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***Engaging State DOTs in Funding Improvements on Inland Waterways:
A Case Study of the Gulf Intracoastal Waterway – Texas***

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1 **ABSTRACT**

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3 This paper summarizes the findings of research conducted for the Texas Department of
4 Transportation (TxDOT) that produced a master plan for the Gulf Intracoastal Waterway in
5 Texas (GIWW-T). The project: (1) established a baseline for the condition and utilization of the
6 GIWW-T; (2) examined the major operational concerns, that are mostly related to dredging and
7 navigational safety; (3) investigated the impacts of operational obstacles; (4) determined what is
8 needed to restore and sustain the GIWW-T to its optimum level; (5) investigated potential
9 economic or legislative limitations; and (6) recommended potential courses of action that may
10 enable TxDOT to play a more active role in achieving the goal of a highly efficient and safe
11 GIWW-T. A working group of stakeholders in the GIWW-T was formed for purposes of
12 informing the research. Participants included the U.S. Army Corps of Engineers (Corps), U.S.
13 Coast Guard (USCG), port authorities, TxDOT, and barge industry representatives.

1 INTRODUCTION/BACKGROUND

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3 This paper summarizes the findings of research conducted for the Texas Department of
4 Transportation (TxDOT) that produced a master plan for the Gulf Intracoastal Waterway in
5 Texas (GIWW-T). The objectives were to: (1) establish a baseline for the condition, utilization,
6 and economic significance of the GIWW-T; (2) examine the major operational concerns, that are
7 mostly related to dredging and navigational safety; (3) investigate the impacts of operational
8 obstacles; (4) determine what is needed to restore and sustain the GIWW-T to its optimum level;
9 (5) investigate potential economic or legislative limitations; and (6) recommend potential courses
10 of action that may enable TxDOT to play a more active role in achieving the goal of a highly
11 efficient and safe GIWW-T. A working group of stakeholders in the GIWW-T was formed for
12 purposes of informing the research. Participants included the U.S. Army Corps of Engineers
13 (Corps), U.S. Coast Guard (USCG), port authorities, TxDOT, and barge industry representatives.
14 (1,2)

15 The Gulf Intracoastal Waterway in Texas (GIWW-T) is a shallow draft system that along
16 with 11 deep draft ports is a component of the overall marine transportation system in Texas.
17 These deep draft ports handle both shallow and deep draft vessels, so the two systems are
18 intertwined.

19 The maintenance of the GIWW is the responsibility of the Corps. The State of Texas'
20 local sponsorship of the waterway is governed through the Texas Transportation Code and the
21 Texas Administrative Code. In 1975, TxDOT was named the official non-federal sponsor for the
22 GIWW-T through the Texas Coastal Waterway Act. The primary responsibilities of TxDOT
23 under the act are to provide right-of-way and disposal areas for byproducts of operations and
24 maintenance.

25 The GIWW-T has become an integral component to the extensive supply chains of Texas
26 petrochemical and manufacturing industries. High levels of vessel traffic reflect the GIWW-T's
27 importance to Texas' economy.

28 The type of freight transportation that takes place on the GIWW-T is referred to as
29 "inland towing" or "inland barge" transportation. The main channel has a length of 379 miles.
30 The GIWW-T links together 11 deep draft ports (25 ft or deeper) and 13 shallow draft channels.
31 Figure 1 shows the GIWW-T and the coastal counties that directly or indirectly benefit from it.



1
2 **FIGURE 1 GIWW-T Map.**

3
4 **ECONOMIC IMPORTANCE OF THE GIWW-T**

5
6 Several academic studies have quantified the importance of the GIWW-T. These studies found
7 that the GIWW-T plays a large role in facilitating commerce throughout the Texas Gulf Coast
8 region and is especially important for some of the state's most important industries. In 2012,
9 nearly 78 million short tons were moved on the GIWW-T, with 91% falling within the categories
10 of petroleum- and chemical-related products. The remaining 9% comprised coal, manufactured
11 goods, farm products, machinery, and waste/scrap. Considering both deep- and shallow-draft
12 waterways, in 2012 Texas ranked second in the U.S. in total waterborne tonnage moved with 486
13 million tons of cargo and more than 20% of the total U.S. maritime freight and vessel volume on
14 its waterways. The entire GIWW from Florida to the Mexican Border is the third busiest
15 waterway in the U.S. by tonnage after the Mississippi and Ohio Rivers. In 2012, Texas
16 accounted for 69% of the total GIWW tonnage. (3, 4)

17 From 2002 to 2012, the Corps Institute for Water Resources reported a 5% average
18 annual increase in short tons of petroleum and petroleum products transported through the
19 GIWW-T. Current forecasts suggest that GIWW-T tonnage will increase even further. For
20 example, a 2010 study showed that total freight volumes could increase by 45% by 2035 (5). The
21 most significant development expected to have a strong influence on GIWW-T traffic is the
22 Eagle Ford Shale play in South/Central Texas. This oil and gas play is quickly becoming an
23 important area for the state's growing energy economy. As of January 2014, the Eagle Ford
24 Shale play produced 1.2 million barrels of oil per day, representing an increase of 41% from
25 January 2013, when 849,000 barrels per day were produced. Natural gas production from the

1 Eagle Ford Shale play has also seen similar growth. From January 2013 to January 2014, natural
2 gas production increased by 34%—from 4.6 to 6.1 million cubic ft per day.

3 While no government forecast data are currently available, several firms with energy
4 sector expertise have offered their independent projections for Eagle Ford Shale production.
5 Jefferies & Company, an investment banking firm specializing in oil and gas data analytics,
6 announced in October 2013 that it expects Eagle Ford oil production to peak in 2022 at around
7 1.8 million barrels per day and to start to decline from there (6).

8 Due to a lack of federal government funding, the GIWW-T is currently not maintained to
9 its proper dimensions (12 ft deep by 125 ft wide), despite strong evidence supporting the integral
10 role it plays in facilitating commerce. As would be the case with any highly utilized
11 transportation asset, failing to maintain the GIWW-T at authorized dimensions could present
12 long-term challenges that could result in lost economic productivity.

14 **ECONOMICS/FUNDING ISSUES**

15
16 A lack of sufficient funding is one reason why the GIWW-T channel is not being maintained at
17 its authorized dimensions and locks and gates are not being improved to address safety and
18 navigation issues. The Corps, the entity responsible for maintenance and improvement of the
19 GIWW-T, is forced to direct limited funding dollars toward critically urgent projects, thus
20 leaving little money available for a number of high-priority capital projects. Stakeholder
21 interviews and Congressional appropriations data show that this funding shortfall will continue if
22 no changes are made. There is no authoritative, publicly available list of backlogged projects, but
23 in recent presentations, the Corps has estimated the monetary value of the current backlog
24 nationally to be nearly \$62B. This implies that projects often will wait years, if not a decade or
25 longer, to receive federal water project funding. (7)

26 Based on stakeholder feedback and conversations with the Corps, the researchers
27 identified the two areas of highest concern for the efficient movement of waterborne commerce
28 on the GIWW-T: (1) lack of GIWW-T depth; and (2) Brazos River Floodgates. Addressing these
29 issues will require additional funding in order to ultimately ensure continued efficient operation
30 on the GIWW-T.

31 The average total annual amount budgeted and funded for GIWW-T operations and
32 maintenance has been approximately \$28M. This is about \$34M less than the average amount
33 that the Galveston District requested as “full funding capability” each year. Some of this shortfall
34 has been carried forward each year, so it would not be necessary to raise the budget by the full
35 \$34M to accomplish a first-rate maintenance program, but it is obvious that the Corps is not
36 receiving anything close to what it needs. Additionally, researchers obtained cost estimates for
37 similar facilities and determined that a conservative total cost estimate to replace the Brazos
38 River Floodgates is about \$60M.

40 **DREDGING ISSUES**

41
42 Recent shortfalls in the Corps’ budget mean that actual budgeted amounts for GIWW-T
43 operations and maintenance dredging activities consistently fall short of the requested amount.
44 Over the last 9 years (2006-2014) requested amounts totaled \$560M with budgeted amounts
45 totaling \$251M (45%).

1 The condition of the channel has a direct bearing on the cost of barge companies using
2 the GIWW-T. The researchers calculated the increase in operating costs if the GIWW-T was
3 allowed to shoal to the point that current average drafts were reduced by 1 ft. Essentially, the
4 analysis reduced the draft for all current trips on the GIWW-T as a whole, leaving 6.9 million
5 tons stranded. To move this cargo would require additional trips costing \$58.7M, representing an
6 increase of 14.8% in the cost of doing business. Since companies are in business to make a
7 profit, the end consumer must ultimately bear this additional cost. These additional operating
8 costs must be compared to the expenditures necessary to avoid them.

9 The average annual cost of dredging the main channel of the GIWW-T over the 15-year
10 period from 1998-2012 was \$21.2M in 2013 dollars. However, this cost is offset by avoiding the
11 above potential increase in operating costs of \$58.7M. The ratio of cost avoided to cost of
12 dredging (or benefit-cost ratio) is 2.8:1.0. It is highly likely that the average annual cost of
13 dredging would increase with a properly maintained GIWW-T, since current dredging practices
14 are underfunded and hence insufficient. However, the benefit- cost ratio is high enough that
15 dredging costs could rise significantly and still show a strong benefit-cost ratio.

16 The researchers identified 218 main channel placement areas (PAs) for dredged material
17 that are currently in use or available for use. A number of these would require environmental
18 assessments and additional coordination with resource agencies before their use. Of the 218 main
19 channel PAs, two (PA35 and PA86) have a remaining life of less than 25 years (24 and 12 years,
20 respectively). Five have an estimated remaining life between 25 and 40 years, with 211 PAs at
21 40 years or more.

22 A number of these sites are involved in beneficial use initiatives. These are projects
23 where dredged sediments are used as resource materials in ways that provide environmental,
24 economic, or social benefit. There are possibilities for expanding beneficial use activities at
25 GIWW-T placement area sites. Current beneficial use projects are detailed in the main research
26 report and may serve as a guide for identifying beneficial use possibilities at various locations
27 along the waterway.

28 29 **INFRASTRUCTURE AND SAFETY ISSUES**

30 31 **Intersections with Ship Channels**

32
33 Analysis of USCG data indicated that most vessel collisions involving towboats take place in
34 heavily transited areas and at intersections of waterways. However, collisions are a very small
35 percentage of the total trips. Discussions with operators and the Coast Guard revealed that the
36 level of cooperation and coordination is excellent and that focusing on this issue would probably
37 not be a good use of TxDOT's limited resources.

38 39 **Floodgates and Locks**

40
41 There are two locations along the GIWW-T that have floodgates or locks: the intersection with
42 the Brazos River (floodgates) and the intersection with the Colorado River (locks). The
43 stakeholder working group was of the unanimous opinion that the Brazos River Floodgates by
44 far represent the greatest problem in terms of safety and efficiency anywhere on the entire
45 GIWW in terms of annual number, frequency, and cost of incidents. The Colorado River Locks
46 were of concern, but nowhere near the level of the Brazos River Floodgates.

1 The Corps performed a reconnaissance-level study of both the locks and the floodgates in
2 2000. (8) Reconnaissance studies are typically high-level studies that define the issues and
3 determine whether it makes sense to pursue a detailed feasibility study. In its 2000 study, the Corps
4 indicated that there was a federal interest in pursuing a feasibility study. Since feasibility studies for
5 inland waterways are exempt from cost sharing, the study would be a federal expense. However,
6 that study has not been funded to date so no further action has been taken. Because of the time that
7 has elapsed since the reconnaissance study was done, it will most likely be necessary for the Corps
8 to restart the entire study process.

9 Recent statistics show that an average of more than 40 accidents occurs each year at the
10 two facilities combined due to allisions (strikes) between the barges and the lock/gate structures.
11 These accidents cause damage to the structures and to the barges. Since most of the commodities
12 that move through these facilities are petrochemical in nature, toxic spills could occur as a result
13 of accidents. There has been a significant rise in the accident rate and the severity of the
14 accidents since 2008. Further investigation is necessary to be able to determine the causes of this
15 increase.

16 If the damages to the Brazos River Floodgates were indexed to 2013 prices, the average
17 annual damage would amount to \$799,249, resulting in an average of \$22,201 per incident.
18 There is no public information on the damage to the towboats in these incidents. That amount
19 could be substantial as well.

20 The Brazos River Floodgates are not wide enough for modern configurations of tows to
21 pass through. The floodgates were built in 1943 when barges were typically 26 ft to 35 ft wide.
22 The floodgate chamber is 75 ft wide and the maximum width it can accommodate is 55 ft.
23 Today, it is common for towboat operators to push two 35-ft dry cargo barges side by side, for a
24 total width of 70 ft. A typical tank barge measures 54 ft across. The necessity to break the tow
25 causes significant time delays.

26 TTI acquired three months of log entries for 2013 from the Brazos River Floodgates
27 office for further analysis. Using these entries, TTI was able to develop statistics related to tows
28 that had to be broken up in order to pass through the floodgates. The additional annual operating
29 cost attributable to the requirement to break tows is \$11,352,250. If the cost of damages to the
30 floodgates is added, the total annual cost due to the inefficient design of the floodgates is
31 \$12,151,499.

32 From 2001 to 2013, the annual number of lockages at the floodgates increased by 45%,
33 from almost 10,000 to nearly 14,500. This indicates that the annual cost of delays is rising and
34 will continue to rise.

35 The researchers obtained cost estimates to replace a lock facility from an ongoing
36 feasibility study at the New Orleans Corps District entitled *Bayou Sorrel Lock, Louisiana*. (9)
37 Bayou Sorrel Lock is located in Iberville Parish in south central Louisiana. It is very similar in
38 dimensions and construction to the lock facilities at the Colorado River. The feasibility study
39 concluded that the best plan would be to replace the existing 56-ft × 797-ft lock (earthen
40 chamber) with a 110-ft × 1,200-ft lock (concrete chamber). The cost for the replacement was
41 about \$60M for one lock structure.

42 If the two floodgates can be replaced for a conservative estimate of about half the cost of
43 two locks, or \$60M in total and the \$12M in annual operating costs can be avoided, the payback
44 time for this investment is less than five years at current traffic levels. If traffic increases due to
45 Eagle Ford shale activity and general economic trends are factored in, this payback period will
46 be shortened considerably. Towboat and barge repair costs are confidential and not subject to

1 inclusion in this estimate, but if those costs are avoided and added to the benefits, the payback
2 period will be further reduced.

3 4 **Fleeting Areas**

5
6 One of the issues that all the operators in the stakeholder working group agreed on was the lack
7 of fleeting area capacity that is affecting the safety and efficiency of barge operations on the
8 GIWW-T. This is especially acute in the Corpus Christi area.

9 Fleeting areas are holding areas for barges that are between shipments. They may be used
10 to clean, repair, or simply hold barges. Fleeting areas are typically private operations that may be
11 used for a captive fleet (the owner's fleet) or as third-party enterprises that charge for services
12 rendered. However, this does not preclude a port authority from being involved in the
13 construction and/or operation of such a facility.

14 There is at least one fleeting area in each major port complex. In the cases of Houston
15 and Corpus Christi, there are a number of such facilities. One additional fleeting area in each of
16 the four major port complexes in Texas (Beaumont/Port Arthur, Houston, Freeport, and Corpus
17 Christi) would lead to a significant improvement in operations along the GIWW-T. However,
18 expanding fleeting capacity would require a capital investment of approximately \$16M,
19 assuming that each site would cost approximately \$4M, at a modest length of 2,000 ft of bank
20 space for each.

21 22 **Mooring Areas**

23
24 Barge operators use mooring areas during inclement weather or other situations in which it
25 would not be safe to proceed along the waterway. They are not intended to serve the same
26 purposes as fleeting areas. There are a total of 18 mooring areas at 12 locations along the
27 GIWW-T, including the major port complexes. The Corps is in the final phase of a study to
28 determine the condition and adequacy of the mooring areas along the GIWW-T. The study
29 indicates that it is not necessary to add new mooring areas, but current mooring areas must be
30 rehabilitated and expanded.

31 The total estimated cost for all Corps-recommended improvements is \$7,044,000
32 resulting in the placement of 61 new buoys and the creation of an additional 8,115 linear ft of
33 mooring space. The funding for these improvements will come from the District's operations and
34 maintenance (O&M) funds. Since the study is a Discretionary Report, the authority is delegated
35 to the District Commander to expend O&M funds for the mooring basin expansions. The very
36 minor dredging quantities associated with the expansion of each mooring basin would be
37 included in regularly scheduled maintenance dredging contracts.

38 39 **Other Issues (Encroachment)**

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41 A recent TxDOT report identified several concerns related to encroachment and developed
42 recommendations for both permittees (Corps) and developers. (10) Many were addressed in a
43 new permitting procedure that the Corps instituted in October 2013.

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POTENTIAL FUNDING STRATEGIES

TxDOT may want to consider funding part of the needs that are unmet due to the shortfalls in the Corps' budget. Based on conversations with stakeholders and independent research, the researchers selected, examined, and evaluated several potential funding strategies based on three criteria:

- Feasibility (i.e., what is the likelihood such an alternative could be reasonably implemented?)
- Sustainability (i.e., does this alternative provide long-term, sustainable funding?)
- Equity (i.e., how is the funding burden shared among all parties?)

Elevate the Priority of Economically Important GIWW-T Projects to the Corps and to Congress

One potentially effective and relatively low-cost strategy for TxDOT would be to develop a tenable economic and environmental case justifying why increased federal funding should be directed toward strategic GIWW-T projects. Corps districts are responsible for preparing a cost-benefit analysis for projects, ranking projects based on priority, and recommending high-priority projects for funding. TxDOT could assist the Corps' project prioritization process as described below.

Reconnaissance studies and feasibility studies are two necessary and critical first steps. Unfortunately, general appropriations have fallen far short of required funding amounts for a number of years. Furthermore, this amount is not likely to significantly increase in the coming years. TxDOT could take a very proactive stance in advocating for funding or even providing some of the funding.

There have been some legislative developments that TxDOT may wish to take advantage of. In May 2014, the U.S. House and Senate approved, and the president signed, the Water Resources Reform and Development Act (WRRDA), officially known as H.R.3080. This Act authorizes the Corps to perform various water-related projects and make several changes to how waterways projects are prioritized (11). According to a conference report that the U.S. House Transportation and Infrastructure Committee prepared, H.R.3080 makes several reforms relevant to coastal and inland waterway infrastructure projects. Some of the provisions most relevant to this research project include:

- Limiting the time period for studies to be completed.
- Providing permanent authority for the Corps to accept funds from non-federal public interests.
- Authorizing non-federal sponsors to provide funds to the Corps to carry out studies.
- Authorizing non-federal sponsors to carry out water resources development projects.
- Authorizing the Corps to accept funds from non-federal interest to operate, maintain, and improve the nation's inland waterways transportation system.

It will be important to monitor how these provisions are implemented and how TxDOT might be able to take advantage of them.

Another strategy for TxDOT is to monitor and participate in the activities of the Inland Waterways User Board (IWUB). The Water Resources Development Act (WRDA) of 1986

1 established this board as an industry federal advisory committee responsible for “monitor[ing]
2 the Inland Waterways Trust Fund and to make recommendations to the Army and to Congress on
3 investment priorities using resources from the Fund” (12). In 2010, the IWUB, in a joint effort
4 with the Corps, published the Capital Projects Business Model (CPBM). The CPBM provides a
5 list of long-term capital needs for the inland navigation system that are intended to “balance
6 reliability with affordability” (13). One strategy for TxDOT is to work with stakeholders to
7 elevate the priority of the Brazos River Floodgates and Colorado River Locks projects (labeled
8 GIWW Modifications, TX) in the CPBM. This project is listed as a Phase 3 project, the lowest
9 priority level in the CPBM. Additionally, TxDOT could continue monitoring the activities of this
10 committee to ensure that other strategic Texas waterway projects are considered.

11 **Apply for Marine Highway Designation**

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13
14 The America’s Marine Highway Program is a United States Department of Transportation
15 (USDOT)-led program to expand the use of navigable waterways to relieve landside congestion,
16 reduce emissions, and generate other public benefits by increasing the efficiency of the surface
17 transportation system.

18 In April 2010, USDOT’s Marine Administration (MARAD) issued a call to public agencies
19 for Marine Highway Project applications and received 35 applications. In August 2010, the
20 Secretary of Transportation selected eight projects from these applications for designation as
21 Marine Highway Projects under the program. Many of these projects represent new or expanded
22 Marine Highway services that offer the promise of public benefit and long-term sustainability
23 without long-term federal financial support. They will receive preferential treatment for federal
24 assistance from USDOT and MARAD. In September 2012, \$7M in grant money was awarded to
25 these projects. Should additional funding be made available, a notice in the *Federal Register*
26 will be published.

27 On May 27, 2014, MARAD initiated another call for project applications. The window for
28 submitting applications (Marine Highway Project Open Season) will close on September 30,
29 2016. There will be five project review sessions during the Marine Highway Project Open
30 Season, and route designation recommendations will be accepted and reviewed at any time.
31 Qualified projects will be announced shortly after the completion of each project review session.
32 The application submittal deadlines for the review sessions are: June 30, 2014; December 31,
33 2014; June 30, 2015; December 31, 2015; and June 30, 2016.

34 The Texas portion of M-10 (GIWW-T) could be designated as a distinct Marine Highway,
35 e.g., M-69, while continuing to be a part of M-10. Its “dual existence” is necessary because M-10
36 involves coastal shipping and interstate commerce, but M-69 would focus strictly on intrastate
37 issues.. The M-69 designation would act as a catalyst towards state involvement in GIWW-T’s
38 maintenance and improvement. It would be more justifiable and implementable jurisdictionally,
39 legally, administratively, and financially; and would facilitate procurement of federal funds
40 dedicated to the GIWW-T.

41 **Apply for Federal Discretionary Grant Programs**

42
43
44 Some federal discretionary grants could be available. For example, the Transportation
45 Investment Generating Economic Recovery (TIGER) grant program is an annual supplementary
46 discretionary grant program that awards public sector sponsors, on a competitive basis, funds for

1 capital investments for surface transportation projects. A notice of funding availability is usually
2 published in early March and applications are generally due to the USDOT by early May.

3 The 2014 TIGER discretionary grant program was appropriated \$600M to be awarded on a
4 competitive basis for the 2014 funding cycle, \$35M of which was dedicated to project planning-
5 related activities. It appears that several GIWW-related projects would be eligible to apply for
6 TIGER funding. The application period for FY2014 TIGER grants closed on April 28, 2014, but
7 there are indications that Congress will also fund a 2015 cycle. In 2013, TxDOT submitted an
8 unsuccessful application for a TIGER V discretionary grant to provide “crucial major restoration
9 and modernization of the Texas GIWW infrastructure” (14,15). Further applications could be
10 submitted to meet some of the capital costs required for the GIWW-T.

11 While discretionary grant programs can help meet the funding requirements needed to
12 help maintain the GIWW-T, these funds would have to be focused on one-time projects that will
13 have a fairly long-term effect.

14 **Explore Feasibility of Florida Inland Navigation District Model for Texas**

15 One possibility is to adopt a state-based model similar to the Florida Inland Navigation District
16 (FIND) model. In 1927, the Florida Legislature created FIND through Chapter 12026, Special
17 Acts of 1927. FIND was given taxing authority in specific regions along the Florida coastline.
18 The mission of FIND is to “perform the functions of the ‘local sponsor’ of the Atlantic
19 Intracoastal Waterway project in Florida, a federal navigation project. In this capacity the District
20 provides all lands required for the navigation project including rights of way and lands for the
21 management of dredged materials removed from the waterway during dredging activities” (16). It
22 remits tax revenues to the Corps to be used for dredging the waterway within its jurisdiction.
23

24 **Consider Utilizing Coastal Erosion Planning and Response Funds**

25 The (Texas) Coastal Erosion Planning and Response Act (CEPRA) may provide some limited
26 funding opportunities. The purpose of this program is to implement coastal erosion response
27 projects and related studies to reduce the effects and to understand the processes of coastal erosion.
28 Under CEPRA, the Texas General Land Office (GLO) implements erosion response projects and
29 studies through collaboration and matching funds partnerships with federal, state, and local
30 governments, non-profits, and other potential project sponsors. While funding from this program is
31 not directly related to navigation, it is possible that some GIWW-T related projects could be
32 eligible to receive some funding under this program. The deadline for Cycle 8 funding (the most
33 recent funding cycle) has already passed, but the GLO, at its discretion, may accept applications
34 that address an emergency situation on a rolling basis. TxDOT should stay in touch with GLO
35 regarding possible future funding cycles, which typically occur every two years.
36

37 **Explore Ending State Diesel Tax Exemptions for Certain GIWW-T Users**

38 Another possibility is to consider ending state diesel fuel tax exemptions for GIWW-T users.
39 Currently, Texas Tax Code Section 153.222 allows a refund for taxes paid on excepted uses of
40 diesel fuel. If Texas were to consider pursuing this option, it would be important to first consider
41 revisiting relevant provisions outlined in the Texas Tax Code Sec. 153 and to work with key
42

1 state legislative officials in advance of the 2015 Legislative Session. Legislative changes would
2 be required to allow the additional tax to be used for GIWW-T maintenance purposes.

3
4 **Explore Public-Private Partnership (P3) Opportunities and Monitor Possible Inland**
5 **Waterway P3 Pilot Projects that Might Be Pursued in the Future**

6
7 Possible opportunities to take advantage of innovative financing approaches may be available by
8 increasing participation of the private sector, especially with respect to lock and dam and other
9 waterway infrastructure projects. In the context of waterway infrastructure, a public-private
10 partnership would likely take the form of a contractual agreement between a federal or state
11 public sector waterway stakeholder agency (e.g., the Corps, Texas) and a private sector entity to
12 deliver a public service.

13 In order for a public-private partnership approach to be feasible, a revenue stream such as
14 a lockage fee, dockage fee, annual license fee, or some other form of taxes or fees would be
15 required.

16
17 **Explore Utilizing Texas Rainy Day Fund for Waterway Projects**

18
19 Another area of interest is the use of the Economic Stabilization Fund (Texas Rainy Day Fund).
20 The Rainy Day Fund is a savings fund that allows the state to set aside excess revenue for use in
21 times of unexpected revenue shortfall. Money comes in from several sources to this fund, but
22 natural gas and oil tax revenues have been the driving factors in the fund’s growth. In August
23 2013, lawmakers passed legislation to let voters decide whether to increase funding for
24 transportation by diverting some oil and natural gas tax revenue from reserve accounts. If voters
25 approve this proposal in November 2014, transportation funding will increase to about \$1.2B or
26 by 12%, in 2015, forecasts show. However, if the proposal is passed, the legislation stipulates
27 that this money is “for the sole purpose of constructing, maintaining, and acquiring rights-of-way
28 for public roadways other than toll roads.” This specific wording of the legislation precludes the
29 use of this money for dredging and other maintenance activities on the GIWW-T. Another public
30 referendum would be required to allow the use of any Rainy Day Funds for GIWW-T purposes.

31
32 **Consider the Panama Canal Approach for Texas**

33
34 This Panama Canal expansion proposal called for the execution of a tolls policy that will focus
35 on capturing the value the Canal adds to each segment of its market, and tolls are expected to be
36 set in a manner that will double them within the next 20 years. The loans taken out to finance the
37 construction of this proposal are expected “to be paid [back] rapidly—with investment costs
38 expected to be paid back in less than 10 years.”

39 A similar approach in Texas would be interesting. Texas already has experience creating
40 authorities to help meet infrastructure mobility needs for surface transportation projects, e.g., in
41 2001 the state authorized regional mobility authorities. These authorities are authorized under
42 state law to finance, design, construct, operate, maintain, and expand a wide range of
43 transportation facilities and services. In practice, they are mostly used to deliver critically needed
44 tollway projects to the state. A similar type of authority could be authorized to help finance,
45 design, construct, operate, and maintain the GIWW-T.

1 The Panama Canal levies tolls on its users. Such an authority in Texas could be
2 authorized to recover its costs through tolls in a similar fashion.

3 4 **TXDOT LEGISLATIVE OBSTACLES**

5
6 Because federal law stipulates that: (1) the GIWW-T is totally under federal control; and (2) the
7 Corps is responsible for the maintenance of and any improvements to this asset, any type of
8 direct TxDOT involvement would require significant negotiations with the Corps and
9 Congressional approval. Furthermore, the Corps' rulemaking structure would require several
10 administrative and regulatory changes to take place. Corps representatives interviewed for this
11 study noted that at the very least, a nonstandard agreement (pending a complex approval process
12 involving the Fort Worth Corps Division headquarters) would likely be required. Since a state
13 agency can engage only in activities for which it is specifically authorized, the Texas Legislature
14 would need to grant approval to pursue this option and would require extensive coordination
15 with several of the state and local agency stakeholders.

16 The Corps could theoretically subcontract GIWW-T maintenance activities to TxDOT.
17 Legislative barriers to the subcontractor approach are not as formidable as a full takeover but still
18 pose challenges. TxDOT's authority for engaging as a subcontractor would require legislative
19 approval and increased institutional capacity for conducting such work.

20 Perhaps the fewest legislative obstacles exist where a partnership scenario for GIWW-T
21 maintenance and dredging activities involves multiple parties. Many different approaches exist,
22 but in essence such an approach keeps the Corps as the responsible party for GIWW-T dredging
23 and maintenance activities, while relying on non-federal sponsors to provide a greater share of
24 funding. Although the federal legislative framework for this type of agreement is in place, state
25 legislative changes would be required. For example, Chapter 51 of the Texas Transportation
26 Code "Texas Coastal Waterway Act" would need to be amended to allow broadened authority
27 for partnering with federal sponsors in GIWW-T maintenance beyond acquiring land for
28 dredging materials.

29 A few recent proposals were introduced in the last legislative session (2013) to provide
30 additional funding for transportation. For example, the Legislature passed H.B.1 during the third
31 called session of the 83rd Legislature that would (pending voter approval in November 2014)
32 transfer a portion of revenues deposited in the Rainy Day Fund to the State Highway Fund. An
33 additional constitutional amendment would be required for such a transfer to occur for
34 navigation purposes.

35 When it comes to providing funding for activities such as construction of fleeting areas, the
36 challenge is finding a funding source that is not statutorily dedicated to highway planning and
37 construction. Most funding collected in the State Highway Fund (Fund 0006) is required to be
38 spent toward highway projects. Section 7-a, Article VIII of the Texas Constitution dedicates net
39 revenues from motor vehicle registration fees and taxes on motor fuels and lubricants to be used
40 only for "acquiring rights-of-way, constructing, maintaining, and policing public roadways";
41 Section 7-b dedicates federal revenues received for highway-related purposes to be spent on
42 highway-related projects. However, revenues from vehicle certificate sales, special vehicle
43 registrations, and commercial transportation fees collected in Fund 0006 that are remitted to
44 TxDOT are not required to be spent on highway-related projects (17).

45 Established in 2001, the Texas Mobility Fund allows the Texas Transportation Commission
46 to borrow money for the construction and maintenance of the state highway system with revenues

1 from a mix of transportation-related fees. However, Section 49-k, Article III of the Texas
2 Constitution prohibits the Texas Mobility Fund from financing the construction of non-highway
3 projects. Any use of these funds for the GIWW-T would likely require a constitutional
4 amendment. Proposition 12, which voters approved in 2007, allows the Texas Transportation
5 Commission to issue up to \$5B in general obligation bonds under the authority of Article III,
6 Section 49-p of the Texas Constitution. Legislative approval and statutory changes would likely be
7 required for using Proposition 12 bonds for non-highway purposes (18).

8
9 **RECOMMENDATIONS FOR IMPLEMENTATION**

10
11 There are several avenues for further involvement in the GIWW-T in the context of a “symbiotic
12 relationship” with the Corps that TxDOT may want to explore. The key element in evaluating
13 increased financial participation from the State of Texas is whether it will actually increase
14 expenditures in Texas or merely replace federal funds with state funds. Since the federal
15 government has responsibility for maintaining the GIWW-T, TxDOT should explore
16 opportunities to assist that would not assume part of the ongoing federal responsibility, such as:

17 **1. Urge the Corps to restart the study process for the Brazos River Floodgates**
18 **(which will probably need to include the Colorado River Locks).** This entails making a
19 formal request to the Corps and advocating for funding the study. Once the study process enters
20 the feasibility study phase, TxDOT should investigate the feasibility of funding all or part of the
21 Brazos River Floodgates replacement structure. This will most likely involve a concerted effort
22 to get a higher priority level placed on the Brazos River Floodgates replacement project for
23 funding from the Inland Waterways Trust Fund. (In August 2014, the Texas Transportation
24 Commission voted to take the steps necessary to restart the feasibility study)

25 **2. Cooperate with environmental and conservation entities to fund placement of**
26 **revetments along placement areas.** This will reduce required maintenance dredging
27 necessitated by the sloughing of placement area retaining dikes, and will shore up placement
28 areas, possibly extending their useful life in some cases. The Corps can provide insight into
29 where such projects would have the greatest such impact.

30 **3. Provide funding assistance for the creation of new fleeting areas that would**
31 **accommodate all barge traffic.** This could be done in a number of ways ranging from acquiring
32 federal grant money to directly funding construction. The need for and location of such facilities
33 could easily be determined by consulting with organizations such as the Texas Waterways
34 Operators Association.

35 **4. Stay actively involved in reviewing permit applications for development along the**
36 **GIWW-T filed with the Corps.** It is important to avoid any further encroachment on the
37 GIWW-T to avoid degradation of safety or efficiency on the waterway. It may also be important
38 in terms of protecting needed placement areas, both existing and future.

39 **5. Begin exploring real estate options for the placement area with the least**
40 **estimated remaining life (PA86 in Brazoria County, at 12 years).** Since the acquisition of
41 property for a placement area will involve a lengthy administrative process, an environmental
42 assessment or environmental impact statement, and extensive coordination with other agencies, it
43 is not too early to begin the process of acquiring property for a placement area in the vicinity of
44 PA86.

45 **6. Set up and maintain a web page to periodically update and publish selected**
46 **metrics.** There are a number of metrics that would indicate the condition and safety of the

1 GIWW-T. TxDOT may want to consider creating a website that will track these metrics. A group
2 such as the Port Authority Advisory Committee could advise TxDOT as to which metrics would
3 be most important and how frequently they should be updated.

4 **7. Continue to pursue funding through USDOT's TIGER grant program.** The goal
5 of programs like TIGER is to promote multimodal infrastructure that moves beyond the
6 individual modes (highway, rail, or marine) to an enhanced transportation system network.
7 TxDOT has already pursued one such grant and should consider submitting further applications
8 that will enhance the operation of the GIWW-T and its role as part of the state's freight
9 transportation network.

10 **8. Apply for Marine Highway designation.** While such a designation does not have an
11 immediate benefit, it does place the GIWW-T in line for future Marine Highway grants, and it
12 raises the profile of this corridor on a national level. TxDOT can apply for such a designation to
13 MARAD at any point it chooses.

14
15 The bottom line is that there are no funding mechanisms readily accessible to TxDOT that will
16 provide a predictable and reliable long-term funding source for GIWW-T construction and
17 maintenance. Any such funding streams will most likely require significant legislative changes
18 and may be politically difficult to implement. The recommendations above are focused on
19 expediting and enhancing existing programs and taking advantage of "one-off" funding sources
20 and other measures that will enhance the GIWW-T without requiring a long-term funding
21 commitment on TxDOT's part. Lastly, these recommendations do not call for legislative action,
22 although any initiative focused on new long-term funding sources will most likely require such
23 action.

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26
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