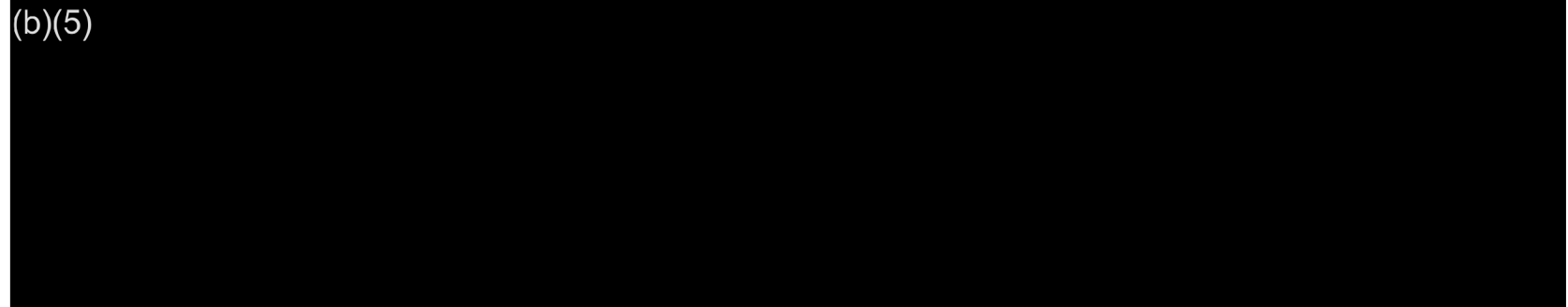
**Subject:** Colville conversation summary

Scott and Ben:

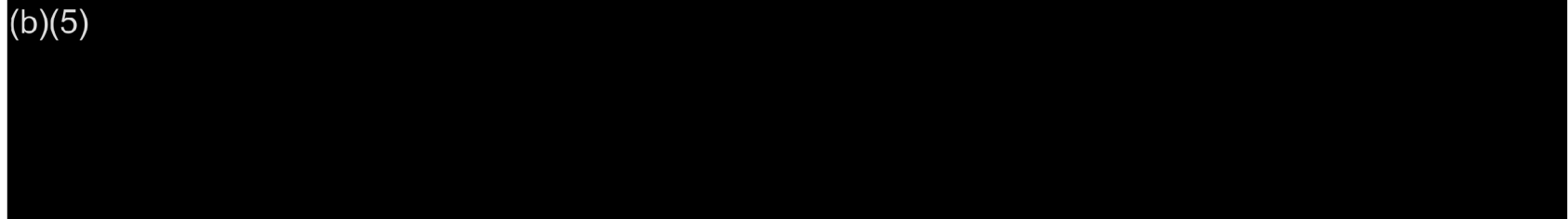
Sonya, Ken, Marcy, Corey and I met with several reps of the Colville tribe yesterday to discuss their interest in legislation to allow the use of Chief Joseph Hatchery fish for placement above CJD and GCD. I did most of the speaking for us and the tribe was primarily represented by Chair Rodney Cawston.

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(b)(5)

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I can loop around with some additional detail, but wanted to get you a sense of how the conversation went.

Let me know if you have any questions or concerns.

Thanks.

Peter

From: Baskerville, Sonya L (BPA) - DIN-WASH

Sent: Fri May 28 10:00:26 2021

To: Zelinsky, Benjamin D (BPA) - E-4; Cogswell, Peter (BPA) - DI-7; Armentrout, Scott G (BPA) - E-4

Cc: Cook, Joel D (BPA) - K-7; Foster, Marchelle M (BPA) - DI-7; Johnston, Kenneth H (BPA) - DIT-7; Ball, Crystal A (BPA) - EW-4; James, Eve A L (BPA) - PG-5; Miles, Tucker (BPA) - LN-7; Connolly, Kieran P (BPA) - PG-5; Carmack, Corey P (BPA) - DIT-7; Key, Philip S (BPA) - LN-7

Subject: RE: Colville conversation summary

Importance: Normal

Attachments: image001.jpg; image002.jpg; image003.jpg; image004.jpg; image005.jpg; image006.jpg

Good ☐

Sonya Baskerville  
BPA National Relations  
202.253.7352 m

On May 28, 2021 12:04 PM, "Armentrout, Scott G (BPA) - E-4" <sgarmentrout@bpa.gov> wrote:

One quick update from CRS executives meeting this AM. Lorrie requested that any discussions on the “initial list of the different things we believe would need to be addressed” include BOR and COE needs as well. Scott

**SCOTT G ARMENTROUT**

Executive Vice President, Environment, Fish & Wildlife, SES | E-4

**Bonneville Power Administration**

[bpa.gov](http://bpa.gov) | P 503-230-3076 | C (b)(6)

**From:** Cogswell, Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Thursday, May 27, 2021 4:00 PM

**To:** Armentrout, Scott G (BPA) - E-4 <sgarmentrout@bpa.gov>; Zelinsky, Benjamin D (BPA) - E-4 <bdzelinsky@bpa.gov>

**Cc:** Cook, Joel D (BPA) - K-7 <jdcook@bpa.gov>; Ball, Crystal A (BPA) - EW-4 <caball@bpa.gov>; Connolly, Kieran P (BPA) - PG-5 <kpconnolly@bpa.gov>; Baskerville, Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>; James, Eve A L (BPA) - PG-5 <ejames@bpa.gov>; Johnston, Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>; Foster, Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Carmack, Corey P (BPA) - DIT-7 <cpcarmack@bpa.gov>; Key, Philip S (BPA) - LN-7 <pskey@bpa.gov>; Miles, Tucker (BPA) - LN-7 <btmiles@bpa.gov>

**Subject:** Colville conversation summary

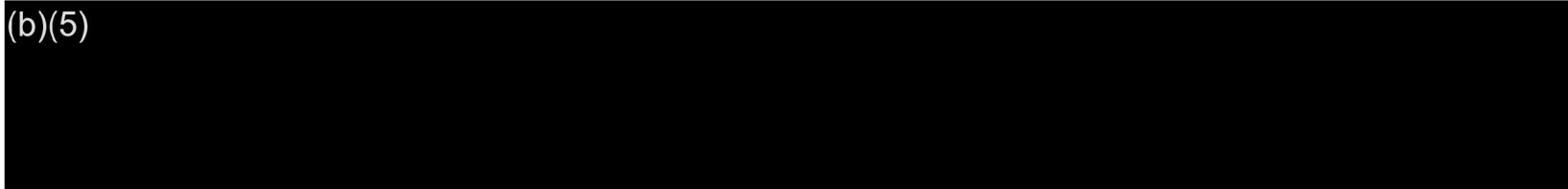
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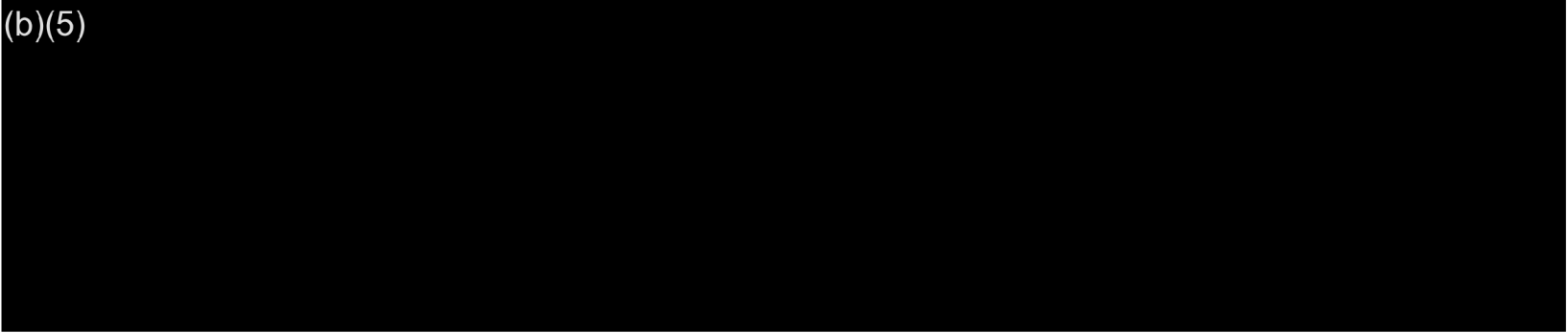


speaking for us and the tribe was primarily represented by Chair Rodney Cawston.

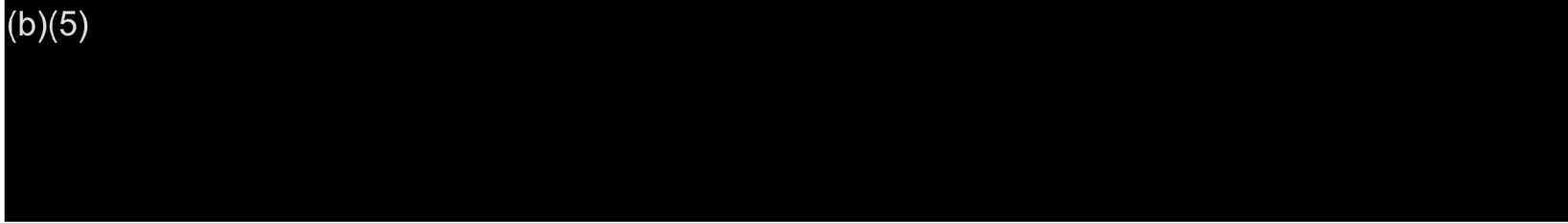
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Let me know if you have any questions or concerns.

Thanks.

Peter

**From:** Carmack,Corey P (BPA) - DIT-7

**Sent:** Fri May 28 10:55:23 2021

**To:** Cogswell,Peter (BPA) - DI-7

**Cc:** Foster,Marchelle M (BPA) - DI-7; Johnston,Kenneth H (BPA) - DIT-7; Baskerville,Sonya L (BPA) - DIN-WASH

**Subject:** RE: Colville conversation summary

**Importance:** Normal

Understood! I will let you know about CCT's availability.

**From:** Cogswell,Peter (BPA) - DI-7 <ptcogswell@bpa.gov>

**Sent:** Friday, May 28, 2021 10:16 AM

**To:** Carmack,Corey P (BPA) - DIT-7 <cpcarmack@bpa.gov>

**Cc:** Foster,Marchelle M (BPA) - DI-7 <mmfoster@bpa.gov>; Johnston,Kenneth H (BPA) - DIT-7 <khjohnston@bpa.gov>; Baskerville,Sonya L (BPA) - DIN-WASH <slbaskerville@bpa.gov>

**Subject:** RE: Colville conversation summary

Thanks Corey. Probably best to do three weeks minimum, we are going to have a lot to work through. In back of my mind a meeting before the fourth is a reasonable goal, but I will be OOO June 28 – July 4, so it's tricky. The next meeting may just be an update on how things are going.

**From:** Carmack,Corey P (BPA) - DIT-7 <[cpcarmack@bpa.gov](mailto:cpcarmack@bpa.gov)>

**Sent:** Friday, May 28, 2021 7:59 AM  
**To:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Cc:** Foster, Marchelle M (BPA) - DI-7 <[mmfoster@bpa.gov](mailto:mmfoster@bpa.gov)>  
**Subject:** RE: Colville conversation summary

Peter and Marcy,

I will look at calendars in 2-3 weeks and get a few potential dates together.

Thanks!

Corey C.

**From:** Cogswell, Peter (BPA) - DI-7 <[ptcogswell@bpa.gov](mailto:ptcogswell@bpa.gov)>  
**Sent:** Thursday, May 27, 2021 4:00 PM  
**To:** Armentrout, Scott G (BPA) - E-4 <[sgarmtrout@bpa.gov](mailto:sgarmtrout@bpa.gov)>; Zelinsky, Benjamin D (BPA) - E-4 <[bdzelinsky@bpa.gov](mailto:bdzelinsky@bpa.gov)>  
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**Subject:** Colville conversation summary

Scott and Ben:


Sonya, Ken, Marcy, Corey and I met with several reps of the Colville tribe yesterday to discuss their interest in legislation to allow the use of Chief Joseph Hatchery fish for placement above CJD and GCD. I did most of the speaking for us and the tribe was primarily represented by Chair Rodney Cawston.

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I can loop around with some additional detail, but wanted to get you a sense of how the conversation went.

Let me know if you have any questions or concerns.

Thanks.

Peter

## **Lake Roosevelt Forum Salmon Reintroduction Webinar:**

Move from where we've been, to where we're at, to where we're going.

**John Sirois, UCUT- overview:** Introduction of what UCUT organization is.

Cultural, Environmental, and Economic Benefits

Salmon impacted by hydropower dams, CRT Ops, legacy and current pollution, cost and legal implications. 80 years too long to not have salmon. Tribes and First Nations are pushing to continue fish passage efforts with Okanogan tribes in Canada. Fish reintroduction at 2 US dams, precise response to NPCC 2014 Program Amendments with a multi-phase investigation. 3 pathways exist to address fish passage- Columbia River Treaty (EbF) International, NPCC (with BPA Discretion) domestic, Tribal Initiatives (Funded Phase 1) tribal. UCUT finished Phase 1, ISRP review, now working on Phase 2 Implementation Studies, bring salmon home with First Nations. 20 year process

Phase 1- Evaluate passage studies at hydroelectric projects including CHJ and GCL. Investigate cost of upstream and downstream passage options, investigate habitat availability, suitability, and salmon survival potential habitats above GCL

Phase 2

Key questions from region- what species and stocks most appropriate and what are available. What are risks to resident fish? Is there any habitat up there.

Phase 1 results- can change depending on operations or dry water year

ISAB review- on site studies show is viable but had information for improving.

Cultural and educational releases- more on this topic later.

Phase 2- looking at feasibility and designs on how phase 2 will work.

## **Phase 1 Pathogen and Habitat Research- Brian Bellgraph PNNL, Jed Varney, WA Dept F&W:**

Journal article on methodology for chinook salmon spawning habitat above GCL dam.

Lakes aren't good habitat for spawning so excluded reach from Kettle Falls to GCL dam. 76-km upstream- most lotic reach of lake Roosevelt (lotic= slow moving), developed habitat model with bed slope, estimates of substrate, 2D depth model, then spawning probability model.

Bathymetric info from previous surveys of BOR, topographic elevations, aerial imagery, 3x3 meter resolution, 278,000 computational cells, bed slope calculated in GIS (salmon particular about slope they like to bring in nutrients, and sweep clean waste and toxins, sediment facies map created from

backscatter analysis from multibeam surveys, video, and hydrodynamic modeling to estimate substrate materials and sizes.

Showed examples of sediment map. Showed where bedrock high velocities, line shows model vs. surveyed substrate. Predicted likelihood of spawning within the reaches- simulated 10%, 50%, 90% exceedance flows during fall spawning time for fall/summer chinook. Used probabilistic spawning model based on Hanford Reach Fall Chinook salmon spawning data from 1994, 1995, and 2001. Created a model with 91% prediction rate and calculated spawning probabilities for pebble, cobble, and boulder. Chinook salmon prefer pebble to cobble (25-305 mm) considered suitable for spawning. Estimated redds and adults for quality habitat with the 3 flow levels. Used no spacing and inter-redd spacing. 2 -8 adults per red based on Hanford Reach estimates. Best habitat Northport, WA to International border. Was not able to do study above Canadian border but hope to in the future. Using 50% flow with cobble and pebble found ~3k-4k redds with inter-redd spacing so conservative estimate equates to 6k-33k adults depending on how many adults assumed per each redd. **Assuming current Canadian project Ops the highest quality habitat upstream of Northport due to velocities, if changes of velocities per depth (water level changes) could open up more habitat.** Need more info from actual salmon in river.

Q around if water quality studied as well? (concern around Tech mining flag) tends to fall out in low velocity which is not where salmon spawn but didn't expressly study. Dissolved oxygen was not looked at either.

#### **Jed Varney presentation:**

Entered into joint effort to study fish health and concern around movement of disease. Fish disease can be major impediment and want to make sure project is successful. WDFW manages transfer of anadromous salmonids into historical range above CHJ and GCL dams. Strict guidelines and requirements on moving fish around the state. Lake Roosevelt reservoir is considered a separate section and diseases in Lower River are not found in reservoir above. Had to write exemption and do risk assessment for bringing anadromous fish into upper reservoirs. Concern around redband trout which are land locked salmon. Virology 101 slide about different viruses that infect different species of fish. Map of pathogens for various fish. Pathogens contained in certain areas. Additional pathogens they considered. Conclusion- IHN MD clade is the significant risk for redbands in the early phases of this project since they have not seen this virus before in their species. Issue that all current diagnostic tests are lethal tests and need to come up with live test that has rapid turnaround time and doesn't kill the fish that need to spawn. They were able to create a non-lethal test for the study.

**Participant Question-** from perspective of more habitat- what might be positive changes in operations? If elevation of lake Roosevelt could be lowered that would have better habitat but reservoir elevation requirements is a very complicated issue. Less habitat if Columbia River Treaty cause elevation of Lake Roosevelt higher in fall that would decrease habitat in that reach.

**Participant Question** - Do diseases have any impact on white sturgeon? Not susceptible to most diseases in salmonids except IHN. Rare cases but could be carrier or become infected but does not cause a lot of problems.



**Participant Question-** with counterparts in Canada on disease stuff. Canada to date hasn't had a large impact on project but has not disagreed with any of the work done.

**Participant Question** - Specific question on kokanee and who Brian has been working with north of the border on spawning habitat work but will answer electronically.

Casey Baldwin Colville Tribe F&W dept, Conor Giorgi Anadromous manager for Spokane Tribe:

**Casey Baldwin presentation-** cultural and educational release of salmon in the blocked areas. Impact to tribal culture upstream of dams. Kettle Falls site specific historic information. Releases to reconnect people with habitat, cultural practices, etc.. 2019 releases from Wells hatchery in Rufus woods. Not able to in 2020 due to COVID restrictions but fish moved into Lake Roosevelt with acoustic tags. All 392 fish were surplus hatchery summer Chinook from Wells Hatchery. Ceremony in Rufus Woods reservoir 2019, speeches from tribal leaders, prayers, traditional foods, later had drummers, etc., worked upstream on successive Fridays 30 fish at each site, ending at Kettle Falls.

Study- 2014 study showed some habitat around Rufus Woods (between CHJ and GCL) and if they would be in area during spawning period. Put receivers near where spawning habitat and near CHJ dam and Wells pool to see if any fallback. No receivers at GCL dam and blind spot in middle of reservoir (fish need to pass by receiver to be monitored). Example of data showing mostly in Norther part between Nespelem River and Seatons Grove Upper third of reservoir and trips back down to CHJ dam. Rapidly between middle part of reservoir where no receiver arrays. Fish from upper release stayed near GCL dam where no receiver arrays. Some fish disappeared due to tag error or predator, angler. 92% fish had first observation at an upstream receiver. 73% fish had more detections at the furthest upstream and downstream locations. Only 2 fish detected below CHJ as of Mid-Oct (very low initial fallback rate). Too deep for boat surveys. Observed redds in some areas weren't expecting them. Some construction workers off dam saw some spawning off the dam and between powerhouse and spillway there is a shallow area with gravel and some did spawn in that location (6 redds). 2020 released near GCL this time, sandpoil and Northport River. Some showed up in Canada receivers and a few below CHJ.

Sandpoil study, no ceremonies or crowds due to COVID, mid-Aug. Most salmon held in pool were dropped and in Oct spread out and spawned- several redds in photos. 38 females released and counted 36 redds. This spring have not caught any but have genetic samples if they generate offspring.

**Conor Giorgio presentation:** Spokane and Coeur D' Alene tribal cultural and educational releases on Spokane arm.

Reconnecting people with salmon and salmon with habitat, ceremonies, harvest from traditional waters, academic programs and inform phase 2 studies. Releases of adult (harvest, volitional) and juvenile Chinook. 2020 had volitional release, limited monitoring since not a lot of monitoring infrastructure. Were able to do spawning surveys and out of 50 released, found 15 redds, 20 carcasses, 3 live fish. Post-spawn monitoring Tshimikain creek- screw trap found 60 fry and alevins. Side-channel electrofishing found 20 fry but light study. Will go back later in the summer and implant pit tags and monitor movements.

Juvenile releases- from Levenworth fisheries complex and incubated locally with recirculating aquaculture systems. Net pen rearing trial in 2020 preparing for Phase 2 studies to determine efficacy of net pen rearing. High rearing survival and good condition.

Juvenile release from 2017 fish ended up downstream of CHJ dam and some even below Bonneville dam. Some fish got below Non-Fed dams with no fish passage. 69 detected downstream of CHJ dam (these are fish from those released the most upstream location). One fish returned in 2019 to Columbia and passed upstream and asked hatcheries to watch out for the fish. The fish found CHJ hatchery ladder and staff found her near brood stock pen. Could not transport live fish due to disease concerns. 3 of siblings returned in 2020 and contributed to harvest.

**Q around Phase 1** – with estimates in studies of what population is possible are original numbers correct, high or low or too early to tell? Casey thinks it's too early to tell. Initial behavioral observations but no statistical rigor. Was surprised any pit tag fish were found downstream and is encouraging but doesn't answer feasibility with any certainty.

Conor- observing some spawning in creeks do support habitat assessment work.

**Participant Question** - with net pens how many juveniles have been or will be released? Conor- 8k released earlier this spring from net pens. Casey- to tie a couple things together with Q that came up. Q about how disease monitoring implemented – pathogen protocol- need to hold fish while sample evaluated and plant ceremony without knowing if fish would pass pathogen test. Put together slide to show how the pathogen protocol works. After brood stock and surplus declared- fish at Wells hatchery, sample fish. Fed Ex overnight to Olympia (Monday then gets there Tues, process samples and data sent back Wed night or Thursday). Tag fish and then move fish on Friday to spots taking fish to.

**Participant Question** - heard some fish held at Kootenai/Columbia confluence do they show up in other places as well? Some reports show a lot of spawning opportunity in the Canadian section.

**Thomas Biladeau- Phase 2 program and where we're going-**

Phase 1 study conclusions affirms should move forward into Phase 2 and importance of salmon spiritually and economic benefits for those living locally now in the area.

Phase 2 goal is to evaluate feasibility of passage and salmon persistence. Test key assumptions used in the Phase 1 life cycle model. Need to establish sources of Chinook and sockeye donor stocks. Need to develop interim hatchery facilities to produce fish for feasibility studies, develop and test upstream and downstream interim passage facilities. Pointed out 3 Non-fed dams as well as GCL/CHJ. Use data in phase 2 for where we can reintroduce fish into the blocked areas. 20 years minimum to implement Phase 2 in 2 major steps. Step 1 Survival assessment and Step 2 passage infrastructure and testing at all hydro projects in the area. Have good idea of next few years but 20 years is a long time and outlook hazier. As study information comes in will impact how project needs to move forward. Large-scale PIT tag releases. Rocky Reach and MCN first dams that can read pit tags. Smolt-to-Adult returns, adult survival to Wells dam. How do fish passage impact power generation since generation through those

facilities is a major concern. How can collect to have high survival? **Survival during spring spill may be high enough on Non-Fed dams where 50% of flow is going over a spillway. Showed potential areas for collection at GCL. Reservoir fluctuations concern at GCL since spring fluctuates greatly.** Interim option truck and haul. If getting 40k sockeye back trucking is not an option. **All these structures impact dam operations differently.** Disease management and getting hands on fish that do and don't want in blocked area are other things to consider- **where would staging for sampling and holding while waiting for results occur?** Multi-million dollar facilities for rearing fish- maybe need to utilize Mid-Columbia or CHJ hatcheries for upstream studies. Strategically located for gathering donor stocks. Need facilities to acclimate fish prior to release (net pen rearing).

**Hurdles-** access to preferred donor stocks, impacts do releases of more non-listed hatchery fish have to extant stocks of listed/wild salmon downstream? Fish health and disease management and lack of funding/support. Support is here and should be looking for idea of reintroduction but funding is a big, continual issue. Collaboration between agencies managing anadromous fish in the basin is really important (NOAA, NMFS, BPA, NW power council).

**Has there been any assessment of nutritional availability in the blocked areas?** Evaluation of zooplankton available in Lake Roosevelt for Sockeye since lake rearing. Figure of 12M – 49M juvenile salmon was based on zoo plankton from fry to yearling smolt given plankton in reservoir. Lack of marine drive nutrients since loss of salmon started occurring 80 – 100 years ago and not sure that has been documented or if it is occurring anywhere. Preparing watersheds for salmon have more to do with flood plain restoration.

**Funding question-** mostly tribal funding with help from state and a few other places. When looking at 20 year timeframe what is magnitude of funding needed? Has anybody put that – for all 5 facilities with studies that correspond would be over \$100M. Not sure what it will look like further out we go and maybe not so much funding needed. Further out in time funding needs are unknown.

Lots of comments around flows due to Canadian treaty but that would be topic in itself. Casey- what flow conditions would improve but no one is proposing to change operation to create more habitat. If currently have 5k spawners in a reach- let's work towards that. **No one is proposing changes to hydro power operations. Under existing operations what is the feasibility and move from there. Not examining or proposing major changes to hydro operations to improve feasibility.**

**What are priorities for initial funds?** Specifically, all the studies are not trying to change dam or treaty operations and trying to build something scientifically valid with the least amount of objections. Looking for sound partners to improve studies we are undertaking.

**Participant Question** around northern pike and other fish in blocked area. Understand the local landscape has changed since dams built so that is part of the importance studies as well with different predation and local species.

**Panel-** Jarred-Michael Erickson, Chris Donley (Wa Dept F&W), Wes McCart (Stephen's county commissioner), Patty O'Toole director of NWPCC F&W program, DR Mitchel Colville Tribe on phone.

Question for Panel- **What you think most important things to consider or reflect on while it reintroduction continues or what wasn't covered in panel that needs to be considered?**

DR Colville- wants to highlight big picture economics – built capital and natural capital and managing sustainably is where we need to be. Look at passage as cost without capturing cost of operations to cost of ecosystem. Doesn't have to be either/or can still have flood management and cheap power rates with fish passage. Tribes support building up flood plains rather than dikes. Opportunities that tie back to land and fish for benefit of all people. A lot of economic opportunities for the region when salmon reintroduced.

Wes- reflection. Gone from fisheries to sturgeon fisheries and maybe salmon fisheries in near future is heart-warming. Nature finds a way and need to help it along. 80 years of no salmon and timeline for Phase 2 study. 20 years is not that long if we can get it to happen. Excited where it may go and local officials very supportive of UCUT efforts.

Patty- reflection. Impressed with work presented, research and complex studies are ambitious and a lot of progress has been made. Council F&W program supports the science. Things to think about- so many jurisdictions that must work together- need to improve coordination and communication. It is really easy to talk past each other. When talk about reintroduction it means different issues, costs, hurdles, what it even means to them. What is near term, what is long term, and how do you sequence? Technical folks think of the river as a river system. Can easily get bifurcated with different jurisdictions interests etc.. Cost estimates get determined and incorporated as process continues.

Chris Donley- challenge in big task is think less about "what-ifs" and more what can be with different states, federal, etc... to make it possible. Be aspirational in our hopes to make this happen. Let's think big and take challenges on. This takes a lot of coordination at all levels and desire about getting passed general rules about what happens above and below GCL dam. White sturgeon had a great accomplishment faster than expected.

Jarred-Michael Erickson- Grandpa would have been last hereditary chief around Kettle Falls area. Columbia River (biologist background) cultural aspects is a big arterie in the system, and our system is hurting. Dad had a heart issue and had to put a stint in the blockage. How to get more people involved- congress people. Membership – our tribal people are lost since trading fish were our lives and addiction issues hurting the people. Attending cultural fish reintroduction and elders crying at the ceremonies. Feels like ancestors singing with him as sound echoes off the canyons. Our way of life and getting it back is huge in any form. I understand phase approach but remember how it makes you feel to have these fish back in those large ceremonies at Kettle Falls- thank you all.

**Science is telling us returning salmon is viable- does the panel agree returning salmon is viable?** All panel members agree.

Is the phased approach working- it is lengthy, it's technical, - panel agrees getting us in right direction.

**One thing that will screw this up what's it going to be?** Chris- Let's not let politics get in the way. Initial question is it viable to get salmon above GCL dam? Yes, it's viable- there are plenty of habitat up there and can use lakes for rearing. If environment can support it what we see stop these things are the politics and we are highly polarized right now and can get stuck on politick of identity right now. If we can't think aspirational enough since focused on individually or sacrifices, we have to make to get there.

Jarred-Michael- agrees because even when trusting science and common sense if we can get back to that and don't let politics get involved.

Wes- not get hung up on overall cost of what this project is going to be. Concern around what are we going to do to power rates. I take it beyond politics and take it to the money. Having the sturgeon fishery back to our economics it has improved it greatly and having salmon here will be benefit to economy overall. Am I trading dollars here for here and look at balanced approach and pluses and minuses holistically. Might spend money up front but what do we get on the return. Extra tenth of a percent for power but what do I get on the other side of that?

Patty- echoing- benefits of thinking in logical phased approach makes sense on anything complex scientifically, politically, sequence and prioritize and appropriate science review at appropriate points and it makes sense.

DR- fish Spokane saw that went down and back with no passage in system. Stop looking short term and think long term economically, culturally... Folks already paying that in bill for fish impacts but those in blocked areas are not seeing the benefits. Educate folks and how benefit long term is where we need to go.

Thanked sponsors, UCUT, WA Dept F&W, BPA. Link available on You Tube.

Comments in chat: Reverberating effects of resource exchanges in stream-riparian food webs. Looking at input of marine -derived subsidies. <https://link.springer.com/article/10.1007/s00442-019-04574-y>

From Bill Green to Everyone: 11:08 AM

Thanks very much Casey on your answer re modifying CRT operations for the TB reach. I agree. Some dependency on results from reach survival studies for Canadian transboundary reach to GCD.

From Denise Dufault to Everyone: 11:09 AM

Great to see and hear from you John Sirios! Stay well.

**Questions in Q&A box on Zoom:**

James Baxter 09:17 AM

Second that. There has already been a lot of habitat suitability work done in the Columbia above the border by First Nations up here. And the river upstream of the border is likely good spawning habitat.

BrianBellgraph 09:40 AM

Great news! I have seen the studies by Golder Associates that show good habitat, but I had not seen the work done by First Nations, but will look for it! Thank you!

Graeme Lee Rowlands 09:18 AM

From the perspective of maximizing quality chinook habitat south of the border, what might be positive changes to Columbia River Treaty operations? What might be negative changes?

BrianBellgraph 09:42 AM

Thank you for the question! If Treaty operations allowed Lake Roosevelt to lower its elevation during the fall spawning period, it would likely increase the amount of suitable spawning habitat. If Treaty operations raised the elevation of Lake Roosevelt, it would likely decrease the amount of suitable habitat.

LARRY ALLEN 09:19 AM

Will the salmon spawn in the tributaries of that part of the Columbia River.

BrianBellgraph 09:46 AM

Hi Larry - in general, fall/summer Chinook salmon spawn in very large rivers like the Columbia. It is possible that they might spawn in Spokane River if/when the Spokane is more like a river (right now it is mostly a series of lakes from hydropower dams). It is possible that fall/summer Chinook would spawn near the mouths of other small tributaries in that reach - the SanPoil and Kettle River are the most likely (as well as the Pend Oreille River in Canada. Spring Chinook salmon spawn in smaller rivers and would be more likely to use the SanPoil. Like John says though, there is a lot that we have to learn and watching the salmon spawn where they want to spawn will give us a lot more information. We do know that we still have a lot to learn from salmon once we can study them in the blocked area.

Anonymous Attendee 09:36 AM

Wondering if these diseases have any potential impact on White Sturgeon? And whether there was contact/coordination with Canadian and Provincial Fish Health staff prior to salmon movements above Grand Coulee. As those fish can (and I believe have swum into Canada)

caseybaldwin 10:33 AM

I believe Jed answered this question, but just in case you missed the live answer.....sturgeon can carry it but rarely develop the disease.

Anonymous Attendee 09:39 AM

John, thanks. Kinda excited about this.

This question has been answered live

Jim Heffernan 09:46 AM

A critical element is out-migration habitat for juvenile salmon, which is why the Columbia Basin Tribes Coalition called for the integration of ecosystem-based function (now ecosystem function in the negotiations) in a modernized Treaty framework, this means providing an enhanced spring and early summer freshet in the water years in the lowest ~40% of the water years to help move juvenile salmon down river quickly to improve their survival.

BrianBellgraph 09:51 AM

Thank you Jim! Agreed on the importance of the freshet to improve juvenile outmigration. Hopefully we'll learn more about juvenile survival through Lake Roosevelt and Grand Coulee Dam in the near future!

Curtis Dotson 09:48 AM

Were the Chinook that were released into Lake R. in 2019 and 2020 tested for viruses, as mentioned by the previous presenter ?

caseybaldwin 10:16 AM

Yes, all groups of salmon that were trapped and hauled were sampled using the pathogen protocol that Jed described

James Baxter 10:05 AM

Just wondering if there is any data on how long in Canada those sonic tagged fish there, and general habitat locations?

This question has been answered live

caseybaldwin 10:17 AM

Yes, we have the data and it will be summarized in a report later this year. Sorry I cant say much more than that right now.

James Baxter 10:23 AM

I have heard that some of these fish held at the Kootenay/Columbia confluence, and my brother observed on on Norns Creek fan on the Columbia River. Both high quality spawning potential. Maybe it's possible they spawned?

caseybaldwin 10:36 AM

When we release a small number of fish with acoustic tags we learn a lot about behavior and movement but its very difficult to document spawning (needle in a haystack). Later in the effort we hope to have enough fish released into the blocked area that we can document their preferred holding and spawning areas.

Anonymous Attendee 10:32 AM

Has the presence of a variety of predator fish in the upper Columbia/Roosevelt reaches been figured into the feasibility and viability of the salmon reintroduction? Do you see predator fish as a factory in recovery and sustainability?

caseybaldwin 10:41 AM

Yes, in the LCM we did decrease survival in lake roosevelt compared to downstream reaches to account for mortality from predators. The tribes and state have an aggressive pike removal program that we hope limits the effect of pike on the reintroduction. If we see low survival through reservoir reaches we will implement more detailed predation studies.

Allan Solonsky 10:34 AM

I agree with some of Jim Hefferman's comment. Getting sufficient numbers of juvenile to survive the downstream migration out of the blocked area is critical. This should be a major focus of the study of true feasibility.

caseybaldwin 10:43 AM

It definately will be a focus early in Phase 2

Bill Green 10:43 AM

do we need to collaborate on reach survival studies for Canadian transboundary reach to GCD? we on Canadian side see this as a key question

BrianBellgraph 10:44 AM

That would be awesome Bill!

Wendy Horan 10:49 AM

Is there currently any interest in CJD or GCD in adjusting operations to accomodate salmon passage?

caseybaldwin 10:53 AM



We have not modeled, evaluated or proposed any changes to hydro operations for reintroduction. Our efforts have focused on how to make it work within existing operations.