Green, Robert

From: Dickson, Stephen M.
Sent: Thursday, February 24, 2011 12:14 PM
To: Swan, Brian
Cc: Green, Robert; 'William.M.Kavanaugh@usace.army.mil'; Marvinney, Robert G.; Slovinsky, Peter A; Dot Kelly
Subject: Meeting in Phippsburg Today to Discuss Kennebec River Dredging - Revised

I changed "Fiddler Reach" to "Doubling Point Channel" in the last paragraph and meant to copy Dot Kelly. No need to keep the previous memo.

From: Dickson, Stephen M.
Sent: Thursday, February 24, 2011 12:04 PM
To: Swan, Brian
Cc: Green, Robert; 'William.M.Kavanaugh@usace.army.mil'; Marvinney, Robert G.; Slovinsky, Peter A
Subject: Meeting in Phippsburg Today to Discuss Kennebec River Dredging

Brian,

Here is some additional information related to the dynamics of sand in the Kennebec River in the vicinity of Fiddler Reach and Doubling Point Channel.

On a daily time frame, the Kennebec River below The Chops (upstream of the City of Bath) has reversing currents driven by the rise and fall of the tides (Fenster et al., 2001). Bi-directional (flood and ebb) transport of bedload (river-bottom) sand in the Kennebec River estuary results in a "bedload convergence zone" (Anthony, 2009) in Doubling Point Channel. Sand is transported downstream in the river-dominated section of the Kennebec River from Merrymeeting Bay (FitzGerald et al., 2000; Hannum, 1997) where it accumulates in the form of large sand waves in a bedload convergence zone. These sand waves are what need to be periodically dredged by the US Army Corps of Engineers.

Downstream of Doubling Point, sand on the river bed can be carried upstream by flood currents that are stronger than ebb currents (using salinity as a conservative tracer in data provided in Larsen and Doggett, 1976). Tidal mean velocities at Hospital Point (at the south end of Doubling Point Channel) measured in September 1994 show net northerly currents near the river bed (Mayer et al., 1996, Figure C.6.4) as do measurements in May 1994 near Bluff Head (Mayer et al., 1996, Figure C.3.1). Flood velocities near the river bed reported by Mayer et al. (1996) were in excess of 25 cm/sec and sufficient to move sand (Dyer, 1986; Gadd et al., 1978). Thus sand can be carried upstream to the bedload convergence zone from south of Doubling Point.

Over a period of decades or longer, spring floods turn the entire river to freshwater and tidal circulation is suppressed. Periods of river flooding can result in river-bed sand being carried toward the coast and Popham Beach (Fenster et al., 2001; FitzGerald et al., 2000). Fine-grained sediment (silt and clay) also exits the estuary by being carried in suspension (Stumpf and Goldschmidt, 1992) out the river mouth near Popham Beach during floods.

In short, the sand waves at Doubling Point Channel form and re-form because that segment of the Kennebec River is a bedload convergence zone. River and tidal currents as well as the shape of the bedrock channel of the Kennebec River preferentially deposit and accumulate sand in this section of the river. I expect removing sand from the channel

by dredging will be replaced by other sand within the Kennebec River. Without further study of the river's sand budget it is not possible at this time to say with certainty what volume of sand could be removed from the river that would result in permanently deepening the channel at Doubling Point Channel (to avoid the need for future dredging) or what the habitat effects of such a removal would be. Permanent removal of large volumes of sand from portions of the river near Bath could possibly affect Popham Beach in the future. Disposal of sand within the Kennebec River is certain to avoid and minimize long-term beach impacts.

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Steve

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From: Dickson, Stephen M.
Sent: Wednesday, February 23, 2011 11:16 AM
To: Swan, Brian
Cc: Green, Robert
Subject: RE: Tomorrow's meeting in Phippsburg

Hi Brian,

No, I am sorry I have a conflict in my schedule and cannot make it.

People should understand the Jackknife Legdge site is a perfect match with the sand from the Sugarloaf Islands. Sand placed there will remain part of the Popham Beach system. I also am not concerned about lowering the tops of the sand bars near the islands with regard to inducing beach erosion along the River Beach. The time the River Beach eroded just seaward of Ft. Popham and Spinney's Restaurant came at a time of large spring tides and I believe a river eddy eroded the underwater bank and led to the "landslides" along the shore that Jack Hart filmed. There was a dredge of the lower river about that time but other dredges did not result in a similar bank failure along the beach.

Steve

From: Swan, Brian
Sent: Wed 2/23/2011 10:59 AM
To: Dickson, Stephen M.
Subject: Tomorrow's meeting in Phippsburg

Hi Steve,

Bill Kavanaugh is wondering if you're going to be at tomorrow night's meeting.

Brian

Green, Robert

From: Dickson, Stephen M.
Sent: Wednesday, February 23, 2011 11:16 AM
To: Swan, Brian
Cc: Green, Robert
Subject: RE: Tomorrow's meeting in Phippsburg

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Steve

From: Swan, Brian
Sent: Wed 2/23/2011 10:59 AM
To: Dickson, Stephen M.
Subject: Tomorrow's meeting in Phippsburg

Hi Steve,

Bill Kavanaugh is wondering if you're going to be at tomorrow night's meeting.

Brian

Green, Robert

From: Dickson, Stephen M.
Sent: Monday, February 14, 2011 3:00 PM
To: Picher, John
Cc: Slovinsky, Peter A; Marvinney, Robert G.; Hunt, Ron; Murray, Brian J; Green, Robert
Subject: RE: MGS Advisory Opinion: Kennebec River Maintenance Dredging at Sugarloaf Islands and Doubling Point
Attachments: ACOE Congressional 2011 annual meeting agenda.doc

Yes, I think the sand would be excellent for the beach although the grain sizes of the beach might need to be compared a bit more. 15,000 cubic yards is a current rough estimate of the volume to be dredged from the lower Kennebec River east of Popham Beach. However, past dredging has been by a large ship that releases sand from beneath the vessel and does not have the ability to pump it ashore. The closest to the beach the ship could get was out by Jackknife Ledge. In addition, the Corps has not been willing or able to pay the extra expense of direct beach nourishment. A third party would have to bear the additional expense. The Corps might pump it ashore if the beach is a "least cost" disposal alternative. I am not an expert, but would guess a hydraulic dredge would (a) not work well at the Sugarloaf Islands in the Kennebec River current, (b) pipelines might impede river navigation, and (c) a booster pump would be needed since the state park is more than a mile from the shoals. When sand is pumped ashore it also gets dewatered and shaped by equipment – an activity that could also affect recreation in August. Your idea certainly bears more thought and discussion, but as Bob Green indicated, getting this permitted (and perhaps funded) for August may be difficult this year.

This Friday there is a meeting at MDOT in Augusta when the Corps will present the status of all projects in Maine, including the Kennebec River dredging. The agenda is attached. You are welcome to attend and ask the Corps if there is a process to get the sand on the beach. I plan to be there. This is an informational meeting, not a public hearing. Here is more information:

Dear Maine Dredging Stakeholders,
It's time once again for our annual Maine dredging stakeholders meeting. This year's meeting is scheduled to take place from 10-12 on **Friday February 18th (Snow date of Friday, February 25th)** here at the Maine Department of Transportation headquarters building in the main conference room. We will have briefings from ACOE New England dredging staff members and other resource agencies. The goal of the meeting will be to work towards determine Maine dredging priorities and to find out more about current dredging projects.

If you have any specific agenda items, please forward them to me as I develop the agenda over the coming days. Also, feel free to forward this email to anyone you feel would be interested in attending.

Very Respectfully,
Kevin Rousseau
Bureau of Transportation Systems Planning
Maine Department of Transportation
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(207) 624-3565
(207) 624-3099 fax
kevin.rousseau@maine.gov

Green, Robert

From: Dickson, Stephen M.
Sent: Monday, February 14, 2011 2:27 PM
To: 'William.M.Kavanaugh@usace.army.mil'
Cc: Green, Robert
Subject: MGS Advisory Opinion: Jackknife Ledge Disposal Site
Attachments: Dickson_1999_Plate_1.jpg

Bill,

For disposal at the Jackknife Ledge site, a shallower site is better than a deeper one. At a shallow site, swells will rework the dredged material in a shoreward direction for beach nourishment. In water 100 feet deep in this region swells can rework sand and gravel but it tends to move less frequently, and for shorter durations and hence distances, than in shallow water.

Sand disposal in 100 feet of water would not result in much benefit to the beach system based on research I did here for my dissertation in the 1990s. Also, sand placed south and west of the Jackknife Ledge site (say south of 43° 42' W) is more likely to move westerly rather than northerly toward the beaches. Attached is a map of seafloor sediment types I mapped using side-scan sonar and core and grab samples.

Bob had sent me maps of the disposal areas and sampling areas. I helped select the original Jackknife Ledge site many years ago. That location or one closer to shore (which could be difficult depending on ship capabilities) is still a good site for more sand.

Steve

-----Original Message-----
From: Green, Robert
Sent: Monday, February 14, 2011 1:23 PM
To: Dickson, Stephen M.
Subject: FW: MGS Advisory Opinion: Kennebec River Maintenance Dredging at Sugarloaf Islands and Doubling Point (UNCLASSIFIED)

-----Original Message-----
From: Kavanaugh, William M NAE [mailto:William.M.Kavanaugh@usace.army.mil]
Sent: Monday, February 14, 2011 12:59 PM
To: Green, Robert
Subject: RE: MGS Advisory Opinion: Kennebec River Maintenance Dredging at Sugarloaf Islands and Doubling Point (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks Bob,

I don't know if I mentioned it to you or not, but we did try to take a sample from the in-river disposal site in Fiddler's Reach, but we lost our grab sampler. It actually got caught on the rocky bottom in over 90' of water and was irretrievable.

To answer Steve's question about volumes, we're proposing to dredge to 30' + 2' of allowable overdepth at Doubling Point (i.e. advance maintenance in an effort to prolong the need for maintenance) which amounts to around 50,000

cubic yards. We're planning on dredging to 27' + 2' allowable overdepth from Popham Beach (if determined necessary by survey). We're using 15,000 cy as an estimate right now.

Feel free to forward this information to Steve if you wish. It might be helpful to us if you could forward a copy of the disposal site to Steve and ask his opinion on whether disposal in the deeper depths might be better or if it's generally all the same.

Thanks
Bill

Green, Robert

From: Dickson, Stephen M.
Sent: Monday, February 14, 2011 12:37 PM
To: Green, Robert
Cc: Slovinsky, Peter A; Marvinney, Robert G.; Picher, John; Hunt, Ron; Murray, Brian J
Subject: MGS Advisory Opinion: Kennebec River Maintenance Dredging at Sugarloaf Islands and Doubling Point

Bob,

The Maine Geological Survey reviewed the grain size data you forwarded. We have no geological concerns about dredging and disposal in August.

Kennebec River near Popham Beach
We assume that the grain size data for the "Disposal Site" is at Jackknife Ledge and not that in Fiddlers Reach Channel. Sediment at Sites A, C, and D are all nearly identical and also almost exactly the same as that at the Disposal Site. All 4 samples are very well-sorted (using Folk's 1974 Inclusive Graphic Standard Deviation method) medium sand with 1% or less silt and clay. From the grain size aspect, sand from the channel in the vicinity of the Sugarloaf Islands and Pond Island is a perfect match with the disposal area. I expect sand placed at this disposal site will gradually become part of Popham and Hunnewell Beaches over a period of years due to the combined effect of wave shoaling and currents in this area. I do not expect any adverse beach erosion along the River Beach (a.k.a. Coast Guard Beach) from dredging the shoals.

Kennebec River at Doubling Point Channel
Sediment at Sites E, F, H, and I from the federal channel are from sand waves on the river bed. These samples are all over 98% sand and dominantly fine to medium sand 0.25 to 2.0 mm in diameter. Given the coarseness of the sediment, the bulk of the dredged material should settle quickly at the river disposal site in Fiddlers Reach. It is not clear from the material you provided what the volume of dredged sand will be from this site. Based on the grain size data up to 1% of the sediment volume might be silt and clay (muddy), not settle to the bottom quickly, and be carried by tidal and river currents to intertidal and subtidal depositional sites nearby as well as upstream and downstream of the disposal area. We do not have the ability to quantify or predict transient water quality impacts or identify specific areas of siltation although, as you are aware, prior disposal of muddier sediment led to deposition of silt and clay on the intertidal shore immediately west of the disposal area.

We would be glad to review additional information as it becomes available.

Steve

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-----Original Message-----
From: Green, Robert
Sent: Tuesday, February 08, 2011 2:18 PM
To: Dickson, Stephen M.
Subject: FW: Kennebec River, Maintenance Dredging Request (UNCLASSIFIED)
Importance: High

Good afternoon,

An immediate need to dredge Doubling Point and Popham Beach has come up (see below). In today's meeting with the Corps, they looking to the DEP to find out if we would have any problems with doing this work this August, which is outside their permitted dredge window. The time for processing their application for a Water Quality Certification is going to be very short, so I'm writing to let you know that the Corps will be submitting the bare bones of an application sometime next week and to ask if you would look over the attached documents and see if there is anything else you need to provide review comments. A bathometric survey of the in-river disposal area adjacent to Dot Kelly's property was recently done and the center of the river channel is still deep. Bill Kavanaugh could probably provide you with a preliminary survey map.

Were you planning to attend next Friday's dredge meeting at DOT? Right now the Corps is putting together a project description and should have more details at Friday's meeting.

Please look over the attached documents and let me know if there is anything of concern.

Thanks,

Bob.

Robert L. Green, Jr., Project Manager
Division of Land Resource Regulation
Bureau of Land and Water Quality
tel: 207-822-6350
fax: 207-822-6303

-----Original Message-----
From: Kavanaugh, William M NAE [mailto:William.M.Kavanaugh@usace.army.mil]
Sent: Tuesday, February 01, 2011 10:56 AM
To: Rousseau, Kevin; Green, Robert; Todd.Burrowes@state.me.us
Cc: O'Donnell, Edward G NAE; Byrne, Robert H NAE
Subject: Kennebec River, Maintenance Dredging Request (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Gentlemen,

I apologize in advance for the long email but I felt that emailing once would be easier than my calling you all individually and explaining the situation. I recommend reading my email below as it offers some background and when prompted, you should open the attached files for "the rest of the story"

I'm writing to give you all a "heads-up" and to request your advance consideration of the attached letters from Captain Krestos of the USN (SUPSHIP in Bath) to Major General Grisoli of the HQUSACE.

Here's a little background for your information. In late November 2010, Captain Krestos wrote a letter to Colonel Feir, our District Commander, that