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Mining & Construction

Vol. 55, Nos. 5/6 - 3/23

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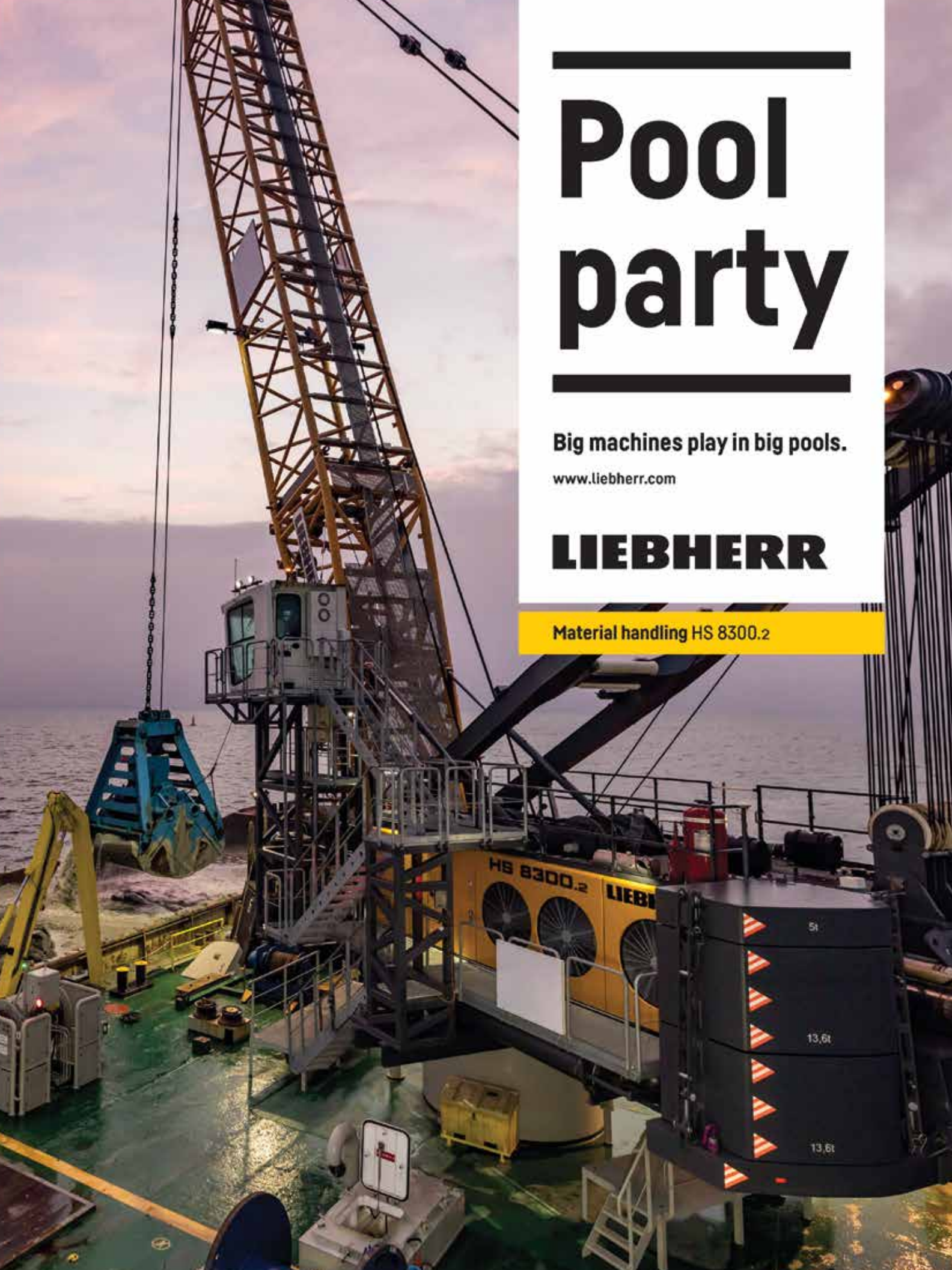
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**COVER: DREDGE AVALON - CURTIN MARITIME -
HOUSTON SHIP CHANNEL WIDENING
TUG TAURUS SCOW - ARBOR POINT
72 yd³ CABLE ARM LEVEL CUT CLAMSHELL
22' OPEN LENGTH x 29.5' WIDTH - WORKING LOAD 245,000 LB. - 4 LIN**

Restoring bird habitats while sustaining ours

By JoAnne Castagna, Ed.D.

This past spring, Dr. Lenore Tedesco was looking out her window at The Wetlands Institute that sits in the middle of vast marshland in Cape May County, New Jersey.

Outside, heavy rain and flooding tides associated with the Mother's Day Nor'easter, were thoroughly soaking the marsh, a low-lying wetland with grassy vegetation that is usually present in areas of transition between land and water. To her dismay, she saw birds and their chicks being flooded out of their marsh homes. Some of the birds escaped to roads and some were struck by cars.

What pleased Tedesco, who is the executive director of The Wetlands Institute, was that some birds found refuge in the high grounds of several marsh islands that were recently restored with dredged sand and mud.

These dredging and beneficial use projects are the result of a collaboration between the U.S. Army Corps of Engineers, North Atlantic Division, and other agencies and organizations. The projects involve dredging critical navigation channels and using the sediment to restore vanishing bird habitats while also enhancing resilience for coastal communities.

Beneficially using sand and mud is of increasing importance to USACE. "One of the Army Corps' primary missions is to dredge federal navigational waterways to ensure easy passage by vessels," said Rena Weichenberg, environmental team lead of the planning and policy division, North Atlantic Division. "Sand and mud sediment removed from the bottom of the waterways was often historically placed in permitted ocean disposal sites or confined disposal facilities. There has been a welcomed evolution toward USACE retaining sediment in the system, and beneficially using it to both protect people and to protect, restore, and create aquatic and related habitats."

Following are two USACE projects taking advantage of dredged material within the North Atlantic Division.

Seven Mile Island Innovation Lab, Cape May, New Jersey USACE Philadelphia District

In 2019, the USACE Philadelphia District, U.S. Army Engineer Research and Development Center, The Wetlands Institute, and the State of New Jersey partnered to form the Seven Mile Island Innovation Lab in Cape May County. The lab is based on a concept pioneered by the Dutch who use a "living lab for mud" to test and demonstrate environmental and social benefits.

The goals of the initiative are multi-faceted – advance and improve dredging and marsh restoration techniques in coastal New Jersey through innovative research, collaboration, knowledge sharing and practical application.

Tedesco said, "The lab was created to act as a think tank to advance dredging and marsh restoration techniques. We put together a host of projects where we can test how we can beneficially use dredged material to create resiliency for both our ecosystems and our communities."

Seven Mile Island, New Jersey, has proven an ideal site for the lab due to the presence of existing and historic dredged material placement sites, federal and state channels including the New Jersey Intracoastal Waterway, extensive tidal marshes, and a mixture of sandy and muddy sediments.

The Wetlands Institute facility located adjacent to the marsh has served as a meeting space for partners and provides an ideal place to observe the successes of projects.

The lab is surrounded by 15,000 acres of marshland, providing a habitat for birds, fish, shellfish, and other wildlife. Marshes help to maintain water quality by removing nitrogen and phosphates and act as a buffer from flooding for coastal communities during destructive and powerful storms.

According to Tedesco, one study done by Lloyd's of London showed marshes play a critical role in reducing damage to infrastructure from coastal storms. These industry models showed during Hurricane Sandy marshes prevented \$625 million in direct flood damages across 12 states. In New Jersey, coastal marshes reduced property damages by more than 20 percent.

Unfortunately, marshes are at risk of decline due in large part to sea level rise, putting coastal



*Flooded marshland near The Wetlands Institute in Stone Harbor, N.J. A late-season nor'easter over Mother's Day weekend in 2022 endangered the bird habitats of several species.
Credit: Lenore Tedesco.*



*A rare gyrfalcon. The sighting of this species near the restored Seven Mile Island marshlands was a sign of project success according to Dr. Lenore Tedesco, executive director of The Wetlands Institute.
Credit: Ray Gilbert.*

communities at risk. Rising waters are also harming ecosystems. Tedesco said, “Marsh grasses grow well over a very narrow range of water depth. During times of naturally slow rising sea level, they can do quite well and keep up with rising water levels by building dense root structures and trapping storm-transported mud and sand.

“If sea level rises too fast, marshes can begin to drown and shift to open-water areas or mudflats. Flooding during the nesting season can destroy bird nests or chicks of American oystercatchers and laughing gulls and many other bird species that depend on the marsh to nest and raise young.”

As part of the lab’s work, dredged sand and mud from the nearby 117-mile New Jersey Intracoastal Waterway have been used to restore drowning marshes and create new habitats that are vanishing, using a variety of techniques. This work provides habitat for long-legged wading birds, beach nesting birds, migratory shorebirds and other species that use the marsh, and can also increase marsh elevations to protect the marsh itself.

“Sediment is the currency of these ecosystems, and we know these marshes are sediment-starved, so we must work to find innovative ways to utilize the clean sediments that clog navigation channels to enhance marshes and offset sea-level rise,” said Tedesco.

Thus far, USACE and its partners have completed multiple dredging and marsh restoration projects throughout the back bays of Seven Mile Island.

The goal is to use dredged sand and muddy sediment to fill in low-lying and drowning areas of the islands and increase marsh elevations. This elevated marsh can provide nesting habitat for long-legged wading birds, such as egrets, herons, and ibis, as well as colonial and marsh nesting birds, such as the salt marsh sparrow, which builds a teacup-sized nest on or close to the ground.

Two of the islands enhanced with dredged materials support nesting for 25 percent of the long-legged wading bird colonies in New Jersey including the glossy ibis, little blue heron, snowy egret, tricolored heron, great egret, and black-crowned night



The Dredge Fullerton, owned and operated by Barnegat Bay Dredging Company, conducts dredging in the New Jersey Intracoastal Waterway near Stone Harbor, N.J. The sediment was placed to create habitat on marshland owned by the New Jersey Division of Fish & Wildlife. Credit Gary Paul.

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*The U.S. Army Corps of Engineers and its contractor Barnegat Bay Dredging Company completed a dredging and marsh restoration project near Stone Harbor, N.J. in December 2018. Work involved dredging sediment from the channel of the New Jersey Intracoastal Waterway and beneficially using the material to create habitat on marshland owned by the New Jersey Division of Fish & Wildlife.
Credit: USACE.*

by progress.

*The U.S. Army Corps of Engineers and its contractor Barnegat Bay Dredging Company completed a dredging and habitat creation project near Stone Harbor, N.J. in December 2018. Work involved dredging a portion of the federal channel of the New Jersey Intracoastal Waterway and beneficially using the material to create habitat on marshland owned by the New Jersey Division of Fish & Wildlife.
Credit: USACE.*

heron, according to The Wetlands Institute. Almost all of these birds are considered priority species of greatest conservation or are state endangered species or species of concern in New Jersey.

In the last few years, birds have flocked to the project sites including beach nesting birds and migratory shorebirds including black skimmers, common and least terns, American oystercatchers, sandpipers, plovers, and whimbrel. In addition, diamondback terrapins and horseshoe crabs are also using these habitats, and the team's restoration work is also enhancing some fish habitats.

Innovation lab team members are monitoring these marshes and placement sites and seeking innovative ways to improve dredging and placement techniques. These projects are always evolving, and the team is using lessons learned to improve them through adaptive management.

The team members find the work rewarding and enjoy working together. "It's been wonderful. There is a true sense of respect and admiration for each other and a sense of the importance of the work we are all doing," said Tedesco.

Philadelphia District's use of dredged material has proven successful restoring bird habitats endangered by mother nature. USACE Norfolk District, on the other hand, is finding ways to beneficially use dredged sand and mud to create solutions for bird habitats endangered



*The team at The Wetlands Institute.
Credit: The Wetlands Institute.*



Hampton Roads Beneficial Use of Dredged Material Project, Norfolk, Virginia
 USACE Norfolk District

During the summer in Norfolk Harbor, Virginia, people used to see an island filled with birds— thousands of them. For this reason, the locals called it “Bird Island.”

Its official name is South Island, and for the last 30 years until 2020, it was home to the largest and most productive bird colony in Virginia. Approximately 25,000 seabirds, wading birds and other migratory bird species used the island for shelter, foraging and nesting — away from disturbances and predators.

Bird species on this island included the royal tern, sandwich tern, common tern, gull-billed tern, black skimmer, laughing gull, herring gull, and the great black-backed gull.

In Virginia, many of these species are identified as “species of greatest conservation need.” The gull-billed tern is designated as a state threatened species. With the exception of herring gulls and great black-backed gulls, many of these birds are in peril or need to be protected.

On the federal level, the gull-billed tern and the black skimmer are U.S. Fish and Wildlife Service “species of conservation” and are listed as decreasing on The International Union for Conservation of Nature’s “Red List of Threatened Species.”

South Island is part of the Hampton Roads-Bridge-Tunnel complex, a series of bridges, anchoring islands, and tunnels, which is presently undergoing a massive expansion that includes widening lanes and adding tunnels. This has required substantial construction activity on South Island, making the island unsafe and

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unsuitable for the birds to use as a nesting location.

Understanding the importance of providing a safe alternative habitat, several agencies teamed together to investigate the feasibility of using dredged sand and mud. These agencies include USACE Norfolk District, the Virginia Department of Conservation and Recreation, Virginia Tech Shorebird Team, Virginia Department of Transportation, and Virginia Department of Wildlife Resources.

In Virginia, protecting bird habitats like “Bird Island” is especially important. According to Michelle Hamor, Norfolk District’s chief of the planning and policy branch, in Virginia, seabirds often nest in large groups. Because of this behavior, and because they like open, sandy areas, they typically breed in very few locations, so if a breeding area is lost, it can have profound consequences.

This is the case with South Island. Several of the species on this island used it almost exclusively as a nesting place. According to Becky Gwynn, deputy director for the Virginia Department of Wildlife Resource, royal terns and sandwich terns nested on South Island and nowhere else in Virginia, and about 50 percent of black skimmers and common terns nested on the island.

In July 2022, thousands of birds can be seen nesting on Fort Wool and its adjacent barges. Parent birds have been observed protecting their nests, incubating their eggs, and brooding and feeding their young. Credit: Jessica Ruthenberg, Virginia Department of Wildlife Services.



Gull-billed tern nest containing chicks and egg on Fort Wool.
Credit: Kelsi Hunt/Virginia Tech.

Gwynn. “In 2021, we documented 6,283 royal tern nests, 663 common tern nests, 139 black skimmer nests, and 15 gull-billed tern nests – a real success!”

Not only is this habitat beneficial for birds, but also for coastal communities. Providing these birds a home keeps them away from cars and planes, reducing potential car collisions and bird strikes with aircraft from a nearby airfield.

The team has plans for this bird colony. Hamor said, “We are conducting a feasibility study to investigate opportunities to create 10-12 acres of permanent habitat using dredged material from federal navigation channels for existing and future seabird colonies, specifically to increase the value and quantity of habitat for shorebirds, wading birds and migratory species.” In addition, this new habitat may encourage the growth of clams, oysters, red drum, seatrout, summer flounder, and striped bass, which can lead to increasing opportunities for commercial and sport fishing.

The Hampton Roads Beneficial Use of Dredged Material Project and the

As a temporary solution, the team worked together to create a habitat for these birds on Fort Wool, a former Army post on an eight-acre island connected to South Island by a stony jetty.

They converted the old post’s parade ground into a 1.5-acre nesting habitat. To increase the available nesting area, three barges were anchored adjacent to Fort Wool, providing an additional acre, for a total of 2.5 acres of nesting habitat overall.

They cleared vegetation on the island to make it attractive to the seabirds and then placed 1,700 cubic yards of barged-in sand over the entire parade ground to provide an appropriate habitat for these species. Dredged sand and mud will be used in future work.

These birds like a habitat that mimics a beach island environment, so the team spread a coarse sand on the parade ground and a sand/pea gravel mixture onto the barges and created gentle slopes that mimic a barrier island. They also placed short sidewalls around the tops of the barges to prevent young chicks from running off the edges.

To lure the birds to the new habitat, bird call recordings were played and decoys of several tern species and black skimmers were placed on the island.

Their work was successful. “In one site visit the first year, we recorded 3,500 royal tern chicks. We also documented 200 sandwich terns, 1,000 common terns, 150 black skimmers, and thousands of laughing gulls. Only one pair of gull-billed terns was documented on the barges during the first nesting season, but anglers and other observers spotted more in the air. And the gull-billed terns produced two fledglings – chicks that survived to take flight,” said



Royal tern adults and chick on Fort Wool.
Credit: Megan Thomas/DWR.

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Common tern chicks display considerable variation in color and pattern on Fort Wool. Credit: Meagan Thomas/DWR.



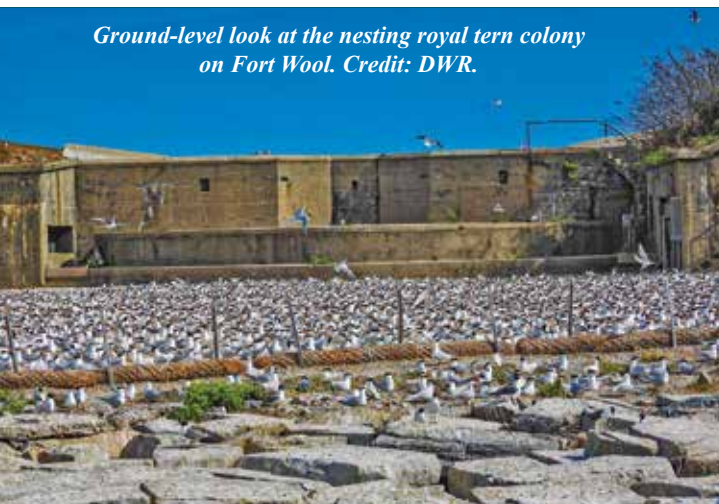
A royal tern chick stands on the Fort Wool parade ground. Credit: Meagan Thomas/DWR.



Terns and laughing gulls lounging on the Fort Wool Rip Rap. Credit: Aileen Devlin/Virginia Sea Grant.



Royal tern chick and adults on Fort Wool. Credit: Meagan Thomas/DWR.



Ground-level look at the nesting royal tern colony on Fort Wool. Credit: DWR.



Close-up look at the nesting royal tern colony on Fort Wool. Credit: DWR.

Seven Mile Island Innovation Lab are both successfully restoring vanishing bird habitats using dredged sand and mud while at the same time helping coastal communities. Tedesco sums up the importance of these projects. A few years ago, she was once again looking out her window at The Wetlands Institute and saw something that absolutely delighted her.

She saw a rare gyrfalcon wander into the area and perch on the high grounds of one of the newly restored marshes. If the marsh had not been restored, that bird would not have had a habitat to forage. Not only was Tedesco excited, but also the hundreds of people who flocked there with telescopes and binoculars for an opportunity to get a glimpse of this bird.

Tedesco said, “This represents an important example of the multiple benefits of these projects that provide habitats for birds and social and recreational benefits for people.”



Aerial view of the nesting royal tern colony on Fort Wool.

Credit: DWR.

Dr. JoAnne Castagna is a public affairs specialist and writer for the U.S. Army Corps of Engineers, North Atlantic Division. She can be reached at joanne.castagna@usace.army.mil.

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Autonomous Underwater Dredging System Drives Productivity, Reduces Risk

Giri Baleri

Director of Product Management and Strategic Marketing Off-Road Autonomy

Onshore and offshore dredging has long been a multi-step process, highly dependent on skilled operators to remove materials to a specified depth, material disposal and verification of work completed. More recently, advanced visualization systems have helped streamline the process. Now, technology advances are enabling fully automated start-to-finish operations.

Engineering firm SPE GmbH & Co. KG, headquartered in Hamburg, Germany, has developed one of the industry's first fully autonomous dredging solutions—a system that independently collects data from the area to be dredged, and then uses that data to autonomously control the system.

A differential difference

As a pioneer in the field of land and underwater dredging, SPE is an engineering firm with decades of experience and expertise in developing dredge monitoring systems for onshore and offshore dredging. The engineering firm has been developing innovative solutions for dredges in the sand and gravel industry since 1995.

In 2019, SPE ventured into full automation of dredges. Peter Klemp, director of SPE, noted that the goal was to create an autonomous dredging system that would enable 24x7 operations, minimize the chance of over or under dredging, improve production and reduce carbon footprints while helping offset the challenges associated with industry labor shortages.

As an early innovator in dredge monitoring and underwater dredging, SPE developed its own dredge monitoring system called the MARPO_DGPS, which is short for Marine Position Differential Global Positioning System. The goal was to precisely position the dredge and the excavation apparatus, provide direct visualization of all information during the dredging process, and simultaneously document all data using the same software.

During the early development of the system, SPE found that it was only possible to achieve a maximum accuracy of 30



centimeters, which did not meet the company's own requirements, or those of its customers.

To improve the accuracy, SPE teamed with the Trimble Autonomy group to find a more effective GNSS solution. They selected the Trimble® BX992 receiver and GA830 ruggedized antenna, along with Trimble CenterPoint® RTX correction service. The combination allowed SPE to achieve increased accuracy requirements—down to 2 centimeters—and provide highly accurate visualization with sonars to depths of more than 80 meters, even in turbid water.

After installing the receiver and antenna to the roof of its office building to test its usability, SPE integrated it into the dredging system.

Subsequently, MARPO_DGPS became the foundation for an autonomous end-to-end dredging solution for the dredging industry facilitating the precise positioning of the dredge and the excavation apparatus, direct visualization of all information during the dredging process, and simultaneous documentation of all data using the same software.

In March 2021, SPE launched the end-to-end dredging solution and thereafter quickly deployed it on multiple dredging projects.

Optimized productivity

As a modular system, the MARPO_DGPS easily adapts to dredging projects to meet the requirements of clients for efficient extraction of deposits and dredging areas. The initial applications have included dredging of tailing ponds, hydroelectric dams as well as sand and gravel mining.

Klemp added, "Depending on the size of the dredge, the system takes 1-10 days to fully deploy, and training takes one day."

The technology was first deployed on two hydroelectric dam projects, one in Germany and one in Switzerland. In both cases, the system was installed on an A-frame dredge with a submerged pump with the goal to remove a designated quantity of sediments, silts and debris quickly from the dam reservoir.

The contractor in both cases saw increased productivity through the optimized extraction process, reduced extraction losses and reduced risk of slope failures.

The next two projects were in support of sand and gravel operations. In one case, a mining company put the MARPO_DGPS

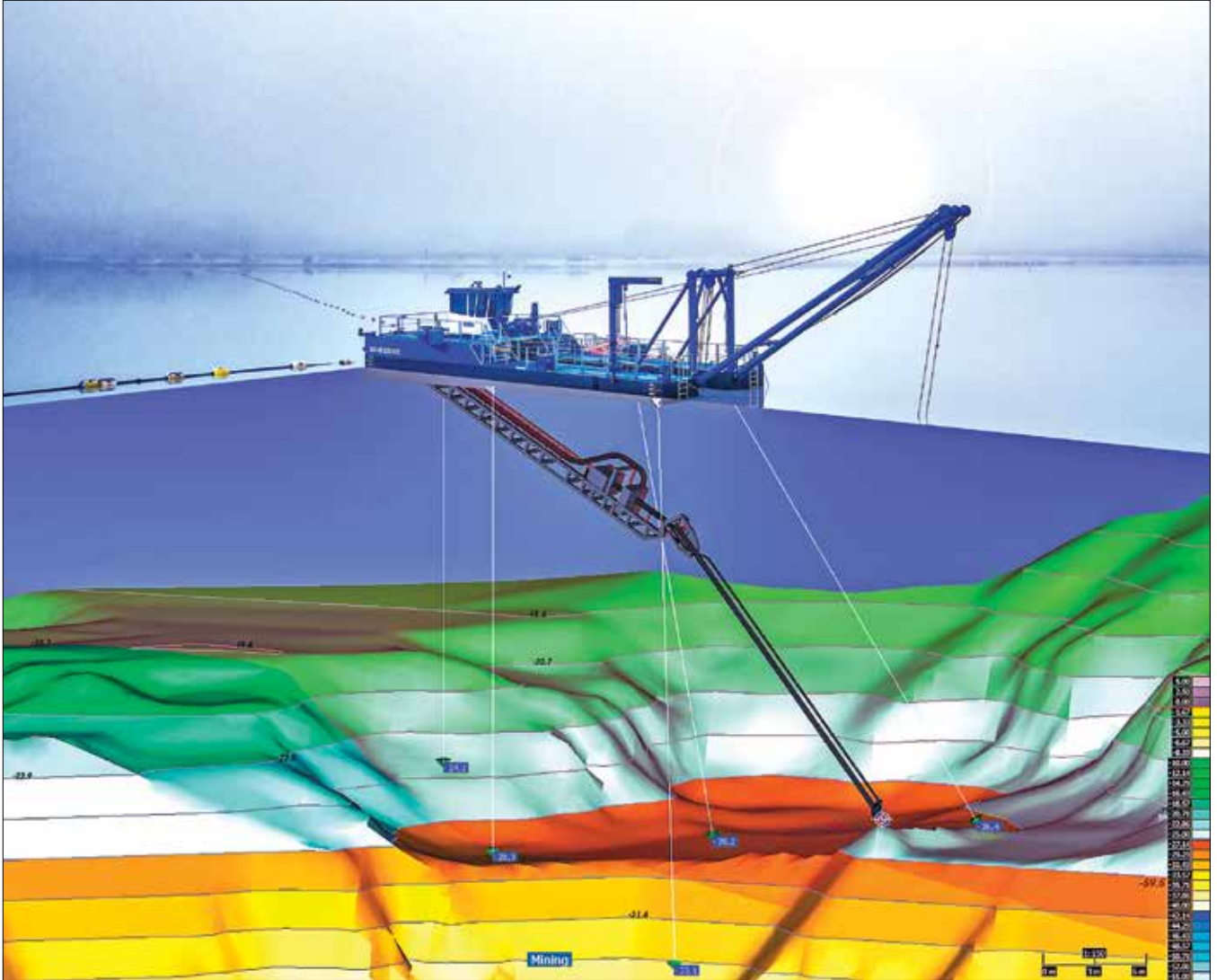


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Autonomous Underwater Dredging System Drives Productivity, Reduces Risk



to use on an A-frame dredge with a suction dredge and submerged pump to remove materials. The second application, another A-frame dredge, was used to support work on a tailing dam for an environmental company.

“While the return on investment is dependent on the size of the task, early assessments have found that payback on the autonomous system is less than one year on large sites and up to two years for smaller sites,” Klemp added.

Word has spread rapidly about the benefits of the autonomous dredging solution. Already this year, SPE has deployed the technology on three suction dredges and two cutter suction dredges for mining operations.



Giri Baleri joined Off-road Autonomy division within Trimble in February 2021 as the Director of Product Management and Strategic Marketing and is responsible for leading the product direction, roadmap and strategy. Giri has over 20 years of combined experience in precision ag technologies, wireless sensor networks (IoT), unmanned vehicles and inertial navigation. Prior to joining Trimble, Giri has held several leadership positions at Resson, Novariant, Memsic and Crossbow Technology, Inc. Giri received a M.A.Sc. in Controls Engineering from the University of British Columbia, Canada and a BS in Mechanical Engineering from National Institute of Technology Karnataka, India. ○

Inside Cable Arm...

"The Cable Arm Environmental Bucket is considered the most advanced in the world and one of the preferred options for environmental dredging" (Environmental Canada, 1998, p. 26)¹. Since its first demonstration in 1991, with its innovative level-cut, the CA environment clamshell has continued to evolve.



CA clamshells are custom built to meet and exceed job specific goals. The CA environmental clamshells (available in mechanical or hydraulic) are specialized sediment removal buckets used to dredge the top, contaminated, layer of the water bed—efficiently and effectively. "Ray Bergeron through his demonstrated knowledge of conventional and unconventional dredging, his outstanding problem solving skills and his ability to seek logical solutions to the needs of the dredging community has reflected greatly on his Company and the Western Dredging Association" (Dredger of the Year Award, Western Dredging Association, 2010). With over 30 years of custom designing environmental buckets to minimize resuspension, cut time, and reduce costs; Ray continues to develop new designs to tackle restrictions and/or needs unique to the job that can otherwise prohibit a successful and profitable operation.



Jobs in which CA environmental buckets excel: large volume sediment removal, precision dredging, remediation of difficult contaminants (e.g. mercury, lead, etc.), open-water disposal restrictions with high disposal/transportation costs (require high solid content), sites in which turbidity is an issue and silt curtains are prohibited (e.g. certified in Canada to remove sediment in front of nuclear power plants), etc.

CA clamshells are built in a modest shop in Southeast Michigan and shipped worldwide to work in various job applications.
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patent & patent pending

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Cable Arm clamshells are designed to improve productivity & profit

75 yard³ | 22' x 29.5' footprint | 70k lb on 250k lb working load crane | 2-1/2" cable diameter

¹https://publications.gc.ca/collections/collection_2019/eccc/En40-549-1998-eng.pdf



PRECISION DREDGING IN A COMPACT PACKAGE

LEVEL-CUT PROFILE LARGE OVERSQUARE FOOTPRINT PRECISE POSITIONING LOW WATER CONTENT SPECIALIZING IN THIN-CUT CLAMSHELLS



CABLE BUCKET
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BETWEEN 2 y³ AND 75 y³

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THE VERRAZANO
BRIDGE

THE THIN-CUT SEDIMENT REMOVAL CLAMSHELL

HYDRAULIC BUCKET AVAILABLE IN VOLUMES
BETWEEN 2 y³ AND 20 y³

CABLE ARM OFFERS THE SHORTEST OVERALL HEIGHT TO
OPEN WIDTH OF ANY LEVEL-CUT CLAMSHELL

OVERSQUARE FOOTPRINT AND OVERLAPPING SIDE
PLATES REDUCE WINDROWING, ALLOWING YOU TO
MEET PPM CLEANUP GOALS

WHY SCOOP INSTEAD OF VACUUM?

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- LOW FACE SEDIMENT REMOVAL WITH
REDUCED WATER CONTENT
- REDUCED DISCHARGE OF
CONTAMINATED WATER
- WATER TREATMENT IS EXPENSIVE
- DRY SEDIMENT IS HIGHLY
TRANSPORTABLE AND TREATABLE

NOT JUST ANY ENCLOSED
BUCKET CAN BE CONSIDERED
AN ENVIRONMENTAL BUCKET -
IT HAS TO MINIMIZE
WINDROWING



AS BUCKET FILLS, LOSS OF BUOYANCY
RESULTS IN FLATTER CUT PROFILE

2y³ VOLUME - 6 ft x 8 ft FOOTPRINT

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GET THE MOST FROM YOUR FOOTPRINT



WE OPTIMIZE YOUR FOOTPRINT AREA TO GIVE YOU THE LARGEST SHALLOW CUT POSSIBLE

TRAPEZOIDAL BUCKET DESIGN MINIMIZES DAMAGE TO SCOW IN THE EVENT OF A COLLISION

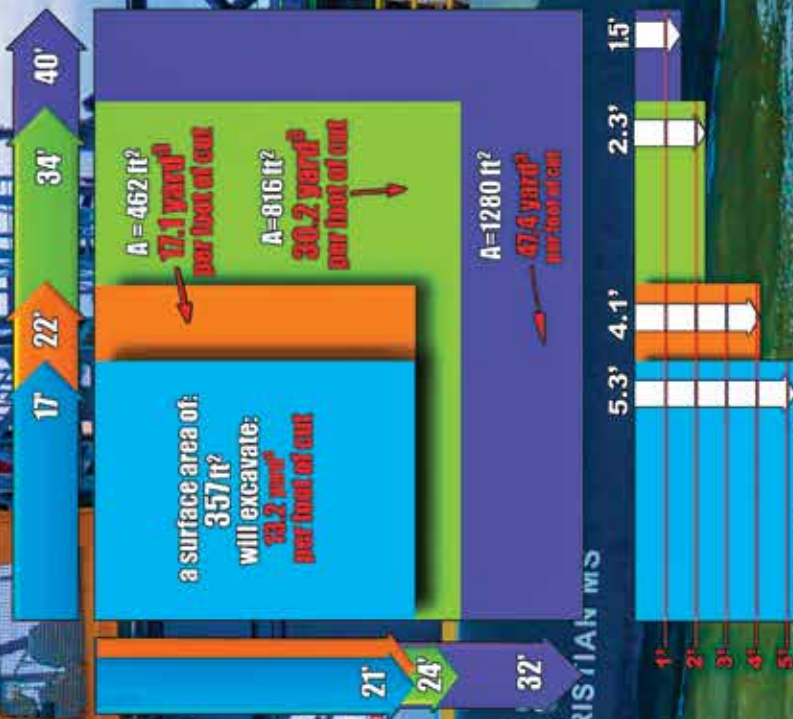
OVERLAPPING SIDE PLATES REDUCE WINDROWING AND RESUSPENSION

LARGE OVERSQUARE FOOTPRINT, WHEN PAIRED WITH THE SHALLOW-CUT DESIGN, INCREASES COVERAGE AREA WHILE REDUCING OVERDREDGING

ALLOWS YOU TO MEET OR EXCEED PPM/CLEANUP GOALS

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depth of cut at 70 yd³

SHALLOW-CUT DESIGN REDUCES COSTS ASSOCIATED WITH OVERDREDGING



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DREDGE CELL
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Barge

Collection Tray

Secondary Spill Containment collects fallen material from bucket movement

Cable Arm

COMPLETE ENVIRONMENTAL DREDGING SYSTEM



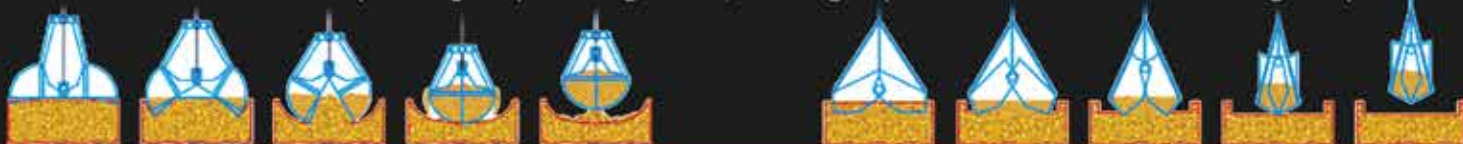
Cable Arm® Environmental clamshells remove material at almost the same water content and volume as in-situ materials. Excess clean water in the clamshell is drained through vents located above the sediment water interface. The passive venting system also minimizes downward pressure, seals in material, and prevents water from washing contaminated sediment out of the bucket.

Overlapping steel side plates ensure minimal lateral movement of material and reduce side sediment windrowing from the bucket discharge by reducing the cross-sectional area during bucket closing. The overlap offset of the side plate is located at 27-29° past the closing centerline, on each end of the bucket. Rubber seals, set within the U-shape grooves, help seal off water flow and help prevent the release of material from inside the bucket.



The material's center of mass is located below the center of the bucket's containment area. This low center of gravity decreases sediment overflow at the ends of the bucket during closure. Gravity's lateral outflow effect on sediment will also be minimized when the bucket's width is wider than the bucket's length giving it an over square design. In addition, the top of the bucket is sealed by rubber, stopping the inflow of water into the bucket during bucket ascension. This reduces the loss of material from the bucket due to washout.

Conventional clamshells leave an uneven surface with potholes that can hold contaminants. Patented Level-Cut® technology creates a nearly flat rectangular cut, ideal for even removal of sediment. Contamination in waterways is typically limited to soft sediment. Cable Arm clamshells can "scrape" along compacted virgin sands, removing only the contaminated sediment resting on top.



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2022 WEDA Environmental Commission Meeting--Results



Meeting in Harris Room, Marriott Marquis, Houston, Texas
July 25, 2022 3:30 to 6:00 PM (CDT)

Introductions and meeting objectives were stated by Craig Vogt and Steve Garbaciak. Objectives included a presentation on WEDApedia, discussion of any needed changes to the Environmental Excellence Awards, hearing a status and call to action for WEDA TechNotes, discussion of a new initiative on how the dredging industry is contributing to resilience and sustainability, and identifying possible themes for next year's panel during the WEDA Summit in Las Vegas.

The Environmental Commission began in the mid-90's as a start to encouraging more positive discussions of environmental issues associated with dredging, hopefully to contribute to relieving the logjam of delayed dredging projects. Craig Vogt listed a few of the Commission achievements: EC started the website through Texas A&M; the goal has been to make WEDA the "go-to" resource for information about dredging. This has progressed through publications, webinars, courses (e.g., Dredging 101), meetings, and initiation of WEDA TechNotes. Annual panel discussions are conducted during each conference/summit on varying environmental topics. Environmental Excellence awards program was initiated in 2011. The commission has provided major contributions to WODA policy papers issued (e.g., Environmental Policy in 1998, Sustainable Dredging in 2012, and elements of climate change in 2016 and 2022.

WODCON Copenhagen recap. There was a very significant emphasis on sustainability, alternative fuels, reuse, and 'green' technology. Part of the ceremonies included an electric ferry boat ride. The Statement on Decarbonization of Dredging was provided and discussed with the team members. One of the papers on the Fehrbelt tunnel project provided a detailed report on the carbon emissions for each aspect of the construction, dredging being one major element. Craig Vogt thought this will be common practice in the future, which is beginning in Europe and will eventually come to WEDA territory. Craig will send the paper to the Commission email list.

WEDA 2022 Environmental Excellence Award: Nick Buhbe stated the current efforts. There were 9 total entries. One was not accepted since it was programmatic in nature. The remaining 8 were exceptional, with one that did not follow the award criteria. The Awards Team suggested sending that company a note to resubmit next year following the suggested



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2022 WEDA Environmental Commission

format and criteria. Since the awards program began, it has been increasingly difficult for certain projects to be slotted into the categories because the categories and projects have overlapping elements. For example, one was a reservoir dredging/water supply project which the existing categories did not address. Two others had navigation dredging and environmental dredging as their objectives.

Three ideas were discussed by the Awards Team and presented during the EC meeting:

The Mitigation/Adaptation to Climate Change category could be dropped and combined with the rating criteria in environmental or navigation dredging categories. Streamline the award criteria and keep the categories.

Lose the categories and only have one category and revise the ratings criteria such that the three best projects would receive awards (e.g., gold, silver, bronze).

A wide-ranging discussion followed. Thoughts included maybe add a ‘reviewers’ choice’ possibility. Another option would be to just provide an award to meet a threshold instead of ranking. Populate a panel with the winning papers (Craig Vogt mentioned that plans for this year’s winners were to hold a WEDA webinar in the Fall). Expand the criteria. Although having a ‘Gold’ would be desirable, a more general Green Star award for a project would also be acceptable. Have a minimum and maximum. Have the committee award 3 each year, or as many as committee selects. Concerns were expressed about dilution of the importance of the awards.

The commission membership queried the reviewers on the review process; and the group responded that the diverse backgrounds of the reviewers worked well in identifying exemplary projects, and that the process was working well. Also, the review process generally resulted in a binomial distribution: it is often easy to identify the ‘top tier’ of projects once all the projects have been independently reviewed and ranked. Nick observed that in some years, it is a greater challenge to elicit a sufficient number of applicants, as opposed to how to rank them. The conclusion: The Awards Team will meet in the early Fall to address the options and possibilities for the 2023 awards.

The Environmental Commission began in the mid-90’s as a start to encouraging more positive discussions of environmental issues associated with dredging, hopefully to contribute to relieving the logjam of delayed dredging projects. Craig Vogt listed a few of the Commission achievements: EC started the website through Texas A&M; the goal has been to make WEDA the “go-to” resource for information about dredging. This has progressed through publications, webinars, courses (e.g., Dredging 101), meetings, and initiation of WEDA TechNotes.

WEDA TechNotes. Kendall Brome, WEDA’s Fellow, provided a WEDA TechNotes Program progress report. Staci Goetz & Kendall will continue beyond Kendall’s fellowship. The program began in 2019 with a start of 8 topics that are currently drafted and in the process of being edited. The guidance and formatting documents have been drafted and provided to the authors. The original USACE notes have been reinvigorated and are undergoing additional editing as the documents are posted. Two TechNotes (i.e., Dredging and Engineering with Nature, Environmental Issues Associated with Dredging) have been posted on the WEDA website under Publications (<https://www.westerndredging.org/index.php/information/weda-tech-notes>).

The plan is to harvest the basic information for several TechNotes from Dredging 101 & Dredging 201. 3 identified so far and many more are possible. Courses 101 and 201 are being recorded today. This may be transcribed. The initial thoughts were that authors would be identified by the Environmental Commission and peer reviewers as well. That proved to be a challenge. As the WEDA Fellow, Kendall Brome along with Staci Goetz have taken the lead in preparing TechNotes; Environmental Commission members are now simply asked to be reviewers. Kendall will send a survey to EC attendees asking for members to step up to review a TechNote. Kendall will provide a list of duties for the reviewer, so they know the commitment level. Under the tutelage of Don Hayes, the review process is being standardized and streamlined.

WEDApedia. Carol Shobrook presented a progress report on WEDApedia. After a big effort by Judith Powers, Marsha Cohen, Madeline Lemings, and Carol Shobrook, WEDApedia is on the WEDA website (<https://www.westerndredging.org/wedapedia>). WEDApedia is a glossary of dredging terms and is expected to be an excellent dredging desk reference.

Credit goes to Paul Fuglevand for the idea to develop a mid-1990s unfinished USACE glossary of dredging terms into an updated and WEDA digital reference. It is a living document and there is a link on the website for suggestions for additional or modified terms. This will be an educational resource and available to all. Carol requested that EC members send photos to make the publication more readable. The WEDApedia Team received a WEDA Special Recognition Award during the Gala Dinner on Wednesday evening.

WEDA Climate Change Initiative. Craig Vogt presented a New Initiative for WEDA to be managed by the Environmental Commission- *How the dredging industry contributes to our community's resilience, sustainability, and adaptation in a changing environment.* The initial draft objectives include:

Showcase the dredging industry's actions in reducing greenhouse gas production and implementing other sustainable, day-to-day practices as they execute dredging and marine construction projects.

Showcase the use of dredged materials to boost carbon capture through the construction and enhancement of wetlands and marshes.

Present the dredging industry's activities that demonstrate how dredging has been and is evolving to meet new challenges, including protecting infrastructure along our shorelines and improving resiliency.

Showcase the dredging industry's contributions to bettering our world in the broadest sense, such as improving the supply chain, dredging for offshore wind farms, dredging for water storage and supply, and creating wetlands for enhanced ecosystem services.

Demonstrate the dredging industry's dedication to addressing environmental issues, and thereby attract young people wanting to have meaningful careers contributing to the overall good of society.

Extensive discussion was focused upon the objectives, the process, and what the product(s) would look like. Matt Binsfeld discussed how this is an important initiative for the dredging industry, as the career path for many new employees have a desire to work in an industry that is working to advance a cleaner environment (e.g., less greenhouse gases and carbon capture in enhancing wetlands). Matt noted that the dredging industry will be very involved in the windfarm industry.

What should be the focus and how to present the resulting material? Burton Suedel suggested using the UN 17 Sustainable Goals as a measure of progress in the dredging industry (<https://www.un.org/development/desa/disabilities/envision2030.html>). Various topics during the discussion included: Look at the way incorporate the circular economy to better characterize sediment from a nuisance to a resource.



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2022 WEDA Environmental Commission

Assess how WEDA member activities meet or contribute to targets. Who is the audience? Members? Others? How to define ‘what is sustainable.’ A paper? Annual report card? Have submittals for sessions on sustainability. Possibly a short course on the subject? How to be sustainable. Hold a workshop on the goals for a company (all day idea). What is in the report card and who assembles? Fold in the WODA 2016 and 2022 statements on climate change....what progress is being made to address elements in those statements?

A small group was identified to further develop the objectives and a scoping paper, led by Burton Suedel and Jason Raimondi with two other members, Marsha Cohen and Russell Hyatt.

There was a general discussion on the WEDA Website: How make it even more useful and/or to access information. Attendees were advised that if they see something or have an idea for the website, send a quick email to Tom Cappellino.

Steve Garbaciak was the moderator for the WEDA 2022 Environmental Commission Panel on the “Three Great Dredge Projects,” conducted Thursday morning during Plenary. The three projects had been submitted for the Environmental Awards and did not win, but the objective was to recognize that even the non-winners were great projects. During the Commission meeting, attendees were requested to attend and also to submit questions for the panel to encourage discussion.

Craig Vogt led the discussion on the WEDA 2023 Environmental Commission Panel discussion topics. Possible topics included showcasing Applicants for the Environmental Excellence Awards like this year or possibly something on the sustainability or the climate change initiative depending upon progress at that time. No topic was selected; attendees were requested to provide possible topics.

Alan Alcorn provided a list of follow-up and Action Items. Craig Vogt closed the meeting at 6pm.



Environmental Commission attendees were, front row, from left, Kendall Brome, Burton Suedel, Ancil Taylor, Craig Vogt, Alan Alcorn, Steve Garbaciak and Carol Shobrook.

Back row, from left, Jason Raimondi, Robb Webb, Mark Stroik, Todd Phillip, Lars Zetterstrom, Travis Merritts, Connor Lamb, Scott Douglas, Jtanner Wiens, Jamie Beaver, Matt Binsfeld, Andrew Timmis, Nick Buhbe, Corry Platt, and Joe Caryl. Photo by Judith Powers. <https://westerndredging.org/> ○

Brennan Acquires Dredging & Dewatering Division of IAI With Recent Purchase of Assets

February 6, 2023 — Specialty marine contractor J.F. Brennan Company, Inc. ([Brennan](#)) recently finalized the asset acquisition of the dredging and dewatering division of Infrastructure Alternatives, Inc. ([IAI](#)). The purchase brings dewatering, water treatment, and treatability testing services into the organization for the first time.

Environmental services account for 50% of Brennan’s work. By adding dewatering and water treatment to their offerings, it increases the accessibility of remediation services nationwide subsequently improving the quality of waterways and the environment.

“We are excited for IAI’s specialists to join the Brennan family,” says Vice President of Environmental Services [Greg Smith](#). “IAI has been a strategic partner for us on sediment remediation projects for decades. There is no doubt that their expertise in water treatment and dewatering will strengthen our ability to remediate contaminated sites across the country.”

IAI President & CEO Dana Trierweiler says, “J.F. Brennan Company has been a long-standing, trusted teammate of IAI for nearly two decades. We have complemented each other’s services on several successful projects together, and IAI is very proud of that. We’re confident that IAI’s former dredging & sediment dewatering team will be well taken care of at Brennan; they are true professionals.”

With the acquisition, Brennan welcomes 30 new team members in both union and non-union roles, along with a complete collection of dewatering and water treatment equipment. The company has invested heavily in dredging and sediment remediation services since the late 1980s.

“Now that we’re offering water treatment services in-house, our environmental remediation, restoration, and coastal resiliency clients will experience enhanced project scheduling and coordination, and even more competitive pricing,” says Director of Business Development [Andrew Timmis](#).

Michigan-based IAI has operated successfully since 2000. “IAI will continue uninterrupted, with a renewed sense of purpose and focus on the services that have been the bedrock of our company: contract operations, engineering, and mechanical support for water and wastewater utilities,” says Trierweiler

Team members making the transition from IAI to Brennan are anticipating future success as they merge their expertise with the Brennan team. “I look forward to bringing the full strength of our team’s water treatment and sediment dewatering capabilities to Brennan and working together to reach our professional and business goals,” says Senior Director Paul Stage.

Senior Business Development Manager [Randy Pit](#) says, “I am excited to work more closely with the people at Brennan and tackle new challenges with our combined strengths.”

Brennan’s acquisition of IAI’s dredging and dewatering division became final on February 1, 2023.

“Now that we’re offering water treatment services in-house, our environmental remediation, restoration, and coastal resiliency clients will experience enhanced project scheduling and coordination, and even more competitive pricing,” said Andrew Timmis, Director of Business Development, atimmis@jfbrennan.com, J.F. Brennan Company.

About J.F. Brennan Company

J.F. Brennan Company, Inc. (Brennan) is a fourth-generation, family-owned, marine construction firm that specializes in [environmental remediation](#), [dam construction](#), [commercial dive](#), [harbor management](#), and [submarine cable services](#). Working closely with public and private owners of water-based infrastructure since 1919, Brennan operates throughout coastal and inland waterways nationwide.

About Infrastructure Alternatives, Inc.

Infrastructure Alternatives, Inc. (IAI) provides contract operations, maintenance, and management services for water and wastewater utilities, for municipal governments, industries, and private communities in Michigan and Wisconsin. ○



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DEME subsidiary Global Sea Mineral Resources **receives Transocean investment**

Transocean, a global leader in the offshore drilling industry, has made a non-controlling investment in DEME Group's subsidiary GSR, through the contribution of an ultra-deepwater drilling vessel and cash investment. The vessel will be converted for a system integration test to explore the technical and environmental feasibility of recovering nodules in ultra-deepwater. The alliance will strengthen GSR's subsea experience and thereby contribute to its leadership position in the deep seabed minerals sector.

DEME Group NV (Euronext Brussels: DEME) today announced a strategic cooperation with Transocean Ltd. (NYSE: RIG) that brings together DEME's Global Sea Mineral Resources' ("GSR") leadership in ultra-deep-water mineral exploration and seafloor nodule collection technology with Transocean's world-class offshore expertise and capabilities.

As part of its investment, Transocean is contributing the vessel 'Ocean Rig Olympia' for GSR's ongoing exploration work, a cash investment and engineering capacity. In return, Transocean is receiving a minority stake, including a board seat, in GSR. Following the successful trial of GSR's pre-prototype seafloor nodule collector in 2021 at 4500m water depth, a key task ahead for GSR is a system integration test ("SIT"), scheduled for 2025. The SIT – for which the converted ultra-deepwater vessel shall be instrumental – will entail a trial of a full-scale seafloor nodule collector and riser to lift the nodules to the surface vessel and is part of GSR's step-by-step and precautionary approach to project and technology development as the company explores the feasibility of commercial operations.

"Transocean is a leader in the global offshore drilling industry and is well known for its ultra-deepwater expertise. We are proud to be working with them as we further explore the potential of deep seabed minerals, which may represent a better way of meeting future metal demand and expand diversity of supply. Critical metals, such as nickel, cobalt, copper, and manganese – found in polymetallic nodules – are key ingredients for a low-carbon future. Deep-seabed mining certainly won't replace land-based mining entirely, however, according to peer-reviewed scientific literature, these metals could be delivered with a 40% reduction of the carbon footprint, which is essential when combating climate change," said Kris Van Nijen, Managing Director of GSR.

Chief Executive Officer Luc Vandembulcke of DEME Group said: "Since the International Energy Agency reported that society will need six times more metals by 2040 to become a net-zero society in 2050, there have been many national initiatives to secure the necessary supply of raw materials. From the U.S. Inflation Reduction Act, the Australian & Canadian Critical Minerals Strategy to the EU Critical Minerals Act, society is now fully aware of the geopolitical and environmental risk of the clean energy transition. As a result, the development of marine minerals has gained considerable momentum to help supply the responsible minerals needed to meet demand due to increased population, urbanization, and transition to a clean energy future and circular economy. Both DEME and Transocean plan to play an important role in the development of a responsible deep seabed minerals sector."



Critical metals, such as nickel, cobalt, copper, and manganese – found in polymetallic nodules – are key ingredients for a low-carbon future

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Pacific Dredge & Construction in San Francisco Bay *with Richmond Inner Harbor maintenance*

Pacific Dredge & Construction continues to make a presence in San Francisco Bay with the Richmond Inner Harbor maintenance dredging project awarded by The US Army Corps of Engineers. Typically, this work is performed annually by mechanical dredging to minus 37 ft MMLW. Dredged material is discharged ashore or offshore at SF-DODS.

The work was composed of 10 different Reaches along the main channel. The purpose was to maintain a proper depth that would allow the safe transit of large vessels through the area. To successfully execute this project, PDC partnered with





subcontractor Manson Construction Co. that helped dredge a portion of the project. PDC dredge plant PDC180 was working 24/7 with an experienced crew that understands the mechanisms of the operations in the Bay Area. More than 390,000 yd³ were dredged during the course of this project.

During the project, PDC worked closely with the USCG and marine traffic due to the high volume of vessel traffic transiting the navigational channel. The strong winds and currents found in San Francisco Bay challenged their captains as well.

US Army Corps San Francisco District has stringent safety standards. PDC has not only met these standards, but exceeded them throughout the performance of this contract. PDC is always committed to minimizing exposure to risks by being preventive and proactive and are proud of their work in Richmond and look forward to future opportunities.

PDC dredge plant PDC180 was working 24/7 with an experienced crew that understands the mechanisms of the operations in the Bay Area. More than 390,000 yd³ were dredged during the course of this project.

<https://www.pacificmaritimegroup.com/> ○

Dredging Nebraska Public Power District Sutherland Reservoir

Plains Dredging of Kearney, Nebraska (NE) found themselves in a difficult position in early October when the dredge they rented was not performing properly at Sutherland Reservoir operated by Nebraska Public Power District. The project involved dredging fine sand and mud as well as intermittent baseball size chunks of wood and heavy patches of seaweed from a channel near Gerald Gentleman Station. The dredge cutterhead was not aggressive enough and the pump inlet was clogging every 15 minutes causing unnecessary downtime for the Plains Dredging field crew. Kenton Kabes of Plains Dredging reached out to IMS to find a fast solution to ensure they met their contractual obligation.



The channel noted in blue was successfully dredge with the IMS 5012 HP Versi-Dredge.

When Kenton of Plains Dredging reached out, he was clear that they needed a solution yesterday. They needed to increase solids performance, significantly reduce downtime due to pump clogging, and maintain better positioning in the channel on



IMS 5012 HP coming off the channel for the day.



windy days. IMS's patented Pump Defender®, Starwheel Drive®, and Traction Master® technologies were able to solve the problem," said Ryan Horton, Vice President, Ellicott Dredge Technologies, LLC.

Fortunately, EDT had a brand-new IMS Model 5012 HP Versi-Dredge® in stock and available for immediate delivery. The bank transfer was made on a Wednesday and the dredge was on site and ready to go with EDT Factory Field Service Technician, Rob Carufel, on site by Monday. EDT's ISO 9001:2015 certified factory was able to get the dredge discharge hoses, adaptor, and dredging GPS installed prior to shipment.

"The IMS 5012 HP is everything it was portrayed to be. We increased solids to 30% by volume, reduced pump system clogs from once every 15 minutes to once a week and increased our stability in the channel with the Starwheel Drive with Traction Master technology. IMS builds one hell of a machine," said Kenton Kabes, Plains Dredging.

This is Plains Dredging's second IMS Versi-Dredge. Their other unit is from the 1990's and is still operating regularly in lagoons around the Midwestern U.S. The 5012 HP Versi-Dredge adds versatility to Plains Dredging's operation with its one truck transportability, patented Starwheel Drive self-propulsion system, 22 ft. dredging depth, modern operator's cabin, and the patented Pump Defender which can reduce downtime in debris rich environments by up to 80%.

"The 5012 HP Versi-Dredge eliminated all the issues that Plains Dredging faced. They increased their cutter power by 117% with the SolidsMaster cutterhead, eliminated constant debris clogs with the Pump Defender, and drastically improved their ability to stay in the cut with the Starwheel Drive system," said Ryan Horton, Vice President, Ellicott Dredge Technologies, LLC.

For more information on self-propelled IMS Versi-Dredges please contact EDT Sales at versidredge@imsdredge.com or call 913-642-5100. Also, visit www.imsdredge.com. For more information on Plains Dredging and their dredging services offered in Nebraska, Kansas, Iowa, Missouri, Colorado and more please visit www.lagoondredging.com.

Ellicott Dredge Technologies 1750 Madison Ave., New Richmond, WI 54017, See ad on pg. 13 ○

Boskalis wins EUR 120M development and climate contract -

Gulhifalhu, Maldives

Boskalis has acquired a contract from the Ministry of National Planning, Housing and Infrastructure of the Republic of the Maldives relating to the further development including climate adaptive measures of Gulhifalhu. The contract carries a value of approximately EUR 120M. This project concerns the second phase of the expansion of the island of Gulhifalhu for which Boskalis also executed the first phase in recent years.

The development of Gulhifalhu, which is located approximately 4 km from the capital Malé, is part of the Ministry of National Planning, Housing and Infrastructure's strategic plan to improve and develop the port infrastructure, and will serve as a climate adaptive solution, making this part of the Maldives resilient to rising sea levels. For the second phase of the island's expansion, Boskalis will deploy a large trailing suction hopper (TH) dredge to reclaim new land using approximately 18M m³ of sand. Boskalis' activities also include rock revetment work for shoreline protection.

To manage the environmental impacts of the dredging and land reclamation activities, a comprehensive environmental impact assessment was conducted in accordance with the highest international standards. To mitigate possible adverse effects, Boskalis is implementing various measures, including coral relocation and measures to limit the spreading of sediments in the water in combination with regular monitoring of the water quality.

Over the past two decades, Boskalis has successfully executed several climate-adaptive dredging and land reclamation projects in the Maldives, including reconstruction work on the islands of Vilufushi and Villingili following the devastating tsunami in late 2004 and the initial development of Gulhifalhu in 2010 and 2012. In addition, Boskalis was responsible for the successful execution of the first phase of the expansion of Gulhifalhu in 2019 and 2020.



Boskalis is a leading global services provider operating in the dredging, maritime infrastructure and maritime services sectors. The company provides creative and innovative all-round solutions to infrastructural challenges in the maritime, coastal and delta regions of the world. With core activities such as coastal defense, riverbank protection and land reclamation Boskalis is able to provide adaptive and mitigating solutions to combat the effects of climate change, such as extreme weather conditions and rising sea levels, as well as delivering solutions for the increasing need for space in coastal and delta regions across the world. The company facilitates the development of offshore energy infrastructure, including renewable wind energy. Boskalis is furthermore active in the construction and maintenance of ports, waterways, access channels and civil infrastructure, thus helping to facilitate trade flows and regional socio- economic development. In addition, Boskalis is a global marine salvage expert and has a strategic partnership in terminal services (Smit Lamnalco). With a versatile fleet of more than 500 vessels and floating equipment and approximately 10,000 employees, including associates, Boskalis is creating new horizons around the world. boskalis.com ○

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