



**U.S. Army Corps  
of Engineers®**

Water Resources Support Center  
Institute for Water Resources

*Policy Studies*

**Evaluation of  
St. Paul Island Harbor,  
Alaska**  

---

*Section 204 (e) Project*

APPROVED FOR RELEASE  
Approved for Release by NSA on 05-08-2014 pursuant to E.O. 13526

19961104 054

**U.S. Army Institute for Water Resources  
Policy and Special Studies Programs**

*The Corps of Engineers Institute for Water Resources (CEWRC-IWR) is part of the Water Resources Support Center in Alexandria Virginia. It was created in 1969 to analyze and anticipate changing water resources management conditions, and to develop planning methods and analytical tools to address economic, social, institutional, and environmental needs in water resources planning and policy. Since its inception, IWR has been a leader in the development of tools and strategies to plan and execute Corps water resources planning.*

*IWR's program emphasizes planning concepts for use by Corps field offices. Initially, this work relied heavily on the experience of highly respected planners and theorists, gained in the many river basin and multiple purpose studies undertaken in the 1960s. As these concepts matured and became a routine part of Corps planning, the emphasis shifted to developing improved methods for conducting economic, social, environmental, and institutional analyses. These methods were essential to implementation of the Water Resources Council's (WRC) Principles and Standards (P&S) and later, Principles and Guidelines (P&G) for water resources planning, which required a multi-objective analysis of tradeoffs among national and regional economic development, environmental quality, and social effects.*

*Increasingly over the years, IWR has also responded to Corps program development needs by studying policy issues resulting from changes in national objectives and priorities. In addition to directly supporting Corps needs, IWR has established an analytic and strategic competence through the direction of such efforts as the National Drought Management Study, National Waterways Studies, the National Wetlands Mitigation Banking Study, the Federal Infrastructure Strategy, and as a lead participant in the development of policy and procedures for environmental planning and management.*

*Many of these forward-looking policy and strategic studies were accomplished by the Policy and Special Studies Division. The mission of the Division is to support the Director of Civil Works by assessing and evaluating changing national water resources and related public works infrastructure management needs as they affect Corps Civil Works missions, policies, practices, legislative mandates, and executive directives.*

*The Division supports the Office of the Assistant Secretary of Civil Works [OASA(CW)] and the Headquarters, U.S. Army Corps of Engineers (HQUSACE) in analyzing current policy issues, and conducting special studies of national and international significance. The Division's work encompasses the following thematic areas:*

- Policy Studies
- Strategic Studies
- Special Studies
- Environmental Studies

*For further information related to the program, call either:*

*Dr. Eugene Stakhiv  
Chief, Policy and Special  
Studies Division  
703-428-6370*

*Mr. Kyle E. Schilling  
Director, Institute for  
Water Resources  
703-428-8015*

*Department of the Army Corps of Engineers  
Water Resources Support Center  
Casey Building, 7701 Telegraph Road  
Alexandria, VA 22315-3868*

*Reports may be ordered by writing (above address) Arlene Nurthen, IWR Publications, at [arlene.nurthen@inet.hq.usace.army.mil](mailto:arlene.nurthen@inet.hq.usace.army.mil) or by fax 703-428-8171.*

EVALUATION OF ST. PAUL ISLAND HARBOR, ALASKA;  
SECTION 204(e) PROJECT

By

Theodore M. Hillyer

U.S. Army Corps of Engineers  
Water Resources Support Center  
Institute for Water Resources  
Casey Building, 7701 Telegraph Road  
Alexandria, Virginia 22315-3868

JUNE 1996

**DISTRIBUTION STATEMENT A**

Approved for public release;  
Distribution Unlimited

IWR REPORT 96 - PS - 2

**DTIC QUALITY INSPECTED 1**

## ACKNOWLEDGMENTS

---

This report was produced as part of the Policy and Special Studies Program of the U. S. Army Engineer Institute for Water Resources. The study was performed by Theodore M. Hillyer under the supervision of Eugene Z. Stakhiv, Chief, Policy and Special Studies Division, Institute for Water Resources (CEWRC-IWR-P). The Director of IWR is Kyle E. Schilling.

The report presents the results of a study to examine the process followed on the St. Paul Island Harbor, Alaska project. To date, this is the only project that has been completed using the authority of Section 204(e) of the Water Resources Development Act of 1986. The study focused on what caused this particular project to require a study to determine the feasibility of modifications almost as soon as it was completed, as well as on the pros and cons of implementing the project under the authority of Section 204(e).

The study was initiated at the request of Dr. G. Edward Dickey, Chief, Planning Division, Directorate of Civil Works (CECW-P). It was supported by and coordinated through Janice E. Rasgus of the Policy Development Branch of the Policy Review and Analysis Division, Directorate of Civil Works (CECW-AA). The review and coordination efforts of Arlene L. Dietz, Alan J. Lauwaert and James Daniels of the Directorate of Civil Works were of great value. The cooperation of the North Pacific Division and the Alaska District is also greatly appreciated. Special recognition is given to the North Pacific Division study monitor for this study, Dennis Wagner.

# EXECUTIVE SUMMARY

---

## Background

Section 204(e) of the Water Resources Development Act of 1986 (WRDA '86), permits the sponsor, under certain conditions, to construct a navigation project and then be reimbursed by the Federal Government for the general navigation features of the project. To date, only one project has been completed under this authority, St. Paul Island Harbor, Alaska. Soon after the Federal features of the project were completed, a study was undertaken to modify the harbor. The study reported on herein, examined the project, investigated why the modification may be needed so soon after completion and what part, if any, was the Section 204(e) process involved.

St. Paul Island is located approximately 800 miles west-southwest of Anchorage, Alaska in the Bering Sea. Until the early 1980's the inhabitants of this island depended primarily on the fur seal trade for subsistence. Following termination of sealing activities the inhabitants turned to fishing for a livelihood. At that time, the existing St. Paul Island Harbor could not support this growing activity and the Corps initiated a study to determine the feasibility of harbor modification. The study resulted in a favorable report that was authorized as part in WRDA '86.

The Corps of Engineers completed the General Design Memorandum for the St. Paul Island Harbor project in May 1988. A construction agreement under the authority of Section 204(e) of WRDA '86 was signed in June 1988, construction by the City of St. Paul commenced in May 1989 and was completed in December 1989. After inspection and acceptance of the general navigation features of the project by the Corps, the City was reimbursed its share of the cost in March 1990. Before the other portions of the harbor project could be completed, it was discovered that the harbor design was inadequate and the Corps initiated a reconnaissance study to determine if additional harbor modification would be feasible. The Reconnaissance Report was certified in October 1995 and a Feasibility Report is currently underway.

## EXECUTIVE SUMMARY

---

### Conclusions

The conclusions of this evaluation of the St. Paul Island Harbor, Alaska; Section 204(e) project are as follows:

- The post project high demands by vessels far exceeded any reasonable projections.
- Implementing guidance on the Section 204(e) process (ER 1165-2-120), provides adequate Corps oversight and control.
- There were no adverse impacts as a result of using the Section 204(e) process on implementing the project at an earlier date than under the normal process.
- Under the Section 204(e) process, the project may have been completed quicker than normal as the contractor was motivated to build the project quickly, carefully, and on budget.
- The Section 204(e) process did not in any way impede the success of the project.
- Favorable coordination and cooperation was maintained between the Corps and the sponsor throughout history of this project.
- Based on the results of this study, both the Corps and local sponsors should look favorably on the Section 204(e) process as a means of constructing comparable projects.

# TABLE OF CONTENTS

<u>Item</u>	<u>Page</u>
Acknowledgments	iii
Executive Summary	v
Table of Contents	vii
List of Tables	vii
List of Figures	vii
I INTRODUCTION	1
Purpose of Report	
Legislative Background	
II. PROJECT HISTORY	3
Project Location and Physical Features	
Socioeconomic Setting	
Development of St. Paul Island Harbor	
Chronology and Comparison	
III. EXAMINATION	13
General	
Existing Project	
Conditions Changed	
What Caused Changed Conditions	
Comparison with Regulations	
Comparison of the Section 204(e) Process with Normal Procedures	
Benefits of Sponsor Constructed Project	
IV. CONCLUSIONS	17
REFERENCES	19
APPENDIX A	21

## LIST OF TABLES

Table 1	Chronology of St. Paul Island Harbor	10
Table 2	Comparison of St. Paul Island Harbor at Different Stages	12

## LIST OF FIGURES

Figure 1	Location and Vicinity Map	4
----------	---------------------------	---

# I. INTRODUCTION

---

## Purpose of Report

This report has been prepared at the request of the Planning and the Policy Review and Analysis Divisions of the Directorate of Civil Works. Under this request, the Policy and Special Studies Division of the Institute for Water Resources was asked to examine what caused the St. Paul Island Harbor, Alaska project to require a study of project modification soon after construction of the Federal features were completed as well as the pros and cons of implementing the project under the Section 204(e) of the Water Resources Development Act of 1986 (WRDA '86) process. The St. Paul Island Harbor, Alaska project is unique in that it is the only project that has been completed under the terms of Section 204(e) of WRDA '86.

## Legislative Background

Section 204 of WRDA '86, (Public Law (PL) 99-662, enacted November 17, 1986) provides that non-Federal sponsors may undertake navigation improvements in harbors of the United States, subject to certain limitations. Under the subsection (e), within certain conditions, the Federal share of the cost of the harbor improvement may be reimbursed by the United States. A complete reading of Section 204(e) of PL 99-662 is as follows:

“(e) Reimbursement

(1) GENERAL RULE.- Subject to the enactment of appropriation Acts, the Secretary [of the Army] is authorized to reimburse any non-Federal interest an amount equal to the estimate of Federal share, without interest, of the cost of any authorized harbor or inland harbor improvement, or separable element thereof, constructed under the terms of this section if-

(A) after authorization of the project and before initiation of construction of the project or separable element-

(i) the Secretary approves the plans of construction of such project by such non-Federal interest, and

(ii) such non-Federal interest enters into an agreement to pay the non-Federal share, if any, of the cost of operation and maintenance of such project; and

(B) the Secretary finds before approval of the plans of construction of the project that the project, or separable element, is economically justified and environmentally acceptable.

(2) MATTERS TO BE CONSIDERED IN REVIEWING PLANS.- In reviewing such plans, the Secretary shall consider budgetary and programmatic priorities, potential impacts on the cost of dredging projects nationwide, and other factors that the Secretary deems appropriate.

(3) MONITORING.- The Secretary shall regularly monitor and audit any project for a harbor or inland harbor constructed under this subsection by a non-Federal interest in order to ensure that such construction is in compliance with the plans approved by the Secretary, and that costs are reasonable. No reimbursement shall be made unless and until the Secretary has certified that the work for which reimbursement is requested has been preformed in accordance with applicable permits and the approved plans.”

## II. PROJECT HISTORY

---

### Project Location and Physical Features

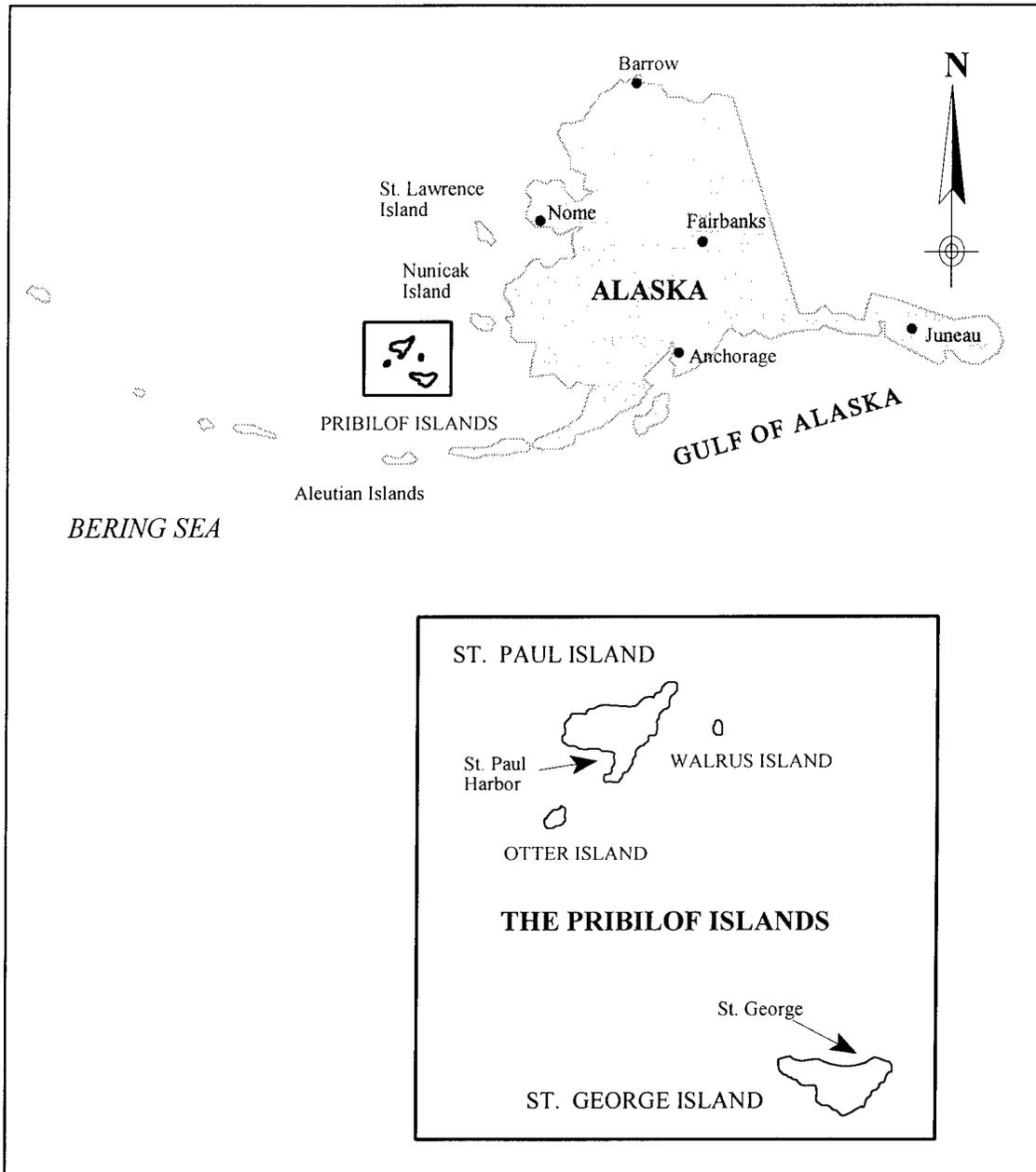
St. Paul Island, with a land area of 44 square miles, is the largest and northernmost of the Pribilof Islands in the eastern Bering Sea of Alaska, **Figure 1**. The break of the 400-mile-wide Bering Sea continental shelf occurs approximately 70 miles to the southwest of the island. The Pribilof's are of volcanic origin and St. Paul Island is composed predominantly of volcanic materials in the form of lava flows and loose cinders with sandy deposits. The west and southwest portions of the island are relatively high and mountainous with precipitous cliffs along the coast. The remainder of the island is relatively low and rolling with a number of extinct volcanic peaks scattered throughout. The city of St. Paul is located on Village Cove on the southern tip of the island and is its only settlement, situated approximately 800 air miles west-southwest of Anchorage, Alaska.

The climate is typically maritime, resulting in cloudiness, heavy fog, high humidity, and relatively narrow daily temperature ranges. The humidity remains uniformly high from May to late September; low clouds predominate during the summer, with occasionally heavy fog. The difference between the average daily maximum and minimum temperatures for the entire year is only slightly more than 7 degrees Fahrenheit. The summer mean maximum temperature is about 50 degrees and the winter mean minimum is about 20 degrees. The highest temperature on record is 64 degrees. Temperatures fall below zero an average of only five days per year.

Windy periods occur throughout the year. Storms frequently occur during the October-to-April period, often accompanied by gale-force winds which produce blizzard conditions. The annual maximum sustained wind speed (winds averaged more than one minute and with a return period of one year) is approximately 51 miles per hour. The extreme high tide is +6 feet MLLW and the extreme low tide is -2.5 feet MLLW. Mean sea level is 2.0 feet above MLLW.

II. Project History

FIGURE 1  
ST. PAUL ISLAND HARBOR  
LOCATION AND VICINITY MAP



## II. Project History

---

### **Socioeconomic Setting**

Economic conditions on the Pribilof Islands are unique. Before October 1983, St. Paul Island was classified as a Federal Government reservation. The island was the center of fur sealing activities under the administration of the National Marine Fisheries Service (NMFS). The NMFS withdrew from the island in 1983, and the community had to restructure its employment sector. The cessation of Federal government-supported sealing was an extreme setback; the NMFS accounted for more than 60 percent of the total labor force employment and operated the island's basic services. Congress appropriated \$20 million for a trust fund to be shared by St. Paul Island and St. George Island (the only other major Pribilof Island) as compensation for loss of the Federal agency and as funds to promote self-sufficiency. At that time (1983), the population of St. Paul island was about 560, including 50 nonnative transient residents. Summer tourist visitations reached as high as 120 people per week.

Shortly prior to the termination of the fur sealing industry, the Magnuson Fisher Conservation and Management Act of 1976 (PL 94-265), as amended, provided for conservation and exclusive management of all fishery resources within 200 nautical miles of the U.S. coastline. Following passage of the act, increasing restrictions were placed on foreign fishing activities within the 200-mile Exclusive Economic Zone off the coast of Alaska. U.S. fishermen concentrated their efforts at an accelerated rate in areas previously worked by foreign fleets. St. Paul Island proved to be of significant aid in supporting fleet operations as the industry began to move north of the Pribilof Islands. At that time, it was thought that establishment of a harbor in the Pribilof islands would allow the crab and groundfish fleets to operate efficiently.

### **Development of St. Paul Island Harbor**

With this background of increasing emphasis on fishing and a decrease emphasis on the fur trade, the U.S. Army Corps of Engineers (Corps) in 1979 initiated a feasibility study to explore a range of alternative solutions to the navigational problems and needs

## II. Project History

---

of St. Paul Island and the eastern Bering Sea. This study resulted in a Chief of Engineers report being signed and sent to the Secretary of the Army on 10 August 1983. This report, however, and the plan it recommended was not sent to Congress until January 1987. In the interim, the City of St. Paul constructed a 750-foot breakwater and a 200-foot dock and the recommendations in the Chief of Engineers Report were authorized in Section 202 of the WRDA '86. Also authorized in WRDA '86, was the law (Section 204(e)) that permitted non-Federal sponsors to undertake navigation improvements in harbors of the United States, subject to certain limitations (see above the paragraph "Legislative Background"). In December 1986 (the month following enactment of WRDA '86), the City of St. Paul requested permission to construct the harbor under the authority of Section 204(e) of WRDA '86.

In May of 1988, the Corps completed its General Design Memorandum (GDM) for the St. Paul Island Harbor project. The total cost of the project at that time was \$29,286,000, with a Federal share of \$15,748,000. In Fiscal Year 1988 Congress, subject to availability of funds, provided \$3 million for the project and the House of Representatives adopted a bill which would provide an additional \$7 million in fiscal year 1989. Following completion of the GDM, on 29 June 1988, the Section 204(e) construction agreement between the Corps and the City of St. Paul was signed. The construction agreement listed a total cost of \$30,330,000, with the Federal share remaining at \$15,748,000 because, as specified the Section 204(e) agreement, the Federal share was limited to 80 percent of the general navigation features (GNF).

Following bid advertisement, the sponsor requested a modification to the Section 204(e) agreement based on the bid estimate of \$32,332,600. The sponsor desired to change the costs stated in the existing agreement which were developed in the GDM (February 1988 price levels), to reflect current price levels and cost estimates, including the Section 902 (WRDA '86) limit, and to remove the prohibition on including the value of rock already quarried. This request was approved and the Federal portion of the cost was increased to \$19,635,200 (1992 price levels). This new Federal cost, while limited to 80 percent of the GNF, included \$2,870,000 for rock previously quarried and stockpiled, but

## II. Project History

---

which was excluded from the original construction agreement because of the Section 902 (of WRDA '86) limit. Construction by the City commenced in May 1989 and the portion of the features subject to Federal reimbursement was completed in December 1989. After inspection and acceptance by the Corps, the City of St. Paul was reimbursed \$18,150,000 in March 1990.

An amendment to the Section 204(e) construction agreement was signed on 30 April 1992. This amendment extended the agreement for five more years to allow the City of St. Paul to complete their portion of the work. The estimated completion date is currently 30 April 1997. Because of the current study of possible harbor modifications, however, it is unlikely that the features will be constructed at this time. Instead, the uncompleted work will be incorporated as appropriate into the new proposed modification.

The project that was completed in 1989 was actually conceived in the late 1970's and early 1980's and while modified to some extent by the 1988 GDM, was still designed to support a fishing fleet, based on projections done in 1988, that was one-third the size of the fleet that was using the harbor in 1994. It lacks moorage for smaller boats and was not intended to have any floating or shore-based processing plants. It was designed only to accommodate unladen fishing vessels going into the harbor to refuel and to stock provisions. Large loaded vessels were not expected to use the harbor because processing facilities were outside the harbor. The design vessel was 110 feet in length and drafted 12 feet unladen. This compares to a 1994 design vessel of 275 feet with a laden draft of 26 feet. By 1994, population on the island had increased to 800 people and the harbor is now serving a fleet of 230 transient vessels during the crabbing season. In addition, it is reported that 27 floating processors were within the 3-mile limit in 1994.

The St. Paul Island Harbor breakwater, constructed in 1989, was designed to have minimal overtopping. Its design was studied in a flume model and documented in the Coastal Engineering Research Center report TR CERC-88-10, "St. Paul Harbor Breakwater Stability Study" (USACE WES-CERC 1988). The final design incorporated large cap stone to reduce the overtopping. Observations and discussions with the harbor master from 1989 through 1995 indicate substantially more overtopping than was intended. Green

## II. Project History

---

water overtops the breakwater five to eight times per year. Wing-driven spray probably overtops the breakwater eight to 15 times per year. The space on the lee of the breakwater is needed for harbor efficiency and expansion. Therefore, the runup and overtopping must be reduced.

With the dramatic increase in harbor activity and the need to reduce wave overtopping of the breakwater, the Corps initiated a Reconnaissance Study in 1994. This study showed that there was a Corps interest in deepening and widening the Federal entrance and maneuvering channels in St. Paul Island Harbor and justified further studies to examine feasible solutions to prevent storm waves from overtopping the existing breakwater. The Reconnaissance report was completed in July 1995 and was certified in October 1995.

The Feasibility stage of the study is currently underway and a Draft Feasibility Report was submitted to HQUSACE on 22 May 1996. This current document lists a design vessel with a length of 325 feet, a beam of 50 feet, and a loaded draft of 23 feet. The estimated project construction cost is estimated a \$18,981,000 (Federal share is \$12,188,000) and the benefit to cost ratio is 1.9. In this report, additional documentation of the design wave studies are provided. Based on analysis of videotapes and harbor users' observations, the current analysis used an estimated design wave height of 28 feet and a design wave period of 20 seconds. This wave would be a depth limited wave for a still water level of +7.0 feet. This design storm event is believed to occur every fall at St. Paul Island.

### **Chronology and Comparison**

The varied history of this small unique island is difficult to capture. In order to show this history, a chronology of the project is provided in **Table 1** and a comparison of the project at three points in history (1982 Feasibility Report, 1988 General Design Memorandum and 1995 Reconnaissance Report) is provided in **Table 2**. This history shows that it was ten years from the start of the study to start of construction and that

## II. Project History

---

construction was completed in one year under the Section 204(e) process. During the study process, conditions on the island and surrounding waters changed dramatically and the planning process did not envision the vast changes that would take place. All proposed project modifications have been well justified.

## II. Project History

---

**TABLE 1**  
**CHRONOLOGY OF ST. PAUL ISLAND HARBOR**  
(Continued on next page)

1979 COE starts the study with a public meeting on 15 May 1979 and with another public meeting on 2 April 1980.

1982 The future of fur seal harvest is uncertain as of November 1982. The President's budget for Fiscal Year 1983 did not allow for Federal funding of a fur seal harvest. Because of this, local officials began to independently investigate the island's boat harbor needs. A consultant's report was prepared which recommended a harbor development identical in all major features to the COE proposal.

December 1982 COE Final Feasibility Report and Environmental Impact Statement completed.

10 August 1983 Chief of Engineers Report signed and transmitted to the Secretary of the Army.

October 1983 Classification of St. Paul Island as a Federal Government Reservation withdrawn and fur sealing activities under the administration of National Marine Fisheries Service terminated.

July 1985 The Chief of Engineers 1983 report, transmitted to the Office of Management and Budget.

1986 The City of St. Paul constructed a 750-foot breakwater and a 200-foot dock.

November 1986 The St. Paul Island Harbor project authorized by Sec 202 of WRDA '86 in accordance with the Chief of Engineers Report dated 10 August 1983.

December 1986 The City of St. Paul sends a letter the COE asking permission to construct the harbor under the authority of Section 204(e) of WRDA '86.

January 1987 The Chief of Engineers Report transmitted to Congress.

Fiscal Year 1988 Although "subject to availability of funds," Congress provides \$3 million for the St. Paul Island Harbor Project and directs the COE to provide from within available funds such other amounts as may be required in fiscal year 1988. In May 1988 the U.S. House of Representatives adopted a bill which provides an additional \$7 million in fiscal year 1989 appropriations for the St. Paul Island Harbor Project. State of Alaska appropriated \$4 million for the St. Paul Island Harbor Project. The city of St., Paul also has an inventory of armor stone and other materials with an estimated value of between \$5 and \$10 million.

May 1988 The COE completes the General Design Memorandum (GDM) for the St. Paul Island Harbor Project.

## II. Project History

---

**TABLE 1**  
**CHRONOLOGY OF ST. PAUL ISLAND HARBOR**  
(Continued)

17 June 1988 Opinion of Office of Chief Counsel on the changes in the plan between that authorized in WRDA '86 and the new plan presented in the 1988 GDM.

- a. The breakwater has been redesigned to take advantage of the existing one constructed by the City in 1986 and has an elevation 15.5' higher.
- b. Construction of an additional inner breakwater to reduce wave activity.
- c. Entrance and maneuvering channel has been deleted.
- d. All changes within the Chief of Engineer's discretionary authority.

30 June 1988 Section 204(e) construction agreement signed. Items are in accordance with the GDM.

May 1989 Construction commenced under the authority of Section 204(e) of WRDA '86 by the City of St. Paul.

December 1989 Construction of the General Navigation Features completed.

March 1990. Corps accepts the work and reimburses the sponsor \$18,150,000.

30 April 1992 Construction agreement modified to extend agreement for five more years to allow the City of St. Paul to complete their portion of work.

July 1995 COE completes the Reconnaissance Report to modify the harbor.

October 1995 Reconnaissance Report certified and Feasibility phase initiated.

May 1996 Draft Feasibility submitted to HQUSACE.

## II. Project History

**TABLE 2  
COMPARISON OF ST. PAUL ISLAND HARBOR AT DIFFERENT STAGES**

Item	1982 Feasibility Report	1988 General Design Memorandum	1995 Reconnaissance Report
General Description	Population of about 560, with summer tourist visitations of 120 people per week. Existing economy dominated by the Federally controlled fur seal industry with tourism the only other significant income. The increase in commercial fishing for crab and bottomfish by U.S. vessels augmented by the 200-mile territorial limit, has been accompanied by a growing need for a harbor of refuge and a nearby source of essential services to reduce the hazards and inefficiency of exploitation of these valuable food resources.	The island has a population of just over 600. Other than a small harbor being constructed at St. George, the St. Paul harbor provides the only facility for boat moorage and service in the region. To replace jobs lost with the National Marine Fisheries Service withdrawal, (for fur seal harvest and the classification of St. Paul Island as a Federal Government Reservation terminated) the city is attempting to develop a new economic base related to fisheries.	Population is about 800 people, with 2/3 being Alaska Native. The existing harbor was designed to support a fishing fleet 1/3 the size of the current fleet and it lacks moorage for smaller boats. The harbor was not intended to have any floating or shore-based processing plants. It was designed only to accommodate unladen fishing vessels going into the harbor to refuel and to stock provisions. Due to lack of room and shallow draft, large boats and processors have to travel to Dutch Harbor to unload. Inclement weather forces fully loaded crab catcher vessels to wait outside the harbor.
Design Vessel	70- to 120- feet	110'x35' with an unloaded draft of 12'	275'x50' with a laden draft of 26'
Design Fleet	36 crabbing and bottomfish vessels	20 to 25 crab vessels and 40 groundfish vessels	230 transient vessels during the crabbing season and 27 floating processors within the 3-mile limit.
Design Wave	16.5' and 9.7 seconds for a 50-yr storm	25' and 18 seconds for a 1-yr storm	Not given. Studies needed to prevent breakwater overtopping.
Project Features	1) 1,800' breakwater 2) Entrance channel & maneuvering area 960'x180'x18' deep	1) Main breakwater 1,050', 37' high 2) Inner breakwater 1,000', 18' high 3) Turning basin of 2 acres, 18' depth 4) Dock length 700' 5) Mooring Basin 6 acres	1) Entrance channel 150' to a depth of -37MLLW 2) Shore access channel and maneuvering channel at a depth of -32' MLLW 3) Existing caisson dock extended 35'x200' 4) New underwater berm at the breakwater with a crest width of 68' and a height of 34' from the sea floor with an 800' length
Project Cost	October 1982 Prices T = \$22.402 M F = \$11.541 M	February 1988 Prices T = \$29.286 M F = \$15.748 M	January 1995 Prices T = \$11.061 M F = \$ 6.343 M
Benefit / Cost Ratio	1.5	1.7	2.1

### III. EXAMINATION

---

#### **General**

As shown above in the history of the project, only a short period of time elapsed between completion of the navigation facilities at the St. Paul Island Harbor project under the authority of Section 204(e) of WRDA '86 and the need to restudy the harbor for a possible enlargement. This unusual occurrence led to a discussion at Headquarters, USACE, concerning the Section 204(e) process, what were the benefits and/or costs, if any, that may have been attributed to the process and were there any lessons learned that could be applied to future Section 204(e) projects. As a result of this discussion, the Institute of Water Resources was asked to investigate this issue as a study under the "Fiscal Year 1996 Policy and Special Studies Program."

A memorandum for the Commander of the North Pacific Division, requesting certain information, was drafted between the Policy and Special Division of the Institute for Water Resources and the Planning Policy Review and Analysis Divisions of the Directorate of Civil Works. A copy of this memorandum is provided as Appendix A. As a result of this inquiry, the following analysis of the St. Paul Harbor Island project is provided.

#### **Existing Project**

St. Paul Island is located in the Bering Sea near the center of vast fish and shellfish resources. Its location made St. Paul the logical harbor site to fuel and resupply crabbers and catcher vessels for factory ships which processed groundfish. The selected optimum harbor design, in the 1988 time frame, would service up to seven vessels at once with a design length of 110 feet. At that time, the total Bering Sea Fishing Fleet was estimated at about 290 crabbers and bottomfish vessels. It was further estimated that about 25 percent of those vessels would visit St. Paul Harbor. Local interests did not want major shore-based processors to build plants at St. Paul because they wanted to preserve the Aleut culture of the island inhabitants and prevent outside interest from controlling the economy of the community. The expected benefits from the harbor were the reduced

### III. Examination

---

operating costs for primarily groundfishing and crab fishing vessels operating in the Bering Sea. Those vessels would avoid a long journey to Dutch Harbor, about 275 miles south, for fuel and supplies. The crabbers and catcher vessels would use the harbor as a service center, rotate crews, make minor repairs with parts flown into St. Paul, and bring ill or injured crew members ashore.

#### **Conditions Changed**

The market demand for shellfish processing facilities at St. Paul Island Harbor far exceeded the expectations of local interests. About 555 vessels participated in the Eastern Bering Sea shellfish fisheries fleet in 1995. Crab must be process live because of toxins that rapidly develop in dead crab. Vessels incur a significant dead loss of crab after about seven days at sea. This dead loss can be minimized when delivering crab to St. Paul Island Harbor which is 275 miles closer to the harvest areas than Dutch Harbor, the next closest port. The short seasons for most species of crab also make it vital to base most vessel operations out of St. Paul Island to maximize time on the fishing grounds and minimize operating costs. Most of the groundfish catcher vessels that trawled for factory ships have been replaced with larger catcher-processors. These larger vessels need a deeper harbor than presently exists at St. Paul Island to deliver their frozen fish product for transshipment to world markets.

#### **What Caused Changed Conditions**

The change that is driving the development of the St. Paul Island Harbor is not only the vast increase in the expected fishing fleet, but also the change in the attitude of the local interests. The residents of St. Paul Island as late as 1983 relied on the fur seal industry and, to a lesser extent, tourists for subsistence. This mostly native Aleut population wanted to maintain control of their island and were strongly against on-shore processing at St. Paul during the formulation process for the project in the latter part of the 1980's. These changed conditions were not predictable and were possible only because

### III. Examination

---

the city officials found a way to maintain local control of the processing plants while gaining significant revenue from their operation.

#### **Comparison With Regulations**

The regulation governing the Section 204(e) process is ER 1165-2-120, "Reimbursement for Advanced Non-Federal Construction of Authorized Federal Harbor and Inland Harbor Improvements." This regulation was developed simultaneously with development of the construction agreement for the sponsor to construct the St. Paul Island Harbor project under the authority of Section 204(e) and was actually dated only 15 days before the signing of the construction agreement on 30 June 1988. The agreement generally complies with the guidance in the regulation. Close coordination was maintained between Headquarters, the division, district, and the sponsor during the negotiation process. One nonstandard item was that \$2.9 million for armor rock that the sponsor had previously quarried and stockpiled was included and approved as part of the 30 June 1992 Amendment. The value of this rock was excluded from the original contract in order to maintain a total project cost below the Section 902 (of WRDA '86) limit.

#### **Comparison of the Section 204(e) Process with Normal Procedures**

There is no evidence that the Section 204(e) process at the St. Paul Island Harbor project caused less assurance of project outputs than would have occurred under the normal process. In this instance, the project was planned and designed as a Corps of Engineers project based on the best economic and engineering data available at the time. The planning for this project was largely completed before enactment of Section 204(e). The North Pacific Division indicates that Headquarters, USACE complemented the Alaska District on the clarity and quality of the GDM which served as the document on which to base the Section 204(e) construction agreement. The changes in conditions at the project are in no way connected with the construction of the project. Also, in this case, there is no evidence that the Section 204(e) process shortened the period between completion of

### III. Examination

---

planning and initiation of construction. Federal funds were available in Fiscal Year 1988 and construction would probably have been initiated in 1989, even without a Section 204(e) agreement. As it was, the City of St. Paul was able to advertise for bids in mid-1988, however, because of high bids, budget constraints, and discussions between the sponsor, the Corps of Engineers and the Assistant Secretary of the Army for Civil Works, construction did not start until April 1989. However, under the Section 204(e) process construction may have been completed quicker than normal, with completion of the general navigation features in November 1989, a short seven months after initiation of construction. Under this Section 204(e) process, the contractor was motivated to build the project quickly, carefully, and on budget because he knew that the Corps would not immediately reimburse the city for the Federal share if the project was faulty or if the costs exceeded the Section 902 (of WRDA '86) limit.

#### **Benefits of Sponsor Constructed Project**

Immediately after the breakwater and dredging were completed (less than a year after the Section 204(e) construction agreement was signed), the harbor was in great demand for servicing vessels. While this demand would have followed, regardless whether the Corps or the sponsor constructed the project, the Section 204(e) process in this instance may have opened up the harbor on an earlier schedule. During January through March 1990 (the tanner crab harvest) most crab vessels selected St. Paul Island Harbor as the best location to store their crab pots and obtain vessel services. Crab processors saw great potential at St. Paul Island Harbor for processing plants and convinced local officials that the plants could be operated without adverse impacts to the local community. Three processors have been operating in the harbor since 1992. Construction of this project, which utilized rock provided by the sponsor has also enabled further development of a quarry that is furnishing large quantities of rock to another Corps project underway at Bethel, Alaska.

## IV. CONCLUSIONS

---

All projects have their unique features. The St. Paul Island Harbor, Alaska project may, however, be more unique than most. Certainly there are few such isolated Corps of Engineer Civil Works projects. This project is also unique in the opening up of the unharvested potential of the sea that was discovered by termination of the fur seal industry. The high demands by vessels at this port far exceed any reasonable projections, expanding from an estimated usage of 36 vessels in 1982 to 230 vessels plus another 27 floating processors in 1992. This high demand for the harbor has enabled St. Paul to convert from an economy dependent on fur seal harvests to an international fishery-based economy that is producing jobs for the community while still maintaining local control of the processing plants.

Implementing guidance developed by the Corps for Section 204(e) projects (ER 1165-120, dated 15 June 1988) provides adequate Corps oversight and control. There were no adverse impacts as a result of using the Section 204(e) process on implementing the project at an earlier date than under the normal process. In fact, by using the Section 204(e) process, the project may have been completed quicker than normal as the contractor was motivated to build the project quickly, carefully, and on budget because he knew that the Corps would not immediately reimburse the city for the Federal share if the project was faulty or if the costs exceeded the Section 902 (of WRDA '86) limit. Certainly the Section 204(e) process did not in any way impede the success of the project.

Close coordination and cooperation between the Corps and the sponsor was maintained throughout the course of the study and construction period. This project, which was planned and designed by the Corps of Engineers and constructed by the sponsor, is a prime example of how the process should work. The results of this study show that both the Corps and local sponsors should look favorably on the Section 204(e) process.

## REFERENCES

---

U.S. Army Corps of Engineers, "*Final Harbor Feasibility Report and Environmental Impact Statement, St. Paul Island, Alaska,*" Alaska District, dated December 1982.

U.S. Army Corps of Engineers, "*General Design Memorandum, St. Paul Island Harbor, St. Paul Island, Alaska,*" Alaska District, dated May 1988.

CECC-J, Memorandum to: CECW-PW, "*St. Paul Island Harbor, Alaska, Project, Determination of Authorization,*" dated 17 June 1988

CECW-PW, Memorandum for: the Assistant Secretary of the Army (Civil Works), "*Draft Section 204(e) Agreement Between the Department of the Army and the City of St. Paul, St. Paul Island, Alaska, for the Construction of the St. Paul Island Harbor Project,*" dated 20 June 1988.

CECW-RN, Memorandum thru: Deputy for Program Planning, Review, and Evaluation, for the Assistant Secretary of the Army (Civil Works), "*St. Paul Island, Alaska--Update,*" undated.

CECW-LM, Memorandum for the Assistant Secretary of the Army (Civil Works), "*Amendment to the Section 204(e) Agreement, St. Paul Island harbor, Alaska,*" dated 22 April 1992.

U.S. Army Corps of Engineers, "*Reconnaissance Report for Harbor Expansion, St. Paul, Alaska,*" Alaska District, dated July 1995.

U.S. Army Corps of Engineers, "*Draft Feasibility Report for Harbor Improvements, St. Paul, Alaska,*" Alaska District, dated May 1996.

## APPENDIX A

---

MEMORANDUM REQUESTING INFORMATION

Appendix A

COPY

CEWRC-IWR-P/CECW-PW

27 February 1996

MEMORANDUM FOR Commander, North Pacific Division, ATTN: CENPD-ET

SUBJECT: St. Paul Harbor, Alaska Section 204(e) Study

1. Reference is made to the 23 January 1996 memorandum from the Director of Civil Works to the Commander of the North Pacific Division, subject "Evaluation of St. Paul Island Harbor, Alaska; Section 204(e) Project, Federal Reimbursement of Projects Constructed by Non-Federal Sponsors."
2. The purpose of the study has been modified to examine the pros and cons of implementing the St. Paul Harbor Project under the Section 204(e) process. In accordance with this modified scope, request you provide answers to the following questions concerning the subject project.
  - a. What were the expected conditions that served as the basis for the harbor expansion?
  - b. What expected outputs (fleet usage of the harbor in particular) served as the basis for the project and what was the basis for these expected outputs?
  - c. What conditions have developed to cause such a significant change in expected outputs that now lead us to study a major harbor expansion? Could these changed conditions have been anticipated?
  - d. Were there any differences in the process followed at the project versus the process as outlined in ER 1165-2-120, "Reimbursement for Advanced Non-Federal Construction of Authorized Federal Harbor and Inland Harbor Improvements," dated 15 June 1988 (as may have been modified by the cost sharing agreement)?
  - e. Is there any evidence that the Section 204(e) process caused less assurance of project outputs than would have been developed under the normal process? If yes, document.
  - f. Is there any evidence that the Section 204(e) process shortened the process between planning and completion of construction than if the project had followed the normal process? If yes, document.
  - g. List all the results of the locally sponsored design and construction, such as earlier access of the harbor by the fleet.
3. Provide your response to the Water Resources Support Center, 7701 Telegraph Rd., Casey Building, Alexandria, VA 22315-3868, ATTN: CEWRC-IWR-P Ted Hillyer. Response is requested by 25 March 1996. Mr. Hillyer can also be reached on E-mail or by phone at 703/355-2140.

(Signed)

G. EDWARD DICKEY  
Chief, Planning Division  
Directorate of Civil Works

CF:  
CENPA-EN-PL

**REPORT DOCUMENTATION PAGE**

Form Approved  
OMB No. 0704-0188

Public reporting burden for this information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Service, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204 Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 1996	3. REPORT TYPE AND DATES COVERED Final	
4. TITLE AND SUBTITLE Evaluation of St. Paul Island Harbor, Alaska; Section 204(e) Project			5. FUNDING NUMBERS	
6. AUTHOR(S) Theodore M. Hillyer				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) USACE, Water Resources Support Center Institute for Water Resources Casey Building, 7701 Telegraph Road Alexandria, VA 22315-3868			8. PERFORMING ORGANIZATION REPORT NUMBER IWR Report 96-PS-2	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Headquarters, U. S. Army Corps of Engineers Directorate of Civil Works 20 Massachusetts Avenue, NW Washington, DC 20314-1000			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES Available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650				
12a. DISTRIBUTION/ AVAILABILITY STATEMENT Approved for public release; distribution unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This report presents the results of a study to examine the process followed on the St. Paul Island Harbor, Alaska project. To date, this is the only project that has been completed using the authority of Section 204(e) of the Water Resources Development Act of 1986. This study focused on what caused this particular project to require a study to determine the feasibility of modifications almost as soon as it was completed, as well as on the pros and cons of implementing the project under the authority of Section 204(e).				
14. SUBJECT TERMS Section 204(e) process, feasibility of harbor modifications, construction agreement, project location and physical features, socioeconomic setting, project costs, benefits of sponsor constructed project.			15. NUMBER OF PAGES 31	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	