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**REVISED
ENVIRONMENTAL ASSESSMENT**

**STRATEGIC PETROLEUM RESERVE
SEAWAY COMPLEX
DISTRIBUTION ENHANCEMENTS**

**BRAZORIA, GALVESTON, AND HARRIS
COUNTIES, TEXAS**

FEBRUARY 1986

U.S. Department of Energy
Assistant Secretary for Fossil Energy
Deputy Assistant Secretary for ~~Strategic~~ Petroleum Reserve

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SUMMARY AND CONCLUSIONS

The Strategic Petroleum Reserve (SPR) of the U.S. Department of Energy (DOE) proposes to construct and operate a 40-inch diameter, 46-mile long buried crude oil pipeline from existing facilities of the SPR Seaway Complex located near Freeport, Texas to an existing commercial crude oil terminal near Texas City, Texas. In May 1985, DOE issued an Environmental Assessment [(EA); DOE/EA-0252] and a Finding of No Significant Impact for this action.

The May 1985 EA addressed the construction and operation of a DOE-owned buried crude oil pipeline from Bryan mound to the ARCO Terminal located in Texas City, Galveston County, Texas. The EA assessed three alternative alignments for routing the pipeline from Bryan Mound past Freeport to a common point near Stratton Ridge. From Stratton Ridge to Texas City, one route segment was considered. All three alternative alignments around Freeport were subsequently determined to be unsuitable for safe construction of a large-diameter buried pipeline, primarily because of crowded pipeline corridors and restricted pipeline rights-of-way (ROW). Therefore, the SPR identified and is herein considering a fourth alternative route segment from Bryan Mound through the Freeport vicinity. This fourth alternative is now the proposed action and its assessment is the purpose of this revision to DOE/EA-0252.

The new fourth alternative passes eastward from Bryan Mound, through the City of Freeport, across the Old Brazos River and Dow Barge Canal, and northward to Stratton Ridge. The route is about 11 miles long, and is in or adjacent to existing utility and pipeline right-of-way (ROW) for about 70% of its length. Crude oil throughput capacity for all cases is 1.10 million barrels per day. This revised EA addresses environmental impacts of construction and operation of the pipeline along the fourth subalternative

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The new fourth alternative passes eastward from Bryan Mound, through the City of Freeport, across the Old Brazos River and Dow Barge Canal, and northward to Stratton Ridge. The route is about 11 miles long, and is in or adjacent to existing utility and pipeline right-of-way (ROW) for about 70% of its length. Crude oil throughput capacity for all cases is 1.10 million barrels per day. This revised EA addresses environmental impacts of construction and operation of the pipeline along the fourth subalternative

route segment, as compared to impacts from the three previously considered alternative route segments.

Potential impacts from pipeline construction address disturbance of prime farmland and wetlands. Impacts to prime farmland are not significant. Alternative 4 would disturb about 2 acres of prime farmland in a 2 mile segment that is currently used for pasture land in an existing pipeline and transmission line right-of-way. The disturbance would result from widening the existing ROW by about 8 ft to allow for the 25 ft permanent ROW for the SPR pipeline. Existing space in the ROW is adequate for construction activity. Digging a 10 ft wide trench would disturb about 2.5 acres. Alternatives 1-3 would each disturb about 24 acres of prime farmland for construction ROW, and about 6 acres for a 10-ft wide pipeline trench. Impacts to prime farmland from all four subalternatives should be minor and temporary.

Construction impacts to wetlands are not expected to be significant. Disturbance of wetlands for the construction ROW would be about 1 acre for Alternative 4; digging the 10 ft wide pipeline trench would disturb about 0.1 acre. Revegetation will occur naturally from existing adjacent rootstock. The wetland area crossed is part of a larger area planned to be filled for use as a future industrial park. Alternatives 1 and 2 each were estimated to disturb about 40 acres and 30 acres of wetlands for the construction ROW, respectively; digging the 10 ft wide pipeline trench would disturb areas equal to about 10% of those for the construction ROW. Alternative 3 was expected to involve negligible, if any, wetland areas. The remainder of the route to Texas City involves about 1 mile of wetlands. Given the locations of the SPR Seaway Complex and commercial crude oil

terminals, there is no practicable alternative to constructing the pipeline across wetlands.

Water use during pipeline testing in accordance with permit conditions is not expected to be significant. Hydrotesting the entire 46-mile long pipeline of Alternative 4 would require a maximum one-time water use of about 18 million gallons. Testing the entire pipeline for the other subalternatives would involve up to 21 million gallons. The source of the test water would be local, available non-potable surface water. Discharge of hydrotest water in accordance with permit conditions is not expected to result in any significant impacts.

Potential impacts from pipeline operation are primarily those caused by accidental releases of crude oil, especially in floodplain and wetland environments. Such potential impacts relate to the probability of an accident occurring, and the volume of crude oil spilled during the accidental release. A maximum of 0.01 spill events are estimated to occur during one six-month drawdown, and the volume of oil spilled would be at most about 14,000 bbl for the pipeline. Because of design factors and the fact that the pipeline will be buried, the occurrence of a major pipeline break releasing large quantities of crude oil is unlikely. Operational testing and inspection of the buried pipeline, and the development of an oil spill contingency plan will reduce the seriousness of an oil spill. Impacts of similar magnitude were identified for the other three subalternative routes.

Impacts on floodplains are expected to be minor. Approximately 71% of the route (Alternative 4) lies within the 100-yr floodplain. Alternative 1 lies in the 100-yr floodplain for about 72% of its length, Alternative 2 for about 67%, and Alternative 3 for about 62% of its length. Given the

terminals, there is no practicable alternative to constructing the pipeline across wetlands.

Water use during pipeline testing in accordance with permit conditions is not expected to be significant. Hydrotesting the entire 42-inch diameter pipeline (46 miles with Alternative 4) would require a one-time water use of about 18×10^6 gallons. Testing the entire pipeline with the other subalternatives would involve up to 21×10^6 gallons. This water use would be available non-potable surface water. Discharge of hydrotest water in accordance with permit conditions is not expected to result in any significant impacts.

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locations of the SPR Seaway Complex and existing private sector crude oil terminals, there is no practical alternative to constructing the pipeline in the floodplain. Because the pipeline will be buried, and original ground contours restored in accordance with permits, there will be no interference with natural moderation of floods, water quality maintenance, groundwater recharge, or agricultural production. Similarly, there will be no increase in the threat of life or property from flooding as a result of any of the pipelines.

As is the case with the three alternative routes considered previously, the proposed pipeline is expected to involve no other environmental concerns. No known or eligible National Historic Register properties are in the project area. The identification, evaluation and treatment of historic properties during the planning and construction of the pipeline will be done in accordance with the Programmatic Memorandum of Agreement among DOE, the Texas State Historic Preservation Officer and the Advisory Council on Historic Preservation. The U.S. Fish and Wildlife Service has confirmed that no species listed or proposed to be listed as threatened or endangered would be affected by the proposed action. No habitats designated as important natural areas will be traversed. Impacts to wooded areas are not considered significant since most of the pipeline route will use existing pipeline ROW that is presently maintained. Impacts of construction on water quality at major water crossings will be minimal due to use of directional drilling. There should be no significant impact on housing availability or demand on community services since there is more than adequate construction labor within commuting distance. After construction is complete, no significant increase in the number of DOE or private sector employees is

anticipated. Finally, no significant air quality, geological, noise, or solid waste issues are envisioned.

Principal impacts are summarized and compared below:

Alter- native Route Segment	Length	100-yr Floodplain	Wetlands	Water Crossings	Existing ROW	Prime Farmland
4	11 mi	8 mi	0.1 mi	9	8 mi	2 mi
1	18 mi	13 mi	4 mi	7	14 mi	5 mi
2	15 mi	10 mi	3 mi	6	8 mi	5 mi
3	13 mi	8 mi	0 mi	2	11 mi	5 mi

1. PROPOSED ACTION AND ALTERNATIVES

1.1 BACKGROUND

In May 1985, the U.S. Department of Energy (DOE) issued an Environmental Assessment [(EA); DOE/EA-0252] and a Finding of No Significant Impact regarding crude oil distribution enhancements for the Strategic Petroleum Reserve (SPR) Seaway Complex located near Freeport, Texas. The distribution enhancements, which consist of a new crude oil pipeline to connect the SPR Seaway Complex with existing commercial distribution networks, are needed to assure an adequate distribution system to allow drawdown of the Seaway storage site (Bryan Mound) at its design rate of 1.10 million barrels per day (bpd).

The need for this action was precipitated by the sale of the Seaway pipeline in 1984 for conversion from crude oil to natural gas transmission. The Seaway pipeline, at one time a major common carrier of imported crude oil, was a major mode of distribution for SPR drawdown from Bryan Mound. With the sale of the pipeline, the distribution capability for Bryan Mound crude oil was limited to 360,000 bpd across the docks in Freeport Harbor and through a local pipeline.

The May 1985 EA for the SPR Seaway Complex addressed the construction and operation of a DOE-owned buried crude oil pipeline from Bryan Mound to the ARCO Terminal located in Texas City, Galveston County, Texas. The EA assessed three alternative alignments for routing the pipeline from Bryan Mound past Freeport to a common point near Stratton Ridge. From Stratton Ridge to Texas City, one route segment was considered.

All three alternative alignments around Freeport were subsequently determined to be unsuitable for safe construction of a large-diameter buried pipeline, primarily because of crowded pipeline corridors and restricted

pipeline rights-of-way (ROW). Therefore, the SPR identified and is herein considering a fourth alternative route segment from Bryan Mound through the Freeport vicinity. This fourth alternative is now the proposed action and its assessment is the purpose of this revision to DOE/EA-0252.

1.2 PROPOSED ACTION

The proposed Federal action addressed herein is the construction and operation of a buried crude oil pipeline with 1.10 million bpd capacity from existing facilities of the SPR Seaway Complex to ARCO's Terminal in Texas City, Galveston County, Texas. This action is identified as Alternative 4 to allow comparison with the three alternative pipeline routes assessed in DOE/EA-0252 (Fig. 1).

The only significant difference among the four alternatives is their alignment from Bryan Mound past Freeport to a common point at Stratton Ridge (Fig. 2). Therefore, this revision to DOE/EA-0252 is focused on potential impacts of the segment of Alternative 4 between Bryan Mound and Stratton Ridge and compares them with impacts of the same segment for each of the three alternatives previously assessed.

From the Stratton Ridge common point to the ARCO Terminal in Texas City, the route is the same as that assessed in DOE/EA-0252, with one exception. A minor realignment of the route, which would shorten the pipeline by one-half mile (Fig. 3), is being considered at Basford Bayou in Galveston County. The Basford Bayou realignment would be offset from the existing pipeline ROW by a maximum of about 1.5 miles.

The realignment would cross about 2.4 miles of prime farmland, primarily in the vicinity of Hitchcock, Texas, whereas the existing ROW involves no prime farmland. On the other hand, the realignment would

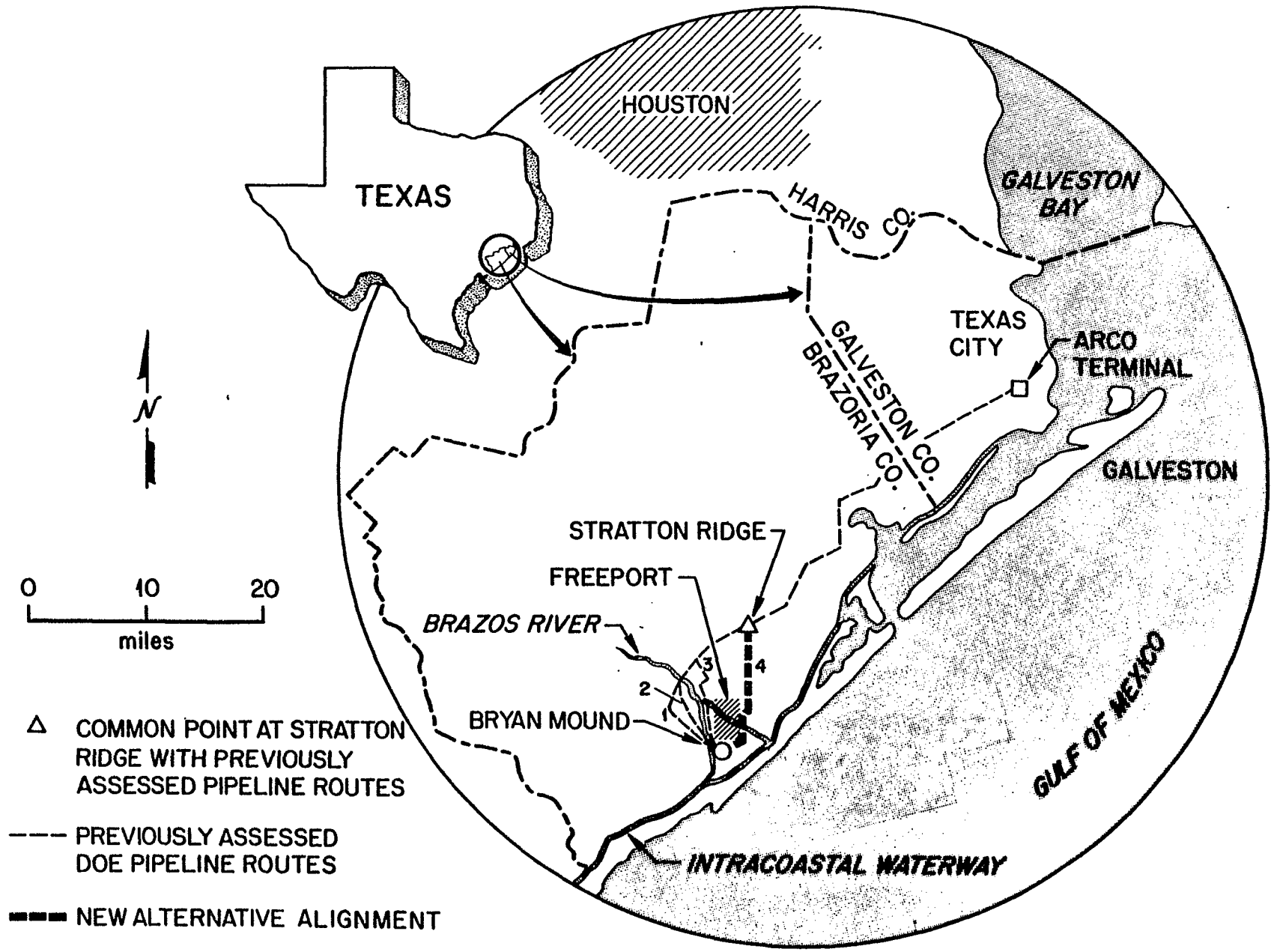


Figure 1. Regional overview of alternative DOE pipeline routes

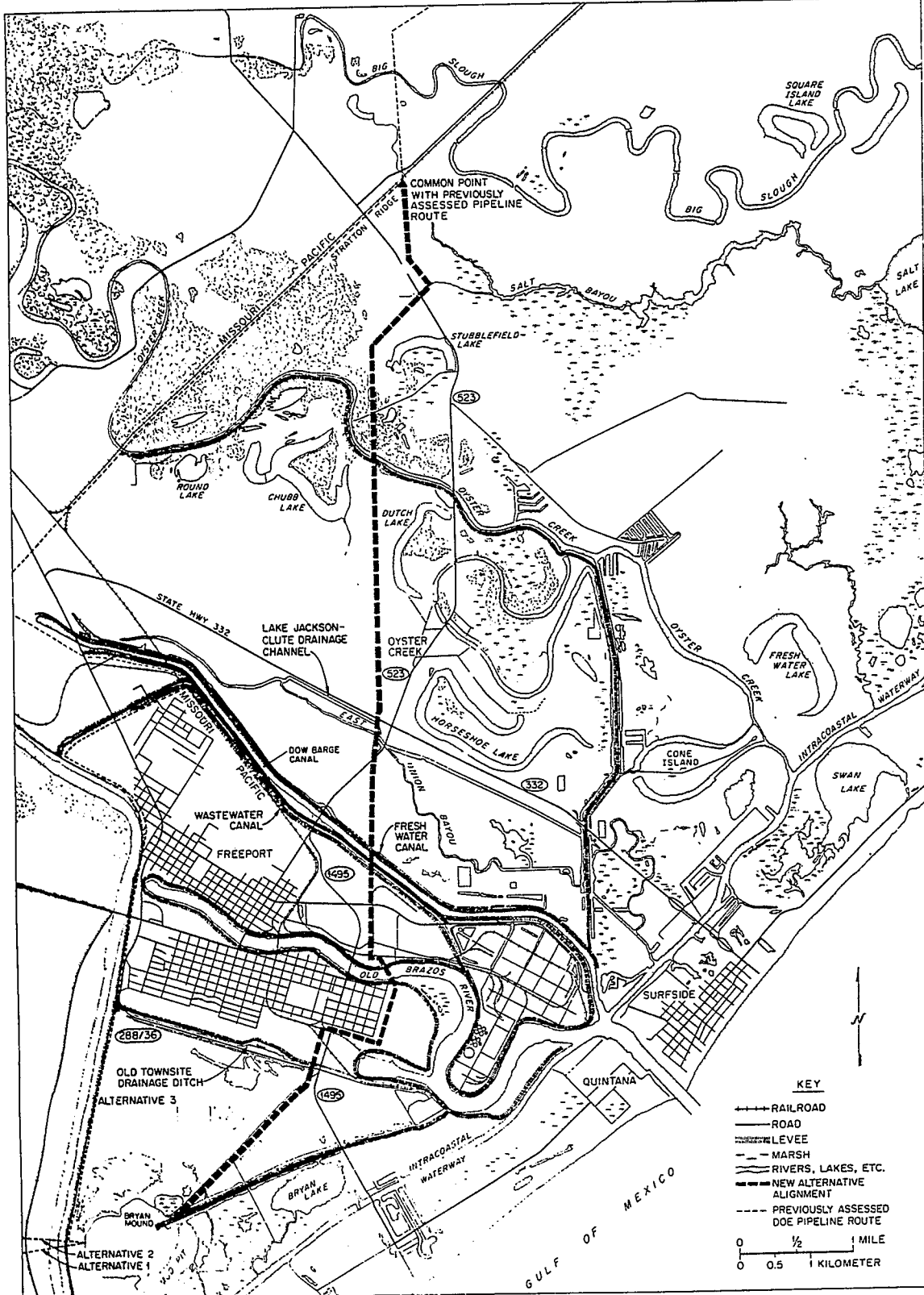


Figure 2. Detailed map of new alternative DOE pipeline alignment from Bryan Mound through Freeport

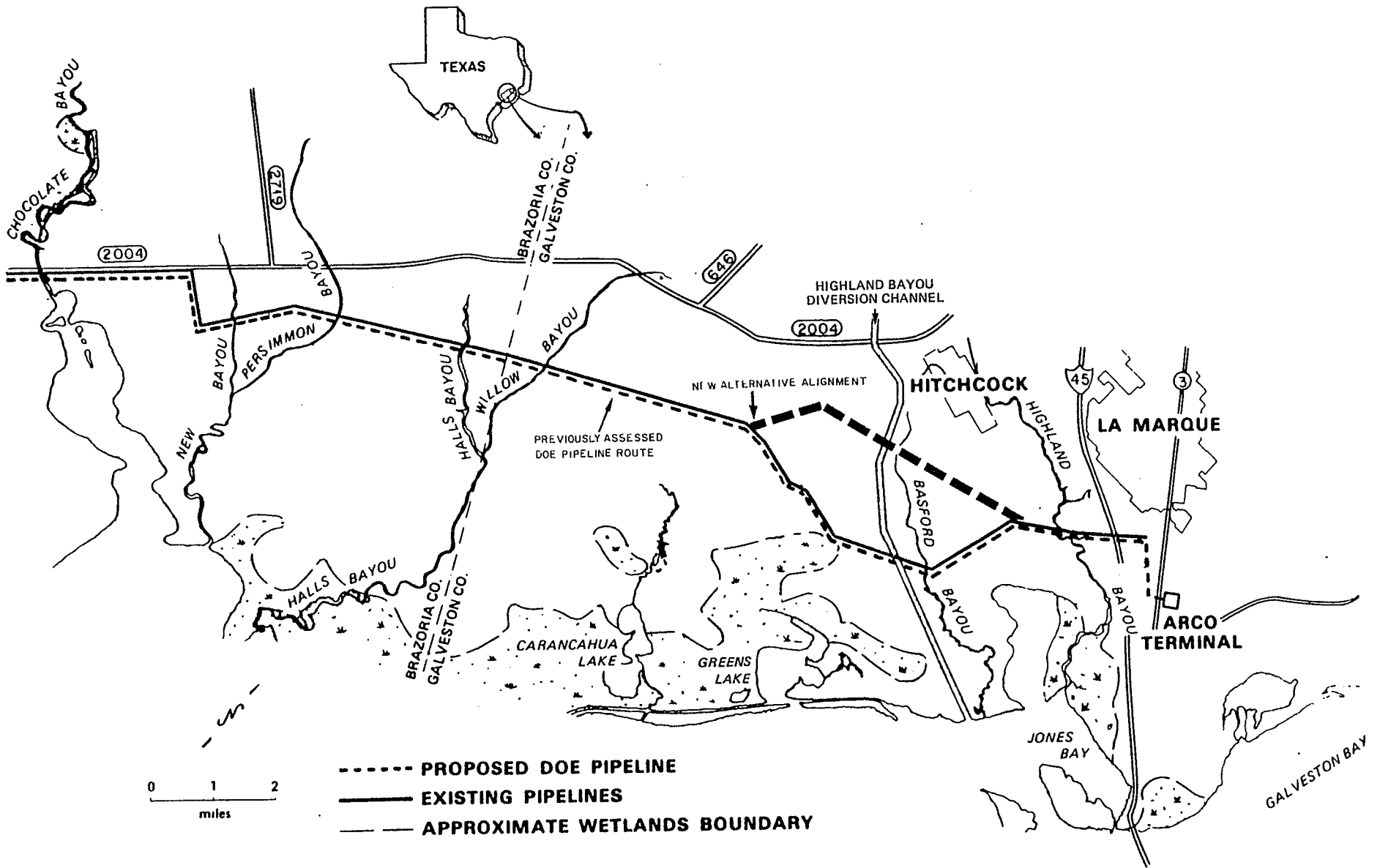


Figure 3. Map of new pipeline alignment in vicinity of Basford Bayou

encounter no wetlands, whereas the existing ROW involves 1000 ft of wetlands adjacent to Greens Lake. Floodplain involvement would be the same for either alternative.

Since the qualitative and quantitative differences between the existing ROW and the Basford Bayou realignment are not significant, the discussion in the previous EA of the segment between Stratton Ridge and Texas City is incorporated by reference. Likewise, discussion of pipeline construction techniques, likely permit conditions, and other generic items are incorporated by reference to DOE/EA-0252 and are not repeated in this document.

The proposed pipeline is 46 miles long overall and 40 inches in diameter, whereas the other three alternatives have a maximum length of 53 miles and are 42 inches in diameter. The segment between the SPR Bryan Mound storage site and the Stratton Ridge common point, which is the object of this assessment, is about eleven miles long for the proposed Alternative 4. This segment ranges in length from 13 to 18 miles for the other alternatives.

From its origin at Bryan Mound, the proposed route proceeds east - northeastward along the north side of Bryan Mound road until crossing State Highway 288/36, at which point it enters the City of Freeport (Fig. 2). Within Freeport, the route passes to the east of a residential area, crosses the Old Brazos River (Freeport Harbor) about one-half mile downstream of FM 1495, and proceeds due north across the Dow Barge Canal, a wastewater and freshwater canal, East Union Bayou, and State Highway 332. The route turns west to cross State Highway 523 and then proceeds due north along a transmission line and pipeline corridor across Oyster Creek, and passes to the the west of Stubblefield Lake. The route turns northeast to cross State

Highway 523 a second time, thence northwestward to cross Salt Bayou, thence due north to the Stratton Ridge common point.

The proposed route illustrated in Fig. 2 has been drawn to maximize the use of existing ROW (e.g., pipeline corridors, transmission lines, railroads, roads, etc.), to minimize interaction with wetlands and other sensitive areas, and to avoid congested or crowded pipeline corridors. The Alternative 4 route uses ROW for about 70 percent of its length. The ROW may be defined as that area consisting of a perpetual easement plus a temporary construction zone. The pipeline will require a temporary ROW of 100 ft maximum for construction and a permanent ROW of 50 ft maximum for operation. Normally the temporary ROW will be a total of 125 ft wide. However, at major crossings, the total will be greater due to additional construction zones required. ROW areas at major crossings are estimated to be 200 ft by 600 ft maximum.

All proposed new pipelines will be designed to meet or exceed DOE Regulations for Liquid Pipelines (49 CFR 195), Standards for Liquid Petroleum Transporting Piping Systems (ANSI B31.4), and Recommended Practice for Liquid Petroleum Crossings and Highways (API-RP-1102). Pipe will comply with American Petroleum Institute specifications for line pipe (API-5L). In general, line pipe will be welded and coated with an epoxy film. Concrete coating will be used for stream crossings and as weights for marsh crossings. Pipeline construction will include cathodic protection to reduce corrosion, radiographing 100 percent of pipe welds and hydrostatic pressure testing.

1.3 PRIOR ALTERNATIVES CONSIDERED

Three alternatives to the proposed Alternative 4 route segment were evaluated in the previous EA for this action (DOE/EA-0252). No significant

environmental impacts were found for any of the three alternatives, and the analysis of environmental impacts of these alternatives will be incorporated in this document by reference to DOE/EA-0252. These three alternatives were rejected, after publication of the EA, for engineering and economic reasons. Detailed examinations of the routes after the EA was issued determined that pipeline corridors and rights-of-way that were planned to be used were actually too crowded to allow safe construction of the SPR pipeline.

1.4 NO ACTION

Under the no action alternative, DOE would do nothing to increase currently available distribution capability for Bryan Mound drawdown. In the event of an energy emergency requiring drawdown, all crude oil stored in Bryan Mound would be distributed at a maximum rate of 360,000 bpd via the Seaway terminal (320,000 bpd) and local existing pipelines (40,000 bpd). Failure to increase currently available distribution capability for Bryan Mound crude oil would limit projected Bryan Mound drawdown to a fraction of its capacity, thus hampering the effectiveness of the SPR Seaway Complex in minimizing the impacts of a future oil supply interruption and in meeting the goals of the Energy Policy and Conservation Act (P.L. 94-163, 1975). Transporting 320,000 bpd through the Seaway dock would require tankers to line up for filling at the dock, an arrangement which calls for an increased number of ships in Freeport Harbor and for more maneuvering of each ship. Both of these conditions increase the likelihood of an accident resulting in a spill. Although the no action alternative obviates potential impacts from pipeline construction, it creates the potential for impacts from tanker traffic congestion.

2. ENVIRONMENTAL IMPACTS

2.1 LAND USE

The principal land use impact of the proposed Alternative 4 route is the disturbance of prime farmland during pipeline construction. Alternative 4 is estimated to cross about 2 miles of land with soil types classified as prime farmland; about 0.3 mile of this is located to the south of Freeport, and the remainder, which is currently used for grazing, is located along the transmission line corridor north of Highway 332 before the route proceeds eastward to the west of Stubblefield Lake (Fig. 2). From their respective origins to Stratton Ridge, each of the previously evaluated alternatives crossed about 5 miles of land designated by the Soil Conservation Service as prime farmland. No unique farmland is encountered by Alternative 4 or the other alternatives.

Conventional dry land construction techniques, as described in the previous EA (DOE/EA-0252), will be used. The proposed pipeline could impact farmland by land-clearing activities associated within the construction ROW and by digging the 10-ft wide pipeline trench. Impacts from land clearing, which are principally terrain disturbance and topsoil scraping by construction equipment, are of interest only in those areas where an existing ROW is not used or where an existing ROW must be expanded. Because the areas of prime farmland soils are already cleared for existing rights-of-way, only minor impacts from clearing a construction ROW are expected. These would occur primarily in the area north of Oyster Creek during widening of the existing transmission line and pipeline ROW by about 8 ft to accommodate the SPR pipeline. In this area, permanent ROW will be 25 ft wide and would employ clearing of about 2 acres of wooded prime farmland currently used for pasture. Existing space in the ROW is adequate for construction activity.

Of the 5 miles of prime farmland encountered by each of the other alternatives, only 2 miles were estimated to require clearing. Thus, Alternatives 1-3 would each disturb about 24 acres of prime farmland for construction ROW.

Trench excavation for burying the pipeline results in a more serious disturbance to the land, regardless of whether or not the route is in existing ROW. Digging a 10 ft wide trench through 2 miles of prime farmland (Alternative 4) would disturb about 2.5 acres of prime farmland. Impacts from trench excavation are expected to be minor because of the small areas involved. Each of the previously considered alternatives was expected to disturb about 6 acres of prime farmland for trench excavation, which was not considered to be significant.

The disturbed acreage for Alternative 4 is negligible, and lost productivity will be largely regained following backfilling, since the upper 2 ft (topsoil) of excavated soils will be stockpiled separately for use as a top dressing upon backfilling. This practice will be conducted in accordance with permits and operating agreements.

The effects of pipeline operation on agricultural land (including prime farmland), through leaks and spills, are expected to be small and localized, as was the case with the previously assessed alternatives.

Another land use impact is the possible effect of pipeline construction on transportation. The route will cross 3 roads and streets and 3 railroads. Most will be crossed with conventional boring through the roadbed; one exception is a road/railroad combination that will be crossed with directional drilling in conjunction with a water crossing. Any impacts to traffic flow caused by these crossings will be temporary and minor, as was the case with road/railroad crossings associated with the previously

assessed alternatives. The intersection of FM 332 and FM 523, as well as the Lake Jackson/Clute Drainage Channel and East Union Bayou, will be crossed via a directional drill.

2.2 WATER

Principal water issues associated with the proposed pipeline routes are impacts from pipeline construction and operation on surface water, groundwater and floodplains.

2.2.1 Surface Water

Pipeline construction activities (including hydrotesting), which are described in DOE/EA-0252, can degrade surface water quality, but impacts are not expected to be significant. Table 1 summarizes the nine water crossings, proposed construction methods and estimated crossing widths for the Alternative 4 route. The use of directional drilling on the navigable waterways (Old Brazos River, Dow Barge Canal, and Oyster Creek) in accordance with U.S. Army Corps of Engineers permit conditions will produce minimal, if any, water quality impacts, primarily because the pipeline is passed under the waterway and no trench is constructed across the waterway, as illustrated in the following figure:

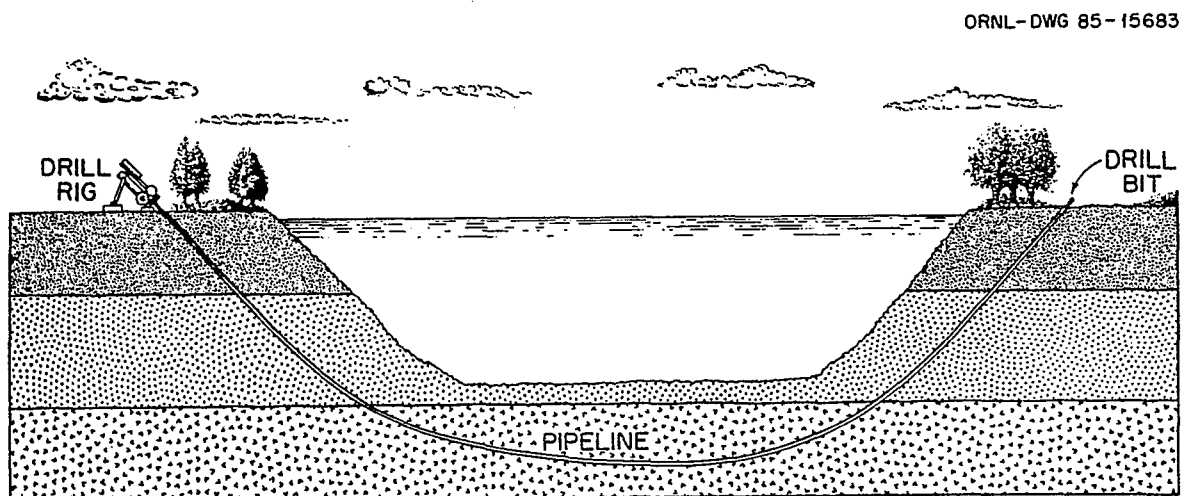


Table 1. Water Crossing Data for Proposed Alternative 4 Route

<u>Water Body</u>	<u>Crossing Technique</u>	<u>Estimated Crossing Width (ft)</u>	<u>Comments</u>
Old Town Site Drainage Ditch	Conventional bore crossing	30	less than 10 ft depth
Old Brazos River	Directional drill	2000	
Wastewater canal Dow Barge canal Freshwater canal	One directional drill	3000	
East Union Bayou*	Directional drill	30-Bayou (3000 total distance)	shallow depth
Lake Jackson-Clute Drainage Channel*	Directional drill	150-Channel (3000 total distance)	25 ft water depth
Oyster Creek	Directional drill	1600	175 ft width at water line; directionally drilled in conjunction with Oyster Creek extensive levee crossing
Salt Bayou	Conventional trenching	1 to 5	intermittent flow width at water line

*Included in this single directionally drilled crossing are the Lake Jackson-Clute Drainage Channel, Highways 523 and 332, and East Union Bayou.

The crossing of the Old Townsite Drainage ditch by conventional boring should likewise produce minimal impacts to surface water. Water body crossings by conventional trenching (a few small bayous located just northeast of Bryan Mound and Salt Bayou) will degrade surface water quality by disturbing sediments through trench excavation. The impacts are expected to be of short duration, with water quality improving rapidly after completion of the water body crossing. Impacts can be reduced by using sediment control measures. Conventional trenching of water bodies can also degrade surface water quality through the release of chemicals, which typically results from the improper use, handling and disposal of wastes. Chemicals that could be released in small amounts during construction include petroleum products, herbicides and pesticides, fertilizers and miscellaneous wastes. Volumes of pollutants from these sources are likely to be small, and with good construction practices would have a small effect on water quality.

Water quality data for the water bodies to be crossed by conventional trenching are limited. Typically, these water bodies are brackish, tidally influenced, and have elevated chemical oxygen demand and fecal coliform count. Oyster Creek in the vicinity of the proposed crossing is classified as brackish.

As discussed earlier, hydrostatic testing can degrade surface water quality via discharge of the hydrotest water. Hydrostatic testing of the entire 46-mile pipeline route using Alternative 4 will require about 18×10^6 gallons, which is less than the volumes for the route using the other three alternatives. The hydrotest would be a one-time water use of non-potable surface water. The sources and quantities of water will be regulated by the Texas Water Commission. Discharge of hydrostatic test

waters will be conducted in accordance with requirements established by the Texas Railroad Commission (as of September 1, 1985). Uncontrolled discharge is not allowed since it could degrade water quality by elevating suspended solids and by introducing pollutants. The use and discharge of water for hydrotesting will be in accordance with the established permit conditions, which are outlined in DOE/EA-0252, and should not result in significant impacts to surface water.

Pipeline operation could degrade surface water quality in the event of an accidental pipeline failure. Rough estimates of pipeline accident/failure frequencies are on the order of 5×10^{-4} events/mile/yr, based on U.S. Coast Guard data (U.S. DOT 1983). Assuming the pipeline would operate 6 months during a full drawdown, then the expected frequency of pipeline failure for the entire route would be about 0.01 events/drawdown (or about 1 event per hundred drawdowns). This is approximately the same expected frequency for the entire route using each of the previously assessed three alternative route segments. If an accidental pipeline failure did occur, the volume of crude oil released would be a function of the volumetric flow rate of crude oil through the pipeline and the length of time between occurrence of the leak and implementation of corrective measures to stop the flow. The pipeline system by design would detect and terminate crude oil flow (during a pipeline failure) within about 20 minutes. Under these circumstances, about 14,000 bbl would be spilled. For the other three alternatives, about 18,000 bbl of oil were estimated to be spilled in the event of a pipeline failure. Based on historical spill data, the average spill size expected would be about 1,100 bbl (DOE/EIS-0075, October 1981).

In terms of potential environmental impacts, the worst place for such a spill to occur would be in wetlands or waterways leading to wetlands (Sect. 2.5). Spill prevention measures that will be employed include regular inspection of pipeline routes, periodic pass-through instrumentation checks of pipeline integrity, line pressure testing, and flow monitoring. An Oil Spill Contingency Plan is currently under development to minimize and mitigate any impacts from pipeline spills. Because the pipelines are proposed to be buried, the likelihood of a major pipeline break releasing large volumes of crude oil is minimized.

2.2.2 Groundwater

Potential groundwater impacts are concerned with contamination of fresh water supplies due to pipeline construction or due to leaks during operation. In the project area, fresh to slightly saline water occurs in the Chicot and Alluvial aquifers. The upper unit of the Chicot aquifer is the most widespread fresh water aquifer in the project area and is used for public, industrial, agricultural, and domestic supplies. Near Freeport, fresh water occurs at depths of about 150 ft or less (USDOA 1977), whereas at Bryan Mound, no fresh water occurs below about 75 ft (FES 76/77-6, January 1977).

Because pipeline construction will only disturb the top 10-15 ft of soil, no significant adverse impacts on the upper unit of the Chicot aquifer are anticipated. No significant impacts to groundwater are expected as a result of pipeline operations. Local contamination of groundwater could occur from an undetected pipeline spill for which remedial action is not initiated; however, because oil that has leaked from a buried pipeline will tend to migrate to the surface, and because the pipeline will be buried at

least 60 ft above the fresh water aquifer, contamination of the fresh water aquifer is not likely.

No significant groundwater impacts from construction and operation of the previously considered alternative route segments were identified.

2.2.3 Floodplains

About 71% of Alternative 4 lies in the 100-yr floodplain. A revised floodplain/wetlands assessment has been prepared for this action, published in the Federal Register (50 FR 52835) and is included in this document as Appendix B. Since there is no practicable alternative to locating a pipeline for this action in the 100-yr floodplain, the pipeline has been designed to minimize potential harm to or within the floodplain, in accordance with Executive Order 11988 (May 24, 1977). The effects of pipeline construction and operation on the floodplain were found to be direct, minor and short-term. Similar findings resulted from the floodplains assessment of the other three alternatives (49 FR 50435).

2.3 AIR

Brazoria County is presently classified as being in attainment with national ambient air quality standards for particulate matter, carbon monoxide (CO), sulfur dioxide, and nitrogen dioxide (NO₂); the county is classified as a nonattainment area with respect to the ozone standard. Ambient air quality impacts from pipeline construction will be limited to temporary localized increases in gaseous pollutants (principally hydrocarbons, CO and NO₂ from motor vehicles and construction equipment) and particulate matter (from fugitive dust). Air quality impacts during operation will be limited to temporary, minor increases in hydrocarbon emissions from leaks at valves, flanges, pump seals, etc. These emissions will be negligible compared to existing VOC emissions in Brazoria and Galveston counties, and will contribute insignificantly to ozone levels in

the region (hydrocarbons are precursors to ozone). No air quality permits will be required for either construction or operation of the pipeline. Similar air quality impacts were identified for the previously considered alternative route segments.

2.4 NOISE

Existing ambient noise levels in rural agricultural areas along the pipeline route, expressed as the average day-night sound level (Ldn), are expected to be in the 40-45 db(A) range (U.S. EPA 1978). Noise levels in the vicinity of residential areas are probably in the 45-50 db(A) range, and noise levels in the industrial area within Freeport are expected to be greater. Short term increases above these levels can be anticipated in areas located close to railroads and highways.

Pipeline construction is estimated to produce an equivalent sound level (Leq), which is a steady noise level containing the same noise energy as a varying level measured over the same period, of about 68 db(A) at 500 ft from the pipeline (FES 76/77-6, January 1977). The Leq at residences located along the pipeline route is estimated to be 68 db(A) at 500 ft, 62 db(A) at 1,000 ft, and 56 db(A) at 2,000 ft from the pipeline. The directional drill rig (and associated support equipment), which is a noise source not included in the above estimate for pipeline construction, is estimated to produce an Leq of about 75 db(A) at a distance of 200 ft from the rig.

Due to the short duration (maximum of two to three days) of exposure to pipeline construction activity at any given location, and the fact that nighttime construction is not anticipated, annual average outdoor noise levels at residences located in the vicinity of the pipeline route should remain below the 55 db(A) level recommended by the EPA for adequate

protection of the public, and no significant adverse impact should result. Within Freeport, where residential areas are most likely to be encountered, the Alternative 4 route would pass through primarily industrial areas, and would not therefore significantly affect residences through pipeline construction noise. No significant noise impacts were anticipated from pipeline construction along the three previously considered alternatives.

There are no state or federal ambient noise standards or regulations enforced in Texas. Local governments may regulate noise levels in areas within their jurisdiction through the application of public nuisance law (TENRAC 1982), but the City of Freeport currently does not have a noise control ordinance.

2.5 ECOLOGY

2.5.1 Terrestrial

The terrestrial ecology of the area of the proposed pipeline route could be affected by pipeline construction and operation. Principal areas of concern are effects on wooded habitat and wetland areas. Pipeline construction using conventional backhoe techniques will be used in these types of areas.

Impacts to habitat in wooded areas from pipeline construction are expected to be minor because of the small area involved. The only appreciable wooded area encountered by the route is a hardwood forest area located north of Oyster Creek. About two acres of forest will be cleared as the existing pipeline and transmission line ROW is widened to encompass the 25 ft permanent ROW for the proposed SPR pipeline. The area is presently used for grazing, and thus does not represent prime habitat. No habitats designated as important natural areas are traversed by the route. Each of the three previously considered alternatives was expected to encounter

greater acreages of wooded areas, primarily in their crossing of Oyster Creek and in the vicinity of the Brazos River. Impacts from the alternatives were also not expected to be significant, principally because other wooded areas are available in the vicinity and because the areas involved are limited. Most of the best wooded habitat exists to the north of these alternatives (U.S. FWS 1982, TORP 1975).

Effects on wetlands from pipeline construction will be minor because of the small wetland area involved. About 0.1 mile of wetlands will be encountered, all located in the area to the immediate northeast of the Bryan Mound site. The construction ROW will disturb about 1.1 acres of these wetlands, and digging the 10-ft wide pipeline trench will disturb about 0.1 acre. Revegetation will occur naturally from existing, adjacent rootstock. None of the wetlands crossed by the route are set aside for wildlife habitat. They are part of a larger area planned to be filled for use as a future industrial park. For Alternatives 1 and 2, digging a 10 ft wide trench would disturb about 4 acres and 3 acres of wetlands, respectively. No wetland areas were encountered by Alternative 3. Adherence to applicable permit conditions, as described in DOE/EA-0252, will limit the magnitude of potential impacts to wetlands from construction. Because the Stratton Ridge to Texas City segment of the route passes through wetland areas, there is no practical alternative to constructing a pipeline through wetlands.

The most important potential effect of operation of the proposed pipeline is from leaks or spills of petroleum in wetlands or into waterways leading to wetlands. Most leaks are likely to be small, easily detected, and quickly contained. The potential effects of oil spills on wetlands have been adequately discussed in previous SPR NEPA documents. Briefly, in addition to aquatic effects, oil spills are known to kill emergent

vegetation in coastal marshes and to have detrimental effects on waterfowl and other terrestrial organisms. The severity of a spill would depend on the volume and characteristics of the material spilled and the biological and physical characteristics of the wetland involved. Cordgrasses (Spartina spp.), the dominant genus in the wetland area encountered by the route, can in general survive a single spill but are susceptible to chronic pollution. A potential exists for damage to wetlands located south of the route, in the Bryan Mound vicinity, in the event of a major spill. The nature, extent and duration of damage to these wetlands cannot be predicted due to the many uncertainties, but could be significant. On the other hand, it is probable that most spills will be small and exert only localized, short-term adverse effects. Operational testing and inspection of the buried pipeline, and implementing an Oil Spill Contingency Plan will substantially reduce the seriousness of a spill should one occur.

2.5.2 Aquatic

Streams in the project region are important as (1) nursery areas for the Gulf of Mexico fisheries, (2) sources of live bait for fishing, and (3) freshwater habitats exploited for sport fishing. In addition, the surface waters in the project area are part of the coastal marsh ecosystem that supports an abundance of waterfowl and other terrestrial biota.

The aquatic ecology of the proposed pipeline vicinity could be affected by pipeline construction and operation. For the water bodies that will be crossed by direction drilling or boring (Table 1), no significant impacts to aquatic ecology would result because there would be minimal, if any, disturbance to water quality. Those water bodies to be crossed by conventional trenching (a few small bayous located just to the northeast of Bryan Mound and Salt Bayou) would experience greater aquatic ecology impacts

through destruction of habitat and disturbance of sediments and riparian soils (with consequent increased turbidity levels and sedimentation). Increased turbidity and sedimentation from disturbance of surface water channels can degrade benthic (bottom) substrates, smother eggs, interfere with feeding, and limit photosynthetic activity (Hynes 1974); however, backhoes and draglines have been found to produce negligible turbidity problems in estuarine areas of the Texas coast. Because of hydrodynamic forces, altered bottom contours have been found to return to their original state with time (Benefield 1976). Impacts are thus expected to be minimal with good construction practices and adherence to permit conditions (discussed in DOE/EA-0252). Similar impacts were identified for the three previously considered alternatives.

The primary potential effect on aquatic ecology from operation of the proposed pipelines is from leaks or spills of the crude oil into surface waters. The effects of oil spills on aquatic biota have been adequately discussed in previous SPR NEPA documents, and are briefly summarized herein. A variety of effects from oil leaks or spills on aquatic organisms, including massive kills, replacement of sensitive species by resistant species, damage to eggs, embryos, or larvae, changes in behavior (such as slower burrowing speeds), avoidance of contaminated areas, reduced density and diversity, and reduced growth rates, have been observed. Bioaccumulation of oil constituents also occurs. The severity of a particular spill would depend on a number of factors, including the volume and composition of oil involved, the degree of mixing and dispersion provided by the receiving water, ambient water quality, and the biological communities present. Impacts from leaks and spills will be minimized through adherence to permit conditions and through implementation of planned management procedures

during operation (DOE/EA-0252). Similar impacts were identified for the three previously considered alternatives.

2.5.3 Endangered Species

As is the case with the three previously considered alternatives, no impacts are expected to rare and endangered species because none are known to be present in the vicinity of the route. Correspondence from the U.S. Fish and Wildlife Service (Appendix A) confirms that no effects on federally listed or proposed endangered or threatened species would be expected.

2.6 SOCIOECONOMICS

The socioeconomic issue of principal interest is the availability of labor, within commuting distance, for the project. Construction of the entire Bryan Mound to Texas City pipeline is estimated to require a maximum work force of 390, for a period of about 6 months. About 13,000 person-days would be required to construct Alternative 4 within 12 to 16 weeks. In the first quarter of 1985, total employment in Brazoria, Galveston and Harris counties, each of which is within commuting distance to the pipeline, was about 1.4 million, with about 110,000 employed in construction (State of Texas, 1985). The average unemployment in 1984 for Brazoria and Galveston counties was 6.2% and 9.3%, respectively (USBLS, 1985). Peak construction work force for the project therefore represents about 3% of the 1984 unemployed construction labor (average) in the pipeline vicinity. Thus, adequate labor exists within commuting distance, and no significant in-migration and associated community service and housing demands should occur because of the project. Similar impacts were identified for the previously considered alternatives.

After construction of the pipeline is complete, no significant increases in the number of employees at either DOE or private sector

facilities are anticipated. It is expected that operation of the pipeline, which would occur in the event of an energy emergency, would not create any new permanent positions in either DOE or private sector facilities. Labor available within commuting distance of the facilities should be able to fill any temporary positions created by operation of the pipeline.

2.7 ARCHEOLOGICAL/HISTORICAL RESOURCES

There are no known historic sites within the pipeline corridor that are eligible for, or listed on, the National Register of Historic Places (Appendix A). However, the area may contain undiscovered historic sites of potential significance, such as aboriginal sites or sites of the early historic settlement period of Texas. These sites tend to be located near coastal prairie water courses, especially in areas of higher relative elevation. Areas near the route are not known to have experienced any settlement of historical or archeological significance. No archeological surveys of the proposed route have been conducted to date. The proposed route is not expected to significantly impact any National Historic Register sites that are proposed or currently listed. SPR will ensure that the identification, evaluation and treatment of historic properties during the planning and construction of the pipeline will be conducted in accordance with the Programmatic Memorandum of Agreement among DOE, the Texas State Historic Preservation Officer and the Advisory Council on Historic Preservation (Appendix A).

None of the previously considered alternatives were found to cross known sites within their rights-of-way. Alternative 1 passes within 0.5 mile of a site on the National Register of Historic Places. The three alternatives were not expected to significantly impact any known sites that are proposed or listed on the National Historic Register.

2.8 OTHER

The proposed pipeline is expected to cause no significant solid waste impacts. No significant amounts of solid wastes will be produced. Pipeline construction along the Alternative 4 route will generate about 80,000 yd³ of soil. After the pipeline is laid in the trench and the land is returned to original contours, the excess soil will be spread along the ROW or transported to upland areas for appropriate disposal.

Construction of the pipeline in accordance with applicable state and federal occupational safety and health standards and regulations should result in no significant worker health and safety issues.

Although the proposed action represents an activity in the coastal zone, the State of Texas does not have a Coastal Zone Management Plan, and a consistency determination for this action is therefore not required.

3. REFERENCES

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- U.S. Bureau of Labor Statistics (USBLS). 1985. Employment and Earnings, U.S. Dept. of Labor, Bureau of Labor Statistics, Washington, DC, Vol. 32, No. 5, May 1985.
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- U.S. Department of Transportation (DOT). 1983. Polluting Incidents in and Around U.S. Waters, 1981, 1982. U.S. DOT, U.S. Coast Guard. Washington, DC. COMDTINST M16440.2E.
- U.S. Environmental Protection Agency (EPA). 1978. Protective Noise Levels. EPA 550/9-79-100, U.S. EPA, Office of Air, Noise and Radiation, Washington, DC. As cited in "Noise", reprinted from the Tenth Annual Report of the Council on Environmental Quality, December 1979. U.S. Government Printing Office, Washington, DC, Publication No. 19800-319-352.
- U.S. Fish and Wildlife Service (FWS). 1982. Gulf Coast Ecological Inventory, Houston, Texas. Publication No. 29094-A1-EI-250. U.S. Department of Interior, Reston, Virginia.

APPENDIX A
CORRESPONDENCE WITH AGENCIES

Oral and written consultation has been conducted for this action previously and is contained in Appendix A of DOE/EA-0252. The prior correspondence is supplemented by the following letters, which pertain chiefly to Alternative 4.

Advisory Council On Historic Preservation

A-3

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

SEP 19 1985

Mr. C.R. Somerlock
Project Manager
Department of Energy
Strategic Petroleum Reserve
Project Office
900 Commerce Road East
New Orleans, LA 70123

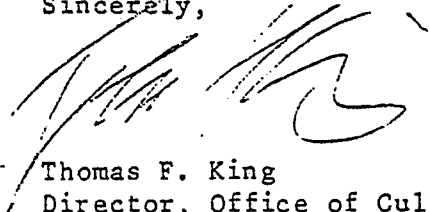
REF: Programmatic Memorandum of Agreement, Strategic Petroleum Reserve's
Seaway Pipelines, Texas

Dear Mr. Somerlock:

The enclosed Programmatic Memorandum of Agreement has been ratified by the Chairman of the Council. This document constitutes the comments of the Council required by Section 106 of the National Historic Preservation Act and the Council's regulations. A copy of the ratified Agreement has also been sent to the Texas Historic Preservation Officer.

On behalf of the Chairman, we commend your efforts in developing this project and appreciate the responsive manner in which your agency has planned for historic values. We look forward to working with you on future projects.

Sincerely,



Thomas F. King
Director, Office of Cultural
Resource Preservation

Enclosure

PROGRAMMATIC
MEMORANDUM OF AGREEMENT

AMONG THE U.S. DEPARTMENT OF ENERGY, STRATEGIC PETROLEUM RESERVE,
THE TEXAS STATE HISTORIC PRESERVATION OFFICER AND THE ADVISORY
COUNCIL ON HISTORIC PRESERVATION REGARDING THE SEAWAY
DISTRIBUTION PIPELINES

WHEREAS, the U. S. Department of Energy, Strategic Petroleum Reserve (SPR) has determined that the construction of buried crude oil pipelines from the Bryan Mound SPR site in Brazoria County, to Texas City, Galveston County, and from the Sun. Terminal, Nederland, Jefferson County to an undetermined terminal in Jefferson or Orange County, Texas may have an effect upon properties listed in or eligible for inclusion in the National Register of Historic Places and has requested the comments of the Advisory Council on Historic Preservation (Council) pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C 470) and its implementing regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800).

NOW, THEREFORE, SPR, the Texas State Historic Preservation Officer (SHPO), and the Council agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of this undertaking on historic properties.

STIPULATIONS

SPR will ensure that the following measures are carried out during the planning and construction of the Seaway Distribution Pipelines.

1. IDENTIFICATION PLANS. SPR shall, in consultation with SHPO, develop and implement a plan for the identification of historic properties in the pipeline's area of effect. The identification plan shall be consistent with the "Secretary of the Interior's Standards for Identification" and the "Secretary of the Interior's Guidelines for Identification" (48 Federal Register 190:44720-44722) and the Council's "Section 106 Update No. 3: Manual of Mitigation Measures." The final plan shall be submitted to SHPO for review and comment. If SHPO concurs with the plan or fails to object within 30 days of receipt of the final plan, SPR shall be free to implement the plan. If the SHPO objects to all or part of the plan, SPR shall consult with the SHPO to remove the objection. If SPR concludes that the objection cannot be resolved, SPR shall refer the matter to the council pursuant to Stipulation 4 below.

2. EVALUATION. SPR shall consult with SHPO to evaluate all properties identified. If SPR and SHPO agree that a property is or is not eligible for inclusion in the National Register, such consensus shall be deemed conclusive for the purposes of this Agreement. All actions taken to avoid, minimize or mitigate effects to historic properties shall be based on this consultation process. Should SPR and SHPO fail to agree as to the eligibility of a property, SPR shall request a formal determination of eligibility from the Keeper of the National Register. Within 6 months of the conclusion of the survey, SPR shall seek formal determinations of eligibility for all properties identified.

3. TREATMENT PLANS. For those historic properties that it is neither prudent nor feasible to avoid, SPR shall, in consultation with SHPO develop a treatment plan. The treatment plan shall be consistent with the principles and recommendations included in Parts I & III of the Council's "Treatment of Archeological Properties: A Handbook." The final treatment plan shall be submitted to SHPO and the council for review and comment. If SHPO and the Council concur or fail to object within 30 days of receipt to the plan, SPR shall be free to implement the plan. Should either party object to the plan, SPR shall consult with the objecting party to remove the objection. Should SPR conclude that the objection cannot be resolved, SPR shall refer the matter to the Council pursuant to Stipulation 4.

4. DISPUTE RESOLUTION. All disputes, except those pertaining to the potential eligibility of a property for inclusion in the National Register, that may arise during the course of the implementation of this Agreement shall be resolved in accordance with the following procedure. Should SPR conclude that a dispute cannot be resolved by further consultation with an objecting party, SPR shall forward all documentation relevant to the dispute to the Council. Within 30 days of receipt of all pertinent documentation, the Council's Executive Director shall either:

- a. refer the matter to the Chairman of the Council pursuant to 36 CFR Section 800.6(b)(7); or
- b. provide SPR with recommendations, which SPR shall take into account in reaching a final decision.

5. DISCOVERIES. If properties are discovered after completion of identification efforts developed in accordance with Stipulation 1 above, SPR shall cause potentially damaging activities to be delayed until SPR has consulted with SHPO and satisfied the requirements of 36 CFR Section 800.7.

6. AMENDMENTS. Any party to this Agreement may request that the other parties consider amendments to the Agreement. Amendments will be arrived at in accordance with 36 CFR Part 800.

Failure to carry out the terms of this Agreement requires that SPR again request the Council's comments pursuant to 36 CFR Part 800. If SPR cannot carry out the terms of this Agreement, it shall not take or sanction any action or make any irreversible commitment that would result in an adverse effect to a historic property or would foreclose the Council's consideration of modification or alternatives that might avoid, minimize or mitigate adverse effect, until SPR has obtained the Council's comments.

Execution of this Programmatic Memorandum of Agreement is evidence that SPR has afforded the Council a reasonable opportunity to comment on the undertaking and its effects on historic properties and that SPR has taken into account the effects of its undertaking on historic properties.

Robert Dawey Sept 4, 1985
Executive Director (Date)
Advisory Council on Historic Preservation

John T. Millway Jr 7/22/85
Assistant Manager (Date)
Strategic Petroleum Reserve

Curtis J. ... 9 Aug. 1985
Texas State (Date)
Historic Preservation Officer

[Signature] 13 Sept 85
Chairman (date)
Advisory Council on Historic Preservation



TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road Austin, Texas 78744

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Laredo

DR. RAY E. SANTOS
Lubbock

August 9, 1985

Mr. Joe Zotter
Fluor Engineers, Inc.
Ocean Services Division
P.O. Box 5014
Sugarland, Texas 77478-5014

Re: DOE Crude Oil Pipeline: Texas City to Bryan Mound

Dear Mr. Zotter:

Thank you for your inquiry about Department permit requirements for the stream crossings of the Texas City to Bryan Mound Strategic Oil Reserve Pipeline. Under Chapter 86, Parks and Wildlife Code, there is a specific exemption of "dredging under state or federal authority." Therefore it will not be necessary to obtain a permit from this Department for the stream crossings involved in the above-referenced project.

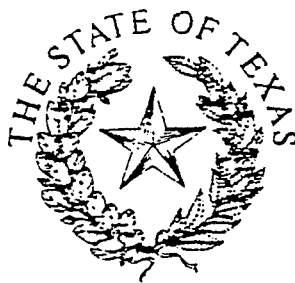
Should you have additional questions please contact me at (512) 479-4864.

Sincerely,

J. Rollin MacRae
J. Rollin MacRae
Wetlands Permit Coordinator

JRM:mcs





CURTIS TUNNELL
EXECUTIVE DIRECTOR

TEXAS HISTORICAL COMMISSION

P.O. BOX 12276

AUSTIN, TEXAS 78711

(512) 475-3092

July 22, 1985

Ms. Melissa Smith
Department of Energy
Strategic Petroleum Reserve
Project Management Office
900 Commerce Road East
New Orleans, Louisiana 70123

Re: Seaway Distribution Enhancements
(DOE A-6)

Dear Ms. Smith:

As per our meeting of July 18, 1985 I have enclosed copies of the areas we discussed for cultural resource survey/assessment. The copies are annotated to reflect known archeological sites. Descriptions of these sites are also attached.

I would like to reiterate a few of the points discussed in our meeting:

1. We have made our recommendations based on the most reliable data currently available. We expect to rely on the expertise and initiative of the professional archeologists hired by the Department of Energy in making field decisions. For example, if the crew encounters pimple mounds or uncharted water courses not located in designated survey areas they should investigate and test for cultural resources. If the crew finds that we have requested survey of an area extremely disturbed by construction they should recognize that our data was not current and document such before moving ahead and bypassing this area.
2. Shovel testing should be recorded and mapped on 7.5' topographic U.S.G.S. quads. All should be put through 1/16" mesh screens and all cultural material recorded from each depth and retained with provenience information.
3. Sites should be photographed, mapped and tested to determine their extent. Please record them on the State forms provided in the meeting. You may copy them if more are needed.
4. Most sites will be in (comparatively) well-drained sandy and sandy loam soils.

The State Agency for Historic Preservation

Ms. Melissa Smith
July 22, 1985
Page -2-

5. When investigating marshlands look for areas of elevation. These need to be tested. If the crew sees no areas of elevation they do not need to survey 100% of the marshland. Again, field discretion is encouraged.
6. Areas with intermittent streams and higher points of elevation are topographically favorable for cultural resources. Watercrossings are included as sensitive. Watercrossings that will be bored need only be investigated where the land is disturbed by equipment and personnel involved in the procedure and where the bore goes in and comes out.
7. We highly recommend a detailed review of the aerial photographs of the route currently in your possession. A careful study of these should save many man-hours in the field if the archeologists know, in advance, areas of high cultural resource potential.
8. It was indicated that prior to the cultural resource survey the pipeline will have been staked. This too will facilitate an archeological survey crew's work. Location assessment becomes minimized and much more exact.
9. Remember that we are interested in historic as well as prehistoric resources. Quite often a historic site and prehistoric site will coexist. To be considered eligible for the National Register of Historic Places a site need only be .50 years old or hold special significance. Of course other criteria enter in, but the key is 50 years old.
10. We request a 100% terrestrial survey/assessment of areas marked on the maps. This includes the entire width of the pipeline R-O-W unless other pipelines border it on one side. Then the archeologists' judgement will be relied upon. Areas not 100% surveyed in the R-O-W should be noted and the reasons recorded.

Thank you for your early planning for cultural resource assessment on the Seaway Project. We will attempt to facilitate your project to the best of our ability.

Please direct any questions to Ms. Laura Maness Studer at 512/475-3057.

Sincerely,



LaVerne Herrington, Ph.D.
Deputy State Historic Preservation Officer

LAMS/LH/cr

Enclosures

SITES

Numerous sites not in the Seaway Right-Of-Way have been indicated on the attached maps. They do not have descriptions attached because your project, as planned, should not affect them. We have included them for your information should a change in line location be contemplated. All sites on the quad sheets were not marked. Only those sites in close proximity to the line have been marked in orange pen.

41B0117 - Jones Creek Quad. We believe this site may have been destroyed by construction work. It may have been a prehistoric shell midden. There is a question regarding its being man-made.

41B0136 - Jones Creek Quad. This is an historic National Register site. The pipeline should not affect this site. It is noted for your information only.

41B032 - Lake Jackson Quad. This site is plotted in three locations. We do not know which, if any, are correct. It is on microfilm near Flag Lake. An anthropomorphic pumice head and camel teeth were found by Raymond Walley. No site forms were filed. The year discovered was not recorded.

Hitchcock Quad - No site number for site on Hall's Bayou. This was recorded in a 1975 survey by the Galveston Corps of Engineers. No information is available.

41GV67 - Virginia Point Quad. This site is not in the R-O-W. However, it was recorded in 1976 by Ed Baxter as being a low mound covered with Rangia and Oyster shells. It was believed to be a badly eroded midden additionally disturbed by cattle.

41GV50 - Virginia Point Quad. This site is not in the R-O-W. It was recorded 3/72 by James McMichael. He revisited in 1976. A 10-15 cm Rangia cuneata layer was eroding from the bank of Highland Bayou.

LAMS/cr

TEXAS DEPARTMENT OF WATER RESOURCES

1700 N. Congress Avenue
Austin, Texas



Charles E. Nemir
Executive Director

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Ralph Roming

July 19, 1985

Mr. Paul K. Johnson, Project Manager
Flour Engineers, Inc.
Ocean Services Division
P.O. Box 5014
Sugarland, Texas 77478-5014

Dear Mr. Johnson:

Re: Your letter dated July 1, 1985 concerning water use permits

After evaluation of the questions posed in your letter, I have the following comments:

The diversion points at the sources indicated can be combined as groups of three per application (there will be four applications with only two sources being included for the fourth application) in the order following the listings of the streams in your letter. This will allow us to begin at Freeport and move eastward (limiting the application to three sources won't make a permit unduly cumbersome).

The right to divert these waters can be acquired through the Texas Water Commission via a Temporary Permit, since all the sources you indicate are State sources of water you should have no problem in obtaining permits for these areas.

Water availability however, may be a different problem. Even if authorized to divert x amount of water from a particular source, the availability of the desired quantity (and quality) of water will be dependent upon rainfall in the area and whether the area has a high water usage. This obviously will affect the project and could cause delays if alternate sources of reliable water are found, i.e. municipal or city water where available, or using tankers to supply water.

It appears that the only industrial user of water located downstream of any diversion location would be Dow Chemical (on the Old Brazos and Dow Barge Canal) who might be affected by diversions, this depends of course on conditions and amount of diversions from these particular sites.



Mr. Paul K. Johnson
July 19, 1985
Page 2

Another group which may be affected by your diversions would be a group of three or four rice farmers on Bastrop and Austin Bayou. These parties will all be provided notice of your intent and will have an opportunity for voicing concern, if any.

Depending on the amount of water requested the staff can process an application (for amounts of water greater than 10 acre-feet -- 3258510 gallons) in 1.5 months, this takes into account statutory notice requirements and administrative processes required for a public hearing. For amounts of water less than 10 ac/ft, it takes approximately 8 working days to process.

The only limitation on pumping rates would be that the stream cannot be dried up at any time due to diversions because of the detrimental effects on stream-life and domestic and livestock users in the area.

I have enclosed the appropriate application forms and a copy of Texas Administrative Code Section 303.91 - 303.93 and a copy of Texas Water Code Section 11.138 for your use. Also enclosed are some forms which pertain to discharge permitting requirements (contact Bill Taylor at phone number 512/463-8202 regarding discharge requirements).

If you have any questions or need assistance in completing an application form, please contact me at 512/463-8260.

Sincerely,



Lann Bookout
Applications Unit

LB/elf



DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1229
GALVESTON, TEXAS 77553-1229

July 19, 1985

REPLY TO
ATTENTION OF:

Environmental Resources
Branch

Mr. N. Wayne Gray
Assistant Project Manager
Technical Assurance
Department of Energy
Strategic Petroleum Reserve Project
Management Office
900 Commerce Road East
New Orleans, Louisiana 70123

Dear Mr. Gray:

This is in response to your letter dated May 23, 1985, which provided an Environmental Assessment for Floodplain/Wetlands Involvement for a Proposed Crude Oil Pipeline in Brazoria and Galveston Counties, Texas, for our review and comments.

Our comments are as follows:

a. The pipeline alignment appears to impact the hurricane-flood protection systems in both Freeport and Texas City, Texas. Close coordination will be required with the Galveston District and local sponsors at all locations at which the pipeline crosses or impacts hurricane-flood protection system features during preparation of plans for construction.

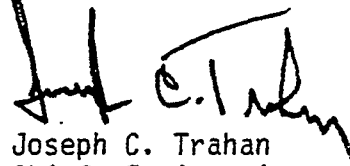
b. Alternate route C is favored since it appears to remain inside the hurricane-flood protection system. If, however, alternate routes A or B are chosen, the directional drilling method should begin at a point inside the hurricane-flood protection system to prevent disturbance of the existing embankment.

c. The "Canal" listed between Willow Bayou and Basford Bayou in Table 1 should be correctly identified as the "Highland Bayou Diversion Channel."

d. As the project appears to involve placement of fill in wetlands, the developer should contact Mr. Marcos De La Rosa, Chief, General Regulatory Branch, at 409/766-3930, for a determination as to the necessity for Department of the Army permits.

We appreciate the opportunity to review this document.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph C. Trahan". The signature is stylized with a large initial "J" and a long horizontal stroke extending to the right.

Joseph C. Trahan
Chief, Engineering
and Planning Division



A-15

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

DIVISION of ECOLOGICAL SERVICES
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TEXAS 77058

July 9, 1985

Consultation No. 2-13-85-I-58

Paul K. Johnson
Fluor Engineers, Inc.
Ocean Services Division
P.O. Box 5014
Sugarland, Texas 77478

Dear Mr. Johnson:

This responds to your letter dated June 13, 1985, requesting comments regarding the effects of the Department of Energy (DOE) crude oil pipeline on species federally listed or proposed to be listed as threatened or endangered. The proposed action involves the construction of a DOE crude oil pipeline. Your geographic area of interest is portions of Brazoria and Galveston Counties from Bryan Mound to Texas City, Texas.

Our data indicate no listed species would be affected by the proposed action in the area of interest.

If we can be of further assistance, please call our office at (713) 229-3681 or FTS 526-7681.

Sincerely yours,

H. Dale Hall
Field Supervisor

LG/psm

cc: Executive Director, Texas Parks and Wildlife Department, Austin, TX



Houston-Galveston Area Council

PO Box 22777 • Three555 Timmons • Houston, Texas 77227 • 713/627-3200

July 5, 1985

Mr. Paul K. Johnson
Project Manager
Fluor Engineers, Inc.
Ocean Services Division
P. O. Box 5014
Sugar Land, Texas 77478-5014

Dear Mr. Johnson:

The draft list of local authorities you supplied appears to cover anyone who may be affected by the Department of Energy pipeline project.

With regard to H-GAC's review requirements, the application package you submit should contain a cover letter requesting H-GAC's comments with deadline date, one copy each of the Final Environmental Assessment Report and the Supplemental report, and documentation that the local authorities have been contacted and their responses (if available).

I look forward to further contact with you during the project review process. If you require any information please contact me at (713) 993-4567.

Sincerely,

A handwritten signature in black ink, appearing to read 'Carl E. Masterson'. The signature is fluid and cursive, with the first name 'Carl' being particularly prominent.

Carl E. Masterson
Senior Environmental Planner

CEM:ss

TEXAS DEPARTMENT OF WATER RESOURCES

1700 N. Congress Avenue
Austin, Texas



Charles E. Nemir
Executive Director

June 26, 1985

TEXAS WATER DEVELOPMENT BOARD

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TEXAS WATER COMMISSION

Paul Hopkins, Chairman
Lee B. M. Biggart
Ralph Roming

Mr. Joe Zotter
Fluor Engineering
P. O. Box 5014
Sugar Land, Texas 77487

Dear Mr. Zotter:

RE: Hydrostatic Test - 50" Pipe Line, Freeport to Texas City

Enclosed are the application forms you requested by phone on June 26, 1985.

A point that you may be aware of that we did not discuss, is the possible need for a permit from the Corps of Engineers for the dredging and filling activities that may be required at stream crossings.

I would suggest that you contact Mr. Dolan Dunn in Galveston at 409/766-3935 about this, if you have not already done so.

If we can be of further assistance, please call upon us at 512/463-8202.

Sincerely yours,

A handwritten signature in cursive script that reads "W R Taylor".

William R. Taylor
Wastewater Section
Permits Division

WRT:msc





DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1229
GALVESTON, TEXAS 77553

REPLY TO
ATTENTION OF

June 13, 1985

Compliance & Special
Actions Section

Mr. Paul K. Johnson
Fluor Engineers, Inc.
P. O. Box 5014
Sugarland, Texas 77478-5014

Dear Mr. Johnson:

This is in response to your June 4, 1985 letter requesting a Department of the Army permit requirement determination for a proposed pipeline. The proposed pipeline will be a Department of Energy crude oil 40 inch O.D. pipeline. Two pipeline routes are being considered, the original route between Bryan Mound and Texas City via Jones Creek and Stratton Ridge, and an alternate route via Freeport and Oyster Creek through Stratton Ridge Oil Field and then following the original route eastward to Texas City, Galveston County, Texas.

Careful review of the documents provided with your letter and at the May 21, 1985 meeting indicate that the proposed pipeline will cross several navigable waters of the United States that are subject to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. In addition, the pipeline will cross waters of the United States (including adjacent wetlands) subject to Section 404 only. Section 10 prohibits all structures and/or work in or affecting navigable waters of the United States unless previously authorized by a Department of the Army permit. Section 404 prohibits the discharge of dredged or fill material into waters of the United States unless properly authorized by a Department of the Army permit.

The portions of the pipeline crossing the waters subject to Section 404 only are authorized pursuant to 33 C.F.R. 330.5(a)(12), a nationwide permit for discharges of material for backfill or bedding for utility lines; provided there is no change in preconstruction bottom contours (excess material must be removed to an upland disposal area). The navigable water crossings, as proposed, qualify for authorization under General Permit 14114(01), a general permit for the placement of pipelines by directional drilling in navigable waters of the United States. A list of the navigable waters being crossed by both routes is attached. Waterways marked with an " * " apply to the original route only and waterways marked " ** " apply to the alternate route only. A copy of General Permit 14114(01) and a permit

<u>NAVIGABLE WATERWAY</u>	<u>CROSSING LOCATION</u>	<u>FEDERAL PROJECT DEPTH (feet)</u>	<u>MINIMUM BURIAL DEPTH (feet)</u>
* Brazos River	Bryan Mound	None	5
* Brazos River	Flagg Lake	None	5
** Old Brazos River at	Stauffer Turning Basin	30 (deauthorized)	15
** Dow Barge Canal	Approx. 3000" North of Stauffer Turning Basin	None	5
Oyster Creek at	Missouri-Pacific RR Crossing	None	5
Bastrop Bayou	Approx. 1,000 NW of Mims	None	5
Austin Bayou	Approx. 11,000' NW of Mims	None	5
Chocolate Bayou at	FM 2004 Bridge	16	15
New Bayou	Approx. 4,000' SE of FM 2004 Bridge	None	5
Persimmon Bayou	Approx. 4,200' SE of FM 2004 Bridge	None	5
Halls Bayou	Approx. 6,000' SE of FM 2004 Bridge	None	5
Basford Bayou	Approx. 14,000' SE of Hitchcock	None	5
Highland Bayou Diversion Channel	Approx. 16,000 SE of Hitchcock	None	5
Highland Bayou	Approx. 14,000' East of Hitckcock	None	5

application packet are enclosed for your use.

In order for the nationwide permit identified to be valid, the special conditions listed on the attached sheet must be followed. In addition, the management practices also listed on the attached sheet, should be followed to the maximum extent practicable. Failure to comply with these practices may be cause for the District Engineer to recommend or the Division Engineer to take discretionary authority to regulate the activity on an individual or regional basis.

This nationwide permit does not convey any property rights, either in real estate or material, or any exclusive privilege; and it does not authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations nor does it obviate the requirement to obtain State or local assent required by law for the activity authorized herein. Further, no dredging or filling in navigable waters of the United States is authorized by this nationwide permit.

For more information on this matter please contact Mr. Tony Vazquez at (409) 766-3947 or at the letterhead address.

Sincerely,



Fred L. Anthamatten
Chief, Compliance and Special
Actions Section

Enclosure

APPENDIX B
FLOODPLAINS/WETLANDS ASSESSMENT

DEPARTMENT OF ENERGY

Floodplain/Wetlands Involvement of the
Strategic Petroleum Reserve Seaway Complex
Distribution Enhancements

AGENCY: Strategic Petroleum Reserve, Energy

ACTION: Revised floodplain/wetlands assessment and opportunity for
comment.

SUMMARY: On December 28, 1984, the Strategic Petroleum Reserve (SPR) published a floodplain/wetlands assessment and opportunity for comment in the Federal Register (49 FR 50435) on a proposed 42-inch diameter buried crude oil pipeline from existing facilities of the SPR Seaway Complex, Brazoria County, Texas, to an existing commercial crude oil terminal in Texas City, Galveston County, Texas. No comments were received. An Environmental Assessment [(EA), DOE/EA-0252] and a Finding of No Significant Impact were issued in May 1985. The public notice of floodplains/wetlands involvement and the EA treated as subalternatives three different alignments for routing the pipeline from Bryan Mound past Freeport, Texas. The SPR subsequently has identified and is considering a fourth alternative route through Freeport. This fourth alternative, which would also involve activities within a floodplain/wetlands area, is the subject of the revised floodplain/wetlands assessment provided below. Public comments or suggestions on the floodplain/wetlands involvement of this fourth alternative are invited. Comments received will be incorporated in the revised EA for this action which is in preparation.

DATE: Written comments should be received at the address below by
January 10, 1986.

ADDRESS: Address comments to:

Mr. Sidney R. Evans
SPR Project Management Office
Department of Energy
900 Commerce Road East
New Orleans, LA 70123
Phone: (504) 734-4353

FOR FURTHER INFORMATION CONTACT:

1. Mr. Sidney R. Evans at the above address.
2. Mr. Walter H. Delaplane, Jr.
Strategic Petroleum Reserve
Department of Energy, FE-421
1000 Independence Ave., S.W.
Washington, DC 20585
Phone: (202) 252-4730

SUPPLEMENTARY INFORMATION: The Strategic Petroleum Reserve (SPR) of the U.S. Department of Energy (DOE) proposes to construct at most a 53-mile long, 42-inch diameter buried pipeline to transport crude oil from existing facilities of the SPR Seaway Complex in Brazoria County, Texas to a commercial crude oil terminal in Texas City, Texas.

On December 28, 1984 the SPR published a floodplains/wetlands assessment and opportunity for comment in the Federal Register (49 FR 50435) on the proposed pipeline and no comments were received. In May 1985 the SPR issued an EA (DOE/EA-0252), a Finding of No Significant Impact and a floodplain/wetlands Statement of Findings for this action. The public notice of floodplains/wetlands involvement and the EA addressed three alternative alignments for routing the pipeline from Bryan Mound past Freeport, Texas.

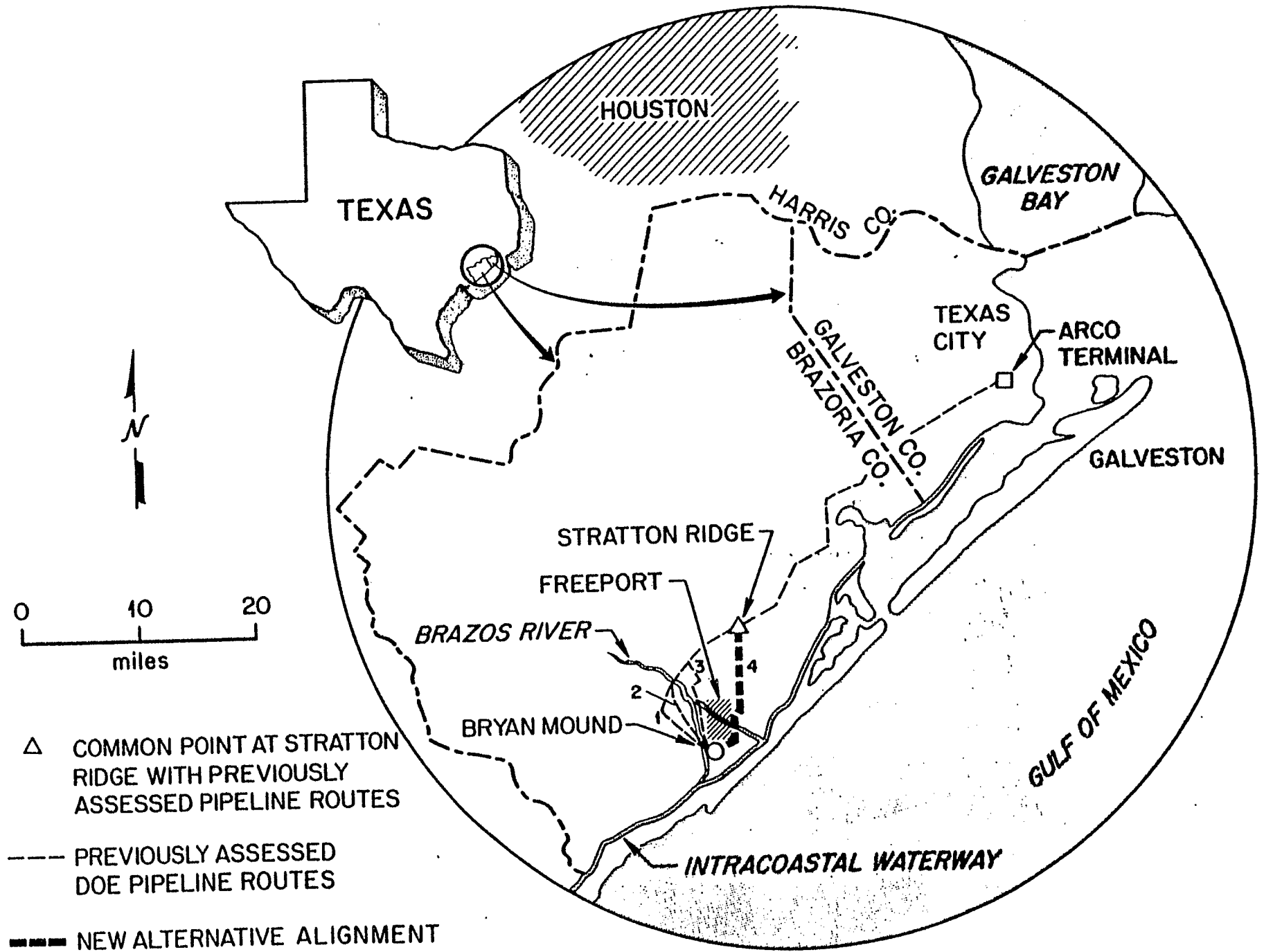
The SPR has identified and is considering a fourth alternative route through Freeport to mitigate logistical problems (primarily crowded corridors) associated with pipeline construction along the previously considered

alternative route segments. This fourth alternative, which also involves activities within a floodplain/wetlands area, is an approximately 11-mile long route from Bryan Mound to Stratton Ridge where it shares a common point with the three alternatives considered previously. From the Stratton Ridge common point to the ARCO Terminal in Texas City, the route is essentially the same as that assessed previously. Figure 1 provides a regional overview of Alternatives 1-4 and the remainder of the proposed route. The Stratton Ridge-to-Texas City segment is about 35 miles long.

Floodplain Involvement

Most of the Alternative 4 route is within the 100-year floodplain (Figure 2). From the SPR Bryan Mound storage site, which has an elevation above the 100-year floodplain, the pipeline route crosses the floodplain east-northeast along the north side of an elevated road (Bryan Mound Road). The route leaves the floodplain as it crosses State Highway 288/36 and a levee and enters the City of Freeport.

Within Freeport the route passes east of a residential area and turns north, crossing levees on either side of the Old Brazos River (Freeport Harbor) near the Stauffer Turning Basin. Except for a 1000-ft stretch beyond the north harbor levee, the route is within the floodplain as it proceeds north until it reaches a levee-protected area at the Dow Barge Canal. The route crosses three levees at this point and proceeds north. Between the Dow Barge Canal and Oyster Creek, the route is within the floodplain except for an 800-ft wide band at State Highway 332 and a 1-mile wide band along the south bank of Oyster Creek. After crossing the seventh and final levee at Oyster Creek, the route remains in the floodplain to the Stratton Ridge common point.



B-5

Figure 1. Regional overview of alternative DOE pipeline routes

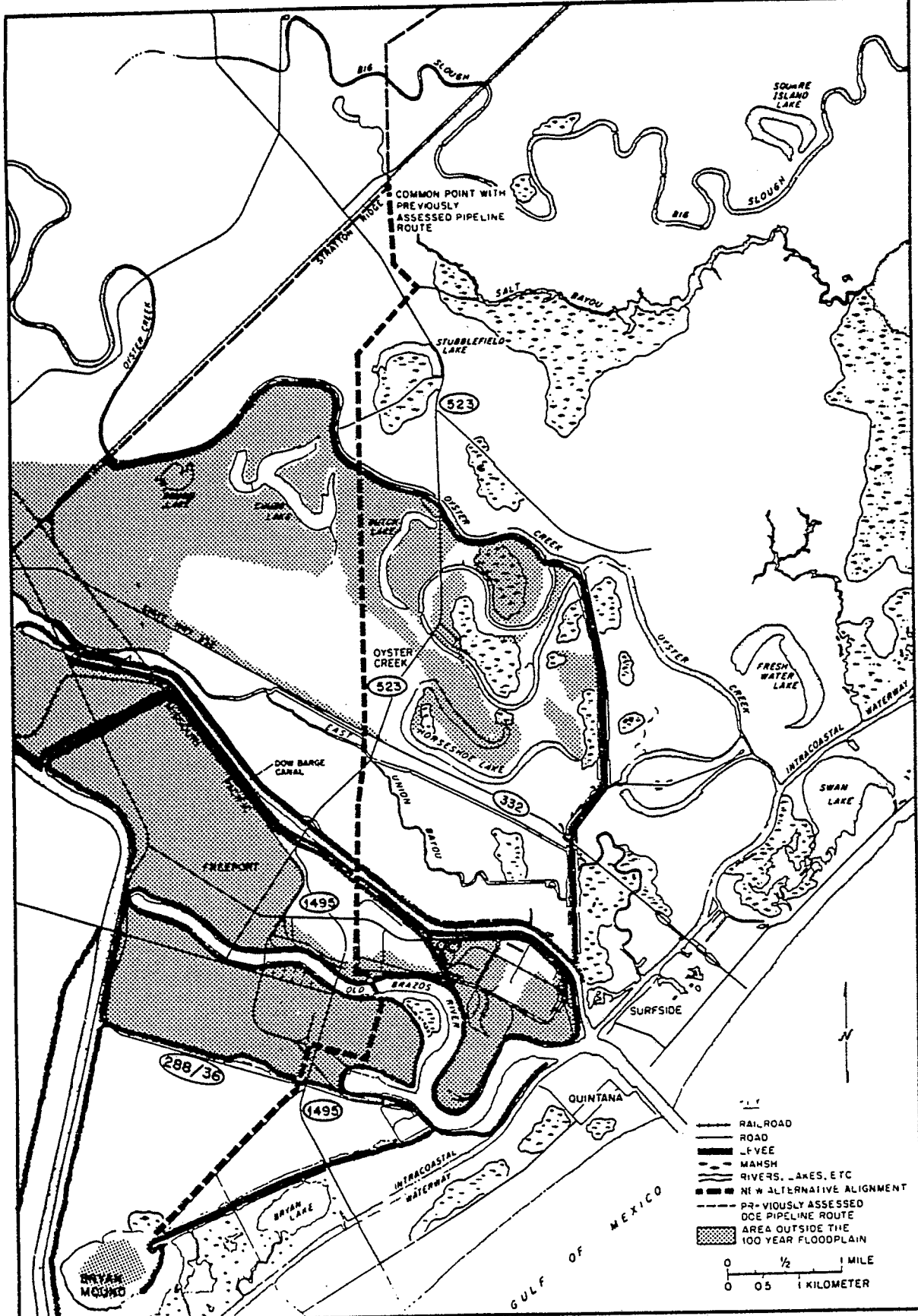


Figure 2. Location of 100-yr floodplain along new alternative DOE pipeline alignment from Bryan Mound through Freeport

The areas within 100-year floodplain areas delineated in Figure 2 are subject to flooding from high rainfall and storm surges associated with hurricanes and other coastal storms. Features shown in Figure 2 are based on current maps published by the Federal Emergency Management Agency supplemented by visual inspection of the proposed route during August 1985. The environments characterizing the floodplain in the vicinity of the proposed pipeline consist mainly of urban/industrial land and coastal prairie (primarily used as range and pasture); small areas of woodlands and coastal marsh are also encountered.

According to Executive Order 11988 (Floodplain Management, May 24, 1977), Federal agencies "shall consider alternatives to avoid adverse effects and incompatible development in the floodplain." If there is no "practicable alternative" to locating a project in a floodplain, an agency is to "design or modify its action in order to minimize potential harm to or within the floodplain." Natural and beneficial floodplain values to be protected include natural moderation of floods, water quality maintenance, groundwater recharge, support of living resources (marshes, fish and wildlife), cultural richness (archaeological, historical, recreational, scientific resources), and agricultural, aquacultural, and forestry production.

There is no practicable alternative pipeline route from Bryan Mound past Freeport that would entirely avoid activity in the floodplain. About 8 miles, or 71 percent, of Alternative 4 is within the floodplain. This is comparable to the other three alternatives which involve from 8 to 13 miles of floodplain between Bryan Mound and the common point at Stratton Ridge.

Alternative 4 crosses nine water bodies and seven levees. In comparison, Alternatives 1 and 2, which bypass Freeport to the west and

north by crossing the Brazos River twice, cross seven water bodies and five levees, and six water bodies and four levees, respectively. Alternative 3, which parallels the east bank of the Brazos River past Freeport, crosses two water bodies and five levees.

About 84 percent of the 35-mile segment of the project pipeline from the common point at Stratton Ridge to the ARCO Terminal in Texas City is in the floodplain. The 5.5 mile portion that is not in the floodplain is located principally in Galveston County.

Wetlands Involvement

Alternative 4 involves about 0.1 mile of wetlands, all located immediately adjacent to the Bryan Mound site (Figure 2). In comparison, Alternative 3 along the east bank of the Brazos would virtually avoid wetlands. Alternatives 1 and 2 involve about 4 miles and 3 miles of wetlands, respectively. The common segment from Stratton Ridge to Texas City involves about 1 mile of wetlands, mainly associated with stream crossings.

Executive Order 11990 (Protection of Wetlands, May 24, 1977) requires Federal agencies to avoid construction in wetlands (e.g., coastal marshes) unless "there is no practical alternative" and "all practicable measures to minimize harm" are included. There is no practicable alternative pipeline route from Bryan Mound to Texas City that would entirely avoid wetlands. However, Alternative 3 would avoid wetlands in routing the pipeline from Bryan Mound past Freeport.

Floodplain/Wetlands Effects

The effects of pipeline construction on the floodplain will be direct, minor and short-term. During construction, small areas of pastureland and wildlife habitat will be disturbed for the 100-ft (maximum) construction

right-of-way (ROW) and the 50-ft maintenance ROW (maximum). The ROW may be defined as that area consisting of a perpetual easement plus a temporary construction zone. Normally, the ROW will be a total of 125 ft wide. However, at major crossings, the total will be greater due to additional construction zones required. Maximum ROW areas at major crossings are estimated to be 200 ft by 600 ft.

For Alternative 4, a small wooded area is encountered between Oyster Creek and Highway 523; the permanent ROW in this area will be 25 ft wide and will require clearing about 2 acres of oak and other hardwood trees. Since about 70 percent of the Alternative 4 route uses existing ROW, there will be little net change to habitat from the construction ROW or from the maintenance ROW. Alternatives 1-3 each use existing ROW for about 77 percent, 53 percent, and 85 percent of their total lengths, respectively.

Because the pipeline will be buried and designed to minimize the potential for leakage, there will be no interference with natural moderation of floods, water quality maintenance, groundwater recharge, or agricultural production. Similarly, there will be no increase in the threat to life or property from flooding as a result of the buried pipeline.

Effects of pipeline construction on wetlands will also be minor. For Alternative 4, the construction ROW will disturb about 1.1 acres of wetlands outside the northeast corner of Bryan Mound. The portion of this area that will be directly disrupted by digging the 10-ft wide pipeline trench is about 0.1 acre. This wetland area is part of a larger area that is to be filled for future development of an industrial park. For Alternatives 1 and 2, the pipeline trench will disrupt about 4 acres and 3 acres of wetlands, respectively.

The wetlands involved in Alternatives 1 and 2 and the common pipeline segment east of Stratton Ridge are mainly brackish and fresh or intermediate coastal marshes. Although such coastal marshes are important as habitat and in maintaining the bay-estuarine ecosystem, none of the areas involved are specifically set aside for wildlife; further, they are often disturbed by grazing and other uses.

Mitigation

Permit conditions will ensure that the effects of the pipeline on floodplains and associated wetlands will be temporary and localized and will minimize harm to floodplains and wetlands in accordance with E.O. 11988 and E.O. 11990. In particular, return to original bottom contours (U.S. Army Corps of Engineers, General Permit 15800, Special Condition 3), revegetation of riparian areas (General Permit 15800, Special Condition 7), and disposal of dredge spoils in upland areas (General Permit 15800) will minimize construction effects on surface waters. For water bodies to be crossed by directional drilling, General Permit 14114 specifies that there will be no dredging or filling in the waterway or adjacent wetlands (Special Condition f), no disturbance to adjacent wetlands or submerged vegetation (Special Condition g), and restoration of preproject ground conditions (Special Condition h).

Construction techniques will ensure that flood protection levees will not be disturbed during pipeline crossings. For Alternative 4, the Old Town Site levee (the first one encountered) will be crossed by boring. The remaining six levees will be crossed using directional drilling. Either method will prevent disturbance of existing embankments. Also, seasonal limitations on construction activity (e.g., during hurricane season) in the vicinity of levees will be observed. Construction techniques at water

crossings should minimize water quality impacts. Buffer zones for water body crossings of up to 200 ft perpendicular to the pipeline and up to 600 ft parallel to the pipeline will separate construction activities from the water's edge on each side.

The risks and potential impacts of crude oil spills will be reduced by routine pipeline inspection and maintenance and implementation of a spill contingency plan.

Issued at Washington, DC Dated: December 19, 1985.

Donald L. Bauer
Assistant Secretary
Environment, Safety, and Health