

*1. Administrative Details*

**Proposal Name:** Study for the feasibility for dredge material disposal in underground salt dome caver

**by Agency:** Port of Houston Authority of Harris County, Texas

**Locations:** TX

**Date Submitted:** 08/20/2018

**Confirmation Number:** 2d6667ef-90be-4697-ba0e-7567714342c0

*Supporting Documents*

<b>File Name</b>	<b>Date Uploaded</b>
PHA 7001 Develop Salt Domes.pdf	08/20/2018
PHA 7001 study salt domes .pdf	08/20/2018

**2. Provide the name of the primary sponsor and all non-Federal interests that have contributed or are expected to contribute toward the non-Federal share of the proposed feasibility study or modification.**

Sponsor	Letter of Support
Port of Houston Authority of Harris County, Texas(Primary)	The Port of Houston is ranked first in the nation in total foreign tonnage, including exports, and second in total tonnage among all U.S. ports. Over 8,300 deep draft vessels and 130,000 barge tows call on the port annually. Because of geological conditions, the narrow, man-made 52-mile ship channel constructed through an estuary and riverine systems requires significant annual maintenance dredging. As channel industries continue to expand to meet commercial demands, real estate needed for traditional dredged material disposal facilities is increasingly scarce, and use of Ocean Dredged Material Disposal Sites using hopper dredged is not practicable for all reaches of the channel. The Houston Ship Channel system extends over a geologic salt dome basin which has been developed for underground storage of petroleum and gas products, including storage caverns beneath Galveston Bay.

**3. State if this proposal is for a feasibility study, a modification to an authorized USACE feasibility study or a modification to an authorized USACE project. If it is a proposal for a modification, provide the authorized water resources development feasibility study or project name.**

Feasibility Study

***4. Clearly articulate the specific project purpose(s) of the proposed study or modification. Demonstrate that the proposal is related to USACE mission and authorities and specifically address why additional or new authorization is needed.***

O&M for the USACE navigation mission in the Houston Ship channel system requires regular maintenance dredging and placement in upland disposal areas. Available real estate for placement areas will become increasingly scarce. Geologic salt domes and bedded formations exist along the Gulf coast including under the entire Houston Ship Channel system. Salt caverns have been created in the Houston region for storage of oil and oil refinery by products at costs of less than the cost to create capacity in traditional upland disposal facilities. Use of salt domes would potentially provide decades of disposal capacity for selected reaches with low development and operational costs. Use of such underground storage features would minimize environmental impacts to Galveston Bay, an important estuary where further upland disposal islands would ordinarily be constructed as the traditional method of dredge material disposal.

5. To the extent practicable, provide an estimate of the total cost, and the Federal and non-Federal share of those costs, of the proposed study and, separately, an estimate of the cost of construction or modification.

	Federal	Non-Federal	Total
<b>Study</b>	\$250,000	\$250,000	\$500,000
<b>Construction</b>	\$8,000,000	\$2,000,000	\$10,000,000

**Explanation (if necessary)**

Planning, permitting and construction of salt dome storage has been conducted for federal and non-federal entities; cost information was developed from published reports.

***6. To the extent practicable, describe the anticipated monetary and nonmonetary benefits of the proposal including benefits to the protection of human life and property; improvement to transportation; the national economy; the environment; or the national security interests of the United States.***

Use of underground dredge material storage could be conducted for 60% to 80% less than upland placement areas, considering land acquisition, and recurring dike raises and mobilization costs. A single placement cavern could potentially receive 20 MCY of material in its first decade of use with cost avoidance of over \$100M. Use of underground placement eliminates environmental impacts caused by creation and operation of new placement area islands in the bay, and preserves bay acreage for recreation and commercial fishing. Underground storage caverns would be continuously available without dewatering and dike construction, and so would better accommodate unexpected dredging requirements (storm-related shoaling), which would mitigate draft restriction impacts and improve efficiency and competitiveness of maritime industries in Houston, the nation's leading port for foreign commerce.

*7. Does local support exist? If 'Yes', describe the local support for the proposal.*

Yes

### **Local Support Description**

The project has received support from the natural resource agency representatives of the beneficial users group of the channel interagency coordination team, as a feasible and environmentally sensitive means of long-term dredge material disposal.

*8. Does the primary sponsor named in (2.) above have the financial ability to provide for the required cost share?*

Yes

# Primary Sponsor Letter of Support

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**PHA 7001 Develop Salt Domes.pdf**



August 20, 2018

Colonel Lars Zetterstrom  
Commander, Galveston District  
U.S. Army Corps of Engineers  
P.O. Box 1229  
Galveston, Texas 77553-1229

Subject: Letter of Support for Section 7001 Proposal for Study of the Feasibility of Developing Salt Domes for Dredge Material Disposal

Dear Colonel Zetterstrom,

The purpose of this letter is to express the support of the Port of Houston Authority for a study of the feasibility of developing salt domes or bedded strata for dredge material disposal from the Houston Ship Channel system.

The Port of Houston Authority (PHA) is the non-federal sponsor of the ship channel area of the proposed study. This disposal study was previously recommended to the district as a potential continuing Authorities Project, but that request has not been fruitful. PHA has briefed and discussed this disposal concept with natural resource agencies at the Beneficial User's Group Interagency Coordination Team meetings and received support for pursuing this concept as a way to minimize impacts to Galveston Bay from continued operations and maintenance of federal channels and berths. As the PHA is required to acquire lands for future placement areas and cost share continuing construction, PHA supports options which additionally minimize federal and sponsor costs. PHA's preliminary research and discussions with the geologists, salt dome storage operators, and natural resource agency representatives have led us to believe that the concept is viable, realistic, and so deserves further study and analysis.

The Houston Ship Channel is the busiest deep draft ship channel in the U.S., and is the conduit for over 250 million tons of commerce annually. The channel requires regular and routine maintenance dredging to assure efficient vessel moves. Because of the volume of dredging required to sustain navigation and the path through the delicate and valuable Galveston Bay estuary, our channel partnership needs to investigate and support all feasible alternatives to traditional dredge material disposal.

This letter is not a commitment for funding the proposed study. That commitment can only be made when a Federal Cost Share Agreement with USACE is executed by the Port Authority. The Port Authority will continue to provide staff assistance to USACE efforts to advance the proposal, including providing supplemental information as may be necessary or useful.

The Port Authority looks forward to continuing our work on this study proposal with your staff in order to achieve the mutual long-range goals for maintenance of the channel system.

Sincerely,

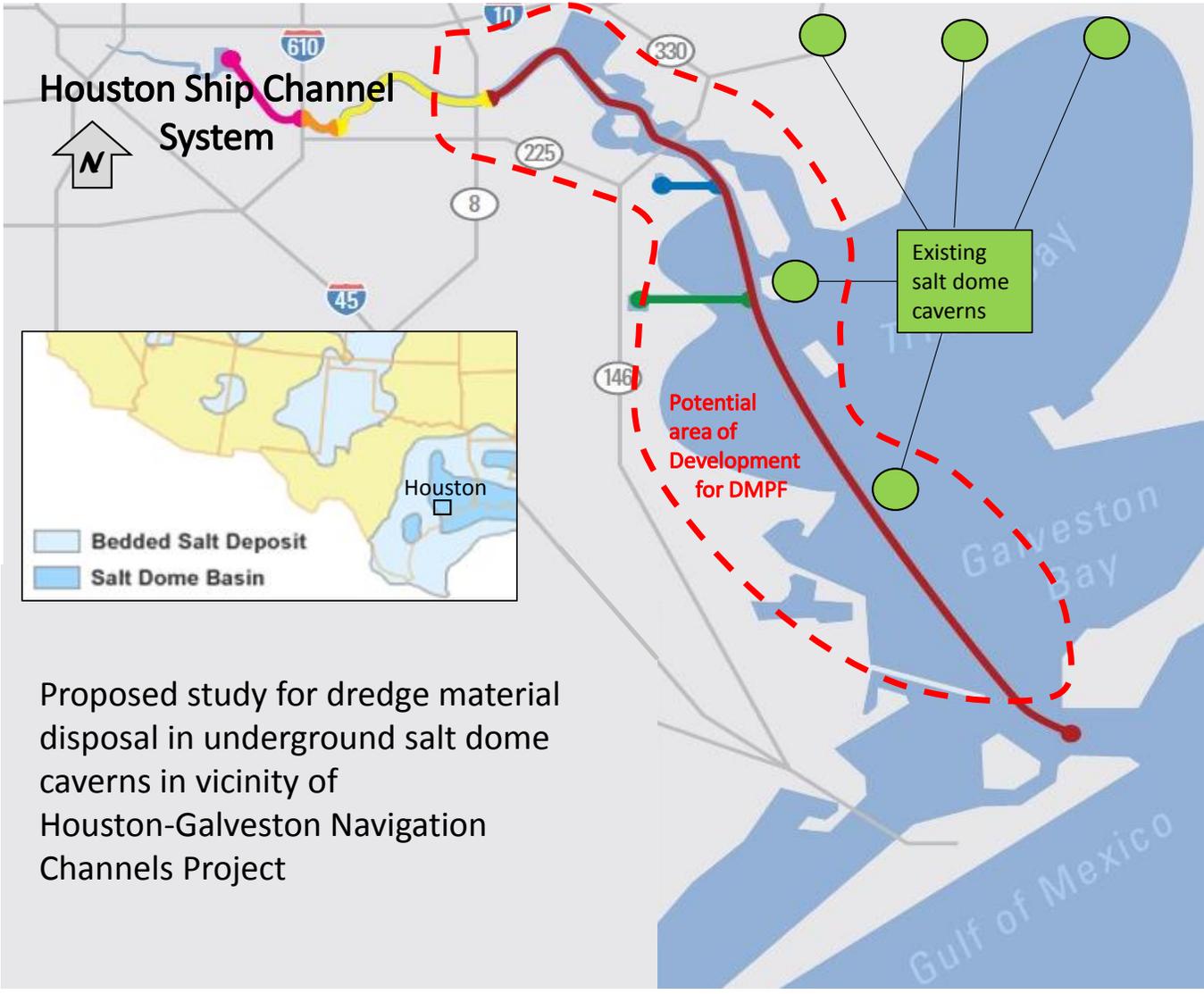
A handwritten signature in black ink, appearing to read 'R. Guenther', with a stylized flourish at the end.

Roger Guenther  
Executive Director

# Map Document

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PHA 7001 study salt domes .pdf



Proposed study for dredge material disposal in underground salt dome caverns in vicinity of Houston-Galveston Navigation Channels Project