

APPENDIX E

SEWARD LEASE LOT FLOOD ANALYSIS



March 4, 2008
W.O. D58337

Mr. Mark Parmelee
Area Planner
State of Alaska Department of Transportation and Public Facilities
P.O. Box 196900
Anchorage, Alaska 99507

Subject: Seward Lease Lot Analysis

Dear Mr. Parmelee:

DOWL Engineers (DOWL) was contracted by the State of Alaska Department of Transportation and Public Facilities (DOT&PF) through the Seward Airport Master Plan to do an investigation of the base flood elevations for the Seward Airport lease lots. The investigation was because airport tenants were having difficulty obtaining approval to develop these lots and flood insurance and breakouts were being required for construction.

Initially, we reviewed the existing Flood Insurance Rate Maps (FIRM) (Figure 1) created in 1981 to determine the base flood elevations. We then compared the base flood elevations reflected in the FIRM Maps to the actual surveyed elevations completed in 2006. This required reviewing the datum used in the FIRM Maps to ensure that the datum represented was consistent with the actual surveyed elevations for the lease lots. The FIRM (Panel 3255 of 6395) references RM1 at an elevation of 26.45 (NGVD 29). This point is USC&GS "X 74" with an elevation of 32.64 (NAVD 88). Therefore, the difference between the two elevations is 6.19 feet. We were able to compare the differences in elevations between the base flood elevations reflected in the FIRM Maps with the actual elevations of the lease lots (Figure 2).

As shown on Figure 2, the base flood elevations are approximately 2.5 to 3 feet higher than the existing ground elevations. This means that for the lease lots to be developed above the Federal Emergency Management Agency (FEMA) base flood elevation, there would need to be 2.5 to 3 feet of fill.

We also contacted Donna Glenz of the City of Seward to discuss what was currently being done to accommodate the lease lots with respect to the National Flood Insurance Program of which the City of Seward is currently a participating community. She stated that the City of Seward was allowing the lots to be developed provided there was no more than 3 feet difference in the lot elevation and the base flood elevation. Furthermore, the developer of the lots would then be required to meet the FEMA rule that requires that breakouts be installed in the buildings to allow flood flow to pass through the facilities. If the developer complied with these requirements, a Letter of Map Revision (LOMR) could be written showing that the proposed facilities meet the requirements set forth in the National Flood Insurance Program. This is the only way short of requiring the developer to model Resurrection River and show that the proposed facility is outside of the floodplain of at an elevation above the base flood elevation. She further stated that FEMA and the State of Alaska was in the process of updating the Resurrection River FIRM Maps. She further stated that she thought that it may be in draft form at the time.

Donna Glenz mentioned that the existing mapping does not represent what actually occurs during a flood event. The apron has not flooded to anyone's recollection, yet the flood mapping shows that it is well within the flood plain boundary.

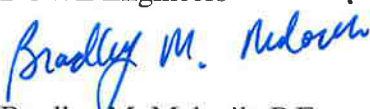
We then contacted Taunie Boothby, the Floodplain Manager for the Alaska Division of Community Advocacy. We discussed the work currently under contract to update the FIRM Maps for Resurrection River, which is being done by Northwest Hydraulic Consultants, Inc., the firm who has a contract with FEMA to perform the modeling for the rivers in the Seward area.

We were unable to get a response from FEMA about obtaining the hydraulic cross-sections that were being used for the modeling of the Resurrection River portion. Because we were unable to get the information necessary for our review, we went directly to Northwest Hydraulics Consultants, Inc., to see if they could provide us with the necessary information that we were requesting from FEMA. The information we requested included the hydraulic cross-sections that they were using at that time for their updated model. The cross-sections showed an elevation of the airport runway similar to that of the existing runway, and that the water surface elevations were continuous across the runway. This means that the original (1981) FEMA model had not incorporated the actual hydraulic conditions created by the runway during major hydraulic events. In our opinion, the existing runway acts as a levee or dike until the runway is overtopped. At that point in time, the amount of water passing over the runway is severely reduced from what is represented in the hydraulic cross-sections that we received from Northwest Hydraulic Consultants, Inc. We were told that the model would be completed sometime after the first quarter of 2008. We have attempted to contact them to get a more definite schedule and have gotten no response.

We strongly recommend that DOT&PF be actively involved in the review of the current flood study, as it directly affects the elevations and ability to lease the lots on the runway apron. The ongoing hydraulic modeling needs to be developed with the runway acting as a weir at lower inundation depths, as this will be the only way to accurately determine the base flood elevations along the lease lots. We recommend that DOT&PF also ask FEMA to model the airport assuming the proposed runway improvements to determine any reductions in flooding that will occur by raising the runway. Skip Barber will be working with Northwest Hydraulic Consultants on the modeling of the Resurrection River. Because of his knowledge of the airport, many of these issues will be addressed, but DOT&PF's involvement is encouraged.

In our analysis of the floodplain and hydraulic conditions, we believe that raising the lease lot elevation will not have any impact to the base flood elevations. This is due to the proximity to Resurrection Bay as well as the wide floodplain in the area. It was determined that the lease lots would need to be raised more than two feet. The difficulty in grading and design constraints makes raising the lease lot elevations impractical. Because there is already an option to develop the lots with the breakouts, this has been the desired option.

Sincerely,
DOWL Engineers

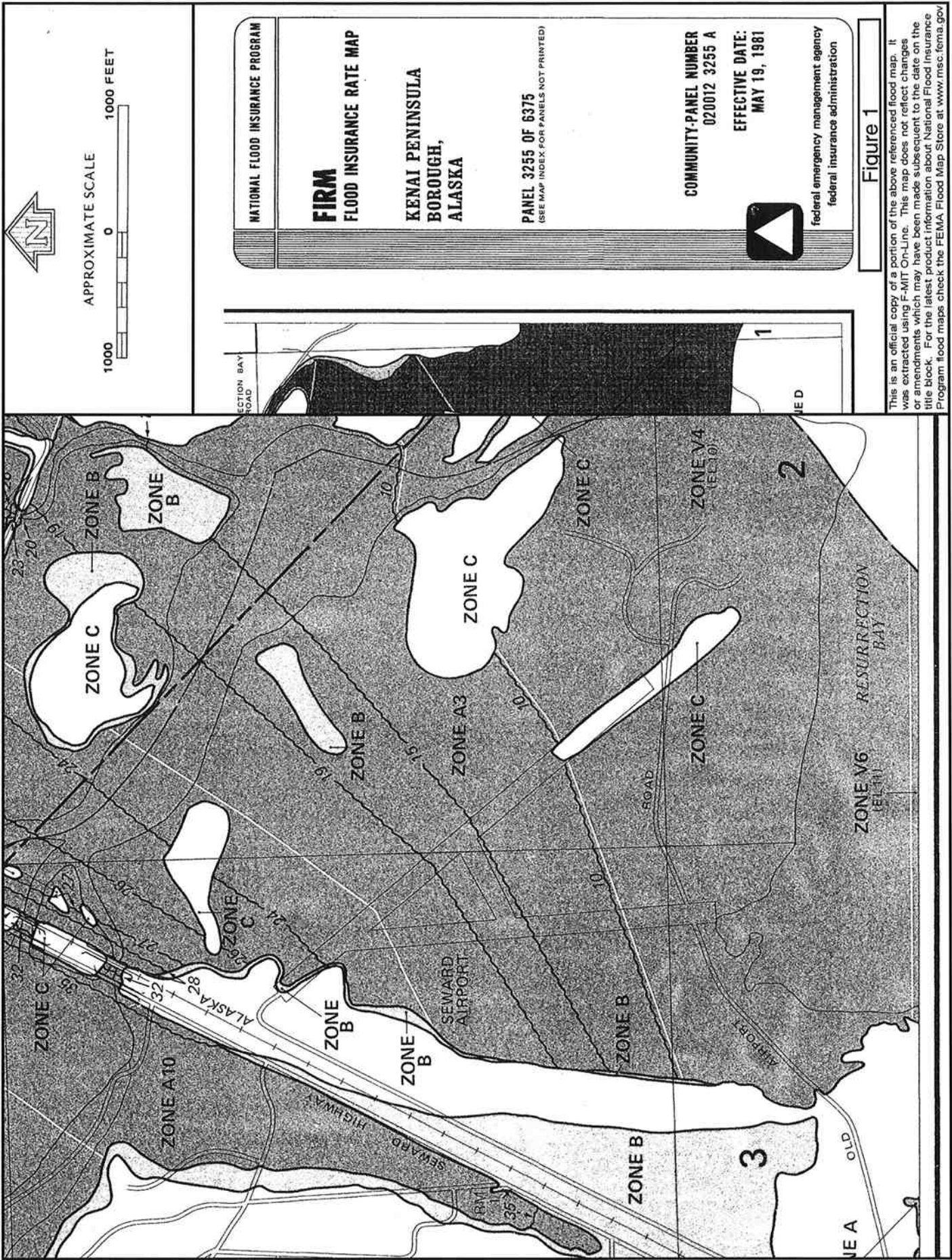


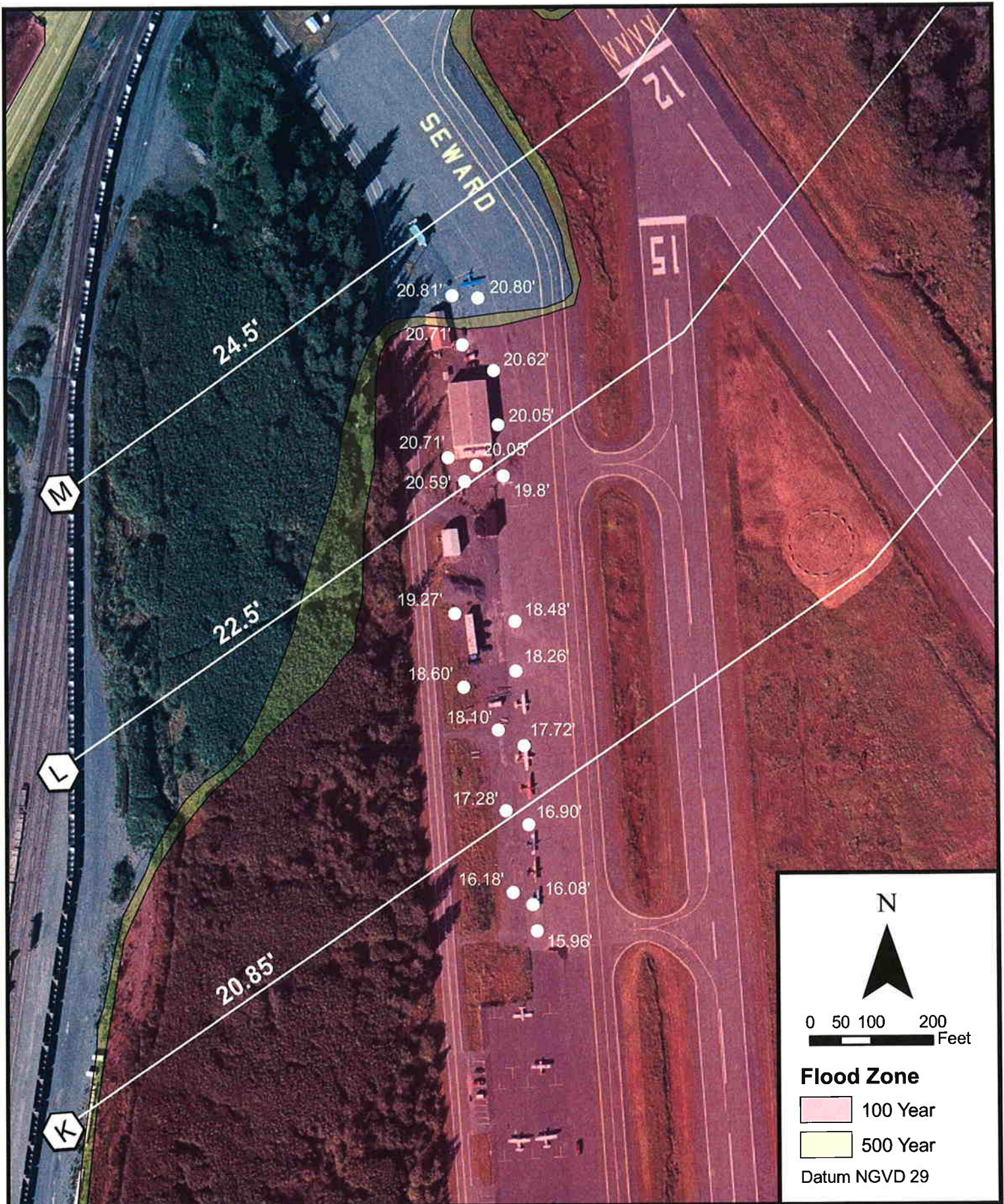
Bradley M. Melocik, P.E.
Hydraulics Engineer

D58337.Parmelee.BMM.030408.cam.tla

Attachment(s):
Figures 1 and 2

c: Paul Janke, PhD, P.E.





P:\Projects\ID58337\GIS\Hydro\Flood Map.mxd (CHARRINGTON)



FLOOD MAP SEWARD AIRPORT

Figure 2

Bradley M. Melocik, P.E.

From: Patty Henshaw Dillon [PDillon@nhc-sea.com]
Sent: Monday, December 03, 2007 2:49 PM
To: Bradley M. Melocik, P.E.
Cc: Jeff Johnson
Subject: Fw: Seward Airport Cross Sections

Attachments: Res.zip; fis xs screenshot.doc; pic26500.gif



Res.zip (452 KB)



fis xs
screenshot.doc (2 ME)



pic26500.gif (1 KB)

Brad,

I've attached a zip file with our very crude HEC-RAS model for the Resurrection and a screen shot showing FIS cross section locations. Our purpose for developing this RAS model was to facilitate overlay comparison of the 1980 FIS cross sections (taken from HEC2 output files) and their approximate equivalents cut from 2006 LiDAR data. We did a couple of cursory runs, but didn't have the need to do further refinement at this time. As Jeff probably mentioned, we are just starting on a new restudy of the Resurrection River for FEMA that will use surveyed channel sections and the LiDAR topography.

It does look like the runway was represented in the FIS cross sections...it is pretty easy to pick out in several, then becomes less distinct moving upstream.

Please give me a call if you have any questions.

Patty

(See attached file: Res.zip) (See attached file: fis xs screenshot.doc)

Patty Dillon, P.E.
northwest hydraulic consultants
16300 christensen rd, suite 350
seattle, wa 98188
ph: 206-241-6000
fax: 206-439-2420
pdillon@nhc-sea.com
www.nhcweb.com

----- Forwarded by Patty Henshaw Dillon/NHC on 12/03/2007 03:41 PM -----

Jeff Johnson
Sent by: Jeff
Johnson

To: Patty Henshaw Dillon@NHC
cc:
Subject: Fw: Seward Airport Cross Sections

12/03/2007 02:24
PM

Jeff P. Johnson
Northwest Hydraulic Consultants Inc.
16300 Christensen Road, Suite 350
Seattle, WA 98188-3418
(206) 241-6000 (phone)

(206) 439-2420 (fax)
www.nhcweb.com

----- Forwarded by Jeff Johnson/NHC on 12/03/2007 02:24 PM -----

"Bradley M.
Melocik, P.E."
sea.com>, "Robert Ruffner"
<bmelocik@dowl.com>
11/30/2007 12:32
PM

To: "Jeff Johnson" <Jeff_Johnson@nhc-
<Robert@kenaiwatershed.org>
cc:
Subject: RE: Seward Airport Cross Sections

Thanks guys. I am trying to get the old cross sections (from the Nov 1980 FIS) as well to determine if FEMA incorporated the airport runway in the previous model. We are working on the lease lots for DOT&PF.

Bradley M. Melocik, P.E.
Project Engineer

(Embedded image moved to file: pic26500.gif)

(907) 562-2000

DOWL Engineers
4041 B Street
Anchorage, AK 99503
Fax (907) 563-3953
www.dowl.com

From: Jeff Johnson [mailto:jjohnson@nhc-sea.com] On Behalf Of Jeff Johnson
Sent: Friday, November 30, 2007 11:13 AM
To: Robert Ruffner
Cc: Bradley M. Melocik, P.E.; SKIP BARBER; Taunnie Boothby; cfrei@nhc-sea.com;
pflanagan@nhc-sea.com
Subject: Re: Seward Airport Cross Sections

Hi Robert and Bradley: Yes, we are in the process of updating the flood insurance maps for the Resurrection River as well as several other streams in the Seward area. We are just finishing the cross section survey work (which is being done by a local Seward surveyor) We are scheduled to develop the hydraulic models in the first quarter of the new year. Bradley: We will be glad to provide you with anything that we have that you may find useful. I am not in the office today, but will be Monday morning. Feel free to call me and I'll have our staff engineer that is heading up the Seward work talk with you.

Regards,

Jeff

Jeff P. Johnson
Northwest Hydraulic Consultants Inc.
16300 Christensen Road, Suite 350
Seattle, WA 98188-3418

(206) 241-6000 (phone)
(206) 439-2420 (fax)
www.nhcweb.com

Robert Ruffner
<Robert@kenaiwatershed.org>
11/30/2007 11:37 AM

To: "Bradley M. Melocik, P.E."
<bmelocik@dowl.com>
cc: SKIP BARBER <Skip_Barber@msn.com>,
Taunnie Boothby <taunnie_boothby@commerce.state.ak.us>,
Jeff Johnson <JJohnson@nhc-sea.com>
Subject: Re: Seward Airport Cross
Sections

Hi Bradley;

We acquired high resolution LiDAR for the Seward area from which you can derive x-sections or other DTM functions. One limitation of LiDAR is that it doesn't shoot through the water. To run it in a backwater model, you need the subsurface channel geometry tied to the surficial terrain. I believe a consultant working for FEMA was doing this work, but I haven't heard from them in a while.

What I'm certain we can get in your hands is 2' contours and the raw DEM data from which that topo was generated. Let me know what would be beneficial and I'll try to round it up for you. I cc'd Jeff Johnson, whom I believe is the FEMA contractor.

RR

Robert Ruffner
Executive Director
Kenai Watershed Forum
44539 Sterling Hwy #202
Soldotna AK 99669

(907) 260-5449 office
(907) 394-4664 cell

<http://www.kenaiwatershed.org/>

On Nov 30, 2007, at 10:04 AM, Bradley M. Melocik, P.E. wrote:

Hi, Robert.

I met you in the Aquatic Organism Passage class about a year and a half ago. I am working for the Alaska DOT&PF to determine some flood elevation information for the Seward Airport and was told by Taunnie Boothby that you may have the cross sections for the FEMA Floodway along the ResurrectionRiver. I am trying to determine if the existing model included the airport runway or not. By chance do you have the report with the sections in it?

Thanks for your assistance.

Bradley M. Melocik, P.E.

Project Engineer

<image001.gif>

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Bradley M. Melocik, P.E.

From: Robert Ruffner [Robert@kenaiwatershed.org]
Sent: Friday, November 30, 2007 10:38 AM
To: Bradley M. Melocik, P.E.
Cc: SKIP BARBER; Taunnie Boothby; Jeff Johnson
Subject: Re: Seward Airport Cross Sections

Hi Bradley;

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3/4/2008

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From: Jeff Johnson [jjohnson@nhc-sea.com] on behalf of Jeff Johnson [Jeff_Johnson@nhc-sea.com]
Sent: Friday, November 30, 2007 11:13 AM
To: Robert Ruffner
Cc: Bradley M. Melocik, P.E.; SKIP BARBER; Taunnie Boothby; cfrei@nhc-sea.com; pflanagan@nhc-sea.com
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Robert Ruffner

<Robert@kenaiwatershed.org>

To: "Bradley M. Melocik, P.E." <bmelocik@dowl.com>

cc: SKIP BARBER <Skip_Barber@msn.com>, Taunnie Boothby <taunnie_boothby@commerce.state.ak.us>, Jeff

Johnson <JJohnson@nhc-sea.com>

Subject: Re: Seward Airport Cross Sections

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Bradley M. Melocik, P.E.

Project Engineer

<image001.gif>

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3/4/2008

From: Graves, John [mailto:john.graves1@dhs.gov]
Sent: Monday, November 26, 2007 3:33 PM
To: Boothby, Taunnie L (CED); Kasperski, Dahlia; Weber, Joseph
Subject: RE: Kenai Peninsula Flood Report

Taunnie,

The FIS will help with the stationing of the cross sections, but you would have to order the back up data from the FEMA library.

John Graves, CFM
Program Specialist
CRS Coordinator
FEMA Region X
425-487-4737

From: Boothby, Taunnie L (CED) [mailto:taunnie.boothby@alaska.gov]
Sent: Monday, November 26, 2007 2:13 PM
To: Kasperski, Dahlia; Weber, Joseph
Cc: Graves, John
Subject: FW: Kenai Peninsula Flood Report

Dahlia or Joe,

Could you answer Bradley's question for the Seward area, or is this answered by ordering from the Map Service center? If that is true will he get the cross sections he is looking for?

Thanks,

Taunnie L. Boothby, CFM
State NFIP Coordinator
Floodplain Management Programs
Division of Community and Regional Affairs
550 W. 7th Ave Suite 1770
Anchorage, AK 99501
Phone: 907-269-4583
E-mail: taunnie.boothby@alaska.gov

From: Bradley M. Melocik, P.E. [mailto:bmelocik@dowl.com]
Sent: Monday, November 26, 2007 11:53 AM
To: Boothby, Taunnie L (CED)
Cc: SKIP BARBER
Subject: Kenai Peninsula Flood Report

Hi Taunnie.

Thanks for the reports that you had out for me. Hopefully you got them back already.

I was wondering if you could check with FEMA, Region X and see if they have a copy of the flood study report with the cross sections in it. This is one of the last leads that we have.

Thanks for your help.

Bradley M. Melocik, P.E.
Project Engineer

3/4/2008

Bradley M. Melocik, P.E.

From: Weber, Joseph [joseph.weber@dhs.gov]
Sent: Monday, November 26, 2007 6:16 PM
To: Bradley M. Melocik, P.E.
Cc: jjohnson@nhc-sea.com; Graves, John; Boothby, Taunnie L (CED); Kasperski, Dahlia
Subject: RE: Kenai Peninsula Flood Report

Bradley,

I received a message that you did not receive this e-mail when I first sent it to everyone, so I'm sending it again.

Joe Weber

Joseph T. Weber, Jr., CFM
**U.S. Department of Homeland Security
FEMA Region X
130 - 228th Street SW
Bothell, WA 98021-9796
Phone: 425-487-4657
Fax: 425-487-4613
Cell: 425-213-3927**

From: Weber, Joseph
Sent: Monday, November 26, 2007 7:09 PM
To: 'Graves, John'; Boothby, Taunnie L (CED); Kasperski, Dahlia
Cc: 'Bradley M. Melocik, P.E. '; Johnson, Jeff (jjohnson@nhc-sea.com)
Subject: RE: Kenai Peninsula Flood Report

Everyone,

Data decks for the cross sections need to be ordered from the FEMA library (703-960-8800 x7488).

Also, everyone should be aware that NHC is doing some new work for FEMA in the Seward area and has new cross section for Japanese Creek + LiDAR data. I believe the LiDAR data may also cover other streams in the area. Contact Jeff Johnson at NHC for this new data (206-241-6000).

Joe Weber

Joseph T. Weber, Jr., CFM
**U.S. Department of Homeland Security
FEMA Region X
130 - 228th Street SW
Bothell, WA 98021-9796
Phone: 425-487-4657
Fax: 425-487-4613**

3/4/2008

Division of Community and Regional Affairs

550 W. 7th Ave Suite 1770

Anchorage, AK 99501

Phone: 907-269-4583

E-mail: taunnie.boothby@alaska.gov

From: Bradley M. Melocik, P.E. [mailto:bmelocik@dowl.com]

Sent: Monday, November 26, 2007 11:53 AM

To: Boothby, Taunnie L (CED)

Cc: SKIP BARBER

Subject: Kenai Peninsula Flood Report

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Project Engineer



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Bradley M. Melocik, P.E.

From: Boothby, Taunnie L (CED) [taunnie.boothby@alaska.gov]
Sent: Monday, November 26, 2007 3:31 PM
To: Bradley M. Melocik, P.E.
Cc: McKay, Peter J (CED)
Subject: FW: Kenai Peninsula Flood Report

Bradley,

You need order the model from the FEMA library using the external data request form. Call the 1-877-FEMA-MAP and let them know what you want, they should be able to provide you the form to order the model.

Hope this is helpful,

Taunnie L. Boothby, CFM
State NFIP Coordinator
Floodplain Management Programs
Division of Community and Regional Affairs
550 W. 7th Ave Suite 1770
Anchorage, AK 99501
Phone: 907-269-4583
E-mail: taunnie.boothby@alaska.gov