Project Title: Kotzebue - Water Security Phase I- Vortec Lake Dam

TPS Number: 68833

Priority: 1

Agency: Commerce, Community and Economic Development
Grants to Municipalities (AS 37.05.315)

Grant Recipient: Kotzebue

FY2025 State Funding Request: $1,000,000

One-Time Need

Brief Project Description:

Vortac Lake Dam is the primary source of back up water for the City of Kotzebue. This dam was inspected by DEC which classified it as life threatening. We are requesting money to ensure the safety of our residents and their access to safe and healthy drinking water.

Funding Plan:

Total Project Cost:	$1,000,000
Funding Already Secured:	($0)
FY2025 State Funding Request:	($1,000,000)
Project Deficit:	$0

Explanation of Other Funds:

At this time, we do not have any funding for this project.

Detailed Project Description and Justification:

Vortac Lake Dam was constructed in 1966. This dam is the primary source of backup water for the City of Kotzebue. Currently, the dam that holds this reservoir in place is failing. Recent safety inspections done by the State of Alaska Department of Environmental Conservation determined that the dam was dangerous and recommended fixing the dam or breaching it.

The City of Kotzebue must find a solution to eliminate risk of a dam break, which would cause catastrophic damage to other infrastructure. The dam, if it were to fail, would demolish the primary water source. Secondly, decommissioning the Vortac Lake dam would leave Kotzebue without a secondary water source.

The City of Kotzebue has made this the top priority for the municipality due to its status as a level two risk deemed by the state. The City of Kotzebue must conduct a bathymetric survey, a terrestrial survey of the embankment, geotechnical drilling and get an estimate for the feasibility of developing the water source at Vortac Lake Dam. This funding request to evaluate and reinstat the dam is a total of $1,000,000.00.

Project Timeline:

If this project were to be funded we would hire an engineering firm this construction season to reinstate the dam.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Kotzebue

Grant Recipient Contact Information:

Name:	Teressa K. Baldwin
Address:	258 Third Avenue
	Kotzebue, AK 99752
Phone Number:	(907)442-5101
Email:	tbaldwin@kotzebue.org

This project has been through a public review process at the local level and it is a community priority.

Project Title: Kotzebue - Swan Lake Watermain Loop

TPS Number: 68839

Priority: 2

Agency: Commerce, Community and Economic Development
Grants to Municipalities (AS 37.05.315)

Grant Recipient: Kotzebue

FY2025 State Funding Request: $14,500,000

Future Funding May Be Requested

Brief Project Description:

Swan Lake Watermain Loop was constructed in 1990. This watermain services 190 homes in the City of Kotzebue and this year has caused the city to lose 100,000 gallons of water a day due to a crack. In addition, the city declared an emergency disaster due to 42 homes having no water due to a failure in the main. The City of Kotzebue is seeking funding to replace this watermain loop.

Funding Plan:

Total Project Cost:	$14,500,000
Funding Already Secured:	($0)
FY2025 State Funding Request:	($14,500,000)
Project Deficit:	$0

Explanation of Other Funds:

The watermain loop was replaced in 1990. ANTHC can service some funding for this project but only for Alaska Native/ American Indian homes on this loop.

Detailed Project Description and Justification:

Swan Lake Water main loop was constructed over 40 years ago. The February of 2024, the City of Kotzebue declared an emergency disaster due to the failure of this water main loop. conveyed that the warm weather had triggered a change, which resulted in a blockage on Swan Lake water main loop. Due to the failure in the Swan Lake Watermain loop 190 homes have been impacted with over 40 of the homes reporting to have no running water. In addition, a few weeks prior to this emergency, Swan Lake Water Loop had a burst in the pipe causing the City of Kotzebue to lose upwards to 100,000 gallons of water a day from city water tanks. This issue alone was a threat to properly responding to any emergency fire. These instances alone cost the City of Kotzebue $xxx,xxx.00 to repair the lines and an average of $xxx,xxx.00 per year.

The City of Kotzebue is working with ANTHC to look for alternative funding for this request but ultimately this funding source can only supply the replacement of the lines for Alaska Native/ American Indian Homes. In order to replace this line with eight-inch HDPE service lines and mains it would cost the City of Kotzebue $13,400,000.00

Funding Request
$14,500,000.00

Project Timeline:

An engineered design is being worked on right now to replace the service lines. Once complete, we will be able to start the process of replacing the watermain loop.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Kotzebue

Grant Recipient Contact Information:

Name: Teressa K. Baldwin

Address:	258 Third Avenue Kotzebue, AK 99752
Phone Number:	(907)442-5101
Email:	tbaldwin@kotzebue.org

This project has been through a public review process at the local level and it is a community priority.

Project Title: Kotzebue - Water and Sewer Improvements

TPS Number: 66918

Priority: 3

Agency: Commerce, Community and Economic Development
Grants to Municipalities (AS 37.05.315)

Grant Recipient: Kotzebue

FY2025 State Funding Request: $18,000,000

One-Time Need

Brief Project Description:

Replace and repair failing water and sewer lines, lift stations, and storm drains for multiple at-risk sites in the Kotzebue community.

Funding Plan:

Total Project Cost:	$18,000,000
Funding Already Secured:	($0)
FY2025 State Funding Request:	($18,000,000)
Project Deficit:	$0

Explanation of Other Funds:

No funding has been acquired for this project. We are looking at avenues for funding through ANTHC.

Detailed Project Description and Justification:

This request includes water and sewer updates to Lagoon Watermain Loop and two lift stations. Improvements on the City of Kotzebue's ageing infrastructure would allow for reduced prevalence of emergency repair by installing modern water and sewer systems to withstand Arctic conditions. Emergency repairs are costly and remove staff from operation and maintenance activities that, if not ignored, could result in additional emergency repairs in the future. In addition to increased repair and maintenance costs, these system failures endanger health and safety due to lack of water and sewer services in homes and sewage spills and flooding in the community.

Swan Lake Watermain loop was installed in 1990 using 4-inch PVC pipe. While approximately one-half of the piping has been upgraded with larger diameter HDPE pipe, the continued replacement of the remaining undersized and deteriorated old 4-inch PVC pipelines is necessary. Leakage and breakage of the old PVC pipe is the main cause for major maintenance on the water loops. Service connections run to each customer in twin pipes which allows for circulation of the water between the pump house and the water main to keep the water service from freezing. Water is circulated using pit orifices installed in the water main and by circulation pumps installed in many of the homes serviced.

Lastly, the City-owned Fire Station has a small residential-style lift station that pumps sewage from the fire station to the gravity main on Bison Street. The lift station is built at-grade into the concrete slab of the fire station, and the force service runs under the building concrete slab and out under the asphalt parking area. Recent failures at the lift station indicate the pumps aren't functioning well, and the force service is in poor condition. The fire station lift station needs to be replaced in place and the force service rerouted in a carrier pipe to avoid failure of sewer service to the fire department because of the crucial nature of the public safety services the department provides to the community. Because the force service is under the foundation slab of the building and the paved parking lot a trenchless technology may be required, making the replacement more costly than a standard residential lift.

The following State CAPSIS request for the City of Kotzebue water and sewer improvement project is as followed:

Lagoon Watermain Loop: $14,000,000.00

Replacement of Lift Stations 9 and 12: $4,000,000.00

Project Timeline:

Out of RFP: Fall of 2024 Construction: Spring and Summer of 2025

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Kotzebue

Grant Recipient Contact Information:

Name:	Teressa K. Baldwin
Address:	P.O. Box 46
	Kotzebue, AK 99752
Phone Number:	(907)442-5101
Email:	tbaldwin@kotzebue.org

This project has been through a public review process at the local level and it is a community priority.

CITY OF KOTZEBUE

DRAFT SANITATION UTILITIES DEVELOPMENT PLAN

December 10, 2021

DOWL

DRAFT SANITATION UTILITIES DEVELOPMENT PLAN

Kotzebue, Alaska

Prepared for:

City of Kotzebue
P.O. Box 46
Kotzebue, Alaska 99752

Prepared by:

DOWL
4041 B Street
Anchorage, Alaska 99503
(907) 562-2000

December 2021

DOWL Project No. 1528.50231.02

1.0 INTRODUCTION

1.1 Background

This Sanitation Utilities Master Plan (Plan) for the City of Kotzebue (City) is a living document that is updated every 5 to 10 years. The Plan, along with the special investigation of Alaska Environmental Infrastructure, developed by the Army Corps of Engineers in May of 1999, have been the basis for improvements and the operation of the City Public Works Department. The process of updating the Plan helps the City of Kotzebue (City) assess their current and future needs, and the Plan that results from the updating process provides the City with planning level costs and a schedule to aid in securing funding. The projects identified in the Plan are focused so that the City can continue to provide appropriate sanitation services such as water, sewer and solid waste management at affordable rates to the current and future residents of and travelers to Kotzebue, Alaska. The original version of the Plan was prepared by USKH, Inc. in the early 1990s and was then updated by LCG Inc. in 2000 and 2005; and then by DOWL in 2011 and now 2021.

Since the original Plan was created, many of the projects in the plan have been focused on updating the City's original water and sewer infrastructure that was constructed in the 1960s and 1970s. But it hasn't been until the last two decades (since the last Plan update in 2011) that the City was able to replace an update much of that infrastructure, due to the availability of funding. The majority of the capital improvement projects (CIP) completed were identified in the 2011 master plan. The projects include a new telemetry system to better monitor the state of the sanitation utilities systems, the expansion of Front Street Water Service Loop by incorporating Southern Water Service Loop, the construction of a new Water Treatment Facility (WTF), and the replacement of Lift Stations 1 and 7 (under construction). Projects such as the repair or decommission of Vortac Lake Dam and raising Devil's Lake Road however have not been completed despite inclusion in multiple updates of the Plan. CIPs listed in the 2011 plan that were not completed have either been shelved because they have become obsolete or have been reworked and are included in this update.

Even though a substantial amount of sanitation CIPs were completed, original sanitation infrastructure is still in place that requires updates, new infrastructure is needed to keep pace with the growing population of the City and the region, and new and old infrastructure requires continual upgrades due to the challenges of operating and maintaining sanitation infrastructure in cold regions (above the arctic circle).

The following sections consist of an updated summary of site-specific conditions, descriptions of the identified CIP for 2021 and the estimated planning costs, and the proposed schedule to fund and implement those projects.

1.2 The Planning Process

The planning process used to create the master plan update consisted of the following activities:

- Review of data related to existing water and sewer facilities as well as conditions including socio-economic, environmental, and cultural aspects in Kotzebue.
- A site visit to Kotzebue to discuss needs with the City and personally review the current sanitation infrastructure.

- Assessment of water and sewer facilities and needs.
- Assessment of available resources.
- Formulation of water and sewer CIPs, which could be implemented to meet the identified needs.
- Discussion with City and Public Works Department staff regarding the feasibility and priority of the proposed CIPs identified.
- Preparation of cost estimates for the various projects selected for planning, including alternatives where appropriate.
- Preparation of a schedule for project implementation based on project priority and historical annual funding.

During these activities, the planning team maintained a continuous dialogue with the City Public works staff concerned with the plan. City input to the plan was instrumental in determining the scope and priority of the projects presented in this report.

The final result of this planning process represents a cooperative effort that should be shared with funding agencies such as Alaska Department of Environmental Conservation (DEC), United States Department of Agriculture- Rural Development (USDA-RD), and the United States Environmental Protection Agency (USEPA).

1.3 Plan Summary

A total of 16 capital projects are identified (Table 1). The projects range from an estimated planning level cost of $121,000 for a GIS database to $38.4 million for the construction of water and sewer utilities at Cape Blossom. The estimates are based on preliminary conceptual level estimates of cost and effort required to complete the projects.

Table 1 presents the estimated CIP funding year, based on historical annual funding of approximately $2 million to $3 million for City sanitation utility CIPs. The years for design and construction were then subsequently estimated based on the size and complexity of the project. This resulting plan spans a period of about 25 years and has a total budget estimated at $96,150,000. Table 2 presents a summary of the estimated amount of funding acquired in each funding year. Detailed cost estimates for each CIP are provided in Appendix A.

The cash flow for funding and schedules should be considered a work in progress that will be refined and modified. The CIP budget does not include yearly allocations for staffing and equipment replacement; these are discussed in Section 6.0.

Project Title: Kotzebue - Cape Blossom Port

TPS Number: 66917

Priority: 4

Agency: Commerce, Community and Economic Development
Grants to Municipalities (AS 37.05.315)

Grant Recipient: Kotzebue

FY2025 State Funding Request: $5,000,000

One-Time Need

Brief Project Description:

Planning, site confirmation, and development of the design and port authority for a regional deep-water port at Cape Blossom.

Funding Plan:

Total Project Cost:	$9,500,000
Funding Already Secured:	($2,455,000)
FY2025 State Funding Request:	($5,000,000)
Project Deficit:	$2,045,000

Explanation of Other Funds:

2018: $3.5M to do a U.S. Army Corps of Engineers (USACE) site study.

2022: Governor Dunleavy committed $27 million for Phase II of Cape Blossom Road project.

2023: $500,000.00 was allocated by State of Alaska Capital Project funding for the development of Cape Blossom Port Authority. In addition, the City of Kotzebue received the U.S. DOT Port Infrastructure Development Program (PIDP) grant at $2.45M.

Detailed Project Description and Justification:

Cape Blossom Regional Port has been a goal for the Northwest Arctic since the 1970s. Regional partnerships with the City of Kotzebue, Northwest Arctic Borough, Native Village of Kotzebue, Kikiktaqgruk Inupiat Corporation, and NANA Regional Corporation have spearheaded this project. The Cape Blossom Port Project will conduct planning and a feasibility analysis for a new port at Cape Blossom. The purpose of the effort is to improve transportation efficiency and reduce safety risks during loading and unloading freight, eliminate the expense of barge lighterage services, and reduce the overall cost of transporting goods and services to 12 Northwest Arctic Borough (NAB) communities, including Kotzebue.

This project has been broken down into several phases. Phase I of Cape Blossom Road was completed in the summer of 2023; much of the funding was through congressionally directed spending by Senator Murkowski at $27 million dollars. Phase I was completed with over 5 miles in road ending at Sadie Creek.

Phase II is being funded with State funding at the direction of Governor Mike Dunleavy at $53 million dollars to build the needed infrastructure to reach the anticipated port location. This funding will also include an estimated 300-foot-long bridge over Sadie Creek and the rest of the road to Cape Blossom Port. The State of Alaska Department of Transportation put this phase ofphase of the project out to bid in the Spring of 2024. Construction season and mobilization of Phase II will begin in summer of 2025.

In addition, the City of Kotzebue was allocated $2.45 million from a United States Department of Transportation Port Infrastructure Development Program (PIDP) grant to start the planning phases of Cape Blossom Port. Several factors go into Phase III of Cape Blossom Port which will include:

Analysis of existing conditions and requirements: Site survey/bathymetry, metocean analysis, and sediment transportation studies that will help determine the safest site for the port. Studies will evaluate vessel navigation, establish vessel requirements, and define

geotechnical and seismic requirements for the future port design stage (i.e., design/construction).

Upland development needs will be established for storage capacity, power, mechanical and electrical requirements, environmental controls, safety, security. Planning will address the port's ability to withstand probable occurrence or recurrence of an emergency or major disaster during operations.

A "rough order of magnitude" (ROM) cost estimate will be developed for the proposed dock, including costs for dock design, pre-construction permitting costs, and construction costs. The ROM cost estimate will be important for the final activity, a Benefit-Cost Analysis, to help determine the cost-effectiveness of building a port at Cape Blossom.

Preliminary design concepts will be developed based on site selection, studies, and planning results.

Lastly, $500,000.00 was allocated to the City of Kotzebue in state capital funds to develop a port authority. The City of Kotzebue City Council established a Cape Blossom Regional Port committee to extend these efforts. Regional partners include the City of Kotzebue, Northwest Arctic Borough, Native Village of Kotzebue, Kikiktaqgruk Inupiat Corporation, and NANA Regional Corporation.

The City of Kotzebue and regional port committee are prioritizing a funding request to complete the planning phases for Cape Blossom Port. This request would allow for the permitting for the Port. This phase of the project would focus on the development of working with regional partners to utilize the land around port site.

Project Timeline:

July 1, 2023: Meet with regional entities to establish port authority.
January 1, 2024: Begin project
July 1, 2024: Begin feasibility study with USACE for alternate site locations: Complete by June 30, 2025. Previous work would allow for a compressed timeline for the feasibility study.

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Kotzebue

Grant Recipient Contact Information:

Name:	Teressa Baldwin
Address:	P.O. Box 46
	Kotzebue, AK 99752
Phone Number:	(907)442-5101
Email:	tbaldwin@kotzebue.org

This project has been through a public review process at the local level and it is a community priority.

US Army Corps of Engineers®

Planning Assistance to States Technical Report

Site Conditions in the Vicinity of Cape Blossom Kotzebue, Alaska

September 2021

Planning Assistance to States Technical Report

Site Conditions in the Vicinity of Cape Blossom Technical Assistance

Kotzebue, Alaska

Prepared By:

U.S. Army Corps of Engineers
Alaska District

September 2021

EXECUTIVE SUMMARY

In 2020 a Navigation Improvement Technical Report (USACE 2020) was prepared after a General Investigation (GI) study was terminated because it did not result in an implementable plan at the project location. The GI study identified an average coastal bluff erosion rate at the project area that resulted in a risk of unsustainable future and / or deferred construction cost to maintain access to the dock. The Native Village of Kotzebue, the non-Federal sponsor, requested technical assistance under Section 22, Planning Assistance to States/Tribes (PAS) with the purpose of identifying a deep-water harbor port site that can be connected to the Cape Blossom Road.

This PAS study conducted an analysis of site conditions of the shoreline north and east of Cape Blossom. This analysis included a desktop study evaluation of coastal erosion rates based on historical aerial photography, and potential navigation channel dredge distances to the shoreline across the study area based on available bathymetry data. After the results of the desktop study identified locations with relatively low coastal erosion rates, a field visit was conducted to observe site conditions at these locations.

The study area coastline was divided up in to 7 reaches (Figure ES-1) identified by a relatively consistent erosion rate, and the same strategy was used to evaluate navigation channel lengths (Figure ES-2) assuming a channel starting at minus 26 feet (ft) Mean Lower Low Water (MLLW) and a dock facility at minus 12 ft MLLW. These depths are consistent with the channel design developed during the GI Study (USACE 2020).

The highest erosion rates were found in the reaches labeled EC, ED, EE, and EF (Figure ES1) with 50-year period land losses ranging from 1,079 to 1,951 ft. Based on the relatively lower erosion rates and shorter navigation channel lengths, the three reaches, EA, EC and EG, appeared to warrant further consideration as described below:

- North of Cape Area (NCA) 1: The coastline immediately north of Cape Blossom and the south end of Coastal reach EA appears relatively stable with a 50-yr land loss estimate that was not measurable (see Table 10), however the navigation channel and near-shore connection lengths (see Figure ES-2) are typically longer than locations east of the cape. Also, the shoreline is much less protected from waves making safe access to the coastline more difficult than areas east of the cape.
- East of Cape Area (ECA) 1: The coastline immediately east of Cape Blossom, coastal reach EB extends to the former area included in the former GI study (USACE 2019 and 2020). This reach has a relatively low erosion rate with a 50-yr land loss estimate of 175 ft. The bathymetry is also favorable which results in the shortest navigation channel and near-shore connection lengths of any of the reaches (see Figure ES-2).
- East of Cape Area (ECA) 2: The coastline farthest east within the study area in reach EG has a low erosion rate with a not measurable 50-yr land loss estimate.

The navigation channel and near-shore connection lengths are longer than at ECA1 (see Figure ES-2).

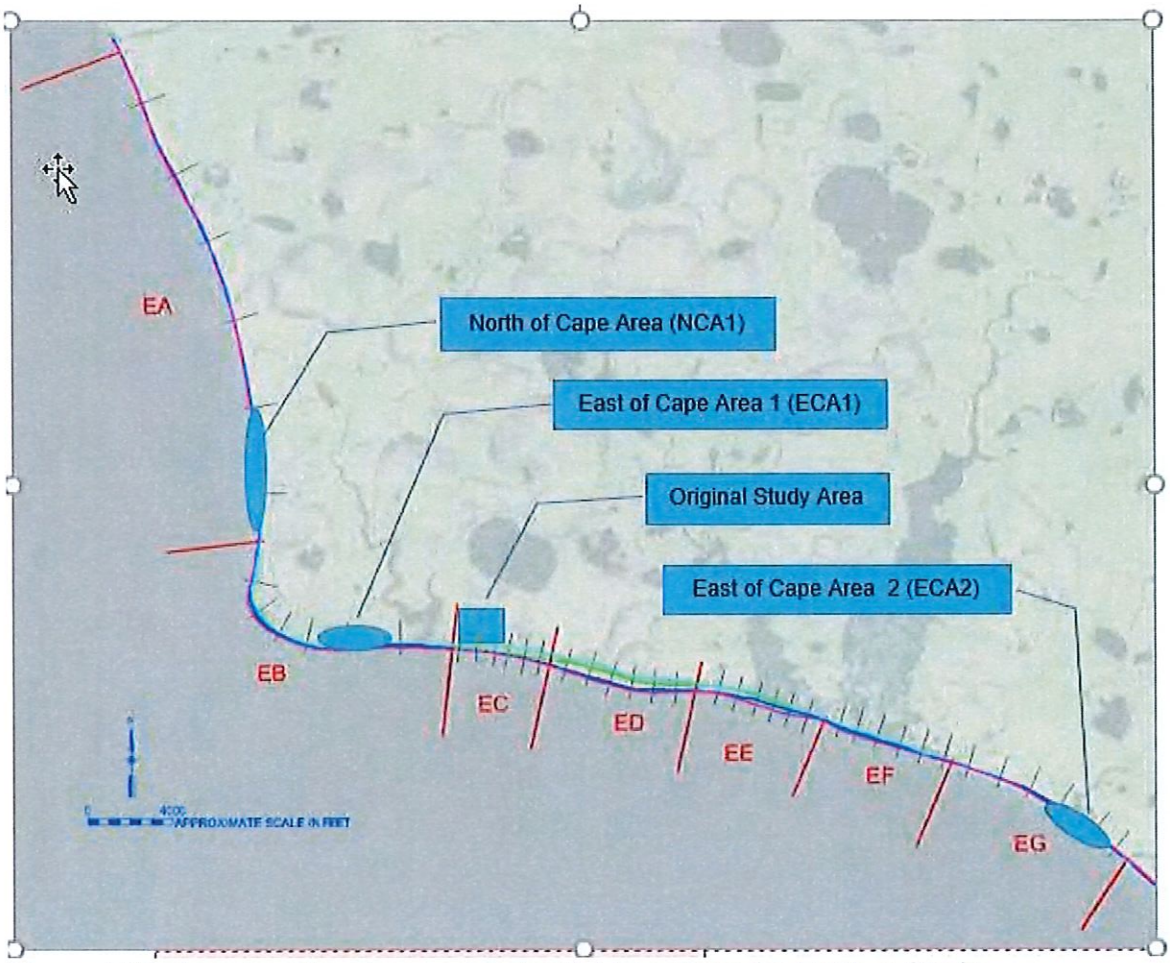

Figure ES1. Erosion Reaches and Potential Locations for Further Study