Supplement Analysis to the Site Selection for the Expansion of the Strategic Petroleum Reserve Final Environmental Impact Statement

DOE/EIS-0385-SA-1

1. Introduction

The Energy Policy Act of 2005 directs the Secretary of the Department of Energy (DOE) to fill the Strategic Petroleum Reserve (SPR) to its authorized 1 billion-barrel capacity. Thus, the purpose and need for agency action is to select and develop sites to expand SPR capacity from 727 million barrels (MMB) to 1 billion barrels; that is, to add 273 MMB in capacity. DOE's proposed action is to develop one new SPR site, expand petroleum storage capacity at two or three existing SPR sites, and fill the SPR to 1 billion barrels.

DOE determined the site selection and expansion constitute a major Federal action that may have a significant impact upon the environment within the meaning of the National Environmental Policy Act (NEPA). For this reason, DOE prepared an environmental impact statement (EIS), *Site Selection for the Expansion of the Strategic Petroleum Reserve Final Environmental Impact Statement*, DOE/EIS-0385. The Notice of Availability (NOA) of the final EIS was published by the Environmental Protection Agency in the *Federal Register* on December 15, 2006 (71 FR 75540).

The purpose of this supplement analysis (SA) is to determine if a supplement to the EIS is required due to adding alternatives regarding expansion sites, as specified in the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) at 40 CFR 1502.9(c) and in the DOE NEPA regulations at 10 CFR 1021.314.

The alternatives considered in the final EIS are summarized in Table 1. The new sites considered in the final EIS with a capacity of 160 MMB are located in Bruinsburg, MS; Chacahoula, LA; Richton, MS; and Stratton Ridge, TX. An additional site at Clovelly, LA, was considered in the draft EIS (NOA, May 26, 2006, 71 FR 30400), but removed from further consideration after DOE determined it was not feasible due to geotechnical issues. The SPR sites considered for expansion in the final EIS in combination with each other and with the new sites are Big Hill, TX by 80 or 96 MMB; Bayou Choctaw, LA by 20 MMB; and West Hackberry, LA by 15 MMB.

The final EIS identifies the preferred alternative to be the development of a new site at Richton, MS, with the expansion of Big Hill by 80 MMB, West Hackberry by 15 MMB, and Bayou Choctaw by 20 MMB.

Table 1: Alternatives Considered in the SPR FINAL EIS

New Sites and Capacity	Expansion Sites and Added Capacity	Total New Capacity*
Bruinsburg, MS (160 MMB)	115 MMB Bayou Choctaw (20 MMB) Big Hill (80 MMB) West Hackberry (15 MMB) **OR** 116 MMB Bayou Choctaw (20 MMB) Big Hill (96 MMB)	275 MMB or 276 MMB
Chacahoula, LA (160 MMB)		
Richton, MS (160 MMB)		
Stratton Ridge, TX (160 MMB)		
No-action alternative	None	None

* DOE would not fill the SPR beyond 1 billion barrels if it developed more than 273 MMB of new capacity.

2. Proposed Additional Alternatives

DOE is considering additional alternatives that would include expanding Bayou Choctaw by 33 MMB. Table 2 lists the alternatives that DOE is now considering to expand the SPR to one billion barrels. The preferred alternative is now the development of a new site at Richton, MS, with the expansion of Big Hill by 80 MMB and Bayou Choctaw by 33 MMB.

Table 2: Alternatives Considered in this SA

New Sites and Capacity	Expansion Sites and Added Capacity	Total New Capacity
Bruinsburg, MS (160 MMB)	113 MMB Bayou Choctaw (33 MMB) Big Hill (80 MMB) **OR** 115 MMB Bayou Choctaw (20 MMB) Big Hill (80 MMB) West Hackberry (15 MMB) **OR** 116 MMB* Bayou Choctaw (20 MMB) Big Hill (96 MMB)	273 MMB or 275 MMB* or 276 MMB*
Chacahoula, LA (160 MMB)		
Richton, MS (160 MMB)		
Stratton Ridge, TX (160 MMB)		
No-action alternative	None	None

* DOE would not fill the SPR beyond 1 billion barrels if it developed more than 273 MMB of new capacity.

Expansion by 20 MMB at Bayou Choctaw would be accomplished by solution mining two new underground caverns of 10 MMB each in the salt dome. Expansion at Bayou Choctaw by 33 MMB, an increase in capacity of 13 MMB, would be accomplished in two ways: (1) solution mining of each of the two new caverns in the salt dome would not stop at 10 MMB capacity but would continue until a capacity of 11.5 was reached in each cavern, and (2) an existing 10 MMB capacity commercial cavern at the site would be purchased for use. This existing cavern is currently filled with ethane, but would be emptied and filled with brine before transfer of ownership to DOE.

A typical 10 MMB capacity cavern is designed to be drawn down 5 times using fresh water. Each time a cavern is emptied of oil with fresh water, the cavern enlarges approximately 15 percent due to dissolution of the salt (to a maximum capacity of 20 MMB). The activities to accomplish an additional 1.5 MMB capacity for an initial 11.5 MMB capacity cavern would be equivalent to one drawdown cycle. (The 11.5 MMB caverns would have adequate capability to be drawn down four more times using fresh water before reaching the maximum 20 MMB capacity.) The larger cavern capacity would require a longer duration of solution mining. Whereas a typical 10 MMB cavern requires 34.6 months to solution mine, an 11.5 MMB cavern would require 38.9 months.

3. Environmental Consequences Described in Final EIS

The following summarizes the environmental impacts for Bayou Choctaw as presented in the final EIS. The final EIS evaluated impacts to 10 resource areas. Of these 10 areas, the largest potential impacts to this site are to water and biological resources.

The Bayou Choctaw SPR storage site occupies a 356-acre (144-hectare) site in Iberville Parish, LA, about 12 miles (19 kilometers) southwest of Baton Rouge. The Mississippi River is located about 4 miles (6.4 kilometers) east of the salt dome, and the Intracoastal Waterway (ICW) is about 0.5 miles (0.8 kilometers) to the west. The general area is swampy with an elevation ranging from less than 5 feet (1.5 meters) to more than 10 feet (3 meters) above mean sea level. The expansion of the Bayou Choctaw site by 20 MMB would involve the development of two new 10 MMB caverns within the existing boundaries of the facility, a 0.6-mile (0.9-kilometer) brine disposal pipeline, and a 96-acre (39-hectare) brine injection field.

The evaluation of water resources included surface and ground water. The construction impacts to surface waters at Bayou Choctaw would be similar to those associated with construction of an SPR site at any location. That is, these potential impacts would include erosion and runoff from construction activities, contamination from oil or brine spills, and permanent fill in a floodplain. These potential impacts would be controlled through various local, state, and Federal permits and implementation of best management practices. Site-specific impacts of construction of new caverns at Bayou Choctaw would involve withdrawal of water from Cavern Lake, a tidally-influenced waterbody. Withdrawal would cause an increase in salinity in the lake of less than 1 part per thousand. Brine from cavern construction would be disposed of via injection into subsurface saline strata. The brine disposal rate would remain at the permitted rate of 0.110 MMB per day. Impacts associated with water withdrawal and brine disposal would be minimal. The expansion at Bayou Choctaw would fill approximately 24 acres (10 hectares) of wetlands within the 100-year floodplain. Due to the large size of the floodplain, this would not be expected to cause significant changes to flooding events in the area.

The biological resources affected by the expansion at Bayou Choctaw would include wildlife and wetlands. The expansion would fill up to 20 acres (8 hectares) of forested wetlands for the new caverns and brine injection well field, and clear another 10 acres (4 hectares) of forested wetlands for the brine disposal pipeline. Filling and clearing these wetlands would change the

plant and animal communities, especially at the site of the brine disposal pipeline and injection well field, by introducing edge habitat within a relatively large forested habitat. DOE, in cooperation with United States Fish and Wildlife Service, would mitigate impacts to migratory birds that frequent the area. Overall, the expansion would cause little effect on wildlife, wetlands, plant communities, or migratory birds. There are no special status species located within or near the proposed expansion area.

4. Additional Environmental Impacts at Bayou Choctaw

The additional alternatives involve enlarging the size of each of the two previously proposed caverns from 10 MMB each to 11.5 MMB each, and using an existing 10 MMB commercial cavern at Bayou Choctaw. The expansion of Bayou Choctaw by 30 MMB, through the development of two new caverns of 10 MMB capacity each and the use of an existing 10 MMB commercial cavern, was analyzed in the draft EIS but removed from consideration when the development of the Clovelly site was removed from the final EIS due to geotechnical issues. No revisions were made to the impact analyses when this expansion was decreased from 30 MMB to 20 MMB in the final EIS, because the elimination of the use of an existing commercial cavern does not substantially affect the impact analysis of the resource areas.

Developing the two new caverns of 11.5 MMB each, as proposed in this SA, would also not substantially change the environmental impacts as presented in the draft EIS or final EIS. The change in capacity does not alter the aboveground footprint, which influences biological and water resource impacts during construction or operation. The design of the larger caverns would create no additional risk to the geologic stability of the area. All SPR caverns are constructed with cavern pillar-to-diameter ratios that ensure sufficient salt between adjacent caverns for good geological stability throughout the lifecycle of the cavern.

Increasing the size of the caverns from 10 MMB each to 11.5 MMB would extend the duration of water withdrawal from Cavern Lake for cavern leaching from approximately 34.6 months to 38.9 months. Extending the period of construction by 4 months would increase the duration of slightly higher salinity levels in Cavern Lake. However, neither the 4 months increased duration nor this slightly increased salinity would be significant because Cavern Lake is already a saline body of water connected to the ICW by a canal with tidal fluctuations that create changes in salinity in the lake that are greater than the change caused by water withdrawal for cavern leaching.

Increasing the size of the two new caverns proposed to be developed at Bayou Choctaw would also add 4 months to the duration of brine disposal. Brine from cavern leaching would be disposed of by injection into a deep (5,000-7,000 feet) aquifer that is currently used for brine disposal at Bayou Choctaw. The increase in cavern capacity would increase the duration of brine disposal, but would not change the rate of discharge. Brine disposal is regulated by permit to not exceed 0.110 MMB per day. Previous studies concluded that the impacts to groundwater of brine injection at this rate would be minimal. Therefore, the increased period of construction would not change the impacts to groundwater.

5. Determination

Based on the analyses discussed in this SA, DOE has determined that the additional expansion at Bayou Choctaw is not a substantial change to the proposed action that is relevant to environmental concerns, and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, within the meaning of 40 CFR 1502.9(c)(1) and 10CFR1021.314(c). Therefore, a supplement to the SPR final EIS is not needed.

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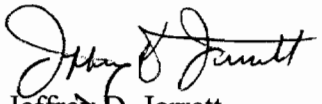

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