

PORT OF SEATTLE
MEMORANDUM

COMMISSION AGENDA

Item No. 5c

ACTION ITEM

Date of Meeting March 27, 2012

DATE: March 20, 2012

TO: Tay Yoshitani, Chief Executive Officer

FROM: Michael Ehl, Director, Airport Operations;
Wayne Grotheer, Director Aviation Project Management Group;
Ralph Wessels, Airfield Program Leader, Project Management Group

SUBJECT: Lagoon 3 Bird Netting System Project at Seattle-Tacoma International Airport
(CIP # C800417)

Amount of This Request: \$1,664,000 **Source of Funds:** Airport Development Fund

Est. State and Local Taxes: \$112,000 **Est. Jobs Created:** 9

Est. Total Project Cost: \$1,833,000

ACTION REQUESTED:

Request Port Commission authorization for the Chief Executive Officer to advertise and execute a construction contract for the Lagoon 3 Bird Netting System Project. The estimate for this work is \$1,664,000.

SYNOPSIS:

This is a safety improvement project that will reduce the risk of aircraft strikes with waterfowl. Federal Aviation Regulations (FAR) part 139.337 requires airports, including Seattle-Tacoma International Airport (STIA), to take immediate measures and mitigate wildlife hazards whenever hazardous conditions exist. A particular emphasis is placed on identification and mitigation of wildlife attractants within and near the airfield.

This project will reduce access by waterfowl to the industrial wastewater system (IWS) Lagoon 3, which is located near the south end of the airfield about 1,000 feet from the approach end of runways 16L/34R and 16C/34C. The proximity of Lagoon 3 to the ends of the runways can be seen on Exhibit A. The inability of waterfowl to access the pond will reduce their presence in the area as well as reduce an operational need for conducting repeated wildlife hazard mitigation measures, such as launching pyrotechnics and shooting with firearms.

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Based on design refinements, the current estimated capital cost for the project is \$1,833,000. There is a potential additional expense cost of \$150,000 if stormwater needs to be pumped to an alternative location for treatment during the construction period. The estimated capital cost at the beginning of design was \$1,631,000. The difference in cost is primarily due to design revisions that improve the constructability and minimize the potential for damage to the pond liner and underdrain system. The current design eliminates the previously proposed drilled foundations that would have penetrated the pond liner and potentially damaged the underlying drainage system. The design now includes gravity foundations that will be installed above the pond liner with additional support posts and structural support cables.

The Project Labor Agreement (PLA) was evaluated and it is recommended that a PLA not be used for this project.

BACKGROUND:

Ponds are an attractant to wildlife, particularly waterfowl. Lagoon 3, with an approximate length of 1,200 feet and width of 500 feet, is identified as one of the most prominent waterfowl attractants at STIA. Pond liners are presently being used to prevent vegetation growth which would give rise to a variety of food resources and therefore would be a further attraction for wildlife. However, snails, which provide a food source for some waterfowl and shorebirds, have been found recently in the lagoon.

Lagoon 3 lies in the area within a 10,000-foot radius of the runway centerline, which is defined as the Federal Aviation Administration (FAA) critical zone with respect to airport wildlife hazard management. Over 75% of all civil bird-aircraft strikes occur within a horizontal distance of 10,000 feet from an airfield. The U.S. Department of Agriculture's (USDA's) Wildlife Services, through an interagency agreement with the FAA, compiled 109,085 wildlife strike reports from 1,659 U.S. airports and 534 foreign airports from January 1990 to December 2010. The number of reported wildlife strikes is estimated to represent only about 39% of the wildlife strikes that have occurred.

Wildlife strikes are an increasing and significant potential hazard at STIA. A total of 69 wildlife strikes were recorded at STIA in 2010. In 2011, the number of wildlife strikes increased to 101. The frequency with which hazardous birds were harassed and lethally removed has increased dramatically since 2002 when Lagoon 3 monitoring for 1 to 2 hours per week began. During 2009, a total of 144 birds were dispersed and 29 lethally removed. By contrast, in 2011 a total of 819 birds were dispersed and 65 lethally removed.

Besides being an air safety hazard, bird strikes can result in significant costs from the damage to aircraft. The estimated cost of at least one 2010 bird strike at STIA is known to exceed \$450,000. On April 4, 2006, a US Airways Airbus 319 struck a single Green-winged teal (duck) when over IWS Lagoon 3. After the bird was ingested into the engine the aircraft made a precautionary landing at STIA. The cost to the airline was 85 hours out of service in Seattle. When sufficient repairs could not be made here, the aircraft was shuttled back to the east coast for further evaluation and repairs. The final costs for damage and downtime were not available to the Port of Seattle. Damage from a bird-aircraft strike at the Orlando-Sanford Airport in 2010 reportedly cost \$4,570,000.

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Different species of waterfowl and other water associated birds (killdeer, gulls, cormorants) will access ponds differently, some from above and some from the sides. Therefore, preventing waterfowl access from the both the top and sides is necessary to effectively discourage their presence in the area. Considerations in the selection of the best measure to use at Lagoon 3 include the anticipated effectiveness, the size of the pond, constructability, ease of maintenance, and initial and longer-term maintenance costs.

PROJECT JUSTIFICATION:

This is a safety improvement project that will reduce waterfowl access to Lagoon 3 near the STIA runways. FAR Part 139.337 requires airports, including STIA, to take immediate measures and mitigate wildlife hazards whenever hazardous conditions exist. Mitigation plans to reduce the attraction of waterfowl to the area will improve air traffic safety at STIA.

Project Objectives:

The objective is to reduce the presence of waterfowl at Lagoon 3 in order to improve air safety at STIA.

PROJECT SCOPE OF WORK AND SCHEDULE:

Scope of Work:

This project will install a netting system at Lagoon 3. The netting system will include the intermediate post system, ground anchors around the perimeter, supporting cables, nettings and the access gate.

Schedule:

Commission Authorization to Advertise	March	2012
Advertise	April	2012
Notice to Proceed	July	2012
Construction Complete	November	2012

FINANCIAL IMPLICATIONS:

Budget/Authorization Summary:	Capital	Expense	Total Project
Original Budget	\$386,000	\$0	\$386,000
Current Budget	\$1,631,000	\$0	\$1,631,000
Budget Increase	\$202,000	\$0	\$202,000
Revised Budget	\$1,833,000	\$0	\$1,833,000
Previous Authorizations for this CIP	\$169,000	\$0	\$169,000
Current request for authorization	\$1,664,000	\$0	\$1,664,000
Total Authorizations, including this request	\$1,833,000	\$0	\$1,833,000
Remaining budget to be authorized	\$0	\$0	\$0

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Project Cost Breakdown:

	This Request	Total Project
Construction	\$1,195,000	\$1,195,000
Construction Management	\$157,000	\$192,000
Design	\$57,000	\$102,000
Project Management	\$90,000	\$152,000
Administrative and Soft Costs	\$53,000	\$80,000
State & Local Taxes (estimated)	\$112,000	\$112,000
Total	\$1,664,000	\$1,833,000

Budget Status and Source of Funds:

This project is included in the 2012 – 2016 capital budget and plan of finance within CIP #C800417 with a budget of \$1,631,000. The cost increase was covered by a corresponding budget decrease in CIP #C102165, Aeronautical New Projects, resulting in no net change to the total Aviation capital budget. The funding source will be the Airport Development Fund. Potential operating costs of \$150,000 for stormwater treatment during construction are neither included in this authorization request nor in the 2012 operating budget.

Financial Analysis and Summary:

CIP Category	Compliance
Project Type	Health, Safety and Security
Risk adjusted Discount rate	N/A
Key risk factors	N/A
Project cost for analysis	\$1,833,000
Business Unit (BU)	Airfield
Effect on business performance	NOI after debt service will increase
IRR/NPV	N/A
CPE Impact	\$.01 increase in 2013, but no change compared to business plan forecast as this project was included.

Lifecycle Cost and Savings:

The estimated useful life for the recommended netting option is 40 years for posts, 15 years for support cabling and 6 years for nettings.

The O&M budget is estimated to be approximately \$2,000 for the first year and increases linearly to approximately \$5,000 for the tenth year.

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STRATEGIC OBJECTIVES:

This project will increase air traffic safety at STIA and aligns with the Port's strategic objective of Ensure Airport and Seaport Vitality.

ENVIRONMENT AND SUSTAINABILITY:

Certain products of the full netting system may contain recycled materials, such as steel. However, the inclusion of recycled steel would be market driven and not a project requirement.

The elimination of access to Lagoon 3 by waterfowl will reduce the need to use lethal methods for their removal near STIA.

BUSINESS PLAN OBJECTIVES:

This project supports the Port's strategy for a World-Class Airport that is safe and secure. Moving forward with this project will improve safety by minimizing the chances for birds to become ingested into aircraft engines.

TRIPLE BOTTOM LINE SUMMARY:

Applying full bird nettings over IWS Lagoon 3 will minimize the access of birds to the pond and discourage their presence in the area. This will increase air traffic safety at STIA.

ALTERNATIVES CONSIDERED AND THEIR IMPLICATIONS:

Alternative 1 - Do Nothing: The increased habitual use of IWS Lagoon 3 by waterfowl is well documented in the weekly airport survey data. The pond is located at the south end of runway 16C/34C and adjacent to runway 16L/34R. Doing nothing would result in an increasing potential risk of bird-aircraft strikes and not comply with FAR requirements. There is no capital cost with this approach. This is not the recommended approach.

Alternative 2 - Other Deterrent Devices: Other deterrent devices, such as a remote control air boat, have been used experimentally at STIA. The tool is effective only when a person is present to operate it. A sprinkler system was also utilized in Lagoon 3 as a means to scare birds away but was removed due to its ineffectiveness. Sprinklers and similar devices have limited effectiveness as birds become accustomed to them. The capital cost associated with this approach would be low but so would the effectiveness. This is not the recommended approach.

Alternative 3 - Bird Wires: The original basis for the project consisted of installing a single level of bird wires over Lagoon 3. Additionally, various configurations of stretching single and multiple levels of bird wires, both with and without perimeter netting, were evaluated for this alternative. These options ranged in cost from \$533,000 to \$1,169,000. None of these options would provide a sufficient deterrent or obstacle to prevent birds from accessing Lagoon 3 in some manner and creating an air safety hazard. This approach is not recommended.

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4) Alternative 4 - Full Bird Netting: This alternative for the project would be to install netting over the top and around the perimeter of Lagoon 3. Bird netting is the only way to positively exclude birds from using the site. The cost for this alternative is the highest cost but minimizes access by waterfowl. The capital cost for Alternative 4 is estimated to be \$1,833,000 with a potential expense cost of \$150,000 for managing stormwater during construction. **This is the recommended approach.**

OTHER DOCUMENTS ASSOCIATED WITH THIS REQUEST:

Exhibit A: Drawing of IWS Lagoon 3.

PREVIOUS COMMISSION ACTION:

On October 11, 2011, The Commission authorized design for the Lagoon 3 Bird Netting System project at Seattle-Tacoma International Airport. The budget authorized for the design work was \$169,000.