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turnkey solution enables manufacturer to focus on production

Minnesota Diversified Industries makes plastic totes and other products at its Grand Rapids facility. The company takes pride in its inclusive workforce and employs people with disabilities. In March, MDI wanted to upgrade outdated controls to improve the efficiency and reliability of one production line. It selected Barr to manage the project and provide engineering, procurement, and construction-related services.

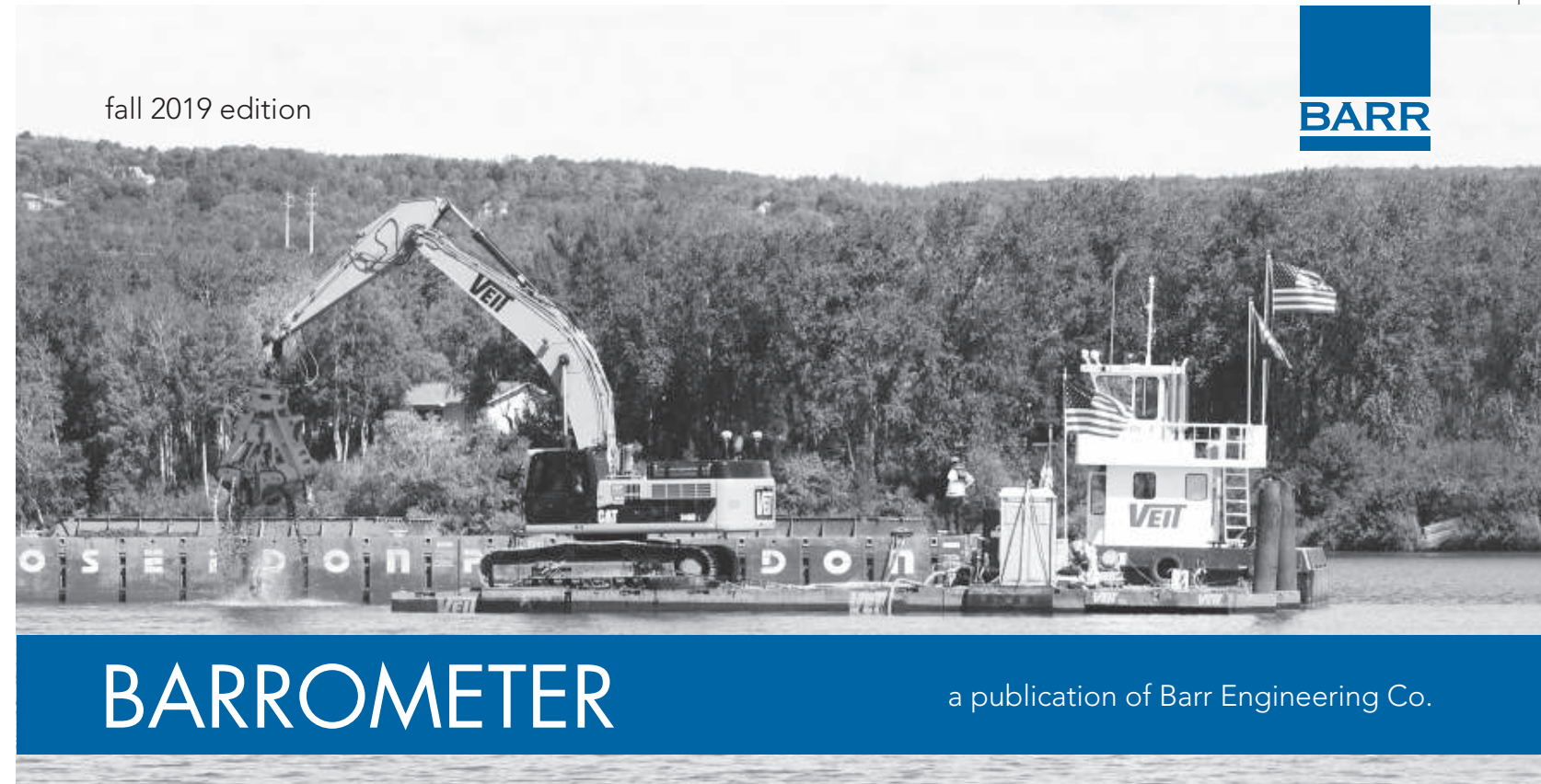
We designed new control systems for extruding machinery on the facility's Line 1, including new programmable logic controllers and human-machine interfaces, and upgraded the system's central-control software. We also procured the equipment, managed demolition and retrofit installation, and oversaw startup and commissioning. The new control systems have been up and running since August.

Implementing a turnkey solution enabled MDI to make critical process improvements while staying focused on production. For more information about Barr's electrical

engineering and EPCM services, contact Joe Vespa at 218.262.8622 or jvespa@barr.com. ■



MDI employees monitor the drive and control panels that replaced four display panels and over 80 push buttons, improving reliability and efficiency.



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Barr developed the restoration design and will provide construction administration and observation to restore shallow bays in the St. Louis River estuary degraded by historic wood waste and excess sediment. The project is funded in part by the Great Lakes Restoration Initiative, Minnesota Outdoor Heritage Fund, and St. Louis River/Interlake/Duluth Tar Superfund site natural resources damages settlement.

a balanced habitat restoration

In 2013, the Minnesota Department of Natural Resources prioritized sites in and around the St. Louis River for habitat restoration. The agency combined the Grassy Point and Kingsbury Bay sites into a single project that will restore 240 acres of fish and wildlife habitat. Combining these sites in northern Minnesota has required not only an intricate material balance but also striking a balance between stakeholders' interests and the project budget.

As DNR's engineering consultant for the project, Barr began working with stakeholders in 2017 to design a project that includes dredging, island building, and thin-layer covers to restore habitat in 13 restoration-site units. Reusing material within and between project areas has been critical in making best use of restoration funds.

Now more than 100,000 cubic yards of 1800s-era sawmill waste at the bottom of Grassy Point is being used to expand an island and create a shallow, sheltered bay. Another 100,000 cubic yards of organic-rich sediment from Kingsbury Bay is being dredged to create deeper-

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treating water to reduce emerging contaminant levels

1,4-dioxane is found in substances ranging from paint strippers, dyes, and antifreeze to cosmetics, shampoos, and detergents. When New Brighton, Minnesota, detected the compound in its water-treatment-plant effluent at concentrations above the health-based value set by the state's Department of Health, it looked to Barr for assistance.

In the late 1980s, Barr had designed the city's original water-treatment plant to remove chlorinated solvents found in groundwater. The discovery of 1,4-dioxane meant additional treatment was required. We evaluated treatment technologies and recommended pilot testing two advanced oxidation process (AOP) treatment systems. A pilot study showed that both systems reduced 1,4-dioxane to target limits—but one produced undesirable byproducts and proved more complex to operate.

We then designed full-scale treatment plant modifications and provided civil, structural, process, and electrical

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river crossing creates challenges for pipeline realignment

Pipelines, railroads, power-transmission corridors, and roadways in some locations inevitably intersect unstable terrain that could slide, subside, or fail. Geohazards resulting from things like seismic activity, erosion, and extreme weather threaten the integrity of infrastructure at or below the surface in these areas.

When one of our clients discovered that a section of its pipeline had become exposed and unsupported at a river crossing, it hired Barr to provide design engineering and environmental services for a replacement. The pipeline design needed to protect the adjacent, unexposed sections and minimize the need for future maintenance.

We completed a geotechnical subsurface investigation, surveying, and hydraulic modeling to inform construction, site layout, and pipeline alignment. Because the replacement required blasting into deep layers of rock, we also conducted a rock-blasting analysis to determine how to open up the replacement area without damaging adjacent infrastructure.

habitat restoration, continued from page 1

water habitat and then placed at Grassy Point to provide a fertile benthic environment.

Barr conducted dredge-elutriate testing to evaluate whether the dredging and reuse process might release contaminants from the wood waste.

Construction is expected to be completed in December 2020, and Barr is currently providing construction administration, engineering, and quality control. For more information, contact Ben Meemken at 952-832-2986 or bmeemken@barr.com. ■



Restoring Grassy Point involves removing piles of scrap lumber left behind from Duluth sawmills over a century ago.

The new pipeline alignment travels across an environmentally sensitive waterway that is home to a fish on the federal list of threatened species. Our team developed measures to minimize impacts to the fish and its habitat and worked with regulators on approvals for the work, which was completed in 2016.

To learn more about Barr's geohazard services, contact Heather Lewis at 573-638-5006 or hlewis@barr.com or Rob Olah at 218-529-7165 or rolah@barr.com. ■



Barr provided engineering design and environmental support for a pipeline replacement traveling through a rocky subsurface and across a river that is home to a federally protected fish species.

emerging contaminant levels, continued from page 1

engineering services as well as construction administration and start-up assistance. New Brighton's AOP treatment system went online in late 2018 and 1,4-dioxane concentrations in the city's water are well below health-based limits.

For more information about water treatment services, contact Julia Macejkovic, PE at 952-832-2693 or jmacejkovic@barr.com. ■



Barr provided engineering design and construction administration for the City of New Brighton's advanced oxidation process treatment system.

new at Barr

in Duluth

Amy Wolcott, PE, recently joined Barr as a senior environmental permitting specialist with a decade of experience on projects involving water supply, distribution, and treatment, as well as wastewater collection and treatment. At Barr, she supports large environmental compliance and permitting projects for fuels pipeline clients across the U.S. Midwest. Her work includes conducting environmental reviews, communicating with regulatory agencies and client contacts, developing and reviewing environmental permit applications, leading environmental review and permitting teams, coordinating field inspections, and reviewing field reports. Contact Amy at 218-788-6383 or awolcott@barr.com.



in Hibbing

Senior mechanical engineer **Jesse Aultman, PE**, joins Barr with 10 years of experience, primarily in iron mining and processing operations. He has managed engineering, planning, scheduling, contracting, procurement, and construction of new process equipment tie-ins and systems along with plant infrastructure restoration projects. At Barr, Jesse provides project engineering and management for multidisciplinary teams serving clients with mining, fuels and natural gas, power generation, and other heavy industrial facilities. You can contact him at 218-262-8698 or jaultman@barr.com.



in Minneapolis

Nick Vosberg is a senior geotechnical engineer specializing in work for the mining and metals industry. He has managed geotechnical and rock mechanics projects related to slope stability monitoring, slope-depressurization design and drilling, stormwater-runoff design and implementation, highwall failure remediation, and open-pit slope design. His work also includes developing ground-control-management and trigger-action-response plans. At Barr, Nick will focus on geotechnical investigations and instrumentation. He can be reached at 952-832-2751 or nvosberg@barr.com.



in Salt Lake City

Senior civil engineer **M. Shaun Boone, SE, PE**, joins Barr with nearly 20 years of civil design, contract administration, and project and construction management experience. His design projects have included site and railyard layout, material handling systems, site utilities, buildings and structures, and mine infrastructure-planning and reclamation. Shaun has also provided federal and state agency permitting support. He served as a senior project engineer and contracting officer's representative with the U.S. Army Corps of Engineers at Camp Williams in Bluffdale, Utah. At Barr, Shaun will focus on rail design, other civil engineering work, and project management. Contact him at 801-333-8442 or sboone@barr.com.



Robert Pack, PhD, PE, PEng, PGeo

has consulted as the primary technical investigator or engineer on over 300 projects involving geological, geomatics, and geotechnical engineering. He joins Barr as a senior geotechnical engineer with more than two decades of experience on projects for the mining, construction, and forest industries in the United States and western Canada. Robert also spent nearly 15 years as an associate professor at Utah State University and holds three patents related to imagery and LIDAR data. In addition, he developed SinMap, slope-stability software used worldwide. Robert can be reached at 801-333-8412 or rpack@barr.com.



returning to Barr

Adam Driscoll, PE, returns to Barr as a senior air-quality consultant after three years in 3M's corporate environmental-operations group. He was with Barr for eight years before joining 3M. Adam will apply his regulatory knowledge, recent industry experience, and consulting background to help clients develop strategies for environmental permitting and compliance.

