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Infrastructure White Paper

The declining condition of America's waterborne infrastructure has been well documented within the agricultural community, though it has not received the attention it deserves in wider circles.

In October of 2012 six members of the American Farm Bureau Board of Directors completed a tour of several critical points in the water commerce of the U.S. We visited St. Louis to see the inland waterway system and New Orleans to better understand the situation in America's deep water ports. But perhaps the most impactful stop on our tour was the visit to Panama City, Panama. There we had the opportunity to visit the effort underway to expand the Panama Canal. It was a scene where real infrastructure investment is being made – and paying off.

The agricultural community uses the inland and ocean transportation network extensively to serve its global customers. Worldwide, U.S. agriculture is known for its high standards, quality, and the efficient movements of its goods to customers all over the globe. This paper is intended to provide background information about the importance of America's maritime infrastructure to U.S. agriculture and its export competitiveness. It also intended to be a call to action.

Importance of Ocean Ports to Agricultural Trade

U.S. ports and the maritime industry offer agricultural shippers and exporters access to a vast global marketplace. A major catalyst behind stronger farm income over time has been the strength of U.S. agricultural exports. As a share of total gross farm receipts, U.S. agricultural exports accounted for more than 30 percent of earnings in 2012. Forty years ago, that share was less than 15 percent. Increased global interdependence among trade nations has been one of the keys to rising farm incomes, but it has also placed additional demands on our ports and the end-to-end delivery system of imports and exports.

U.S. ocean ports provide the gateway for an estimated 70 percent of U.S. agricultural exports and 60 percent of agricultural imports. Through those ports U.S. farmers and ranchers export a wide variety of products.

Through bulk shipments, America's farmers send international customers familiar products like corn and soybeans, or grain products such as flour and oil, soybean products such as oil, animal feed, rice, and poultry. But they also send products that do not come to mind as quickly, such as: tallow, canned food, fruits and vegetables, as well as fish and molasses among others. In terms of volume, more than 80 percent of waterborne agricultural exports in 2007 were moved in bulk.

But there has been a rising shift in the form of those agricultural exports. Through containerized shipments, America's farmers and ranchers send international customers an even wider variety

of products ranging from high-value specialty items such as fruits, vegetables, nuts, meats, dairy products, and beverages to items formerly exclusively shipped in bulk, like soybeans and grains.

The improvement and use of containers has allowed U.S. agriculture to export products in new and unique ways. Containers allow small and medium sized enterprises (SMEs) to participate in trade in ways that were previously only available to large grain trading companies. Containers allow SMEs to supply relatively small amounts of product to buyers and service small niche markets. In fact, some agricultural products, such as food preparations, food grade soybeans, cotton, and frozen poultry, use containers extensively to reach export markets. In terms of volume, nearly 20 percent of waterborne agricultural exports in 2007 were moved in containers.

In order to export such a wide variety of products, U.S. farmers and ranchers rely on ports from coast to coast. Port specialization differs with commodities. For example, waterborne containerized poultry exports are moved mostly through East and Gulf Coast ports due to the dense production of poultry in the southeastern portion of the country. More than 80 percent of the waterborne containerized grain exports moved through the West Coast ports of Los Angeles/Long Beach and Seattle/Tacoma. According to USDA's Grain Inspection, Packers and Stockyard Administration data, 57 percent of the U.S. export grain shipments departed through the U.S. Gulf region in 2008.

Waterborne agricultural import traffic on the other hand is concentrated on the East Coast. The top 10 import ports for U.S. waterborne agricultural trade by tonnage are: New York (19%), Los Angeles (7%), Long Beach (6%), Philadelphia (5%), Wilmington (5%), Houston (5%), Oakland (4%), Norfolk (4%), Savannah (3%), and Baltimore (3%).

The top 10 export ports for U.S. waterborne agricultural trade by tonnage are: South Louisiana (21%), New Orleans (17%), Tacoma (6%), Kalama (6%), Seattle (5%), Houston (5%), Portland, OR (5%), Westwego (5%), Los Angeles (3%), and Vancouver, WA (3%).

Importance of the Inland Waterways System to Agricultural Trade

It is imperative to understand that for U.S. agricultural exports to be successful the entire port system needs to be in top working order, not just parts.

A well maintained, high functioning port system is vital to agricultural trade, however, it is worthless without a means by which to transport product from the point of production to the point of export. Most agricultural products are not produced near these centers of transportation and trade. As a result, the system of inland waterways as well as our marine ports plays a vital role in both the domestic and international transportation systems.

The U.S. depends heavily on the Inland Waterway System for its growing export markets, especially agricultural products. Top bulk commodity export products like corn and soybeans are heavy as well as having a large volume. Sales are made in large quantities, making the inland waterway system the most effective means of transportation. Transportation by other methods, such as rail or truck, requires more transits due to weight limitations. Additional transits in smaller quantities leads to additional handling, which can have a negative effect on product

quality and add to the cost of transportation. Much of the Midwest grain and crop production can only competitively enter world markets by ship transportation through the inland waterway system.

The Inland Waterway System allows grain to be shipped efficiently and thus cost effectively. A study commissioned by the American Society of Civil Engineers found that the inland waterway system provides an average transportation savings of $10.67 per ton over the cost of shipping by alternative modes. As such it comes as no surprise that a recent USDA study, *Transportation of U.S. Grains, A Modal Share Analysis, 1978-2010 Update*, found that barges moved 45 percent of all grain exports in 2010. More specifically, barges moved 57 percent of corn, 47 percent of soybeans, 26 percent of wheat, and 7 percent of sorghum to ports. Additional studies have shown that without barge competition, agricultural shippers pay higher rail transportation costs, the farther they are from an inland waterway. It is for these reasons that in 2010, eighteen percent of all agricultural products moved via the inland waterway system.

But the usage of the Inland Waterway System for exports is only part of the story. American agriculture, like the rest of the country, relies heavily on products like petroleum, fertilizers, chemicals, coal, sand, gravel and stone that travel on the inland waterway system. These products are important inputs to agricultural production. Like grains, many of these products are heavy, bulky, or otherwise difficult to move by other means of transportation. By keeping the costs of transportation competitive, inputs are more competitive and thus U.S. agriculture is more competitive.

Forty-one states, including all states east of the Mississippi River and 16 state capitals, are served by commercially navigable waterways. The U.S. inland waterway system consists of 12,000 miles of navigable waterways in four systems—the Mississippi River, the Ohio River Basin, the Gulf Intercoastal Waterway, and the Pacific Coast systems—that connect with most states in the U.S.

A Weakening System

Clearly, U.S. agriculture's current and future success in international trade is tied very closely to well functioning ocean ports and Inland Waterway System. Unfortunately, when the American Farm Bureau Board of Directors toured these systems in 2012, we saw first-hand how failure to invest in U.S. waterborne infrastructure is handicapping our success.

In St. Louis, we learned that forty-seven percent of the 257 locks that comprise the Inland Waterway System are classified as functionally obsolete. On average, federal locks are 60 years old. When they were built they had a 50 year expected lifespan. Sadly by 2020, more than 80% of American locks will be functionally obsolete.

A recent article in *the Economist* noted that "the extended failure of a single crucial lock could cost agriculture exporters up to $45 million and barge operators as much as $163 million. But inadequate locks delay ships not just when they break, but by their design. The Industrial Canal lock, for instance, is half the size of a modern one, which means that barges transiting in convoy need to be broken up. That boosts costs to the shipper, and, ultimately, the consumer as well."

However, according to the American Society of Civil Engineers, "the greatest threats to the performance of the inland waterway system are the scheduled and unscheduled delays caused by insufficient funding for operation and maintenance needs of locks governing the traffic flow on the nation's inland system. A total of 90 percent of locks and dams on the U.S. Inland Waterway System experienced some type of unscheduled delay in 2009. According to the U.S. Army Corps of Engineers, maintaining existing levels of unscheduled delays on inland waterways, and not further exacerbating delays, will require almost $13 billion in cumulative investment needs by 2020, and an additional $28 billion by 2040. Current funding levels can support only $7 billion by 2020, and an additional $16 billion by 2040. Roughly 27 percent of these needs entail the construction of new lock and dam facilities, and 73 percent are estimated for the rehabilitation of current facilities."

Currently, the Corps has $180 million per year available for lock repairs—half comes from the Inland Waterway Trust Fund (IWTF) revenues and half comes from congressional appropriations. With an average rehabilitation cost of $50 million per lock, the current level allows the Corps to fully fund only two or three lock projects each year.

In New Orleans, we learned that many commercial ports are making private and public investments to improve their facilities. Frankly, the U.S. government is not holding up their end of the investment bargain. Most major ocean ports in the United States are making improvements to alleviate congestion at the ports and improve landside infrastructure. According to the American Society of Civil Engineers port authorities are planning on spending a combined $18 billion through 2016 on infrastructure improvements for water terminals, while their private-sector terminal partners anticipate spending a combined $27.6 billion for a total of nearly $46 billion.

Unfortunately for these forward looking ocean ports, maintenance of existing navigable channels and waterways and the ability to accommodate the increasing size of cargo vessels requires dredging, a portion of which is legislatively required to be funded by the public sector through Congressional appropriations to the U.S. Army Corps of Engineers. For these ports, dreams of expansion are put on hold as they wait out funding delays that hamper maintenance dredging. As they wait, silt and sediment pile up, clogging the channel floor, forcing ports to limit the weight of entering vessels and cramping its business.

Because the amount of money a port receives to clear mud and silt from its channels can change, it leaves port authorities dependent on the annual allocation process and on yearly surveys by the Corps to gauge the depth of all federal navigation channels. Insufficient funding also makes it impossible to maintain most federal navigation channels at their authorized and required dimensions. According to the American Association of Port Authorities, today, the busiest 59 U.S. seaports are dredged to their authorized channel depths only 35 percent of the time, and far fewer channels are dredged to their authorized widths.

In Panama, we saw firsthand that while United States' federal investment in its waterborne infrastructure is trending downward, countries like Panama are committing billions of dollars to modernize theirs. A massive expansion of the Panama Canal is expected to have a dramatic

impact on the global shipping industry. It is an impressive project from both an engineering as well as a policy perspective. The $5.25 billion project was passed by referendum in October 2006 and is slated to be completed in the spring of 2015. In less than ten years, the government and people of Panama will have started and completed a project that will double existing canal capacity and allow transit for vessels with three times the cargo. We have domestic locks that require almost that long for jut the environmental studies .

We learned from international shippers that Panama is not alone. Ports in the Bahamas, Jamaica, Chile, Peru, Brazil, Colombia and the Dominican Republic are acting quickly to deepen their navigation channels and improve harbor facilities in order to accommodate the larger ships that will now be able to move through the wider, deeper canal. Shippers conveyed to us that they were concerned U.S. ports would not be up to the challenge.

Failure to Act - Impacts on Agriculture

Waterborne transportation facilities are critical to the health of the agricultural economy, enabling the importing and exporting of goods. Today and increasingly into the future, growing economies in developing countries demand U.S. agricultural exports. U.S. agriculture is up to the challenge, but chronic underinvestment in our waterborne infrastructure causes us to question whether our aging system will cause us to become uncompetitive.

The challenge to the marine transportation system lies in the projected growth of the nation's international trade, and the ability of the marine, highway, and rail systems to accommodate the increased volumes of freight shipments so vital to our nation's continued economic growth. The U.S. Department of Transportation projects that trade volume for marine ports will double by 2021, and double again shortly after 2030. Increasing agricultural trade is expected to be a large part of that increase. As trade volumes increase, the capacity of America's waterborne infrastructure system must increase in order to maintain and expand the nation's economy.

A key challenge for marine ports in the United States, particularly on the East and Gulf Coasts, will be their ability to handle the large post-Panamax cargo ships, designed to fit through the expanded canal. These vessels are 40% longer, 64% wider and have more than 2.5 times the cargo capacity of the current Panamax vessels. American agriculture will have the capacity to export considerably more product per shipment, but only if ports have the channel depths, channel widths, turning basin size, sufficient bridge heights, and port support structures such as dock and crane capacity to off and on-load goods.

U.S. West Coast ports at Seattle, Oakland, Los Angeles and Long Beach are all considered post-Panamax ready. Things are more limited on the East Coast with only three ports ready for the big boats: New York, Baltimore and Norfolk. However, in the Southeast and Gulf of Mexico, it is unlikely that any of the harbors will be ready to dock the big ships which require 50 feet of depth when the expanded canal opens for business. Yet these are the very regions that are geographically positioned to potentially be most impacted by the expected changes in the world fleet. For U.S. bulk agricultural exporters, who often compete on the basis of very narrow margins, this could be disastrous.

Lack of adequate draft for the post-Panamax ships in the U.S. Gulf region means that shippers will be faced with draft restrictions, which reduces the total number of tons that a vessel can carry. Based on industry standards, each foot of draft lost results in the loss of 2,400 tons for a Panamax vessel. This is equivalent to losing capacity to ship more than 85,700 bushels or 578 acres of corn, or losing more than 80,700 bushels or 1,900 acres of soybeans. With the increasing size of post-Panamax ships the average load and therefore the potential loss is likely to increase. However, what will not decrease is the total cost to sail the vessel, which means that the cost of ocean transit per ton will increase. Thus, it is quite likely that American producers faced with higher transportation costs will lose markets to foreign competitors.

Further, even if the ports in the Gulf of Mexico and East Coast dig deeper channels to handle the post-Panamax ships, it is very questionable as to whether or not the Inland Waterway System will be able to handle the additional quantity of grain? F*rank Lessiter of "No-Till Farmer" magazine points out* that "with the majority of Upper Mississippi River locks being only 600 feet long and limited capacity to handle more shipments, makes [one] wonder how beneficial the new Panama Canal will be for U.S. grain exports."

Time to Act

In 2010, President Obama launched the National Export Initiative, with the stated goal of doubling U.S. exports by 2015. U.S. agriculture is up to the task, but in order to do so we need to address this chronic underinvestment in waterborne infrastructure.

The American Society of Civil Engineers estimates that "in order to accommodate anticipated growth in trade and domestic waterborne traffic, total public investment will exceed $30 billion by 2020. This includes both navigational dredging and operation and maintenance needs for both marine dredging and inland waterways and marine ports. It does not include private sector investments to improve the port facilities themselves or improving connections to surrounding roads and rail systems to reduce congestion experienced by trucks entering and exiting port facilities. By 2040, these needs are expected to reach $92 billion. The U.S. will be left with a funding gap of nearly $46 billion if current investment trends continue, based on the annual budgets for navigational purposes that have historically been appropriated to the U.S. Army Corps of Engineers by Congress."

There is an old Chinese proverb that seems relevant to this discussion. "The best time to plant a tree is twenty years ago. The second best time is now." Twenty years ago we did not make changes to avoid woeful underinvestment in waterborne infrastructure, but that does not mean that we should put off making the right decision just because it might have been better to make that decision a long time ago. Today we can. Today we should. Our success depends upon it.