Overview of USACE Dredging Operations Webinar
Mr. Thomas Verna,
June 26, 2013

Julie Marcy: Okay, I have right at 1 pm Central Time so let's go ahead and begin our Web meeting. Welcome everyone. I'm Julie Marcy from the ERDC Environmental Lab and I'll be serving as your webinar host today.

Welcome to all of you to this second program in our Dredging Operations Technical Support or DOTS Summer Web Meeting Series. I welcome all of our online participants as well as the live audience that's accompanying our speaker Tom Verna at the Institute for Water Resources.

This series of Web meetings is intended to share topics of concern on the National Dredging Program and the meetings are recorded and archived files are posted on the DOTS Web page at the Resources. We just had a power outage.

Julie Marcy: Okay, the Intro screen is back, okay. So hopefully, that won't happen again. A few notes before we begin today's session.

We will have about 10 to 15 minutes at the end of the program for questions and answers but anytime during Tom's talk, if a term or something is unfamiliar to you, you're welcome to ask a question at that time. You may ask

questions verbally or you can also use the chat feature on your WebEx screen so that you can express your question.

And if you do have a question that's applicable to the content of the meeting I'll ask that you use chat and send it to everyone so that we can all see the question. Remember to keep your phones on mute when listening and then unmute them when you need to speak and please avoid putting us on hold since that background music can be just a little distracting.

In order to have a more comprehensive list of attendees, if it's not already apparent in your sign-in on the participants' list, if you would take just a moment to identify either yourself or your group using chat so that we know who is participating -- for example it might be John Smith, Fort Worth District or Fort Worth District 5 Attendees.

And now, I'll give you today's speaker on an Overview of the Corps's Dredging Operations, Mr. Tom Verna. Tom began his career in the Memphis District in 1974 in the Dredging and Navigation Section. He served as Senior Policy Adviser at the Headquarters of the Corps for Navigation, Dredging and Floating Plant Activity.

He retired in 2006 and now works at the Corps' Navigation Data Center as a Senior Policy Adviser for Civil Works Navigation and Floating Plant Operations. He also serves as an officer on the Board of Directors for the Western Dredging Association. Much more information about Tom's distinguished and award-winning career may be found in his bio posted on the DOTS webpage, along with a copy of the PowerPoint that he'll be sharing with us today.

So Tom we're very happy to have you with us and, if you'll give me just a moment, I'll assign you presenter rights.

Tom Verna: Okay, well, thank you Julie. I hope everyone can hear me okay. All right, well again thanks for the intro. Appreciate that.

As some of you may know I've been around over the dredge material so some have said. And been in business a long time, really enjoy it. Still doing it, so hopefully I can continue.

As Julie mentioned this is the second in a series for the Dredging Overview Program for DOTS. (Joe Wilson) provided the input last month and (Joe) focused mostly on the environmental aspects and the management of the dredging program.

Now I'm going to move in a different direction and still is important. I'm going to talk about the operational side of the house and let's focus on that. So with that let me get started.

Most of you are aware of our organizational hierarchy and starting at the bottom all of our work is performed and conducted at the projects. And we have a lot of projects that involve dredging. All that information is then funneled up at the district level. Project is either done at the district area office or however your organization is structured there locally.

Typically, of the 38 districts we have in the Corps dredging for example, Albuquerque or Fort Worth, typically do not. There are probably about 22 districts that are primary dredging districts but the project information is fed up to the district, the district consolidates that, rolls it up to the division level or the major subordinate command level. That gets rolled back up to

headquarters and from there headquarters submits it to the Office of the Assistant Secretary for Civil Works and to OMB. That project level is where you're involved in that effort through the budgeting process.

Along with that this is a simple concept I put together and I'd like you to understand this and it's the inverted triangle. And it concerns the budgeting aspects with the money that we get.

Civil works typically the rule of thumb -- and I use rule of thumb deriving hard numbers -- the rule of thumb in Civil Works, our budget's approximately $5 billion a year. Of that Civil Works budget we have major mission areas, navigation being one of them, navigation receives about half of the Civil Works budget, so $2-1/2 billion.

Of the navigation budget that we get about $1 billion is spent on dredging. The reason I want to highlight this is nowhere in this good government that we are in is there such a specific work activity or function such as dredging that receives as much dollars that we have, this $1 billion, that is why we are under the microscope especially with our congressional constituents and our stakeholders because of the amount of money for such a specific element of work.

So if you can understand that and the importance of it the rest of the operations and the management of the program will go a lot easier. Now let's get down to basics.

Dredging, the definition. I'm not going to read that to you but dredging is typically identified as a three-term definition and basically there are three components. One is you have to remove the material, you're excavating it.

Once you get that material you got to transport it some place. And once you get it there you got to put it some place. And that's the placement.

There are other avenues of thought that says there is a fourth term and that's the remediation of the dredged material.

So I'm not going to challenge that at this time, but just so you'll know, there's three aspects in the dredging process. Okay, what do we dredge? Well, that's a simple question. We dredge federal navigable channels, the waterways. And there are three terms used with that.

Most of our work concerns maintenance dredging of the existing channel dimensions. There is another aspect to that and I have it listed as construction. You may hear the term new work or capital dredging. So that's another element.

And the third one is urgent requirements. I don't list it as emergency so I list it under urgent and that occurs usually from a storm event such as a flood or a hurricane that comes through and usually shoals up our projects and we have to go in an do something quickly to restore at least a pilot channel in the navigable waterway.

Okay, the next several slides are a bunch of cartoons that we put together. All this data here is available at the Navigation Data Center. And what this chart shows you is the total program over a 10-year period. And it shows the dollars and the yards for the dredging program and as I just mentioned the majority of it is the maintenance dredging which is shown in purple and then new work,

Now those are the words that go along with that chart. For FY '12 we had $1.2 billion and 237 million cubic yards. And I show that also broken down in

Maintenance, New Work and the Urgent Requirements. In parentheses on that first slide I have $5.14 per cubic yard.

I did this on purpose. What I would like you to do and I want to caution you is if you put your accounting hat on and you divide dollars by yards you get that $5.14 per cubic yard. So an investment banker may call you and say, what is the cost of dredging in the United States and your answer is $5.14.

Well, what we try to explain in the dredging business the answer to any question is “it depends”. If you're familiar with the dredging program that $5.14 may be representative by an equation. However, if in New York and you're involved with all of the environmental concerns and restrictions the cost per cubic yard may be $100 a cubic yard.

If you're in the Lower Mississippi Valley trying to maintain the navigable channel in the Lower Mississippi River the cost may be $1.25 per cubic yard. So the answer is it depends. So I caution you when someone asks please be careful and ask a couple of questions.

What type of dredger is used? What type of material you're going to dredge and where you're going to put that material so that costs may vary.

Okay, moving on, here's another bar chart that shows that breakdown of Maintenance and New Work, and as I said the maintenance is the bigger component and the new work is the smaller component. And this shows the yardage by maintenance and new work. And again that just follows along with the data that we have.

Okay, how do we dredge? Well, in the United States dredging is accomplished by two means. One way is we dredge with government-owned and operated

dredges. So we have a fleet of dredges that fly the Corps flag, the Corps employees on board, and then we do the work. The majority of the work done in the United States is now done by private industry. And I'll explain that breakdown a little bit into the presentation.

This is an example -- if you're not familiar with our fleet -- this is one of our latest or newest vessels. This is the hydraulic pipeline dredge Goetz. It is the cutterhead dredge assigned to St. Paul District. It replaces the cutterhead dredge Thompson, the 1934 model. We did the studies and the computation and we were able to replace this vessel and it began service in the early 2000s. I'll explain a little bit more about how that fleet is comprised today.

Here's another picture of one of our vessels. This is the smallest type of dredge we have in the Corps fleet. It's the hopper dredge Yaquina based out of Portland, Oregon, and it's approximately 1000 cubic yards hopper dredge. And it works on the smaller harbors along the Pacific Coast in Oregon and Northern California.

This is a representation of a bucket dredge or mechanical dredge. We don't own and operate a bucket dredge in the Corps fleet anymore. However, we do have a lot of floating cranes with buckets to do clean-out say at the entrance to our hydro plants and in some of the lock chambers. But all bucket work now is done by private industry.

Moving further along, more words to go along with the slides. That first line gives you the total program again and I broke it down into the Corps versus Industry and you could see the numbers. But what I would like to highlight here is if you look at the yardage breakdown you see approximately an 80/20 split among Corps and industry.

That's typical. My rule of thumb is industry does about 85% of the work and the Corps does 15%. But this chart shows for '12 it was a little bit more for the Corps.

At the bottom of the slide I again did the simple math and came up with the cost per cubic yard. And as you can see, the Corps's cost per cubic yard is somewhat cheaper than industry. That may be a controversial issue depending on where you work, but just so you know but that's what the data proves.

Okay, let's move on. I've got a couple of other cartoons to show you. And this is a breakdown of dredging by the type of equipment and is based on the winning bids, the dollars of the winning bids for FY '12. And as you can see and hope you would imagine, that the pipeline dredges -- the pipeline cutterheads -- are the big players in this environment.

You would have thought the hoppers because they're the bigger machines but not necessarily.

And this follows because the Mississippi River drains 42% of the Continental United States along with its tributaries, and the pipeline dredge is the most versatile of equipment to use.

Okay, moving on. Here's another breakdown, the same pie chart, but this is based on the quantity of the winning bids and shows you the breakdown by equipment. And again the pipelines are the big boys in the business and the hopper by yardage has increased just a little bit.

Now further on, on the left, you'll see the pie chart. You're taking that total quantity of 237 million yards, and I broke out the hopper component and that's both Corps and industry. Over on the right you'll see further segregation of the

data into the industry and the Corps and in this picture shows an 82%/18% split. And I mentioned earlier my rule of thumb is an 85/15.

So, you can see how the hopper industry, which is a very limited market here in the US, and how that breaks down. And of the hopper work I have the cost per unit. That's $5.20 which is another interesting factor.

Okay, another segregation of the data, dredging requirement by region. I looked at the breakdown of where the work occurs and I'm sorry for you folks on the Great Lakes and on the Inland and the Pacific Coast you're not the big boys in the business. The Gulf is the big players, as you would imagine, with the Atlantic Coast coming in a second. I don't think that will be a surprise to many folks.

Switching gears a little bit I want to highlight this slide which is the beach nourishment. The reason I want to highlight this is up until the late '90s or early 2000s beach nourishment was considered the placement type. And that's the only designation that we have for it.

Around the late 1990s early 2000s legislation started to be enacted where we received specific funding for beach placement. For example in the event of a storm or hurricane we would go in and renourish the beaches and we had specific funding for that activity.

At that point in time we looked at it and we identified beach nourishment as a funding stream in addition to a placement type. So when you go into the dredging information system which compiles the data on the dredging program please be aware that if you have a project that has beach placement -- is it a placement type or is it a funding stream -- then make sure that the data is entered properly in those categories.

Okay, let me switch gears again. Where do we get all this information? Well, several of the Web sites that we have for waterborne information you go to the Web site of the Waterborne Commerce Statistics Center co-located with New Orleans District in New Orleans, does a majority of the work mostly with the Commodities and Vessel Movement and they tabulate that and they publish the information and that's available at that site.

The data that you see today that I'm talking about is compiled in the DIS, the Dredging Information System, and also continuing cost analysis that we do here. And if you go to that link it pulls up the Navigation Data Center Web site and it gives you several options to choose from.

You can go directly to the Commerce Statistics Center, to the Commodity Movements. You go to dredging information and you can also go to the navigation information. And that site will give you all the information that I've used today to show you.

There's also another element that's new on the horizon, the Dredging Quality Management System. That is hosted and managed by our friends in Mobile District and that is primarily for vessel performance and monitoring.

They have a program designed with a set of specifications and the requirement is to put censors on board the vessels to do the contract management and monitoring. And if you need to know more information contact (Vern Guinn) or (Brenda Allen) in Mobile and they'll be more than happy to help you with that.

Now moving on to the bigger picture, the navigation information, the first item is the Waterborne and Navigation Information located here at IWR

through the Navigation Data Center Web site. We also have a navigation gateway and that is hosted by our friends at ERDC that gives you more of a broad range of the navigation business involved with the Corps.

The third element there is the Operation and Maintenance Business Information Link (+) Plus called (OMBIL Plus). For those who are involved in the dredging budgeting process you may be familiar with it. It's a great tool to prepare your budgets for projects.

The (OMBIL Plus) System will be migrated to the EDW, Enterprise Data Warehouse. We're currently working on that conversion at the moment, and the EDW has more flexibility. It will be a more powerful tool.

Now the fourth element, Regional Sediment Management, if you go to that Web site, that will give you the criteria for evaluating your project in relation to other projects adjoining yours or in a sister-district or even within your major support command or region. So the Corps is moving to that forum especially in our budgeting process, so that may be a valuable tool to have at your disposal.

Let me switch gears here again, the dredge fleet. We talked about how the Corps performs dredging and I said we have Corps-owned equipment and industry-owned. In the Corps of Engineers we have a fleet of 10 vessels made up of 4 hopper and 6 non-hopper dredges and that's what we currently have today. And that was authorized by Public Law 95-269.

That legislation which was passed on the 28th of April 1978 set forth a four-year program where the Corps would compete their fleet against industry dredges and if the Corps was successful we were able to keep the vessel and

replace it with new equipment. If not we would decomission the vessel and offer up that work to industry.

On the industry side of the house we currently have 13 hoppers in the fleet and we have quite a few non-hoppers which are mostly regional.

I am noticing -- let me take a break here -- I am noticing some questions...

Julie Marcy: Yes, Tom, this is Julie. He was just wondering about posting the PowerPoint and we've got that covered.

Tom Verna: Okay, great. All right, well, let me continue on then.

Okay, that is the fleet. Let me explain a little bit more in detail. For the hopper fleet, the industry hopper fleet we have 13 active dredges. The names are listed there on the side, and the capacity of those vessels is listed also.

The capacity of a hopper dredge is identified by cubic yards and that is the volume metric capacity of the open hopper. So it's a box and you calculate the volume of that vessel. So for example you see the Glenn Edwards at the bottom at 12,000 cubic yards, that is the volumetric capacity of that vessel. Now does that mean it can carry 12,000 yards?

And what's the answer? It depends. It depends on the type of material, on the density. In this day and time with our environmental restrictions we can't possibly go to overflow anymore so it would be difficult to obtain that 12,000 yards. It'd be somewhat less.

If we were able to go to overflow we may be able to reach that 12,000 or a little bit more, but in our situation here probably not.

So that's the fleet we have today in the industry. And another photo - this is a historic event. It shows three of the four Corps hopper dredges. This was taken around 1996, the Lower Mississippi Valley. At the top of the photo you'll see the Corps' Dredge Essayons based out of Portland, Oregon. In the center is our flagship hopper dredge, the Dredge Wheeler, based out of New Orleans, and at the bottom is the Dredge McFarland which is based out Philadelphia.

What's historical about this event? We had three hopper dredges working on the Lower Mississippi River to maintain navigation during the flood event and we brought the Essayons around from the West Coast thru the Panama Canal to help us out in this endeavor.

Here's a breakdown of the Corps's minimum fleet. I have a breakdown bydredge type; we have the four hopper dredges I just mentioned; we have two special purpose dredges based out of Wilmington and I'll show you one of those in a minute.

There it is. That is the Dredge Murden. That was christened last month by Wilmington District. It is a small split-whole -hull hopper dredge. Its capacity is about 500 cubic yards and it is used only on the volatile shallow draft inlets along the North and South Carolina coast. However, it does work up and down the Atlantic and has been tested successfully in some of the Jacksonville District projects.

Julie Marcy: Tom, this is Julie. We have had another question come in. The question is, sometimes, dredging is done by agitation. How is that different from overflow which you said was not allowed?

Tom Verna: Okay, let me go back to that picture right there. If you'll see in the center picture of the dredge Wheeler and you see some of that white stuff that, that discharge, typically on the Lower Mississippi River, when we have an event where we have rapid shoaling we will go in and what we will do is called agitation dredging.

And what that basically is we remove material from the bottom, we place the material in the hopper in which the material stays in suspension and we immediately discharge it overboard. And what you see there on the Wheeler is there's overflow valves.

The reason is the material on the Lower Mississippi River is such a fine density of material it takes a long time for it to settle out and when it does it really causes problems for navigation.

So what we do is we go in and we agitate it and make sure the material stays in suspension and the river current and the natural phenomenon of the river will take that material and carry it downstream typically away from the shoaling area and deposit it into a deeper hole along the navigable channel.

That is different from overflow where you may have a specific restriction on your project due to say a water quality concern that you can only fill up the hopper bin to the full water level and you may be carrying maybe a third or a half or more of solid material and you'll have to carry that to your placement site. And you would have to do a significant amount of testing.

So again the answer is it depends on your project, the type of material and the environmental restrictions you're working on. Hopefully that answers that question. If not please call me. Be glad to elaborate on that further.

Back to the Corps breakdown. We have at the top the pipeline dredge Goetz. I showed you a picture of that. We have three dustpans. They work primarily on the barge channel from Baton Rouge North on the Upper-Lower Mississippi and some on the Ohio. And we have a sidecaster which is based out of Wilmington called the MERRITT.

This is a typical picture of the fleet of the Goetz based in St. Paul. What we did is we replaced the 1934 model Thompson which was a self-propelled cutterhead dredge with quarters on board.

And when we looked at replacement for the Thompson which we were authorized by the Minimum Fleet Law, that Public Law 95-269, we looked at the components that the dredge performed which was the pumping mission, we had quarters on board for the crew, and we had a propulsion plant.

Well, looking at the dredging requirement for the St. Paul area typically it's about five months. So, did we need to build a new vessel to work five months and be tied up the rest of the year.

So what we did is we broke out the pumping plant and we built the dredge Goetz and we broke out the quarters and built quarterboat (TAGGETZ) which is in the middle and we broke out the propulsion plant and we built the Governor Warren, the towboat which is on the left.

So we have three components now. So in a dredging season we have the fleet as you see it in the dredging mode, and when we're not dredging, St. Paul also does repair and maintenance on our locks and dams on the upper river. So now we have a towboat, a quarters barge which will handle the crew, and the rest of the fleet comprises work barges that have bulldozers and cranes and other machines we needed to do those repairs.

We can also use this complement as a Command and Control Center and it was used during Katrina down in the New Orleans area where we sent the quarterboat and the Governor Warren down to the New Orleans area as that command and control center. So now we have much more flexibility with the equipment that we have.

This slide will show you a classification of hopper dredges. In doing these presentations and teaching the classes for many years it was hard - we always got the question, how do you determine that? Well, the classification of hopper dredges is based on the cubic yard capacity and you could see how it's broken down here from small up to jumbo.

Here in the United States we will use up to the extra large version but bordering on the 12,000 yard capacity. Anything larger than that is too big to fit in our waterways and to do a decent job as far as maintenance dredging.

Where you will see those larger-capacity vessels is overseas, especially for land reclamation, for example the resort islands built over in Saudi Arabia and Dubai known as the Palm Islands, or even building the new airport for Japan in Tokyo. It was an island built out there in the bay. So they used those vessels for the reclamation of material.

Okay, I'm pushing almost the 30-minute clock. If you bear with me here we'll get through a couple of the other slides and we'll finish up. The next couple of slides are just some tables breaking down both the Corps and industry fleet by that classification, by size, by medium hopper, large hopper, small hopper. So I won't belabor that.

In the industry it gives you the vessel name and the owner, the company. In the dredging business, especially hoppers, we have three major players. We have Weeks, Manson and Great Lakes. And if you're in the business I'm sure you're familiar with them.

Getting close to wrapping up here. I'd like to shift gears and address some dredging research and development activities. At the top of the page we have the DOTS Program, Dredging Operations and Technical Support. That's how we're doing this webinar today.

That is a most valuable program. For example, if you're in the district and you have a project and you have an unusual issue that you can't resolve, you don't have any expertise in the district, who do you call? Well, you're not alone. Pick up the phone and call a sister district. If they can't help you call somebody that may be familiar with-in the dredging industry. If no one, pick up the phone and call Cynthia Banks.

They have at this program under DOTS where they will assist you and they will even send someone out to your site to evaluate your program free of charge up to a certain dollar amount and Cynthia will give you that information. It's a valuable tool and they've got some remarkable results with that program.

The ongoing R&D we have in the Corps now is the DOER program, Dredging Operations and Environmental Research. There's primarily five major work areas in the DOER program. Go on to the Web site and look at each one of those five areas and if you have an interest contact (Todd), program manager there at ERDC, and he'll be more than happy to include you in those working groups.

We also have the Center for Contaminated Sediments. If you happen to have a project that has some questionable material again (Todd) has some information available on those contaminated sediments and may provide you some assistance on how to handle that and manage it.

We also have the DIG Program, Dredging Innovations Group. Contact (Jennifer) and those folks can come up with some really creative solutions to your problem. I worked with (Jennifer) for a little while and I'll tell you what, those folks are go-getters, so give them a call if need be.

Now from the R&D activities we do have -- and I listed two -- programs that we've moved to an operational R&D element. One is the National Coastal Mapping Program. Some of you may know of the SHOALS program where we used the helicopter to do the hydrographic surveys using LIDAR technology, now a fixed-wing aircraft, that's a valuable tool, especially if you have a storm event moving through your area. And they can cover up to 200 miles of coastline and do a quick assessment of the impacts to your navigation in the coastlines.

And the other element, Dredging Quality Management, I've already mentioned. Started out as just a silent inspector, (Vern Guinn), and (Brenda Allen) in Mobile are more than happy to assist you. Under dredging quality management it is a performance monitoring system onboard the vessels. The program right now is mandatory for hopper dredges. It's also mandatory for mechanical dredging, that is bucket-barge-scow operation.

And they have recently implemented the DQM for pipeline dredges. The dredge Potter, a dustpan assigned to St. Louis District is the testbed for the pipeline operation and they are beginning implementation on the large

pipeline dredges from say about a 24-inch diameter discharge on up at present. So if you have any questions contact those folks. Be glad to help you.

This slide shows a pet peeve of mine with some of the language we use. And on the left side I would like to encourage you to use the word placement when you have to put that material somewhere. Dredge material is not spoil or waste; actually it's good stuff. And we do a tremendous job here trying to compile the data on how dredge material is used for beneficial use.

So, thank you very much for listening to me today, and no, that's not me hanging on a ladder of the helicopter some wish it was. And if you have any questions online or through the chat we'll take them now.

Julie Marcy: Great. Thank you Tom. This is Julie so anyone that has a question please feel free to ask. And remember to take your phone off of mute before you speak.

Tom Verna: And if you're shy and don't wish to ask any questions I'm on Outlook on email. Please contact myself. If I'm not available, (Mark Pointon) who was at headquarters in the Programs Office. He's now here at IWR as the IWR Navigation Business Line Manager. (Mark) and I co-host the Dredging Fundamentals class. He's very familiar with this presentation.

And, of course, we have (Jeff McKee) who is now the permanent Navigation Business Line Manager at headquarters and all three of us will be more than happy to help you with any questions or concerns you may have.

So, if nothing further, thank you all for listening. Julie and Cynthia, thank you for inviting me. And hope to hear from you soon.

Julie Marcy: All right, thank you Tom. Any last questions out there before we end our session? Okay, and again you can follow up with an email or call and we'll be happy to help you then.

Tom, thank you so much for sharing your knowledge with us today. And thank you to all of our participants for taking time out of your busy day to join us.

Be watching for upcoming notices on additional DOTS webinars this summer from Cynthia Banks at ERDC. And with that, we'll end our session and I hope everyone has a great afternoon.

Thank you.

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