

The four criteria are: 1. Safety and navigability of incoming and outgoing vessel traffic with consideration to neighboring operations and infrastructure. 2. Federal, State, and local agency input regarding structure location and constructability. 3. The extent of potential environmental impacts from construction and maintenance activities. 4. The neighboring land-use and aesthetic perception of the proposed project.

The applicant's first alternative consists of construction of a 1,014-foot-long by 24-foot-wide dock structure with a dock access bridge that spans a distance of 148 linear feet over Texas City Hurricane Flood Protection Levee that connects to a 400-foot-long by 24-foot-wide dock access lane. The dock access lane provides access to the working platform that is 128-feet-long by 115-feet wide which contains an operations building and ammonia product loading arms and piping. The vessels will moor to 5 cast in place concrete mooring dolphins, one emergency turning dolphins, two breasting dolphins, and additional mooring and breasting dolphins for barge vessels. A new channel, 3,500-feet-long by 382-feet-wide, will be dredged to provide navigational access for vessels to the dock structure. The footprint of the total dredge area is estimated at 43 acres. This alternative was not selected because the design did not meet all four criteria. The siting of a permanent dock access structure spanning over the Texas City Hurricane Flood Protection Levee generated concerns from the Corps Operations-Navigation Division regarding the impacts of a permanent structure constructed over the Federal project. The lack of a turning basin and the length and width of the proposed dredge channel generated concerns from the U.S. Coast Guard and Galveston-Texas City Pilots regarding the potential of an increased risk of vessel groundings and the navigational operation of the proposed channel design. The large dredge area generated concerns with the extent of environmental impacts. The location of the dock adjacent to Texas City Hurricane Flood Protection Levee and near the Texas City Dike generated concerns with the aesthetics of the structure and its locational proximity.

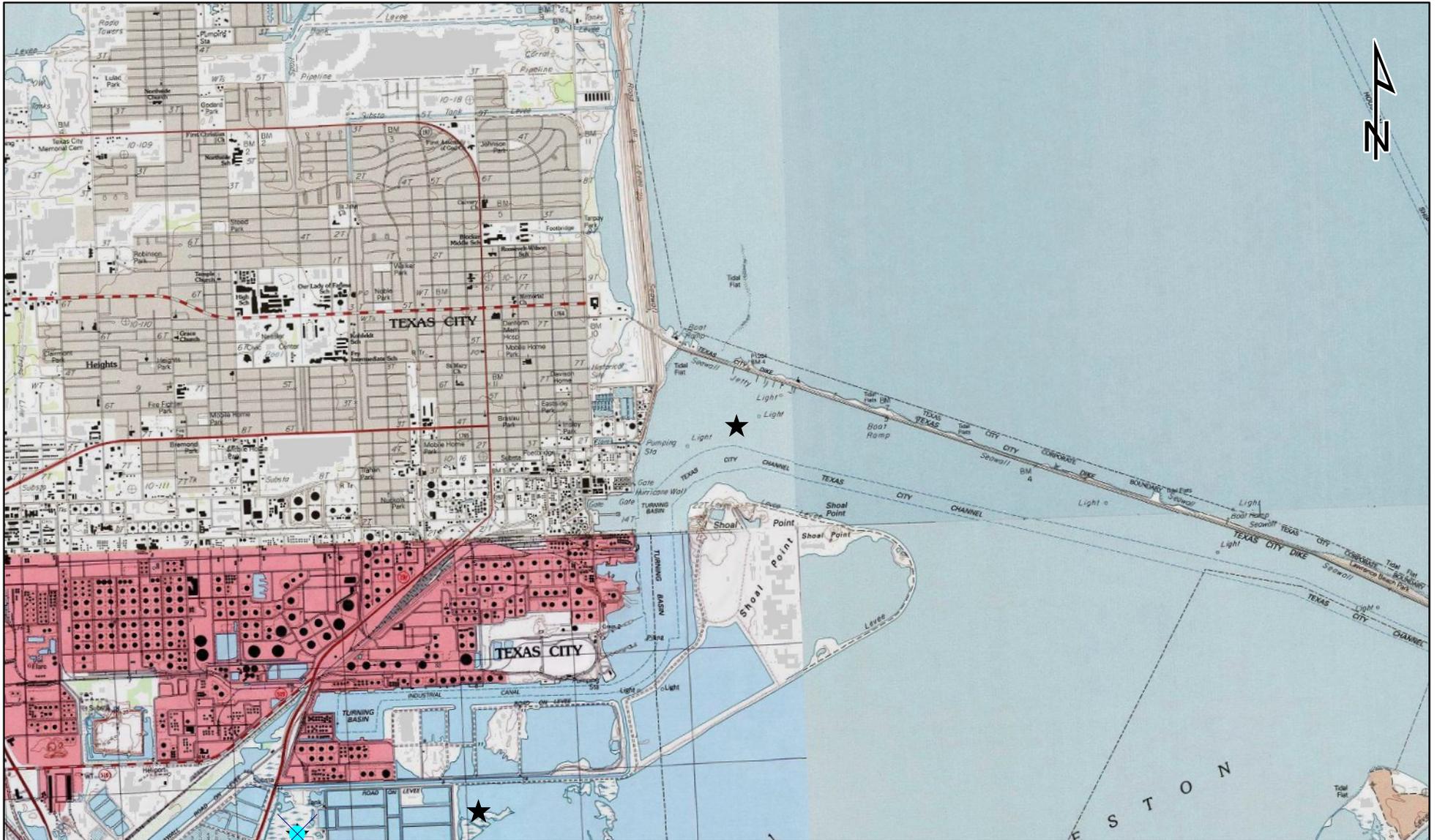
The applicant's second alternative consists of the structures as described in the first alternative but include the addition of a 710-foot-diameter turning basin near the proposed dock structure. The addition of the turning basin increased the total dredge area to an estimated 48 acres. This alternative was not selected because this design did not meet all four criteria. The siting of the permanent dock access structure spanning over the Texas City Hurricane Flood Protection Levee, the large dredge area, and the location of the dock adjacent to Texas City Hurricane Flood Protection Levee and near the Texas City Dike generated the same concerns as the first alternative. A review of the channel and turning basin still generated the same concerns with the potential of an increased risk of vessel groundings and navigational operation as the first alternative.

The applicant's third alternative consists of construction of a remote dock that is 130-feet-long by 103-feet-wide supported by 145 piles located north of the Texas City Channel (Channel) and adjacent to the turn of the Channel but recessed back out of the line of sight of the channel navigational aids. The remote dock structure will contain 10 mooring dolphins with sea vessels mooring on the south side of the remote dock and barges on the north side sharing common mooring points. The footprint of the total dredge area is estimated at 48 acres. This alternative met the aesthetics criteria because it reduced the

footprint of the dock structure and removed the location of the dock structure to a farther distance from the shore of the Texas City Dike. This alternative removed the concerns of the Corps of construction of a permanent structure over the Texas City Hurricane Flood Protection Levee. This alternative did not reduce the environmental impacts when compared to the first two alternatives. The siting of the remote dock along the turn of the Channel still generated navigational operation concerns from the U.S. Coast Guard and Galveston-Texas City Pilots.

The applicant's fourth alternative consist of construction of the same remote dock structure as described in the third alternative. This alternative sited the remote dock location on the north side of the Channel and east and prior to the turn of the Channel. This location was contingent upon relocating the Channel marker light 18. The footprint of the total dredge area is estimated at 25 acres. This alternative met the aesthetics criteria similar to the third alternative. This alternative met the reduction of environmental impacts by reducing the dredging footprint. This alternative removed the concerns of the Corps of construction of a permanent structure over the Texas City Hurricane Flood Protection Levee. The siting of the remote dock prior to the turn of the Channel still generated navigational operational concerns from the U.S. Coast Guard and Galveston-Texas City Pilots.

The applicant's fifth alternative, is the preferred alternative, and is the proposed project as previously described. The siting of the remote dock structure would be on the straightaway portion of the Texas City Channel, away from the turn of the Channel, and offset of the centerline of the Channel by a distance of 526 linear feet. This alternative also consists of construction of a vertical pipe structure and temporary pipe access that spans over Texas City Hurricane Flood Protection Levee. The footprint of the total dredge area is estimated at 15 acres. This alternative met the aesthetics criteria similar to the third alternative and met the reduced environmental impacts similar to the fourth alternative. This alternative removed the concerns of the Corps regarding construction of a permanent structure over the Texas City Hurricane Flood Protection Levee. This alternative also reduced concerns from the U.S. Coast Guard and Galveston-Texas City Pilots with navigational operations by removing the remote dock structure outside of the radius of the turn of the Channel. In addition, the requirement for a slow rate of speed for incoming vessels to enter the turn of the Channel and the requirement of outgoing vessels to have tug assist by the Galveston-Texas City Pilots to control vessel trajectory through the turn of the Channel also reduced the risk of vessel allision with this preferred alternative location of the remote dock structure.



★ Project Location



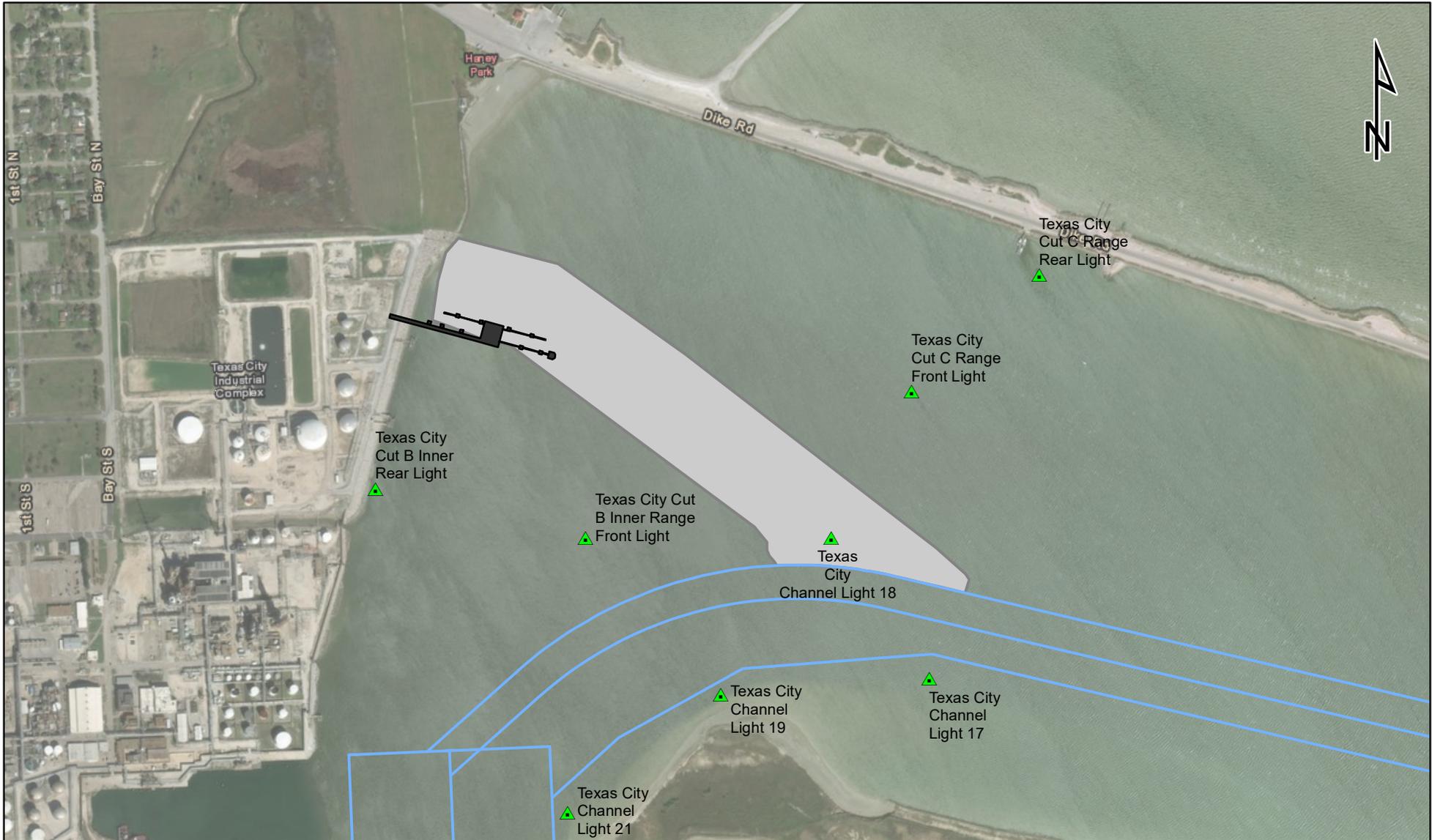
**GCA Dock Vicinity**  
Texas City, Texas

**Geosyntec**  
consultants

Austin

February 2018

**Figure**  
**1**

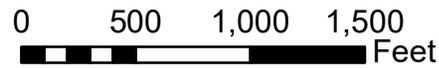


▲ Nautical Navigation Aids (NAVAID) Locations

— Channel and Centerline

■ Option 1 Dock

■ Option 1 Dredge Area



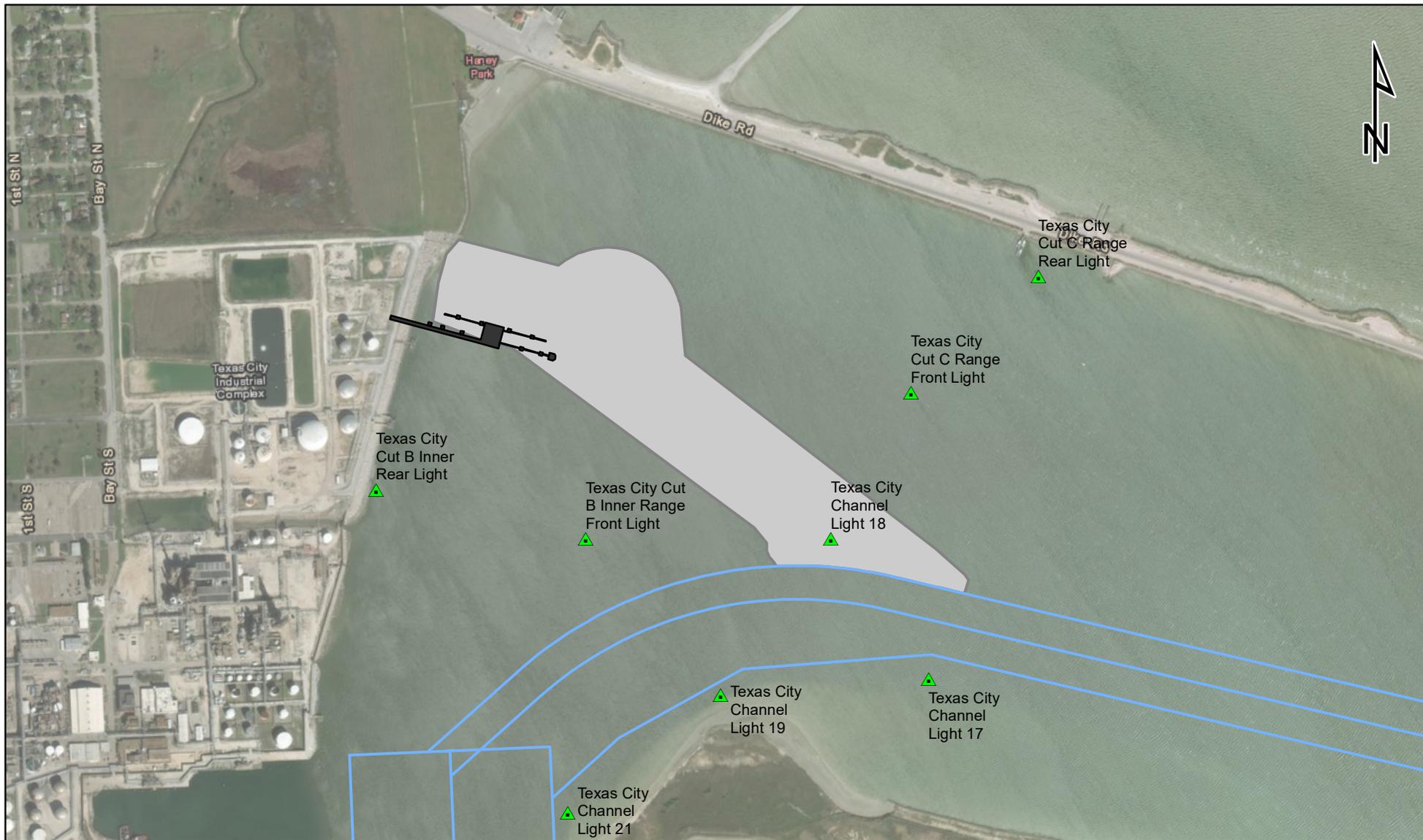
**GCA Dock Option 1**  
Texas City, Texas

**Geosyntec**  
consultants

Austin, TX.

February 2018

**Figure**  
**2**

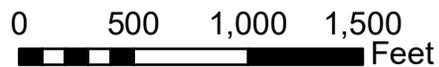


▲ Nautical Navigation Aids (NAVAID) Locations

— Channel and Centerline

■ Option 2 Dock

■ Option 2 Dredge Area



### GCA Dock Option 2

Texas City, Texas

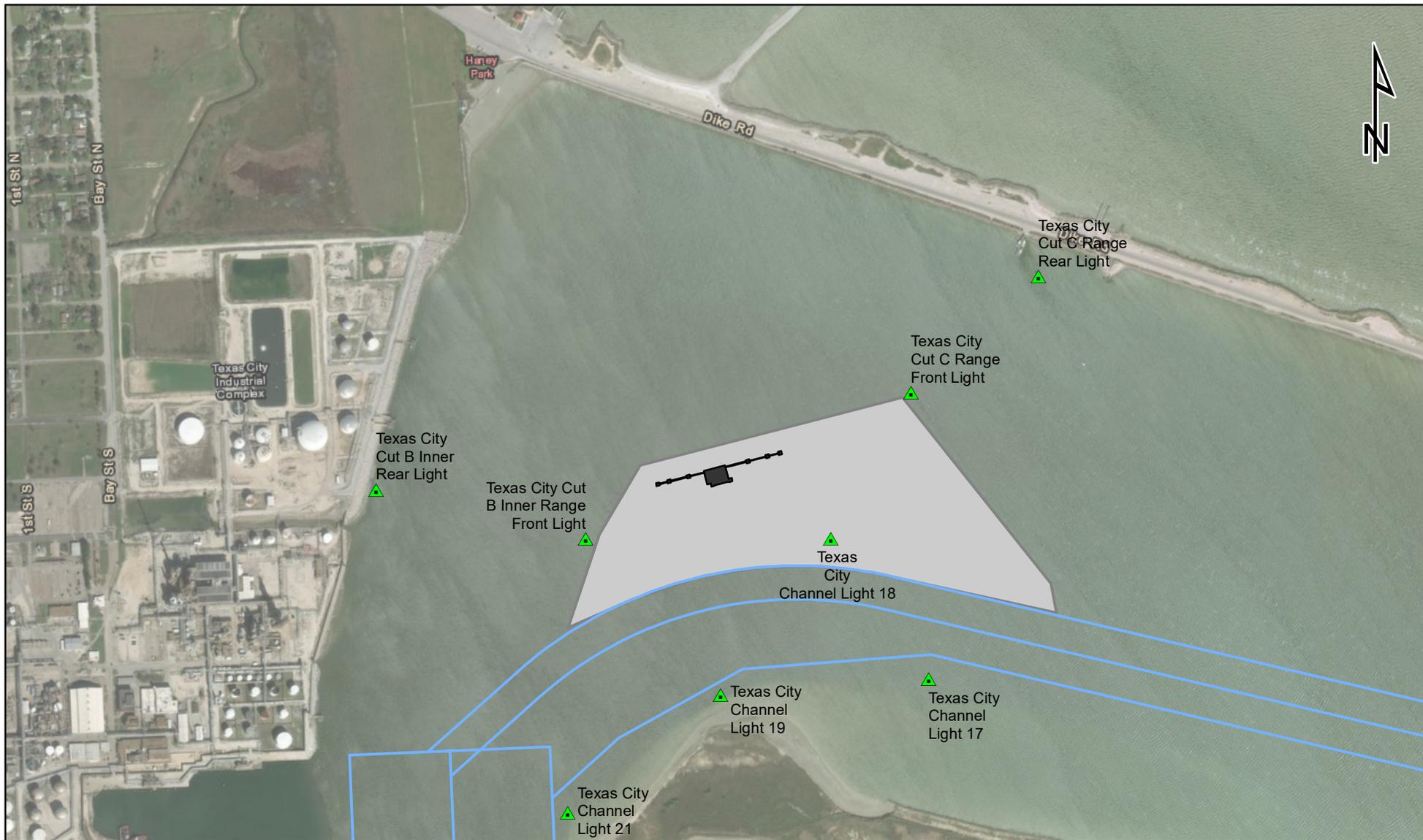
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Figure

3

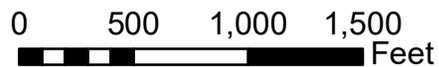


▲ Nautical Navigation Aids (NAVAID) Locations

— Channel and Centerline

■ Option 3 Dock

■ Option 3 Dredge Area



### GCA Dock Option 3

Texas City, Texas

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**Figure**

**4**

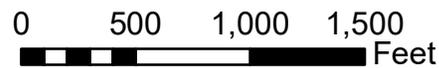


▲ Nautical Navigation Aids (NAVAID) Locations

— Channel and Centerline

■ Option 4 Dock

■ Option 4 Dredge Area



### GCA Dock Option 4

Texas City, Texas

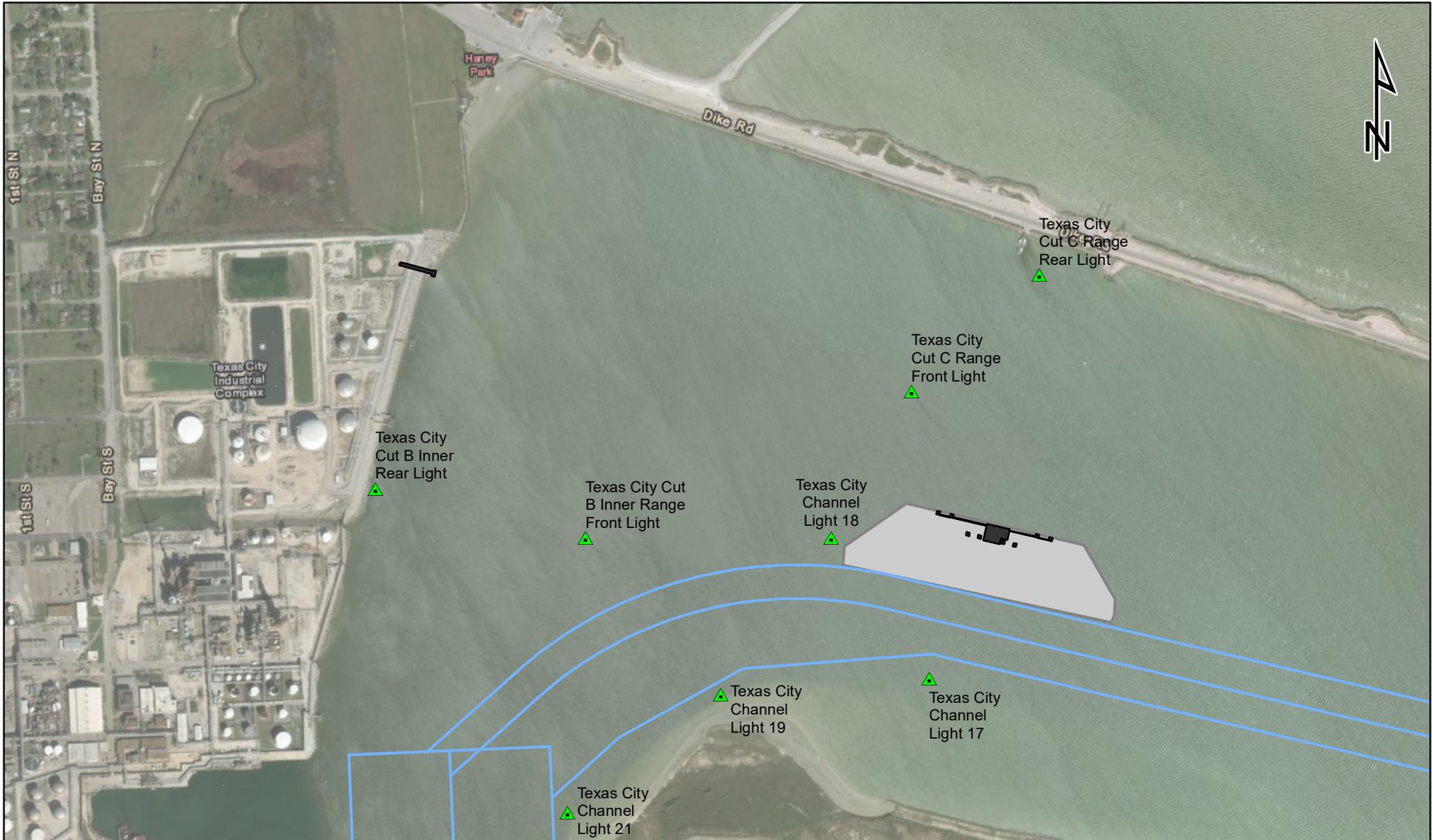
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consultants

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**Figure**

**5**



▲ Nautical Navigation Aids (NAVAID) Locations	0 500 1,000 1,500 Feet
— Channel and Centerline	
■ Option 5 Dock	
■ Option 5 Dredge Area	

<p align="center"><b>GCA Dock Option 5</b> Texas City, Texas</p>	
<p align="center"><b>Geosyntec</b> consultants</p>	
Austin, TX.	February 2018
<p align="center"><b>Figure</b> <b>6</b></p>	