The Feasibility of Containerization in The Great Lakes St. Lawrence Seaway System

Nick Edwards

Bemidji State University

Introduction

The use of waterways to transport goods has always been a staple of civilization dating back to some of our earliest days. And throughout history it has always played a pivotal role in our economies and affected the very way in which our civilizations developed. Perhaps one of the world's most important waterways is the Great Lakes that lie directly in the heart of the North American continent and connect the heartland of North America to the Atlantic Ocean. Thus, providing a vital mode of transportation for shipping a variety of products from North America's heartland to the rest of the world. The Great Lakes are also strategic for the transportation of domestic products, providing a way for producers to move goods from state to state without relying on truck or rail transportation. Around the rest of the world, it is no different as global trade has become an increasingly more important part of our daily lives. This has only become more true with the introduction of containerization, something that has revolutionized the shipping industry and brought about a dramatic change. The result of that is that shipping using the world's oceans and waterways has become increasingly more important than ever before. Furthermore, the revolution that containerization has brought about has led some to ponder the possibility of introducing container shipping into the Great Lakes. Well, this may be an intriguing possibility as it could bring new found economic advantages, one must first ask what is the true feasibility of introducing containerization into the Great Lakes. Even if it were to be introduced would it truly be able to serve in an effective manner and operate in the same manner as containerization has around the rest of the world.

Containerization

Since the earliest days of shipping one of the greatest challenges has always been how to load and store cargo in the most time and cost-effective way. In 1956, all of this was changed

when an entire new way of shipping was introduced to the world. It was in 1956, that American businessman Malcom Mclean loaded the first standardized containership in the Port of Newark, NJ bound for Houston, TX. Like many great innovative leaps before, the advent of containerization was met with criticism at the time but would later come to mark the beginning of a revolution in global trade that today affects the very way in which we live (Floyd, Roach, Taylor, 2009, p.50). It is no wonder why the advent of the containership has been credited as a catalyst for the growth in global trade that the world has seen in the last 60 years (Floyd, Roach, Taylor, 2009, p.50). While not all ports have been able to reap the benefits of containerization, it has helped to expand global commerce through a reduction in prices and increases in efficiency (Floyd, Roach, Taylor, 2009, p.50). In the second half of the 20th century the use of standardized cargo containers transformed surface freight transportation and global commerce with the introduction of the twenty-foot equivalent unit (TEU) (Donovan, 2004, p.10). Containerization, like most significant innovations, was not the result of scientists or professionals from other fields, instead it was thanks to industrial practitioners. The pioneers of containerization were transportation managers and engineers, who believed that using containers would reduce freight costs for the businesses in which they were working (Donovan, 2004, p.10). It is important to recognize that in the 1950s, when trailer-truck-sized steel boxes packed with general cargo were first hoisted aboard ocean-going ships, most maritime veterans were convinced this costly experiment would fail. Experience proved them wrong, but their doubts were not unreasonable (Donovan, 2004, p.10)

After all fifty years ago, no one anticipated that surface freight transportation was about to undergo a major revolution, nor did anyone foresee that using containers would radically change the way goods are produced, distributed and sold worldwide. How did it happen?

(Donovan, 2004, p.10). The introduction of containerized shipping did not just revolutionize how we transport cargo, in addition this innovation also led to a steep drop in the cost of transportation of cargos around the globe (Donovan, 2004, p.10). In the centuries prior to the development of containerization, moving general cargoes across oceans cost roughly 10 to 15 percent of the retail value of the goods carried (Donovan, 2004, p.13). Meaning that selling goods to the global market came at a huge cost, and often meant foreign goods were unable to compete in domestic markets. These "break bulk" cargo ships spent a week or more in every port they served, and port costs accounted for roughly half the total operating cost of a voyage (Donovan, 2004, p.13). These losses were only further compounded during the loading and unloading process, valuable cargo such as whiskey and coffee often ran as high as 30 percent (Donovan, 2004, p.13). Meaning that prior to the introduction of containerized shipping global shipping was incredibly inefficient for both consumers and producers. Veterans in the maritime shipping industry have long said that containerization was the first significant improvement in "break bulk" cargo handling since the time of the Phoenicians (Donovan, 2004, p.13). Signifying just what a revolution containerization was, and how it helped to create the world we know today. Today the cost of shipping goods in containers is between one and two percent of retail value, 90 percent less than before containerization (Donovan, 2004, p.13-14). Loading and unloading are fully mechanized, which has dramatically reduced labor costs, ship time in port, total transit time and losses due to breakage and theft (Donovan, 2004, p.14). Collectively signifying just as important the introduction of containerized shipping has been, and how it has affected the world. The revolution that has been created by container shipping when it comes to the transportation of goods can be compared to what the telephone and the internet have done when it comes to the sharing of information (Donovan, 2004, p.13)

The development of containerization has undoubtedly not only had a drastic impact on the shipping industry. It also has had an impact on the global economy and consumer markets, and the 21st century shows signs of slowing down. Throughout the 21st century, containerization and container ports have continued to grow throughout the world (Floyd, Roach, Taylor, 2009, p.50). The largest container port in the world is the port of Shanghai, which set a world record moving more than 40 million TEUs in 2017. In addition, the ports at Singapore and Shenzhen each handle more than 25 million TEU's annually (Floyd, Roach, Taylor, 2009, p.50). New cargoes are constantly being added to the list of goods that can be containerized, and because containers can be transferred from ships to trains to trucks that can be sent virtually anywhere (Donovan, 2004, p.14). And today as industrial production is widely distributed rather than concentrated, and sub-assemblies and semi-finished components are routinely shipped in containers across borders and oceans container shipping only continues to play a great role (Donovan, 2004, p.14). This has led some to believe that as a result of containerized shipping the age of mass production has come to an end (Donovan, 2004, p.14). For inland containerized transport, three issues are of particular relevance. One is port regionalization, which implies a more efficient maritime/land interference. A second concerns a new generation of inland terminals that will improve the productivity, efficiency, and throughput of inland distribution. A third one involves the container itself in terms of new specifications and more advanced forms of management (Notteboom, Rodrigue, 2009, p.7-8). And, if these issues with inland container shipping can be addressed it could expand the reach of container shipping. Resulting in increases in the efficiency of transportation and production methods.

In 2009, two possible scenarios were developed for predicting the growth of containerization in the near and distant future (Notteboom, Rodrigue, 2009, p.10). The first

scenario entailed an ongoing growth of international trade at a rate similar to what took place in the last decade. This would culminate with peak growth being reached around 2010 and be followed by a maturation of containerization. This would imply intensive deregulation in ownership, particularly over inland transportation, with further consolidation as well as rapid terminal development, at least doubling the capacity of most existing ports. This scenario, which assumes the doubling of container traffic between 2005 and 2015, raises serious questions concerning the amount of intermodal and modal infrastructures that would need to be brought online and the tremendous stress these volumes would have on inland transport systems and on the environment (Notteboom, Rodrigue, 2009, p.10). The low range scenario, a divergence, would entail a significant global recession where North American and European consumption suffers a setback. It is also linked with protectionism (particularly toward China) and higher energy prices. Although it tends to reflect an extremely negative economic environment, it could also take place in a context where the comparative advantages behind the push toward globalization that have prevailed until recently, are much less valid. Thus, a restructuring of manufacturing toward a more regional base can take place with lesser average distance involved for commodity chains (Notteboom, Rodrigue, 2009, p.10). Based on these two predictions and the large quantities of freight that is being shipped through the ports of Shanghai, Singapore, and Shenzhen, it should be concluded that there has been a continued growth in containerized shipping.

Great Lakes St. Lawrence System

The Great Lakes have a storied history of transportation stretching back hundreds of years. From the fur trade to the lumber trade, to the iron and copper booms of the 19th century (Floyd, Roach, Taylor, 2009, p.50). Stretching from Montreal, QC in the east, to Duluth, MN in

the west, the waterway spans 2,342 miles (Floyd, Roach, Taylor, 2009, p.50). Physically, the Great Lakes St. Lawrence Seaway System (GLSLS), consists of an interconnected system of locks located at 16 different sites, four major navigational channels, more than 50 ports, several bridges, tunnels, and a variety of approach roads (Great Lakes, 2007). Within this array there are four distinct segments. The Great Lakes waterway links Lakes Superior, Michigan, Huron, and Erie through locks at Sault Ste. Marie and the channels of the St. Mary's, Detroit and St. Clair rivers. Key to this segment are the two operational U.S. locks, the Poe and MacArthur locks (Great Lakes, 2007). The second segment is the Welland Canal, which consists of eight Canadian locks linking Lake Erie to Lake Ontario (Great Lakes, 2007). The third part of the system is known as the Montreal-Lake Ontario segment, which includes seven locks: the Iroquois, Upper and Lower Beauharnois, Côte Ste. Catherine and St. Lambert locks on the Canadian side of the waterway, and the Dwight D. Eisenhower and Bertrand H. Snell lock on the American side (Great Lakes, 2007). Finally, there is the St. Lawrence ship channel, which has no locks and runs downstream from the port of Montreal to the Atlantic Ocean (Great Lakes, 2007). When this system was completed with the opening of the St. Lawrence Seaway in 1959, planners envisioned that it would carry grain from North America's prairies to the markets of Europe and the Soviet Union. Subsequent political and economic changes in those markets have reduced demand for North American grain, which has recently found alternative buyers in the Pacific region (Great Lakes, 2007). Historically, the Great Lakes have primarily transported bulk commodities such as iron ore, grain, coal, and aggregates. These trends have held true to the present day with the primary commodities transported during the 2016- 2017 shipping season being grain, iron ore, coal, and dry bulk (Floyd, Roach, Taylor, 2009, p.50). These commodities are carried by a combination of Laker vessels, and ocean-going ships. The inter-lakes shipping

industry is highly reliant upon the domestic steel industry (Floyd, Roach, Taylor, 2009, p.50). Collectively it can be seen that the GLSLS is a well-established waterway critical to the transportation of goods.

The GLSLS's location at the core of North America's industrial heartland, which contains a quarter of North America's population, and accounts for 55 percent of its manufacturing and service industries makes it an intricate part of North America's transportation network (Great Lakes, 2007). The waterway serves a significant portion of both the United States and Canada, with the GLSLS containing 27% of the population of the United States, and 62% of the population of Canada. A study in 2011 found that the waterway generates $35 billion dollars in business revenues (Floyd, Roach, Taylor, 2009, p.51). The Great Lakes St. Lawrence region is also home to the industrial and agricultural heartland of both the United States and Canada with a combined GDP of more than $6 trillion U.S. dollars. This output would represent the third-largest economy in the world behind the U.S. and China if it were a country (Marin Associates, 2011, p.2). Making the region a crucial part to both the United States and the Canadian economy. This has strategic meaning for the waterway because the waterway's health and integrity are a crucial part to this region's economy. Evidence to this fact was proven in 2017, when a total of 143.5 million metric tons (158.3 million short tons) of cargo valued at US$15.2 billion (Cdn$19.8 billion) moved through the Great Lakes Seaway system (Martin Associates, 2011, p.6).

A majority of the domestic cargo moving on Canadian and U.S. flag vessels remains in the Great Lakes-Seaway system, creating economic impacts at the loading port as well as the port of discharge (Martin Associates, 2011, p.6). Maritime commerce on the Great Lakes-Seaway system supported 237,868 U.S. and Canadian jobs, including 78,400 direct jobs (Martin

Associates, 2011, p.6). An additional 80,343 induced jobs were supported in the regional economy. Finally, 79,126 indirect jobs were supported by US$8.0 billion (Cdn$10.4 billion) in regional purchases (Martin Associates, 2011, p.6). Maritime activity supported US$14.2 billion (Cdn$18.5 billion) in total personal wage and salary income and local consumption expenditures in the regional economies of the U.S. and Canada (Martin Associates, 2011, p.6). Businesses involved in maritime activity in the Great Lakes-Seaway system spent US$8 billion (Cdn$10.3 billion) on purchases in their respective local economies (Martin Associates, 2011, p.6). A total of US$6.6 billion (Cdn$8.6 billion) in federal, state/provincial, and local tax revenue was generated by maritime activity in the Great Lakes Seaway system (Martin Associates, 2011, p.6). Based on this it can be seen that the waterway is a critical part of this regional economy as it provides a mass transit system allowing the movement of raw materials and finished products. Beyond this though the waterway is also crucial to the region's economy as it provides some 237,868 jobs and injects billions of dollars into the region's economy.

However, the decline in the domestic steel industry has resulted in the overall decline in Great Lakes traffic since the mid-twentieth century, which leads to the question what the future of the waterway is (Floyd, Roach, Taylor, 2009, p.50). Laker traffic in the Montreal-Lake Ontario portion of the Great Lakes system peaked in 1977 with 38.3 million metric tons, with oceangoing traffic peaking in 1978 at 23.1 million metric tons (Floyd, Roach, Taylor, 2009, p.50). This compares to 17.6 million metric tons of Laker traffic, and 11.2 million metric tons of ocean traffic in 2017 (Floyd, Roach, Taylor, 2009, p.50). Meaning that in the last forty years or so we have seen a decline of 48% in the metric tons carried by ocean vessels, and a decline of roughly 46% in the metric tons carried by laker vessels.

This has led some to contemplate the idea of implementing short sea container shipping in the GLSLS. Especially as in recent years, land-based transportation systems have become congested, delays to shippers lengthened, and waterway systems under-utilized, domestic water carriage has experienced a renewed interest in both North America and Europe. Short sea shipping initiatives have been proposed or implemented in several Canadian areas, including the Great Lakes, the Vancouver/lower mainland area of British Columbia (Higginson, Dumitrascu, 2007, p.38). Financial advantages, such as lower transportation rates charged to shippers (Higginson, Dumitrascu, 2007, p.39). Energy advantages, such as reduced energy consumption by transportation activities (Higginson, Dumitrascu, 2007, p.39). Environmental advantages, such as fewer vehicle emissions, traffic accidents, and related social costs, and less need to build roads and rail facilities (Higginson, Dumitrascu, 2007, p.39). All of this points to the fact that the implementation of short sea container shipping could not only bring new traffic but could also relieve strains on the existing transportation system and have added environmental advantages. To succeed, a short sea service must possess two major characteristics: (1) it must provide a time/cost tradeoff that is competitive with that of other modes (particularly trucking); and (2) it must be reliable and as seamless as possible (Higginson, Dumitrascu, 2007, p.39). Even if these objectives can be achieved, a major hurdle is the perception of many shippers and freight forwarders that water transportation is slow and old-fashioned. Changing these opinions will require partnerships between participants and modes, more aggressive marketing, and an entrepreneurial attitude by short sea operators (Higginson, Dumitrascu, 2007, p.39). With these factors in mind the question must be asked, can short sea container shipping be implemented into the Great Lakes and even if it can be is it practical.

Possibility of Containerization in the GLSS

However, operating a container shipping service in the GLSLS is not a new idea. During the 1960s, 70% of international maritime trade was conducted on the Northern Atlantic trade route, this placed the St. Lawrence Seaway in a unique position to benefit from the advent of containerization (Guy, 2007, p.47). Manchester Liners was the first company to establish a Europe to Montreal container route in 1968, thus placing a container port right at the entrance and or exit of the GLSLS. They were quickly followed by companies such as CAST, CanMar, and CP Ships, who all sought to capture the lion's share of the containers moved through the port of Montreal. (Alix, 1999, p.204). And as Montreal established itself as a major container shipping center it did not take long for other communities to begin exploring how they could extend containerization into the Great Lakes region via a feeder services to and from Montreal, or with a scheduled container service direct to and from European ports (Floyd, Roach, Taylor, 2009, p.52). In an attempt to capture this market Manchester Lines established a container feeder service between Great Lakes ports and Montreal and other companies quickly followed establishing their own feeder services (Hull, 2015). Manchester Lines continued to operate this container feeder service from Montreal to Cleveland, Detroit, Chicago, Milwaukee, and Toledo, as late as 1979 (Floyd, Roach, Taylor, 2009, p.52). With the peak year for container traffic in the GLSLS coming in 1978, with 271,485 tons ("Traffic Report", 2020). Despite these attempts Manchester Lines service went bankrupt only a short time afterwards. And, the combination of relatively low container traffic, limitations on ship size, and intermodal competition kept similar feeder container service operations from developing in the latter half of the 20th century (Floyd, Roach, Taylor, 2009, p.52). The compounding factor was that these ships faced stiff competition from established truck and railroad transportation networks already in place (Floyd, Roach,

Taylor, 2009, p.52). With the low point of container traffic coming in 1999, with just 11,573tonnes in total container traffic for the year ("Traffic Report", 2020).

Despite this, ports around the Great Lakes have made continuous efforts to bring scheduled container services to the GLSLS. In a hopeful effort to offset the loss of traffic from domestic cargo that has occurred over the last four decades. The ports of Milwaukee, Duluth, Chicago, and Muskegon have all expressed their interest or made attempts to establish a container service in the GLSLS (Floyd, Roach, Taylor, 2009, p.52). In 1989, the Director of the Detroit/Wayne County Port Authority James Kellow made attempts to bring a container service to Detroit. He said that "we believe we need regularly scheduled liner services," and that the "economics are there" (Markiewicz, 1989). Similar attempts were made in the mid 80's, when a joint Detroit/Windsor port promotional agency outlined the potential for a Northern Europe to Detroit/Windsor scheduled direct container service using 500-600 TEU vessels. Like many other such efforts nothing developed (DeWin, 1989). Since 2000, there has been a gradual increase in the amount of container traffic in the GLSLS ("Traffic Reports", 2020). More recently, in 2010, the Port of Toledo went as far as to install two container cranes in the hope of attracting a shipping company and subsequently a feeder service (Lavigne, 2013). The Port of Cleveland has made similar attempts at establishing container service in the Great Lakes. In 2014, they signed a contract with Dutch carrier Spliethoff Group. The agreement was to establish a container service between Cleveland and the European ports of Antwerp, and Rotterdam (Lavigne, 2013). Throughout the first year, the Port Authority subsidized the service at the price of $850,000 per month during the roughly eight-month shipping season. That cost did come down over the following three-years of the contract. With the Port Authority spending $3.1 million to subsidize the service in 2015 and $1.8 million in 2016, according to the agency's audited financial

statements (Miller, 2018). In 2015, the Port of Muskegon was making plans ready to establish their own container service within the Great Lakes and possibly beyond. The service planned to use offshore support vessels that had previously been used servicing oil rigs in the Gulf of Alaska (Kloosterman, 2015). These new developments are marked by the fact that in 2019, total container traffic on the GLSLS totaled 93,680 tons. This marked the highest level of traffic since 1985, for container traffic on the GLSLS ("Traffic Report", 2020).

Obstacles to Containerization

In light of these attempts that have been made to introduce container shipping into the GLSLS the question becomes what are the obstacles that prevent the establishment of a container service in the GLSLS. Perhaps the most notable obstacle is the fact that for three months out of the year the Seaway is closed due to the Great Lakes and connecting waterways freezing over (Floyd, Roach, Taylor, 2009, p.56). In the past few winters, higher water levels have created greater ice hazards for ships, hindering the movement of goods and last year costing an estimated 5,421 jobs and $1 billion to the U.S. economy, according to an industry-backed study (Fleming, 2020). The higher water levels and freezing temperatures create more opportunities for the formation of ice floes and large sheets of ice that can damage hulls and cause ice jams, which clog waterways and cause flooding (Fleming, 2020). This makes the ice issue even more pressing, because if a container service is established on the GLSLS how the waterway is supposed to stay open to allow ships to continue to transport goods year round. Jim Weakley, president of the Lake Carriers Association, which represents shipping companies operating on the lakes, said that these conditions "are creating a growing problem to keep the shipping channels and harbors open from December to as late as April" (Fleming, 2020). "We've been complaining about this for years," Weakley said. "And now with the high water, we think the

problems are going to be even worse, not just an economic loss to the laker fleet, but an economic loss to the steel companies that we provide support for." (Fleming, 2020). And, if these predictions ring true that would make establishment of a container service that much more difficult. Due to the fact that it would either stall the shipment of container goods for three months out of the year, unless a temporary alternative mode of transport could be brought in.

To counter the ice problem the U.S. Coast Guard currently operates nine icebreaking ships on the Great Lakes while Canada operates two, however this is two to three fewer than the Coast Guard operated during the 1990's (Fleming, 2020). Brian Calley, the former lieutenant governor of Michigan said that "There is an aging fleet of icebreakers that have dwindled in numbers over the past few decades. That presents an unnecessary risk to moving commerce and homes/businesses along the coastlines." (Fleming, 2020). However, a Coast Guard spokesman said that the Coast Guard is on top of the ice problem 95% of the time (Fleming, 2020). During the winter of 2019, however the lack of available ice breaking vessels by the Coast Guard resulted in a 4-million-ton loss of iron ore and 900,0000-ton loss of coal because of ice that didn't get moved (Fleming, 2020). The fact is that for a container service to be functional and cost effective in the GLSLS it must be open year-round. The possibility of that is dependent on reliable and predictable icebreaking on the Great Lakes (Fleming, 2020). Which means that a larger commitment must be made by both the United States and Canada in their ice breaking fleets. This could lead to disputes over what each country's role would be in ice breaking operations, and what they would be required to commit financially. Even if these issues were to be sorted out can it truly be expected that waterways will be kept open, and that shipping traffic will be by and large unimpeded by ice.

The established use of trucks and railroads to move containers between Montreal and the surrounding region presents perhaps the greatest obstacle to the development of a container shipping service in the GLSLS. As railroads and trucking companies have developed extensive intermodal service networks serving Montreal, Halifax, and New York (Floyd, Roach, Taylor, 2009, p.55). This makes it difficult for any new container service to enter this market and be able to attract a large enough share of the market for the service to be cost effective. In addition, attracting customers would be difficult, because they would have to move away from a proven form of transportation to something that would still be relatively new and untested. Furthermore, any new service proposed for the Great Lakes would likely find significant resistance from the railroads and truckers to prevent them from switching a portion of their traffic to ocean vessels coming to a Great Lakes port (Floyd, Roach, Taylor, 2009, p.56). In addition to the fact that trucking and railroad networks are well established and proven making it difficult to draw any market share. The fact that the waterway freezes over for three months out of the year means that container traffic will not be able to move through the waterway for three months. This means that alternative forms of transportation would have to be found, more than likely returning to truck and rail transport. And it would be understandable that trucking and railroad companies would not offer the same prices they had previously. Based on this it is hard to believe that a container service in the GLSLS would offer an attractive opportunity.

A third obstacle that presents an issue to the development of a container service in GLSLS is the infrastructure of the waterway, which places limitations on the size of ships that are able to enter the waterway. This becomes an increasingly noticeable obstacle as containerships continue to increase in size and the number of containers they carry also increases (Floyd, Roach, Taylor, 2009, p.54). This is demonstrated by the larger ships coming into the

Port of Montreal which are in the 4,400 TEU range (Floyd, Roach, Taylor, 2009, p.54). Whereas a container ship passing through the Seaway into the Great Lakes would likely be in the 1,000-1,500 TEU range (Floyd, Roach, Taylor, 2009, p.54). This presents a rather dramatic size difference between ocean going container ships and container ships navigating the GLSLS, a size difference of roughly 400%. A service from the Northern Europe port of Hamburg or Antwerp to Montreal takes about 7-8 days depending on the number of stops. The total time for a trans-Atlantic round trip including time in port is about 21 days. Based upon this a ship would be able to depart Montreal for Northern Europe every 3-weeks, and a weekly service between the port of Montreal and Northern Europe would require three ships (Floyd, Roach, Taylor, 55). If a ship were to go beyond Montreal to Detroit or Chicago additional time would be required given the longer distances and a sailing time of about one additional week to Detroit and two additional weeks for Chicago would be necessary (Floyd, Roach, Taylor, 2009, 55). As for the previously mentioned desire to bring a scheduled container service to Muskegon. This would require a staging area for containers and the installation of a boom crane. As for a location these operations could start out at the Mart Dock or Verplank in Muskegon, and then later move or expand later on (Kloosterman, 2015). However, it should be said that all of these infrastructural improvements would require a large investment. As either new container ships would need to be constructed or existing vessels would need to be retrofitted that could provide a container service in the GLSLS. Furthermore, extensive retrofits of designated Great Lakes ports would need to be made, so that they could facilitate container shipping.

Conclusion

In light of these obstacles a conclusion must be reached as to the feasibility of a container service in the GLSLS, and whether it is possible for it to overcome these obstacles. The obstacle

of the three-month shipping season presents the most difficult obstacle to overcome. Due to the fact that the only way to overcome it is either a large investment in more icebreakers that will allow the seaway to stay open year-round, or the container service would have to operate seasonally when the seaway is not impeded by ice. However, operating the service seasonally would make it hard to compete with the established trucking and rail services that are already in place. Even if these obstacles could be overcome the lack of infrastructure currently in place in the GLSLS to facilitate container shipping presents an obstacle all its own. However, we should not discredit the fact that there has been an increase in the amount of container shipping in the GLSLS since 2000. The result of this is that the feasibility and possibility of container shipping within the GLSLS has yet to be proven, and only the future will determine the outcome.

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