

# A Reliable Waterway System Is Important to Agriculture

A publication of the Agricultural Marketing Service • [www.ams.usda.gov/services/transportation-analysis](http://www.ams.usda.gov/services/transportation-analysis) • OCTOBER 2018

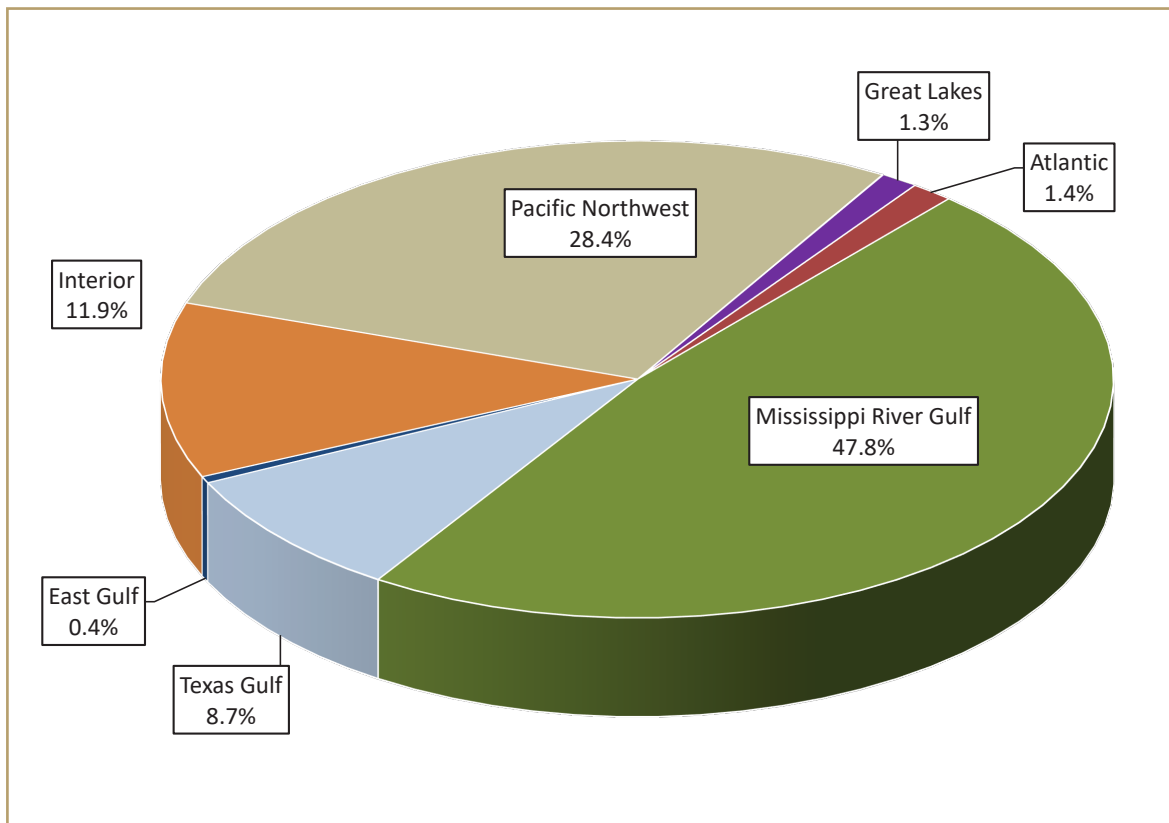
## Overview

- U.S. agriculture is expected to contribute \$19.5 billion to the U.S. balance of trade in fiscal 2018.<sup>1</sup>
- Exports are forecast to reach \$144 billion, while imports are forecast to reach \$124.5 billion.<sup>2</sup>
- Forestry and fishery products, and critical farm inputs such as fertilizer, feed, and fuel move on the waterway system as well.<sup>3</sup>
- Exports are responsible for 20 percent of U.S. farm income, also driving rural economic activity and supporting more than one million American jobs on and off the farm.<sup>4</sup>
- In calendar year 2017, 70 percent of U.S. agricultural exports, 150.9 million metric tons valued at \$90.5 billion, and 70 percent of agricultural imports, 46.2 million metric tons valued at \$63 billion, were waterborne.<sup>5</sup>
- Exporters, importers, and domestic shippers depend on authorized port and waterway depths and widths, and locks and dam infrastructure.<sup>6</sup>
- The Harbor Maintenance Tax (HMT) is a 0.125 percent ad valorem tax on the value of imports and certain domestic waterborne cargo deposited in the Harbor Maintenance Trust Fund (HMTF).<sup>7</sup>
- Estimated fiscal 2018 HMT receipts and investment interest are \$1.7 billion, and Congressional appropriations from the HMTF are \$1.4 billion, yielding an estimated year-end balance of \$9.3 billion.<sup>8</sup>
- Commercial vessels engaged in waterborne transportation on the inland waterways system generate revenues and investment interest from a 29 cents per gallon tax on diesel fuel, which is deposited in the Inland Waterways Trust Fund (IWTF) to finance one half the Federal costs of authorized locks and dams projects.<sup>9</sup>
- Estimated fiscal 2018 IWTF receipts, are \$106 million, and Congressional appropriations are at least \$332.5 million, making use of all estimated annual revenues from the IWTF; plus additional balances.<sup>10</sup>

# Grain Exports

- For the 2017/18 marketing year, the United States is projected to export 27 percent of the grain it produced. This will include 56 percent of the sorghum, 52 percent of the wheat, 49 percent of the rice, 48 percent of the soybeans, and 17 percent of the corn.<sup>11</sup>
- Mississippi River, Texas Gulf, and East Gulf ports accounted for 57 percent of grains inspected and/or weighed for export in calendar year 2017, nearly 78 million metric tons.<sup>12</sup>
- Pacific Northwest (PNW) ports accounted for 28 percent of grains inspected and/or weighed for export in 2017, nearly 39 million metric tons.<sup>13</sup>
- The September 2018 estimates for 2017/18 marketing year exports include:<sup>14</sup>
  - Corn—2.4 billion bushels (61.6 million metric tons)
  - Soybeans—2.1 billion bushels (60 million metric tons)
  - Wheat—901 million bushels (24.5 million metric tons)
  - Soybean meal—14.4 million short tons (13.1 million metric tons)
  - Rice—87 million hundredweight (3.9 million metric tons)
  - Sorghum—205 million bushels (5.2 million metric tons)
  - Soybean oil—2.5 billion pounds (1.1 million metric tons)

## Grains Inspected and/or Weighed for Export by Region and Port Area, 2017, % of Total Metric Tons



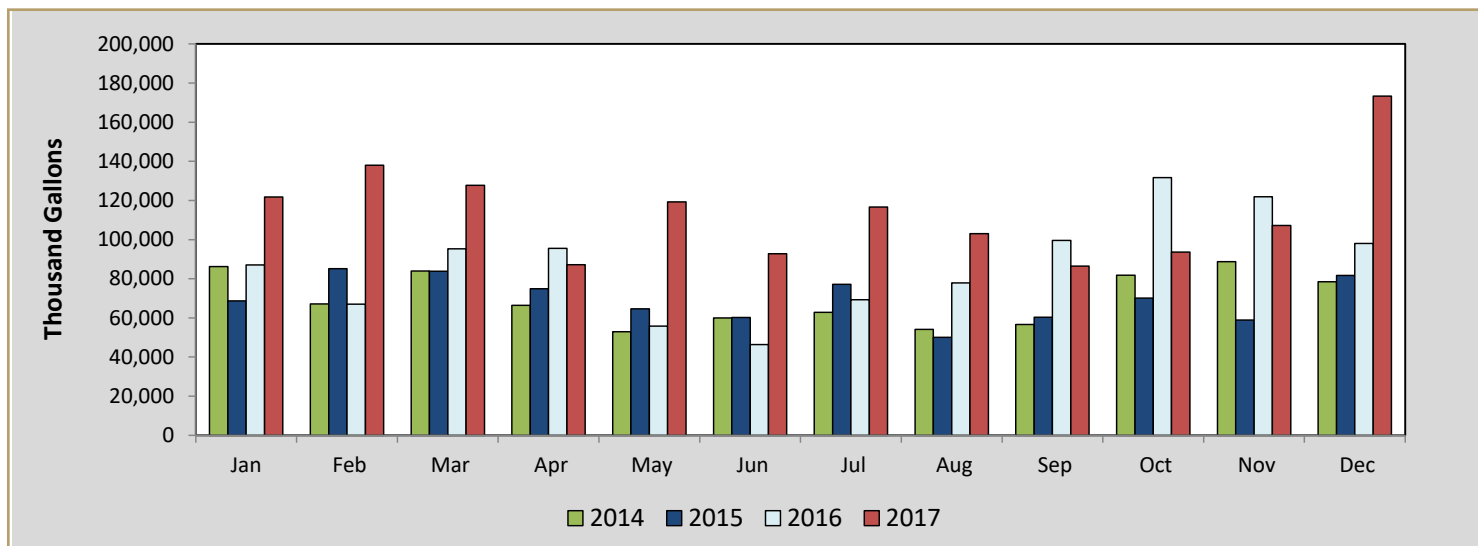
\*136.5 million metric tons

Source: USDA AMS Federal Grain Inspection Service and Livestock, Poultry, and Grain Market News Division

# Ethanol, Corn Production, Fertilizer, and Barge Traffic

- U.S. ethanol operating production at 201 refineries is over 15.9 billion gallons per year.<sup>15</sup>
- Nearly 1.4 billion gallons of ethanol were exported in calendar year 2017.<sup>16</sup>
- Major multimodal ethanol terminals include Albany, NY, Baltimore, MD, Chicago, IL, Houston, TX, Linden, Newark, and Sewaren, NJ, Mount Vernon, IN, New Orleans, LA, Sauget, IL, Providence, RI, and Tampa, FL.<sup>17</sup>
- Barges move nearly 10 percent of ethanol.<sup>18</sup>
- Over 555 million gallons of ethanol were moved by tanker and barge between Petroleum Administration for Defense Districts (PADD) in calendar year 2017, from PADD 2 Midwest to PADD 3 Gulf Coast and from PADD 3 to PADD 1C Lower Atlantic.<sup>19</sup>
- Barges also move some of the fertilizer needed to grow corn to produce ethanol, as well as some of the distillers' grains, an ethanol by-product used for animal feed.<sup>20</sup>
- A bushel of corn yields 2.7 gallons of ethanol and 17.5 pounds of distillers' grains.<sup>21</sup>
- Nearly 11.1 million metric tons of distillers' grains were exported in calendar year 2017.<sup>22</sup>
- USDA estimates a corn harvested area of 82.7 million acres in 2017/18, yielding 176.6 bushels per acre, with 5.6 billion bushels, or 33 percent of the total corn supply, to be converted to ethanol and by-products including distillers' grains, corn gluten feed, corn gluten meal, and corn oil.<sup>23</sup>
- Corn is the largest user of nitrogen in terms of application rates per acre, total acres treated, and total applications.<sup>24</sup>
- The United States imported nearly 40 million metric tons of fertilizer in calendar year 2017. This included nearly 14 million metric tons of nitrogen.<sup>25</sup>

## U.S. Monthly Ethanol Exports



Source: U.S. Census Bureau Trade Data

# Barge and Rail Competition

- In calendar year 2017, barges carried over 49 million short tons of food and farm products downbound through Mississippi Locks 27, Ohio Locks and Dam 52, and Arkansas Lock and Dam 1.<sup>26</sup>
- This included 25,935 grain barges with nearly 41 million short tons of grain.<sup>27</sup>
- A total of 38,343 grain barges were unloaded in the New Orleans port region, showing that an additional 12,408 grain barges entered the river below these 3 locks.<sup>28</sup>
- Railroads originate approximately 24 percent of U.S. grain shipments and sent 415,988 carloads, approximately 46.2 million short tons, to ports in calendar year 2017.<sup>29</sup>
- Railroads consider barge rates and the spread between U.S. Gulf and Pacific Northwest ocean vessel freight rates, and price their services accordingly.<sup>30</sup>
- USDA's *Transportation of U.S. Grains, A Modal Share Analysis, 1978-2014 Update*, shows that barges moved 48 percent and railroads moved 36 percent of all grain exports in 2014.<sup>31</sup>
- Barges moved 61 percent of corn, 48 percent of soybeans, 33 percent of wheat, and 13 percent of sorghum to export grain elevators.<sup>32</sup>
- Railroads moved 27 percent of corn, 31 percent of soybeans, 55 percent of wheat, and 58 percent of sorghum to export locations.<sup>33</sup>
- Studies have shown that without barge competition, agricultural shippers pay higher rail transportation costs, the farther they are from an inland waterway.<sup>34</sup>

## Agriculturally Significant Waterways

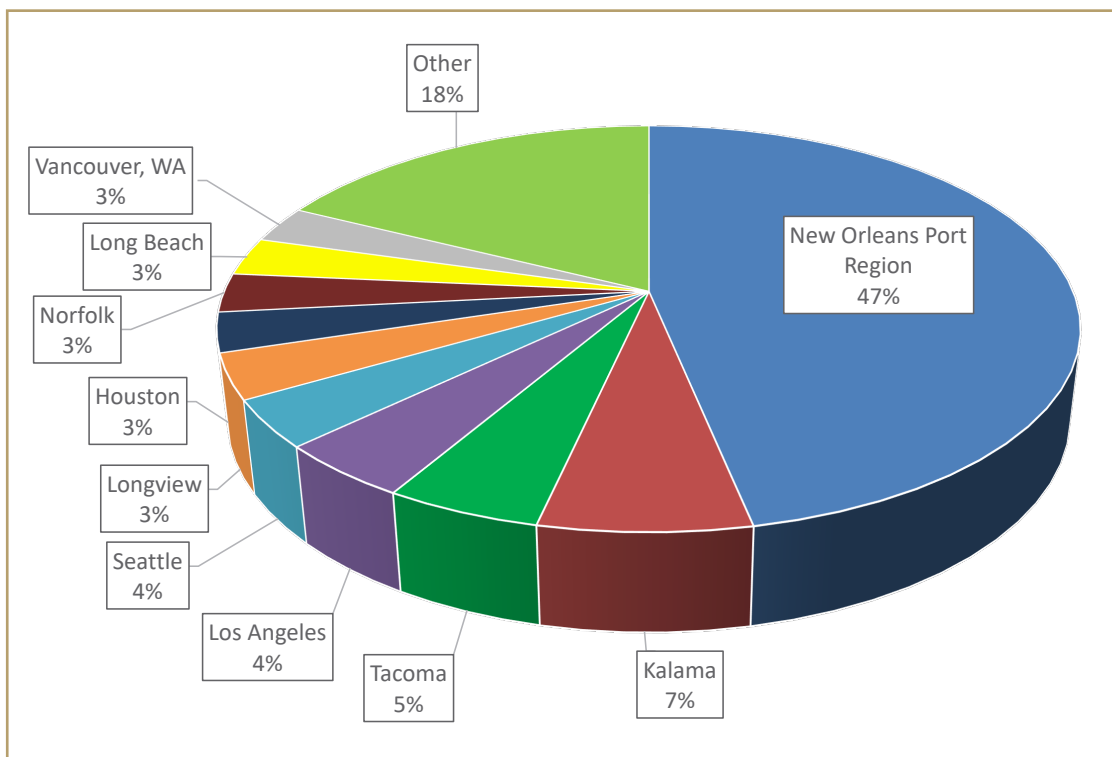


Source: USDA AMS Transportation Services Division

# Top U.S. Ports for Agricultural Exports

- In calendar year 2017, U.S. bulk and containerized waterborne agricultural exports totaled 150.9 million metric tons valued at \$90.5 billion and 22 percent of this total tonnage, 34.8 million metric tons valued at \$45.1 billion were moved in containers.<sup>35</sup>
- During the same period, containers were used to transport 7 percent of total U.S. waterborne grain exports, including 10 percent of U.S. grain exports to Asia.<sup>36</sup>
- The top five U.S. ports for bulk and containerized agricultural exports in 2017 were the New Orleans Port Region, Kalama, Tacoma, Los Angeles, and Seattle. In terms of containerized exports, the top five ports were Los Angeles, Long Beach, Oakland, Tacoma, and Norfolk.<sup>37</sup>

**Top U.S. Ports for Waterborne Agricultural Exports, 2017**

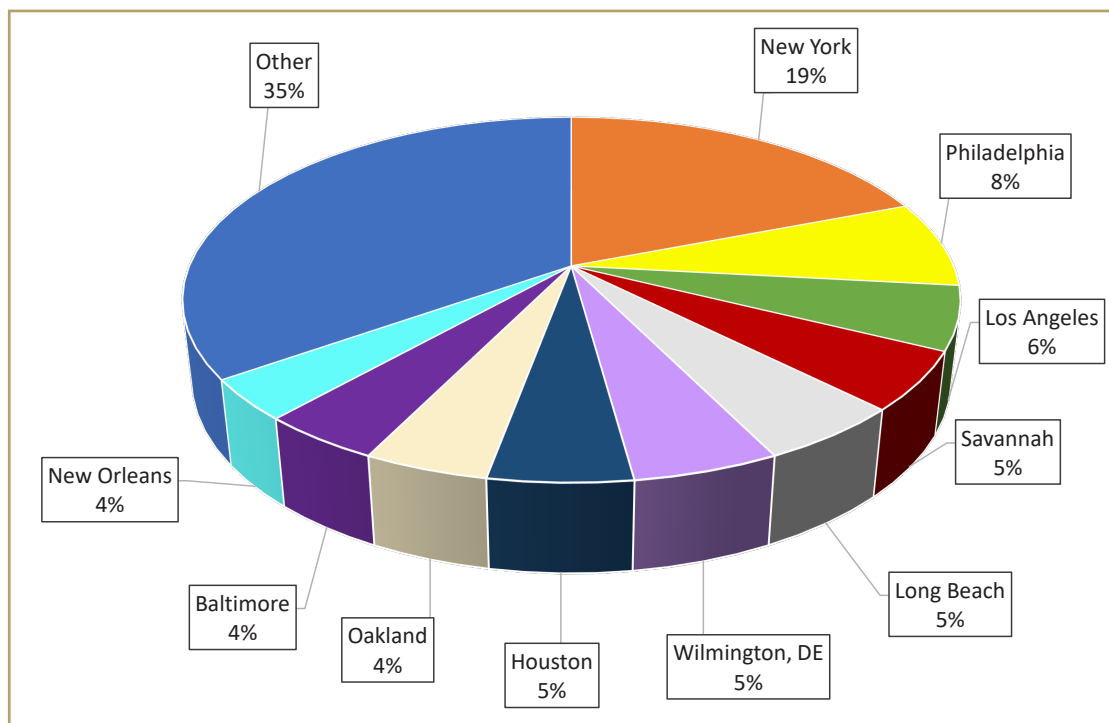


Source: PIERs, formerly known as the Port Import Export Reporting Service

## Top U.S. Ports for Agricultural Imports

- In calendar year 2017, U.S. bulk and containerized waterborne agricultural imports totaled 46.2 million metric tons, valued at \$63 billion and 78 percent of this total tonnage, 43.3 million metric tons valued at \$48.6 billion were moved in containers.<sup>38</sup>
- The top five U.S. ports for bulk and containerized agricultural imports in 2017 were New York, Philadelphia, Los Angeles, Savannah, and Long Beach. In terms of containerized imports, the top five ports were New York, Los Angeles, Long Beach, Philadelphia, and Oakland.<sup>39</sup>

### Top U.S. Ports for Waterborne Agricultural Imports, 2017



Source: PIERS

## Harbor Channel and Inland Waterway Draft Issues

- Inadequate channel depths and widths due to drought and sedimentation (shoaling) can lead to higher transportation costs, as barges and vessels may be loaded to less than capacity because of low water.<sup>40</sup>
- The number of barges in a tow may be reduced to the available channel width, and one-way, or day time only traffic restrictions may be imposed.<sup>41</sup>
- In these cases, more barges and vessels, and additional time may be required to ship a given weight of commodities.<sup>42</sup>
- There have been extended periods where low river levels, shoaling, and reduced channel widths impeded grain barge movements and access to shallow draft ports.<sup>43</sup>
- At a 9-foot draft, a barge has 1,500 short tons of capacity;<sup>44</sup> for each foot of reduced draft, the barge loses about 200 short tons of capacity.<sup>45</sup>

- When harbor channels are at less than authorized depths, S-Class container vessels lose 3,840 tons of cargo capacity per foot,<sup>46</sup> Panamax bulk grain carriers lose 2,148 tons per foot,<sup>47</sup> and the largest Great Lakes vessels lose almost 3,200 tons per foot.<sup>48</sup>
- Low water on the Great Lakes and unfunded dredging requirements increased the risk of vessel groundings, reduced vessel carrying capacity by at least 10 percent, and increased shipping costs by \$40 million a year in 2012-13.<sup>49</sup>

## Effects of Temporary Closures on Costs, Receipts, and the Federal Budget

- U.S. exporters compete based on world prices.<sup>50</sup>
- Temporary closures and restrictions on traffic in harbors and channels due to high water, debris after storms, drought, shoaling, groundings, natural disasters, man-made disasters, slowdowns, strikes, and lockouts can lead to congestion, delays, spoilage, diversion to other modes and ports, higher transportation costs, reduced farm income, and lost sales.<sup>51 52 53 54</sup>
- Higher transportation costs can result in lower cash bids in interior markets.<sup>55</sup>
- U.S. exporters may be unable to pass on higher transportation costs, as customers can purchase similar products from other countries.<sup>56</sup>
- In contrast, U.S. importers may be able to pass on higher transportation costs to their customers.<sup>57 58</sup>
- Users of railroads and highways face congestion, constrained capacity, and driver and equipment shortages.<sup>59 60 61</sup>
- Authorized channel depths and widths, and locks and dams maintained by the U.S. Army Corps of Engineers (Corps) moderate the effects of congestion, provide resiliency, and enhance recovery after transportation disruptions.<sup>62</sup>
- The Corps works to maintain operable navigation channels through accelerated dredging, rock removal, river training structures to remove sediment, strategic management of water releases from reservoirs, routinely scheduled surveys, and close collaboration with channel users and the U.S. Coast Guard on river conditions.<sup>63</sup>
- Important partners in a reliable waterway system include:
  - U.S. Coast Guard, which provides security, aids to navigation, and implements vessel traffic safety restrictions.<sup>64</sup>
  - National Oceanic and Atmospheric Administration which provides nautical charts and maps, marine weather and river level information, surveys after disruptions, and marine debris removal.<sup>65</sup>
  - Maritime Administration which promotes the development and maintenance of an adequate, well-balanced, United States merchant marine and marine highways.
  - Saint Lawrence Seaway Development Corporation which promotes use of the Seaway and maintains and operates the two U.S. Seaway locks and vessel traffic control in areas of the St. Lawrence River and Lake Ontario, in collaboration with its Canadian partner, the St. Lawrence Seaway Management Corporation.
  - Federal Maritime Commission which regulates oceanborne transportation in U.S. foreign commerce for the benefit of exporters, importers, and the American consumer.

## Want to Know More? Try These Publications:

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# Endnotes

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## NOTE:

Consistent with established practices, this report only considers those trade actions which are in place or have had formal announcement of effective dates as of the time of publication of the monthly [World Agricultural Supply and Demand Estimates](#) on September 12, 2018 and the quarterly [Outlook for U.S. Agricultural Trade](#) on August 29, 2018. Further, unless a formal end date is specified, this report also assumes such actions are in place throughout the time period covered by these forecasts.

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<sup>4</sup> Sec. Perdue: U.S. Farm Exports Hit 3rd Highest Level on Record, Press Release No. 0149.17. U.S. Dept. of Agriculture, November 11, 2017. Web. <https://www.usda.gov/media/press-releases/2017/11/16/sec-perdue-us-farm-exports-hit-3rd-highest-level-record>

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<sup>10</sup> Ibid.; Consolidated Appropriations Act, 2018. H.R. 1625. PL 115-141. Division D—Water Development and Related Agencies Appropriations Act, 2018, Title I, Corps of Engineers—Civil, Department of the Army. March 23, 2018. Web. <https://www.congress.gov/115/bills/hr1625/BILLS-115hr1625enr.pdf>; Explanatory Statement—Division D. Web. <https://docs.house.gov/billsthisweek/20180319/DIV%20D%20EW%20SOM%20FY18-OMNI.OCR.pdf>; FY 2018

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<sup>19</sup> Table 59: Movements of Crude Oil and Petroleum Products by Tanker and Barge Between PAD Districts. Petroleum Supply Monthly. U.S. Energy Information Administration. Web. <https://www.eia.gov/petroleum/supply/monthly/>

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McGregor, Brian. A Reliable Waterway System Is Important to Agriculture. October 2018. U.S. Dept. of Agriculture, Agricultural Marketing Service. Web. <<http://dx.doi.org/10.9752/TS050.10-2018>>

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