



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, NORTHWESTERN DIVISION  
PO BOX 2870  
PORTLAND OR 97208-2870

CENWD-RBT

30 APR 2013

MEMORANDUM FOR Commander, Portland District (CENWP-PM-F/George Medina)

SUBJECT: Review Plan (RP) Approval for Bonneville Second Surface Bypass Orifice Improvement Study, Bonneville Dam, Oregon, NWP District, Engineering Design Report (EDR)

1. References:

a. RP for Bonneville Second Powerhouse Second Surface Bypass Orifice Improvement Study, Bonneville Dam, Oregon, Engineering Design Report (EDR) (Encl).

b. EC 1165-2-214 Civil Works Review, 15 Dec 12.

2. Reference 1.a. above has been prepared in accordance with reference 1.b. above.

3. The RP has been coordinated within the Business Technical Division, Northwestern Division, U.S. Army Corps of Engineers. The Review Plan includes District Quality Control and Agency Technical Review (ATR). NWD will be the Review Management Organization (RMO) for the ATR.

4. I hereby approve this RP, which is subject to change as circumstances require, consistent with the study development process and the Project Management Business Process. Subsequent revisions to this RP or its execution will require written approval from this office.

5. For further information, please contact Mr. Steve Bredthauer at (503) 808-4053.

Encl

A handwritten signature in black ink, appearing to read "Anthony C. Funkhouser".

ANTHONY C FUNKHOUSER, P.E.  
BG, USA  
Commanding

CF: PDS



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, PORTLAND DISTRICT  
PO BOX 2946  
PORTLAND OR 97208-2946

REPLY TO  
ATTENTION OF

CENWP-EC

8 APR 2013

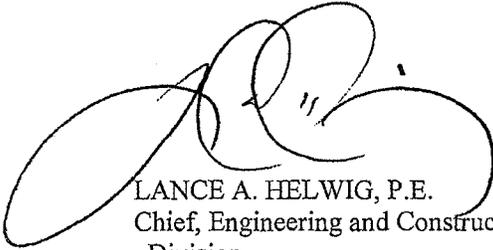
MEMORANDUM FOR Commander, Northwestern Division (CENWD-DE)  
(Stephen Bredthauer, Quality Assurance Manager, CENWD/RBT)

SUBJECT: Bonneville Second Powerhouse Surface Bypass Orifice Improvement Study, Bonneville Dam, Oregon, NWP District, Northwestern Division, Engineering Design Report Submittal

1. Enclosed for NWD Commander's approval is the Review Plan for the B2 Surface Bypass Orifice Improvement Engineering Design Report for the Bonneville Second Powerhouse. The Review Plan has been prepared in accordance with EC 1165-2-214, Civil Works Review.
2. The District point of contact (POC) for questions or request for additional information may be referred to George Medina, Project Manager, at (503) 808-4753 or email at [george.j.medina@usace.army.mil](mailto:george.j.medina@usace.army.mil). A secondary POC is Technical Lead Karen Kuhn, and can be contacted at (503) 808-4897 or email at [karen.a.kuhn@usace.army.mil](mailto:karen.a.kuhn@usace.army.mil).

FOR THE COMMANDER

Encl



LANCE A. HELWIG, P.E.  
Chief, Engineering and Construction  
Division

CF  
CENWD-RBT (Bredthauer)

**PROJECT REVIEW PLAN**  
ATR Review Plan for  
Implementation Documents and Other Work Products  
Northwestern Division (NWD)

**Project Name: Bonneville Second Powerhouse, Orifice Improvement Study**  
**Project Location: Cascade Locks, Oregon**  
**Project P2 Number: 122645**  
**Project Manager or POC Name: George Medina**  
**NWD Original Approval Date: Pending**  
**NWD Revision X Approval Date: XX**

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**General Document Information**

The first two pages of this document are the Cover sheet and the Table of Contents and are not numbered.

**Review Plan Template.** Information provided in **PAGES 3-8** is Review Plan Template information for ATR for Implementation Documents and Other Work Products. Do not alter. The controlled (approved) version of this template will be maintained on the NWD SharePoint site. Districts must use the most current version from the NWD SharePoint site and avoid shared versions outside of the NWD SharePoint. See the footer information in the template for document location.

**Attachment 1** provides the review plan Review Plan Specifics that supplement the RP Template. These specifics are prepared by the District team and as coordinated with the NWD.

**Attachment 2** provides acronyms and abbreviations for the document and may be altered as necessary.

Review Plan approval memorandums shall be documented with the RP and the dates recorded on the cover sheet.

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of Engineers®**

**PROJECT REVIEW PLAN**  
**ATR Review Plan for**  
**Implementation Documents and Other Work Products**  
**Northwestern Division (NWD)**

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## ATR Review Plan for Implementation Documents and Other Work Products

### 1. PURPOSE AND REQUIREMENTS.

**a. Purpose.** This ATR Review Plan (RP) Template and attachments describe requirements for the project identified on the cover sheet of this document. This RP describes Agency Technical Review (ATR) associated with implementation documents, or other work products. The RP Template and the completed RP Specifics attachment together describe the risks considered and the review plan proposed for this project or product.

**b. General Process.** The PDT considers the project risks and selects an appropriate RP Template based on the risks per EC 1165-2-214. The risk consideration process is determined by Districts as appropriate to develop a risk informed review plan strategy.

1) When the District has considered the project risks and determined the applicability of this template, the PM/PDT prepares the "RP Specific" information in Attachment 1 and submits with the RP Template to NWD for approval. The RP Specifics provide the essential elements of the RP such as the scope, project cost, the review team and capabilities, review schedules and budgets and points of contacts.

2) The RP Specifics are coordinated with the appropriate levels of management in the District and the NWD. Potentially the RP may also need to be coordinated with the Risk Management Center (RMC) and others such as the relevant Planning Center of Expertise (PCX) if required. This may be necessary in cases where there is debate on the project risks, required review levels, the review team composition and areas of responsibility.

3) The approved RP Specifics and RP Template information together shall describe the project scope, review plan, schedule and budget in sufficient detail to allow review and approval for the RP. The RP information is a component of the Quality Management Plan within the Project Management Plan. Once approved, the RP is documented in the project PMP/QMP and project files and also placed on the District Website for a minimum of 30 days.

**c. Applicability.** Applicability of the review plan template is determined by NWD. If any of the criteria listed below are met, this RP template is not appropriate. This review plan template is applicable, ONLY, for projects that;

- Are agreed to require ATR review based on risk-informed decision process.
- Are agreed to NOT require Independent External Peer Review (IEPR) or Safety Assurance Review (SAR) based on a risk-informed decision process.
- Do NOT require an Environmental Impact Statement (EIS) for the project.
- And, the project for this review plan is NOT producing decision documents.

### d. References

Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012  
Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006  
ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007

## **ATR Review Plan for Implementation Documents and Other Work Products**

ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and  
Approval of Decision Documents, Amendment #1, 20 Nov 2007

### **2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION**

The RMO for ATR is Northwestern Division (NWD) unless determined otherwise. The USACÉ Risk Management Center (RMC) shall serve as the RMO for Dam Safety Modification projects and Levee Safety Modification projects. NWD will coordinate and approve the review plan. The home District will post the approved review plan on its public website.

### **3. REVIEW FUNDAMENTALS**

- a. The USACE review process is based on a few simple but fundamental principles:
  - Peer review is key to improving the quality of work in planning, design and construction;
  - Reviews shall be scalable, deliberate, life cycle and concurrent with normal business processes;
  - A review performed outside the home district shall be completed on all decision and implementation documents. For other products, a risk informed decision as described in EC 1165-2-214 will be made whether to perform such a review.
  
- b. The EC 1165-2-214 outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review.

### **4. DISTRICT QUALITY CONTROL (DQC)**

The RMO for DQC is the home District. In accordance with EC 1165-2-214 all work products and reports, evaluations, and assessments shall undergo necessary and appropriate District Quality Control (DQC).

DQC is the internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the project Quality Management Plan (QMP) of the Project Management Plan (PMP).

The DQC is the internal quality control process performed by the supervisors, senior staff, peers and the PDT within the home District and is managed by the home District. DQC consists of;

- a. Quality Checks and reviews. These are routine checks and reviews carried out during the development process by peers not responsible for the original work. These are performed by staff such as supervisors, team leaders or other senior designated to perform internal peer reviews.
- b. PDT reviews. These are reviews by the production team responsible for the original work to ensure consistency and coordination across all project disciplines.

DQC will be performed on the products in accordance with the QMP within the PMP.

### **5. AGENCY TECHNICAL REVIEW (ATR)**

## **ATR Review Plan for Implementation Documents and Other Work Products**

A risk informed process was completed for this project in accordance with EC 1165-2-214. See **paragraph 7, RISK INFORMED DECISIONS.**

The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers.

ATR will be conducted by a qualified team from outside the home District that is not involved with the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC. In limited cases, when appropriate and independent expertise can be secured from Centers or Laboratories or when proper expertise cannot be secured otherwise, NWD may approve exceptions.

### **6. REVIEW DOCUMENTATION**

a) **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and;
- (4) Where appropriate, provide a suggested action needed to resolve the comment or concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

ATR shall be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team).

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**7. RISK INFORMED DECISIONS**

- a. **ATR:** (Source: EC 1165-2-214, paragraph 15). The process and methods used to develop and document the risk-informed decisions are at the discretion of the District but must be appropriate for the risk and complexity of the project. The following questions and additional appropriate questions were considered;

1. Does it include any design (structural, mechanical, hydraulic, etc)?
2. Does it evaluate alternatives?
3. Does it include a recommendation?
4. Does it have a formal cost estimate?
5. Does it have or will it require a NEPA document?
6. Does it impact a structure or feature of a structure whose performance involves potential life safety risks?
7. What are the consequences of non-performance?
8. Does it support a significant investment of public monies?
9. Does it support a budget request?
10. Does it change the operation of the project?
11. Does it involve ground disturbances?
12. Does it affect any special features, such as cultural resources, historic properties, survey markers, etc, that should be protected or avoided?
13. Does it involve activities that trigger regulatory permitting such as Section 404 or stormwater/NPDES related actions?
14. Does it involve activities that could potentially generate hazardous wastes and/or disposal of materials such as lead based paints or asbestos?
15. Does it reference use of or reliance on manufacturers' engineers and specifications for items such as prefabricated buildings, playground equipment, etc?
16. Does it reference reliance on local authorities for inspection/certification of utility systems like wastewater, stormwater, electrical, etc?
17. Is there or is there expected to be any controversy surrounding the Federal action associated with the work product?

\*Note: A "yes" answer to questions above does not necessarily indicate ATR is required, rather it indicates an area where reasoned thought and judgment should be applied and documented in the recommendation.

**Decision on ATR:** The District considered the risks and determined that **ATR is required** considering the project risks. ATR will be performed on the products in accordance with the District QMP and this RP. See **Attachment 1** for RP Specifics.

- b. **INDEPENDENT EXTERNAL PEER REVIEW (IEPR).** The District considered risks and risk triggers for Type I IEPR and Type II IEPR, also referred as a Safety Assurance Review (SAR) as described in EC 1165-2-214.
- I. **Type I IEPR** is required for decision documents under most circumstances. This project does not involve the production of decision documents.

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**Decision on Type I IEPR:** The District considered these risks and determined that **Type I IEPR is not required.**

- II. **Type II IEPR (SAR).** Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.
- Any project addressing **hurricane and storm** risk management and **flood risk** management or;
  - any other project where Federal action is justified by **life safety** or;
  - the failure of the project would pose a **significant threat to human life.**
  - This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities (based on identified risks and threats).

Other Factors to consider for Type II IEPR (SAR) review of a project, or components of a project;

- The project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices
- The project design requires redundancy, resiliency, and robustness.
- The project has unique construction sequencing or a reduced or overlapping design and construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.

**Decision on Type II IEPR:** Based on the information and analysis provided in the preceding paragraphs of this review plan, the project covered under this plan is excluded from IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis. The District considered these risks and determined that **Type II IEPR (SAR) is not required** considering the risks triggers.

### 8. POLICY AND LEGAL COMPLIANCE REVIEW

All documents will be reviewed throughout the process for their compliance with law and policy. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

This review plan template is not intended to describe requirements and processes to conduct policy and legal compliance review, or legal sufficiency reviews.

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**9. TEMPLATE APPROVAL**

NWD is responsible for maintaining the current version of this Review Plan template and ensuring the information accurately describes the criteria and considerations necessary to arrive at a risk informed decision. The review plan template is a living document and is subject to change.

The home District is responsible to complete the Review Plan Template Cover page, adjust the Table of Contents and the complete Review Plan specifics in **Attachment 1**. Significant changes to the review plan specifics (such as changes to the scope and/or level of review) should be re-approved by NWD. The completed Template information and the Attachment 1 will be submitted to the NWD for coordination and approval.

**END OF TEMPLATE INFORMATION**

**ATR Review Plan for  
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**ATTACHMENT 1**  
**Review Plan Specifics**

The information in this attachment is prepared by the District PM/PDT for the project specific information required for this review plan. The DQC is managed by the District and is described in the PMP/QMP. This document should be attached or included in the PMP/QMP to document the ATR.

**A-1. PROJECT INFORMATION**

**a. Study/Project Description:**

At Bonneville Second Powerhouse (B2), a series of orifices connect the intake gatewell slots to the Downstream Migrant Channel (DSM). The orifices and DSM are part of the Juvenile Bypass System (JBS). There are two orifices in each bulkhead slot. The orifices provide a free discharging jet into the downstream collection channel. Field observations of the orifice jet suggest that poor air ventilation is causing the jet to spread, and this "spread," is believed to be detrimental to migrating juveniles. The orifices are illuminated to facilitate inspection of the jet. A byproduct of having orifices lit is the high probability that light serves as an attraction mechanism for fish being routed through the dark gatewell environment.

The work product to be reviewed is the Engineering Document Report (EDR) that investigates potential alternatives and provides recommendations for improving downstream juvenile fish passage. Study goals were focused on improvements to reduce injury and delay to migrating fish species. Four categories of alternatives were developed and evaluated: (1) discernment and prevention of upstream debris blockage at the orifice exit; (2) discernment and prevention of upstream debris blockage at the orifice entrance; (3) improve jet trajectory under low hydraulic flow conditions, and; (4) decrease fish passage retention time through attraction lighting. Twelve alternatives were developed. The alternatives were grouped together by concept and rated in terms of potential impacts to fish passage and survival; technical viability; Operations & Maintenance (O&M) cost, and; construction costs and timing.

Additionally, the Product Development Team (PDT) is asking for the review of recommendations provided in the EDR such as; hydraulic jet improvement via air support enhancement; structural and physical changes (concrete mining) to improve the jet; installation and/or replacement of controls and valves to facilitate inspection; modifications to the ring diameter (reduction from 12 5/8" to 12") and; field-test orifice light ring prototypes in a Bonneville Second Powerhouse (B2) gatewell.

**b. Current Total Project Cost. :** \$1,124,000.

**c. Required ATR Team Expertise.** ATR team and required expertise;

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with experience in

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	fisheries biology and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process.
<b>Hydraulic Engineering</b>	The reviewer(s) must have familiarity with a typical hydroelectric powerhouse dam (preferably on the Lower Columbia and/or the Snake River); hydraulics dynamics, and; surface-by-pass systems for downstream migrating juvenile salmonids. The reviewer should have working knowledge of numeric modeling principles, data evaluation and sensitivity analysis.
<b>Structural Engineering</b>	The reviewer(s) must have extensive knowledge of concrete and steel reinforced materials relative to a powerhouse and a surface by-pass-system. The alternatives discussed and evaluated are focused on the gatewell environment of the powerhouse and screens that are used to direct fish away from turbines.
<b>Mechanical Engineering</b>	The reviewer should be able to evaluate and assess alternative recommendations that entail mechanical louvers, turning vanes, screens, etc. that help regulate hydraulic flow.
<b>Electrical Engineering</b>	The reviewer should be able to evaluate and assess alternative recommendations that entail the replacement of existing orifice lighting with a new designed LED orifice light ring. The reviewer should be familiar with both electrical and electronic components that support video monitoring and surveillance in the surface-by-pass downstream migration channel.
<b>Biologist</b>	The reviewer must have in depth knowledge of salmonid lifecycle and behavior – particularly for migrating juveniles. Additionally, the reviewer must be familiar with powerhouse surface-by-pass systems.

**A-2. REVIEW SCHEDULES AND COSTS**

a. **ATR Schedule.** Instruction: Complete project specific milestone, products and dates.

Review Milestone	Review Products	Date Planned
100% ATR review	Engineering Design Report	8 Apr – 31 May, 2013
100% back-check	Engineering Design Report	3 Jun - 28 Jun, 2013
ATR Certification	Engineering Design Report	1 Jul – 31 Jul, 2013

b. **ATR COSTS - Labor/Expenses.** Instruction: Complete milestones and cost estimates. Example provided.

Review Milestone	#reviewers/total hours	Approximate cost/hr	Totals
100% ATR review	6/24	\$110	\$15,840

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<b>100% back-check</b>	6/8	\$110	\$5,280
<b>ATR Certification</b>	6/4	\$110	\$2,640
<b>ATR Expenses (travel etc)</b>	N/A	N/A	N/A
<b>Total ATR costs</b>			\$23,760

c. **Engineering Models.** The following engineering models are anticipated to be used in the development of the implementation documents or other work products:

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Approval Status</b>
N/A	N/A	N/A

**A-3. REVIEW PLAN POINTS OF CONTACT**

The Review Management Organization for ATR will be NWD unless noted otherwise.

While public interest is not anticipated, public questions and/or comments on this review plan can be directed to the following points of contact:

<b>Contact</b>	<b>Role</b>	<b>Title</b>	<b>Office/District/Division</b>	<b>Phone</b>
George Medina	Project Manager	Chemist	NWP-PM-F, US Army Corps of Engineers	503-808-4753
Steve Bredthauer	RBT – Point of contact	Technical Review Program Manger	Northwestern Division, US Army Corps of Engineers	503-808-4053
Brad Bird	RMO - Point of contact	Senior Hydraulic Engineer	Northwestern Division, US Army Corps of Engineers	503-808-3728

**A-4. PROJECT DELIVERY TEAM (PDT) ROSTER.** Before posting to websites for public disclosure of the RP, it may be necessary to remove names and contact information for Corps employees to comply with security policies.

<b>PDT Roster</b>				
<b>Name</b>	<b>Discipline/Role</b>	<b>District</b>	<b>email</b>	<b>Phone</b>
George Medina	Project Manager	NWP	<a href="mailto:George.i.medina@usace.army.mil">George.i.medina@usace.army.mil</a>	503-808-4753
Karen Kuhn	Technical Lead	NWP	<a href="mailto:Karen.A.Kuhn@usace.army.mil">Karen.A.Kuhn@usace.army.mil</a>	503-808-4897
Alan Stokke	Mechanical Engineering	NWP	<a href="mailto:alan.m.stokke@usace.army.mil">alan.m.stokke@usace.army.mil</a>	503-808-4905

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PDT Roster				
Name	Discipline/Role	District	email	Phone
Dennis Petross	Structural Engineering	NWP	<a href="mailto:Dennis.W.Petross@usace.army.mil">Dennis.W.Petross@usace.army.mil</a>	503-808-4915
John Rerecich	Fisheries Biologist	NWP	<a href="mailto:Jonathan.G.Rerecich@usace.army.mil">Jonathan.G.Rerecich@usace.army.mil</a>	503-808-4779
Laurie Ebner	Senior Hydraulic Engineer		<a href="mailto:Laurie.L.Ebner@usace.army.mil">Laurie.L.Ebner@usace.army.mil</a>	503-808-4880

**A-5. ATR TEAM ROSTER** (complete when team members are identified). Before posting to websites for public disclosure of the RP, it may be necessary to remove names and contact information for Corps employees to comply with security policies.

Agency Technical Review (ATR) Team				
Name	Discipline/Role	District/Agency	email	Phone

**A-6. REVIEW PLAN SPECIFICS - APPROVAL**

The information provided in the Review Plan Template and the Review Plan Specifics in **Attachment 1** are hereby submitted for approval.

NWD will review this plan and route by NWD staffing sheet. If the plan is complete and appropriate for the risk and complexity of the project/products, the NWD will recommend approval by the appropriate Senior Executive Service (SES) in NWD. The NWD approval memorandum will be sent to the District PM responsible for the plan. The NWD approval memorandum shall be documented with the review plan, and the approval date should be noted on the cover sheet of this document.

Approved revisions should be recorded in the A-7 block below.

**A-7 REVIEW PLAN REVISIONS**

Revision Date	Description of Change	Page / Paragraph Number	Date Approved
Original			
Revision 1			

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**ATTACHMENT 2**

**B-1. ACRONYMS AND ABBREVIATIONS**

Acronyms	Defined
ATR	Agency Technical Review
CAP	Continuing Authorities Program
DCW	Director of Civil Works
DQC	District Quality Control
DSM	Downstream Migration Channel
EC	Engineering Circular
ECI	Early Contractor Involvement
EDR	Engineering Design Report
EIS	Environmental Impact Statement
ER	Engineering Regulation
FAQ's	Frequently Asked Questions
FGE	Fish Guidance Efficiency
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IEPR	Independent External Peer Review
JBS	Juvenile Bypass System
LED	Light-emitting Diode
NWD	Northwestern Division
MSC	Major Subordinate Command
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PH2	Bonneville Second Powerhouse
PIT	Passive Integrated Transponder
PMP	Project Management Plan
QA	Quality Assurance
QMP	Quality Management Plan
QMS	Quality Management System
O&M	Operations and Maintenance
RIT	Regional Integration Team
RMC	Risk Management Center
RMO	Review Management Organization
RP	Review Plan
SES	Senior Executive Service
SAR	Safety Assurance Review (also referred as Type I IEPR)
VBS	Vertical Barrier Screens