



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
PACIFIC OCEAN DIVISION, U.S. ARMY CORPS OF ENGINEERS  
FORT SHAFTER, HAWAII 96858-5440

[11 MAR 2013

CEPOD-PDC

MEMORANDUM FOR COMMANDER ALASKA ENGINEER DISTRICT (CEPOA-CO-  
O/JULIE ANDERSON), P.O. BOX 6898, JBER, AK 99506-0898

SUBJECT: Review Plan Approval for the Lowell Creek Tunnel Operations and Maintenance  
Letter Report, Seward, Alaska

1. References:

a. Engineering Circular 1165-2-214, Civil Works Review, 15 December 2012.

b. Review Plan for the Lowell Creek Tunnel Operations and Maintenance Letter Report,  
Seward, Alaska, Alaska District, U.S. Army Corps of Engineers.

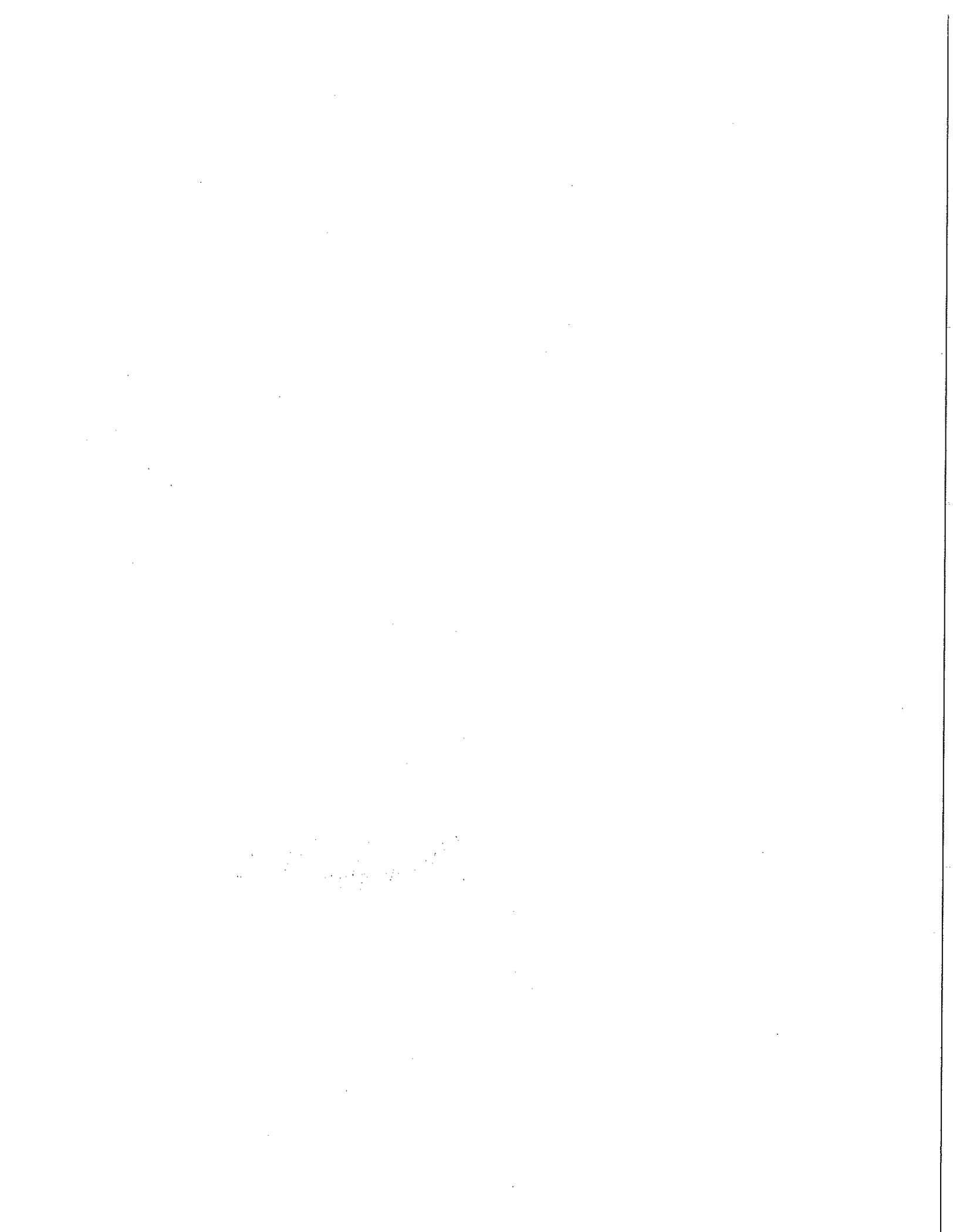
2. The enclosed Review Plan (reference 1.b.) for the Lowell Creek Tunnel Operation and  
Maintenance Letter Report, Seward, Alaska, was prepared IAW reference 1.a. The Pacific  
Ocean Division Civil Works Integration Division is the lead office to manage this Review Plan.  
This plan does not include Type II Independent External Peer Review.

3. I approve this Review Plan. It is subject to change as circumstances require, consistent with  
project development under the Project Management Business Process. Subsequent revisions to  
this Review Plan or its execution will require new written approval from this office.

4. The point of contact for this memorandum is Mr. Russell Iwamura, Senior Economist, Civil  
Works Integration Division, at 808-835-4625, or email, Russell.K.Iwamura@usace.army.mil.

Encl

  
GREGORY J. GUNTER  
Colonel, EN  
Acting Commander



# **REVIEW PLAN**

**Lowell Creek Tunnel  
Seward Alaska**

**For**

**Operations and Maintenance Letter Report**

**Alaska District**

**MSC Approval Date: 11 March 2013**

**Last Revision Date: None**



**US Army Corps  
of Engineers®**

**REVIEW PLAN**

**Lowell Creek Tunnel  
Seward Alaska**

**For  
Operations and Maintenance Letter Report**

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## 1. PURPOSE AND REQUIREMENTS

**a. Purpose.** This Review Plan defines the scope and level of peer review for the Lowell Creek Tunnel, Seward Alaska, letter report that will detail the extent and cost of the operations and maintenance of the tunnel. Section 5032 of the Water Resources Development Act (WRDA) 2007 requires this letter report be approved by the Assistant Secretary of Army for Civil Works (OASACW) before repairs are funded.

### b. References

- (1) Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012.
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011.
- (3) Engineer Regulation (ER) 1110-1-12, Quality Management, 30 September 2006.
- (4) ER 1110-1-12, Quality Management, 21 July 2006, Change 1, 30 September 2006, and Change 2, 31 March 2011.
- (5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007.
- (6) ER 1110-2-1156, Engineering and Design Safety of Dams – Policy and Procedures, 28 October 2011.
- (7) Civil Works Operations and Maintenance Program Management Plan, Alaska District, 13 May 2011.
- (8) CEPOA-QMP-001, Alaska District Quality Management Plan, CEPOA-QMP-001, January 2010.

**c. Requirements.** This Review Plan, which is a component of the Project Management Plan, was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC 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. In addition to these levels of review, this letter report is subject to cost engineering review and certification (per EC 1165-2-214) and the Value Management Plan requirements in the Project Management Business Process Reference 8023G and ER 11-1-321, Change 1.

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The Review Management Organization (RMO) is responsible for managing the overall peer review effort described in this Review Plan. The RMO for a letter report can be a Planning Center of Expertise (PCX), the Risk Management Center (RMC), or a Major Subordinate Command (MSC) depending on the primary purpose of the report. The RMO for the peer review effort described in this Review Plan is the home MSC, the U.S. Army Corps of Engineers (USACE) Pacific Ocean Division (POD).

POD, as the RMO, will coordinate with the Civil Works Cost Engineering and ATR Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review team to assess the adequacy of cost estimates, construction schedules and contingencies.

## 3. STUDY INFORMATION

**a. Letter Report.** The Lowell Creek Tunnel is part of the Lowell Creek Flood Control Project (FCP) authorized by Congress as a USACE project on 25 August 1937 (Public Law (P.L.) No. 369; 50 Stat. 806). Original construction was completed in November 1940 with alterations completed in 1945. Alaska District has repaired the tunnel four times under the authority of P.L. 84-99 and one additional time under the authority and direction of Section 510 of P.L. 106-60 (WRDA 2000). Section 5032 of WRDA 2007 gave USACE responsibility for the long-term maintenance and repair of the Lowell Creek Tunnel. The law also directed USACE to conduct a study to determine whether an alternative method of flood diversion in Lowell Canyon is feasible. Section 5032 mentions only the "tunnel", but the overall system is comprised of four features: a diversion dam, an inlet structure, a concrete lined tunnel, and an outlet structure. In accordance with the Implementation Guidance for Section 5032, dated 29 June 2009, the Alaska District will prepare a letter report that details the extent and cost of the future operation and maintenance for Lowell Creek Tunnel. National Environmental Policy Act (NEPA) documentation will be included in the letter report. This letter report is to be completed prior to a budget request. The letter report must be submitted for review and approval by the OASACW.

**b. Study/Project Description.** Lowell Creek Tunnel, a feature of the Lowell Creek, Seward, Alaska Project, is located in Seward, Alaska, 125 miles south of Anchorage at the head of Resurrection Bay. Seward is the southern terminus of the Alaska Railroad and is also connected to the Alaska Highway system. The City of Seward is built on the alluvial outwash plain formed by Lowell Creek which was diverted away from the community through Bear Mountain in 1940. Since then development of residential and commercial properties (to include the hospital and senior citizens home) has occurred within the old floodway leading from the dam spillway at the tunnel entrance through Bear Mountain.

Floods in 1986, 1989, and 1995 revealed that if the spillway were to be overtopped, catastrophic damages and possible loss of life could occur due to the aged structures. The tunnel lining suffers erosive damage from rocks and debris being carried by the flood flows and has been repaired five times. There is also the possibility of landslides blocking the intake to the tunnel

thus forcing the water to flow over the diversion dam and threaten many residences and businesses, including the senior citizens facility, and the Seward Hospital.

The project consists of a diversion dam and three primary appurtenant structures: tunnel, intake, and outlet. See Figure 1. The non federal sponsor is the City of Seward.

Diversion Dam: The Lowell Creek Dam is an approximately 400-foot-long rock-fill dam faced with reinforced concrete on the crest and upstream side and grouted rubble masonry on the downstream side. The City of Seward owns the Lowell Creek Dam.

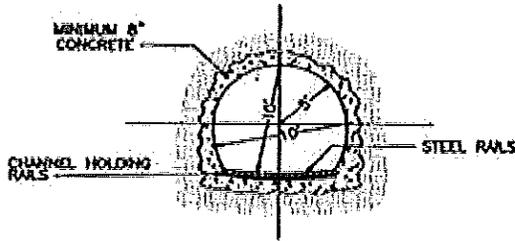
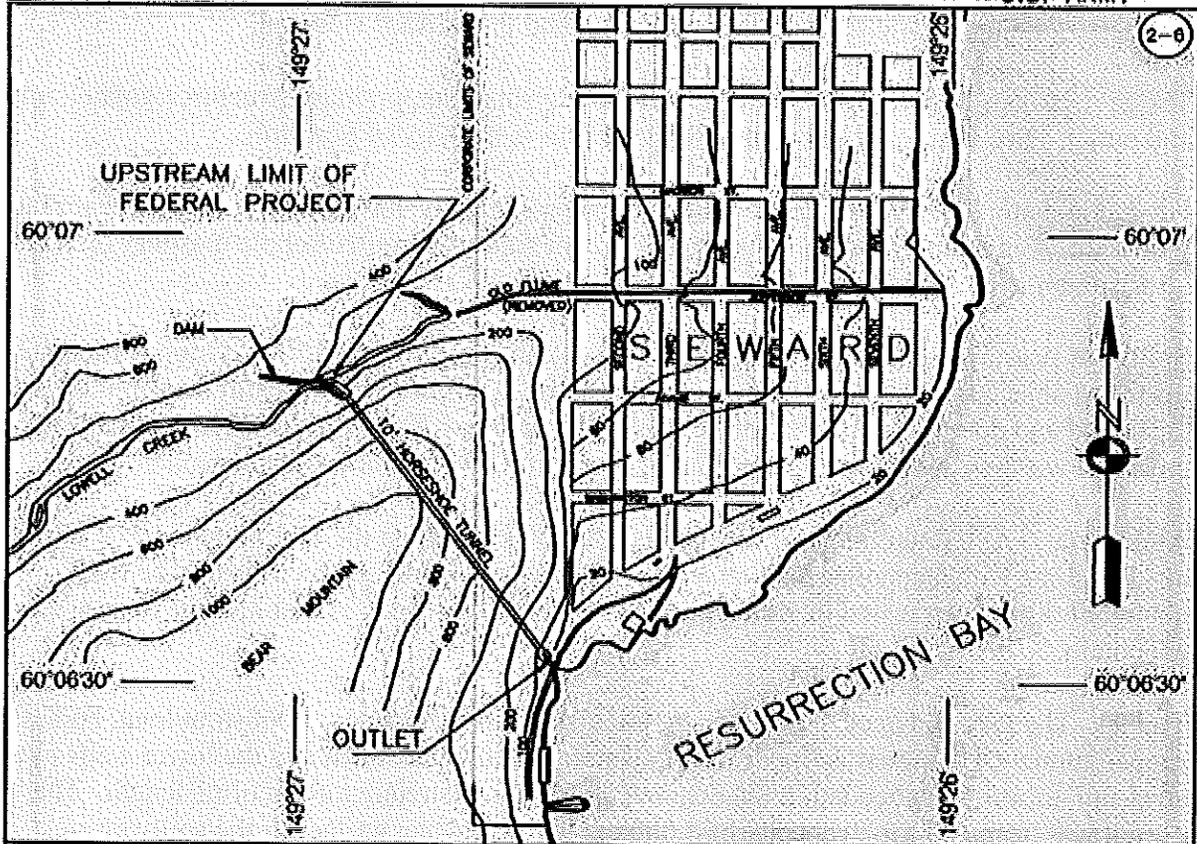
Spillway: A grouted rubble masonry spillway section approximately 70 feet long is immediately upstream adjacent to the tunnel entrance. The spillway allows water to spill over into the old creek bed and down into the City of Seward. The spillway is essentially a lowered section of the crest and was designed with a maximum discharge of 1,700 cubic feet per second (cfs).

Abutments: The left abutment of the dam is constructed against the canyon wall. The rock is cut at a 4:1 slope with a concrete slab attached with dowels against the rock face. The right abutment of the dam is tied into the entrance to the tunnel, which is cast into the rock of Bear Mountain.

Tunnel: The Lowell Creek Tunnel is a nominally 10-foot diameter, 2,068-foot long, horseshoe-shaped tunnel. The invert is lined with high strength concrete silica and the lower walls have steel-rail armoring embedded in the concrete along the upstream portion of its length. The outfall was designed for a capacity of 2,600 cfs with the water surface at the spillway crest. Most maintenance has been directed toward repair of the tunnel. The concrete lining has rapidly eroded due to super critical velocities carrying sand, gravel, cobbles, and boulders into and through the tunnel.

Tunnel Inlet: The tunnel inlet is a concrete ogive section with embedded steel rails for impact and scour reinforcement. The intake ties into the tunnel entrance and parallels the toe of the dam.

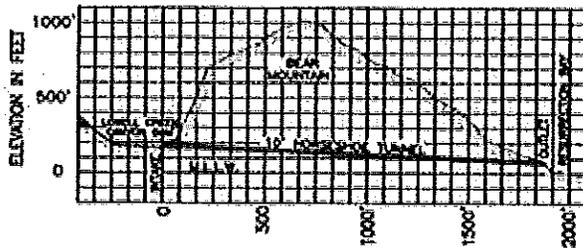
Tunnel Outlet: The Lowell Creek Tunnel outlet discharge flows to Resurrection Bay south of the City of Seward. A bridge was placed over the outfall area to connect Seward to Lowell Point via Lowell Point Road after tunnel construction. Significant quantities of material and debris are known to accumulate at this bridge, especially during periods of high flow. An estimated 27,000 cubic yards of rock and debris is carried through the tunnel each year. In the October 2006 and July 2009 flood events, gravel had accumulated and overtopped the bridge leaving Lowell Point inaccessible by road.



TYPICAL SECTION OF TUNNEL  
NOT TO SCALE

METRIC CONVERSIONS					
FEET	METERS	FEET	METERS	FEET	METERS
10	3.04	500	762.4	1500	457.2
25	7.62	600	182.8	3000	909.8
300	91.44	800	243.8	3570	1098.0
400	121.92	1000	304.8		

NOTE: THIS LOCALITY SHOWN ON U.S.C. & G.S. CHART NOS. 16682 & 16680.



PROFILE OF TUNNEL  
SCALE AS SHOWN

FLOOD CONTROL  
LOWELL CREEK  
ALASKA

Revised 1998

0 500 1000 1500  
SCALE IN FEET

0 100 200 300 400 500 600  
SCALE IN METERS

Figure 1. Lowell Creek Tunnel

**c. Factors Affecting the Scope and Level of Review.** In accordance with the Implementation Guidance for Section 5032, dated June 29, 2009, the Alaska District will prepare a letter report that details the extent and cost of future operation and maintenance for Lowell Creek Tunnel. This letter report is to be completed prior to a budget request for tunnel repairs.

- The letter report will likely not be challenging since the report details the extent and cost of future operations and maintenance of the existing tunnel.
- The project is repairing an existing project to pre-storm conditions. The repair will not impact the project further and will not impact any other structure or feature of the structure whose performance involves potential life risks. The POA Chief of Engineering concurred with the determination that there were no potential life safety issues related to the construction of this project.
- There is no request by the Governor of Alaska for a peer review by independent experts.
- This review plan addresses only the letter report that details the extent and cost of the operations and maintenance for the Lowell Creek Tunnel; additional studies identifying long-term solutions will require a separate Review Plan or an update to this Review Plan when the future studies/reports are understood in detail.
- According to ER 1110-2-1156, the letter report shall be subjected to a DQC with Regional Technical Specialists or other appropriate specialists.
- The information presented in the letter report is not based on the use of novel methods, does not use innovative materials or techniques, does not present complex challenges for interpretation, does not contain precedent-setting models or methods, and does not present conclusions that are likely to change common engineering practices.

**d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. There are no in-kind products and/or analyses to be provided by the non-Federal sponsor because O&M of the Lowell Tunnel project is performed by USACE.

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

All letter reports (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Program Management Plan. POA shall manage DQC. Documentation of DQC activities is required and should be in accordance with the POA and POD Quality Manuals.

**a. Documentation of DQC.** Review comments, evaluations (responses to comments), and response/action taken (for each comment) from the DQC of the letter report will be available in a spreadsheet format developed by POA, titled "POA Civil Works DQR Comments," or another

suitable format. The DQC Lead will prepare a study report checklist confirming that all the required elements of the report/document are complete, consistent, and technically sufficient to support the findings and recommendations. The spreadsheet and checklist, along with any other pertinent guidance or review comments/responses from POD/HQUSACE/OASACW will be provided to the ATR team.

**b. Products to Undergo DQC.** The O&M letter report will require DQC.

**c. Required DQC Expertise.** The DQC will be conducted using Regional Technical Specialists or other appropriate specialists. These personnel should specialize in the following fields in order to assure comprehensive review of the letter report: Dam Safety, Geotechnical, Structural, Hydraulics and Hydrology, Environmental Resources, and Cost Engineering.

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

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 is managed within USACE by POD and is conducted by a qualified team from outside POA that is not involved in 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 POD.

**a. Products to Undergo ATR.** The O&M letter report will require ATR.

**b. Required ATR Team Expertise.** The following ATR expertise is required for this project. Where possible ATR team members will address multiple disciplines and emphasis. Once identified, the ATR team members for this study and a brief description of their credentials will be added in Attachment 1.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as hydrology and hydraulic engineering, environmental resources, etc). Experience with the O&M program preferred.
Environmental Resources	The environmental reviewer should have a strong working knowledge of flood damage reduction projects and water control plans, the NEPA process and analysis procedures, and have expertise in evaluating impacts to endangered species, particularly marine mammals. Experience with the

	O&M program preferred.
Hydrology and Hydraulic Engineering	The hydrology and hydraulics engineering reviewers should be technical subject matter experts in Hydrology and Hydraulics who have a strong working knowledge of flood damage reduction projects and water control plans. A registered professional engineer is recommended. Experience with the O&M program preferred.
Dam Safety	The Dam Safety subject matter expert should have a working knowledge of ER 1110-2-1156 <i>Safety of Dams – Policy and Procedures</i> , Required for Flood Risk Management (FRM) studies to ensure compliance with ER 1105-2-101. Experience with the O&M program preferred.
Geotechnical Engineering	The geotechnical engineering reviewer shall have experience with FRM projects and water control plans. A registered professional engineer is recommended. Experience with the O&M program preferred.
Structural Engineering	The structural engineer should be a technical subject matter expert with a strong working knowledge of flood damage reduction projects and water control plans. Experience with the O&M program preferred.
Cost Engineering	The cost engineering reviewer will be familiar with cost estimating for O&M Civil Works projects using the Microcomputer Aided Cost Engineering System (MCACES) model and preparation of an MII Cost Estimate. Experience with cost and schedule risk analysis using Crystal Ball software is required. The reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. Coordination with the Cost Engineering MCX will be required to obtain MCX certification of the cost estimate. Experience with the O&M program preferred.

**c. Documentation of ATR.** DrChecks<sup>sm</sup> 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 be 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) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the 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<sup>sm</sup> will include the text of each ATR concern, the Project Delivery Team (PDT) response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes POA, POD, 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 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks<sup>sm</sup> with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may 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). A Statement of Technical Review will be completed for the letter report and draft Environmental Assessment (EA). A sample Statement of Technical Review is included in Attachment 2.

## **6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

IEPR may be required for Civil Works documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team

outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- **Type I IEPR.** Type I IEPR reviews are managed by an Outside Eligible Organization external to USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), is managed by the RMC and is 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.

- **Decision on IEPR.** Based on the factors discussed in Paragraph 3.c. neither a Type I nor Type II IEPR is needed. The activities addressed in this letter report are future operations and maintenance of an existing structure. The project is repairing an existing project to pre-storm conditions. The repair will not impact the project further and will not impact any other structure or feature of the structure whose performance involves potential life risks. No additions, expansions are included as part of this report.

- a. **Products to Undergo IEPR.** Not applicable.
- b. **Required IEPR Panel Expertise.** Not applicable.
- c. **Documentation of IEPR.** Not applicable.

## 7. POLICY AND LEGAL COMPLIANCE REVIEW

All Civil Works documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. 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 POD

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 Civil Works documents.

**8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION**

This letter report shall be coordinated with the Cost Engineering and ATR MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering certification. POD is responsible for coordination with the Cost Engineering MCX.

**9. MODEL USAGE**

Well-known and proven USACE developed and commercial engineering software should be used whenever appropriate during the development of implementation documents. The professional practice of documenting the application of the software and modeling results will also be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever possible. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

The following engineering model is anticipated to be used in the development of the letter report:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
Microcomputer Aided Cost Engineering System (MCACES) 2 <sup>nd</sup> Generation (MII)	The MCACES MII construction cost estimating software is a tool used by cost engineers to develop and prepare all USACE Civil Works cost estimates. Using the features in this system, cost estimates are prepared uniformly allowing cost engineering throughout USACE to function as one virtual cost engineering team.	Cost Engineering MCX Required Model

**10. REVIEW SCHEDULES AND COSTS**

**a. ATR Schedule and Cost.** The ATR for this letter report is being accomplished in accordance with the cost and schedule in the Project Management Plan. The ATR reviews are anticipated to take from 4 – 6 weeks to complete and cost between \$35,000 and \$40,000. At this time, ATR is scheduled for completion in the first quarter of FY14.

**b. Type I IEPR Schedule and Cost.** Not applicable.

c. **Model Certification/Approval Schedule and Cost.** Not applicable.

## **11. PUBLIC PARTICIPATION**

The public will be afforded the opportunity to comment on the proposed intermediate letter report and through review of the Environmental Assessment or if a public comment period is requested by the City of Seward.

## **12. REVIEW PLAN APPROVAL AND UPDATES**

The POD Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving POA, POD, and HQUSACE members) as to the appropriate scope and level of review for the letter report. Like the PMP, the Review Plan is a living document and may change as the study progresses. POA is responsible for keeping the Review Plan up to date. Minor changes to the Review Plan since the last POD Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will be re-approved by the POD Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commander's approval memorandum, will be posted on POA's webpage. The latest Review Plan will also be provided to POD.

## **13. REVIEW PLAN POINTS OF CONTACT**

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Alaska District POC: POA Project Manager, Tina McMaster-Goering, Ph. (907) 753-2861;
- Pacific Ocean Division POC: POD Senior Economist, Russell Iwamura, Ph. (808) 835-4625

## ATTACHMENT 1: TEAM ROSTERS

**Table 1. PDT Members**

<b>Name</b>	<b>Function</b>	<b>Office</b>
Julie Anderson	Operations	CEPOA-CO-O
Tina McMaster-Goering	Project Management – Civil Works	CEPOA-PM-C
Crane Johnson	Hydraulics and Hydrology	CEPOA-EN-ES-HH
Dave Spence	Emergency Management	CEPOA-EM
Michael Salyer	Environmental Resources	CEPOA-EN-ES-ER
Tom Sloan	Geomatics	CEPOA-EN-ES-GES
Karl Harvey	Cost Engineer	CEPOA-EN-CE
Robert Tedrick	Structural Engineer	CEPOA-EN-ES-HH

\*Other team members and peer reviewers will be added as necessary.

**Table 2. Pacific Ocean Division Dam Safety Team**

<b>Name</b>	<b>Function</b>	<b>Office</b>
James Pennaz	POD Dam Safety Program Manager	CEPOH-EC
George Ward	POD Chief, Business Technical Division and Dam Safety Officer	CEPOD-RBT
Terry Kojima	POD Public Affairs Officer	CEPOD-DPA
Helen Stupplebeen	POD Program Manager	CEPOD-PDC

**Table 3. District Quality Control Team/Regional Technical Specialists**

<b>Discipline</b>	<b>Office</b>	<b>Description of Credentials</b>
Dam Safety/Geotechnical	CEPOA-EN-GES	Dam Safety Program Manager/Chief of Geotechnical Engineering
Hydraulics/Structural	CEPOA-EN-ES-HH	Chief of Hydraulics and Hydrology
Environmental Resources	CEPOA-EN-ES-ER	Chief of Environmental Resources
Cost Engineering	CEPOA-EN-CE	Chief of Cost Engineering

**Table 4. Vertical Team**

<b>Name</b>	<b>Function</b>	<b>Office</b>
Marcus Palmer	POA Dam Safety Manager	CEPOA-EN-GES
David Frenier	POA Dam Safety Officer	CEPOA-EN

James Pennaz	POD Dam Safety Program Manager	CEPOH-EC
Jim Bersson	POD Dam Safety Officer	CEPOD-RB

## ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW

### COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

SIGNATURE

Name

ATR Team Leader

Office Symbol/Company

\_\_\_\_\_  
Date

SIGNATURE

Name

Project Manager

Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

Name

Architect Engineer Project Manager<sup>1</sup>

Company, location

\_\_\_\_\_  
Date

SIGNATURE

Name

Review Management Office Representative

Office Symbol

\_\_\_\_\_  
Date

### CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

Name

Chief, Engineering Division

Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

Name

Chief, Construction Division

Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
EA	Environmental Assessment	OEO	Outside Eligible Organization
EC	Engineer Circular	OSE	Other Social Effects
EIS	Environmental Impact Statement	PCX	Planning Center of Expertise
EO	Executive Order	PDT	Project Delivery Team
ER	Engineer Regulation	PAC	Post Authorization Change
FDR	Flood Damage Reduction	PMP	Project Management Plan
FEMA	Federal Emergency Management Agency	PL	Public Law
FRM	Flood Risk Management	QMP	Quality Management Plan
FSM	Feasibility Scoping Meeting	QA	Quality Assurance
GRR	General Reevaluation Report	QC	Quality Control
Home District/MSD	The District or MSC responsible for the preparation of the document	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MCX	Mandatory Center of Expertise	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act