

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS

The conclusions presented are those of the environmental staff of the FERC. The Coast Guard, in its LOR, will address the suitability of the Pascagoula Bar, Horn Island Pass, Lower Pascagoula, and Bayou Casotte Channels for LNG marine traffic. Likewise, the COE will present its own conclusions and recommendations in the dredging, dredged material placement, and wetland permits it may issue pursuant to section 10 of the River and Harbors Act, section 103 of the MPRSA, and section 404 of the CWA. The EPA has the authority to review and veto the COE decisions on the section 103 and 404 permits.

We have determined that construction and operation of the Casotte Landing LNG Terminal Project would result in limited adverse environmental impacts. If the proposed Project is found to be in the public interest and is constructed and operated in accordance with recommended mitigation measures, it would be an environmentally acceptable action. Our conclusion is based on information provided by Bayou Casotte Energy and data developed from data requests; field investigations by Commission staff; literature research; alternatives analysis; comments from federal, state, and local agencies; and input from public groups and individual citizens.

If the Coast Guard issues a LOR, with conditions, finding the waterway suitable for LNG marine traffic, the arrival, transit, cargo transfer, and departure of LNG marine traffic would be required to adhere to the procedures of an *LNG Vessel Transit Management and Emergency Plan* to be developed by the Coast Guard Sector Mobile and the Coast Guard District Eight Commander. In addition, Bayou Casotte Energy would develop Operations and Emergency Manuals in consultation with the Coast Guard. These procedures would be developed to enhance the safety and security of all operations associated with LNG ship transit and unloading.

As part of our review, we developed measures that we believe would appropriately and reasonably avoid, minimize, or mitigate for environmental impacts resulting from construction and operation of the proposed Project. We are, therefore, recommending that our mitigation measures be attached as conditions to any authorization issued by the Commission.

5.1.1 Geology

Construction and operation of the Casotte Landing LNG Terminal Project would have minimal impact on geological resources. The existing topography at the LNG terminal site would be permanently changed by the excavation and dredging of an unloading slip for the marine terminal. The natural topographic slope and contours would be temporarily altered along much of the pipeline interconnect route by grading and trenching activities. However, Bayou Casotte Energy would restore topographic contours and drainage conditions to preconstruction conditions following installation of the pipeline interconnects.

No oil or gas wells are present in the vicinity of the proposed LNG terminal site or pipeline interconnect route. Construction of the pipeline interconnects would be limited to near-surface disturbance and measures would be taken to avoid and protect individual wells and existing pipelines within the proposed pipeline right-of-way. Therefore, the Project would not affect oil and gas production in the area. No other known mineral resources or significant paleontological resources are present at the proposed LNG terminal site or along the proposed pipeline interconnect route.

Potential geologic hazards in the Pascagoula area consist of seismic-related hazards, subsidence, flooding, storm surge, and shoreline erosion. Slope instability and inadequate load-bearing capacity of soils could also pose a hazard at the proposed LNG terminal. Conditions necessary for the development of other geologic hazards, including karst terrain, landslides, avalanches, and volcanism are not present in the Project area. The potential for geologic hazards to significantly affect the construction or operation of the proposed Project is low. The risk of damage resulting from geologic hazards would be avoided or reduced by specific engineering design criteria, ground modification, other construction techniques, and operating procedures to be implemented by Bayou Casotte Energy.

5.1.2 Soils and Sediments

The majority of the soils impacted by the construction of the proposed Casotte Landing terminal site would be poorly drained altered soils consisting primarily of fill material with little to no erosion potential. Approximately 28 percent of the soils within the proposed terminal site are hydric in nature. About 65 percent of soils found on the LNG terminal site are classified as fill material. About 88 percent of the interconnect spur pipeline would cross hydric soils. To mitigate potential impacts on soil resources in the Project area, Bayou Casotte Energy would implement its Plan and Procedures, as modified in this EIS, during construction and restoration of the LNG terminal site and pipeline interconnect.

Some soil contamination has also been detected at the proposed LNG terminal site; however, remediation activities were conducted at the site in an attempt to remove the contaminated soils from the previous industrial operations. No significant exposure risk is anticipated.

Approximately 1 mcy of soil would be excavated and 3.5 mcy of sediment would be dredged during construction of the marine terminal. Because of the angled design of the marine slip, no dredging would be required within Bayou Casotte Channel or the turning basin. Some of the excavated material would be re-used on site for facility foundations and the hurricane levee. The remainder of the excavated material would be disposed of offsite. Bayou Casotte Energy proposes to place sediments dredged from the slip into bottom dump scows for disposal at the EPA's permitted Pascagoula ODMDS located in the Gulf of Mexico south of Horn Island. Bayou Casotte Energy has submitted its Section 103 evaluation of the MPRSA and filed a DMMP with the COE for approval. Model studies performed by Bayou Casotte Energy predicted that total suspended solids resuspended from dredging operations would not be significantly different than levels already exhibited in Bayou Casotte Channel. Based on sediment sampling conducted by Bayou Casotte Energy, as well as sediment analysis of the Bayou Casotte Channel area conducted by the COE for its proposed maintenance dredging, low levels of contaminants exist in the sediments but would not be a concern.

5.1.3 Water Resources

Construction and operation of the proposed Casotte Landing Project would not have a significant impact on groundwater resources in the Project area. There are two public water supply wells located within a 1-mile radius of the proposed LNG terminal site. Both wells are located north along Bayou Casotte, upstream and up-gradient from the proposed Project and would be unlikely to be impacted by the Project. The greatest potential for impact on groundwater would be from spills, leaks, or other releases of hazardous substances during construction or operation. To prevent or mitigate these potential impacts, Bayou Casotte Energy has developed an SPCC Plan that meets state and federal requirements.

The Casotte Landing LNG Terminal Project would be constructed on Bayou Casotte, and would temporarily impact surface waters of the channel during the dredging to create the proposed marine terminal. Water quality in the area being dredged would be temporarily affected by increased turbidity

during dredging, but would return to preconstruction conditions following completion of dredging. Bayou Casotte Energy has filed SPCC Plans and we have recommended that Bayou Casotte Energy develop a plan to include procedures for spills of hazardous materials during offshore activities associated with the construction and operation of the marine terminal.

Because the LNG ships would be fully loaded with LNG when transiting to and arriving at the proposed terminal, no ballast water would be discharged into the Mississippi Sound. However, as the LNG cargo is unloaded, ballast water would be taken on to maintain trim and stability. LNG ships would also use water to cool engines during offloading of LNG at the proposed terminal.

The LNG terminal was designed to account for an accidental spill of LNG during operation of the facility and to prevent any LNG from entering Bayou Casotte Harbor. In the unlikely event that LNG is spilled into the water either from the LNG terminal itself or from a ship during transit to the LNG terminal, the cryogenic liquid would vaporize rapidly upon contact with the warm air and water. Being less dense than water, LNG would float on the surface prior to vaporizing. Because LNG is not soluble in water and would completely vaporize shortly after being spilled, the LNG could not mix with or contaminate the water.

The proposed interconnect pipeline would cross two drainage canals. The proposed nonjurisdictional NGL pipeline would cross five perennial ditches and one perennial drainage canal. Bayou Casotte Energy would cross these waterbodies using the open cut method. To minimize impact on surface waters, Bayou Casotte Energy would implement the protective measures outlined in its SWPPP.

Bayou Casotte Energy would conduct hydrostatic testing activities in accordance with its Procedures as well as all applicable permits, including NPDES discharge permits. To minimize effects of stormwater runoff during construction of the project, Bayou Casotte Energy would implement measures outlined in its Plan and its site-specific SWPPP.

5.1.4 Vegetation and Wetlands

Vegetation in the proposed Project area is comprised of upland and wetland communities. Construction of the proposed LNG terminal and interconnect pipeline would affect about 117 acres of low quality upland vegetation. Much of the vegetation at the proposed terminal site is commercial/industrial-associated vegetation that is fragmented and contains several invasive, exotic species. Most of this impact would be permanent because the development of the proposed terminal site would result in a permanent conversion of vegetative cover. Following construction, areas not containing new facilities would be landscaped with gravel or turf grass at the proposed terminal site. Disturbed upland vegetation along the pipeline route would be restored in accordance to Bayou Casotte Energy's Plan, as modified in this EIS.

Construction of the proposed Casotte Landing LNG Project would directly affect a total of 146.9 acres of low to medium quality wetlands. Construction at the proposed terminal site would permanently affect 119.3 acres of wetlands. The construction of the interconnect pipeline and associated meter stations would affect 15.3 acres of wetlands during construction and 7.9 acres during operation. The nonjurisdictional NGL pipeline and meter station would affect 12.3 acres of wetlands during construction and 0.9 acres during operation. During construction, Bayou Casotte Energy would minimize impact on wetlands by implementing measures in its Procedures, as modified in this EIS, and its SWPPP.

Pursuant to Section 10/404 permit requirements to the COE, Bayou Casotte Energy is proposing the purchase of mitigation credits from various mitigation banks and restoration and enhancement of a local site to mitigate for the impacts to wetlands.

The LNG vessels would transit confined areas between the barrier islands and the mainland, where submerged aquatic vegetation and beach dunes are located. The beach dune community on Petit Bois Island consists of two distinct plant associations dominated by sea oats on the foredune side and a variety of plants such as beach grass, bunch grass, prickly-pear cactus, and golden aster on the protected lee side of the dune.

5.1.5 Wildlife and Aquatic Resources

The onshore habitats supporting wildlife in the vicinity of the proposed Project have been extensively modified by past development and industrial uses. The primary impact on wildlife associated with the proposed Project would be clearing of upland and wetland habitat and temporary disturbance during construction. Species that may occur at the proposed Project site are typical of disturbed or developed areas. While some small, less mobile species could be injured or killed during construction, more mobile species would be displaced from the proposed terminal site permanently and temporarily from the pipeline right-of-way. Fish and aquatic species that reside in the onshore, low quality waterbodies would suffer mortality from the construction activities at the proposed terminal site. All construction would be conducted in accordance with the mitigation and restoration requirements described in Bayou Casotte Energy's Plan and Procedures, as modified in this EIS, and impacts to onshore wildlife habitat would be minimal.

The EIS discusses potential impacts on shoreline, estuarine, and marine habitats if LNG were released from LNG ship cargo tanks while in transit. Because LNG would vaporize and is a cryogenic liquid, we conclude that the greatest threat to aquatic life from an LNG spill would be thermal stress.

The estuarine benthic habitat in proposed Project area is already frequently disturbed. The fauna associated with this benthic habitat is reflective of periodic disturbance and is primarily comprised of opportunistic and colonizing invertebrate species. The aquatic habitat occurring in the Bayou Casotte water column is also reflective of a developed and previously disturbed setting. Most impacts to marine fish would be temporary, as they would be able to avoid the area during construction and operation.

NOAA Fisheries identified EFH for a variety of managed fish and shellfish species that occur within this region, but EFH for 18 individual species and the "billfish and highly migratory species group" has the potential to occur within the proposed Project area. The FERC requests that NOAA Fisheries consider this EIS as notification of the initiation of EFH consultation. Bayou Casotte Energy has been consulting with NOAA Fisheries to develop an acceptable mitigation plan that would compensate for adverse impacts on EFH and associated managed species. That EFH Assessment is included in this EIS.

5.1.6 Threatened, Endangered, and Other Special Status Species

The FWS and NOAA Fisheries have identified a total of 26 federally listed endangered or threatened species that could potentially occur in the vicinity of the proposed Project. We conclude that 11 of these species do not occur in the proposed Project area or would not be affected by the construction and operation of the proposed LNG facilities based on field surveys, initial agency consultations, and review of existing information. The remaining 15 species that the proposed Project could encompass habitat for include six whales (sperm whale, blue whale, sei whale, fin whale, humpback whale, North Atlantic right whale), the Florida manatee, the Gulf sturgeon, five turtles (hawksbill sea turtle, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle), and two birds (bald eagle and brown pelican).

Based on our analysis of habitat that would be affected by the Project, Bayou Casotte Energy's proposed mitigation, and our recommended mitigation measures such as the implementation of the Strike Avoidance Procedures and special pile driving procedures, we have determined that the proposed Project would either have no effect or would not likely adversely affect these species. Consultations with the FWS and NOAA Fisheries are ongoing.

5.1.7 Land Use, Recreation, and Visual Resources

The nearest residences to the property boundary of the proposed LNG terminal are about 1.0 mile northwest of the terminal. The residences in this area were severely damaged or destroyed by Hurricane Katrina. We assumed that these residences would be rebuilt and, therefore, continued to use them as the closest residences for the purposes of evaluating impacts associated with construction and operation of the LNG terminal. Temporary construction impacts on these residences could include inconvenience caused by noise generated during pile driving activities associated with the installation of the proposed facilities. Permanent impacts on residences associated with operation of the proposed LNG terminal include those on visual resources.

Two planned industrial developments have been identified in the immediate vicinity of the proposed LNG terminal site. One, the expansion at the Chevron Pascagoula Refinery, is proposed within the existing boundary of the refinery and so adverse impacts are not expected. The other is an LNG terminal whose application is currently being reviewed by the FERC. The land adjacent to the proposed pipeline route is largely industrial with no private residences located within 50 feet of any proposed workspace. The land required for the proposed Project is all privately owned with the nearest special use area being Grand Bay National Estuary Research Reserve about one mile from the proposed Project site.

While LNG carriers are on their inbound and outbound routes or docked, other vessels, including recreational boats, would be prohibited within any safety/security zones that may be established by the Coast Guard. These effects would be temporary while the boat is in transit or moored at the ship unloading facility. The maximum delay expected due to the transit of a LNG carrier would be 1.5 hours. The extent of the security zone around the LNG ship while it is unloading would be established by the Coast Guard but is not expected to interfere with traffic along the adjacent Bayou Casotte Channel.

The most prominent visual features of the proposed LNG terminal would be three LNG storage tanks, each about 168 feet in height. The height of the LNG storage tanks would be about 68 feet taller than the tallest structure on the adjacent Pascagoula Refinery. While the LNG storage tanks would be visible from surrounding locations, they would be consistent with existing views of adjacent industrial facilities, and would not represent a significant visual impact. Ship traffic is common in Bayou Casotte, and would be similar to existing practices and not substantially change the visual character of the area. The visual impact of the proposed pipeline and associated aboveground facilities, all of which are in direct proximity to existing industrial facilities, would not represent a significant change to the aesthetics of the landscape.

In Mississippi the MDMR and the Pascagoula Special Management Area are responsible for reviewing federal agency actions and activities to ensure that they are consistent with Mississippi's CMP. We have recommended that Bayou Casotte Energy not be allowed to begin construction until it has received documentation confirming that the Project, including LNG vessel transit in Mississippi's waterway, is consistent with the Mississippi's CMP.

5.1.8 Socioeconomics

During the two years of peak construction activity, Bayou Casotte Energy would employ 400 to 600 workers. About 50 full-time employees would be needed for operation of the proposed Project facilities. Annual permanent wages for these employees would be about \$3million. The addition of non-local workers would not represent a significant increase to the Jackson County Mississippi population though, depending on reconstruction following Hurricane Katrina, construction related demand for housing could result in a minor to moderate tightening of the housing market. Local infrastructure and public services were sufficient to handle project needs prior to the hurricane and it is likely that they will be prepared to absorb project related workers by 2007. Any additional strain on public service provision would likely be offset by an increase in the local tax base. The proposed Project should not have an adverse effect on local property values, and would not disproportionately impact any minority or low-income neighborhoods. The proposed Project would benefit the local economy through expenditures for wages, purchase of materials, and taxes.

We have not identified any high and adverse human health or environmental effects that would be borne disproportionately by any minority or low-income group.

5.1.9 Transportation and Traffic

Traffic generated during peak construction of the LNG terminal would increase by an estimated 5 percent over existing daily traffic volume on Highway 611, the only access route to the proposed terminal. While this would not be a significant impact on traffic flow on Highway 611, there could be significant impacts on interchanges and intersections leading to the proposed LNG terminal site. Bayou Casotte Energy would try to alleviate these impacts by having workers arrive before peak commuting times and delivering most materials to the proposed site via marine transport or limiting deliveries to off-peak transportation times. We have recommended that Bayou Casotte Energy file the outcome of consultations with the MDOT and Jackson County regarding the need for traffic mitigation measures. The proposed project would not have a significant impact on traffic during operation.

During operation, the LNG terminal would receive up to 170 LNG carriers per year, resulting in an average of one vessel every two days through the Pascagoula and Bayou Casotte Channels, if determined to be suitable waterways by the Coast Guard. Along with the anticipated addition of 150 carriers from the Gulf Energy LNG Project, both projects have the potential to increase the number of LNG carriers by up to 320 LNG carriers per year, however, neither of these projects is located in an area of high recreation value or usage. Therefore, the proposed LNG terminal projects could only have minimal affects on recreational activities in the area. Other shipping activities would be moderately affected by the increase in traffic; however, based on the relatively low volume of existing shipping activity in the berthing area to the territorial sea, the impact is not expected to be substantial.

Safety measures and the size of the LNG carriers may require specific transit procedures within the Bayou Casotte Channel (e.g., daylight movements, one-way traffic, convoys). However, the Pilots (which are responsible for scheduling ship movements and establishing working conditions) indicated that they could continue to escort ships into and out of the channels in a safe and expeditious manner and that the Project would have minimal impacts on ship traffic. In a letter dated April 1, 2006, and modified in a letter dated September 5, 2006, the Coast Guard made a preliminary determination that the Pascagoula Bar, Horn Island Pass, Lower Pascagoula, and Bayou Casotte Channels may be suitable for the marine traffic associated with the Casotte Landing LNG Terminal Project.

5.1.10 Cultural Resources

Bayou Casotte Energy has conducted cultural resource surveys and filed with the FERC and the Mississippi SHPO survey reports for the proposed LNG terminal, pipelines, and interconnects. The Mississippi SHPO has issued its concurrence that the LNG terminal, pipeline, and interconnect facilities would not affect cultural or historic resources; therefore, no mitigation would be required.

The LNG marine traffic would transit along the waterway from the territorial seas to the berthing facility, passing through the Horn Island Pass. In the unlikely event of an LNG spill along the waterway, the physical properties of LNG would limit any potential impacts to cultural resources on either Horn or Petit Bois Island.

Bayou Casotte Energy filed with its application an accepted Unanticipated Discoveries Plan to be used in the event that cultural resources or human remains are discovered during construction. The plan describes the procedures that would be undertaken in the event previously unidentified cultural resources or human remains are encountered during construction.

Bayou Casotte Energy contacted the Mississippi Band of Choctaw Indians whose traditional territory would be directly affected by the proposed project. To date, the tribe has not requested any information regarding the proposed project.

5.1.11 Air Quality and Noise

Air emissions resulting from construction of the proposed Casotte Landing LNG Terminal would be temporary and intermittent. Bayou Casotte Energy would minimize dust emissions through application of water. Based on the nature of these emissions and level of mitigation that will be used the construction emissions would not significantly affect air quality in the region. Air emissions from operation of the LNG terminal would be low because the equipment would burn natural gas. The proposed LNG terminal would be a minor source of air emissions under the PSD regulations. The marine vessels associated with the proposed LNG terminal operation would generate the vast majority of the air emissions during transportation to the terminal and berthing at the terminal. Dispersion modeling indicates that these vessel emissions would not exceed a NAAQS.

Bayou Casotte Energy also conducted a quantitative assessment of project air emissions. The assessment included air dispersion modeling analyses to predict off-site (i.e., ambient) concentrations in the vicinity of the project resulting from the proposed emissions associated with operation of the project for comparison to appropriate federal air quality standards. The modeled project emissions plus background concentration was less than the NAAQS which demonstrated that the project primary sources would not have a significant impact on NAAQS compliance. Bayou Casotte Energy also modeled emissions from primary and secondary sources and their impacts on the Class I area at Breton National Wildlife Refuge (BNWR). Results for each pollutant demonstrated that the Proposed Project would have no significant impacts on the NAAQS at BNWR.

During operation of the Casotte Landing Project, air emissions from LNG marine traffic and other project-related vessels would occur along the entire waterway from the territorial seas to the ship berth. The emissions to any one localized area during ship transit would be temporary and transient and would be occurring at distances allowing for considerable dispersion before reaching any sensitive receptors; therefore, air emissions from ship transit are not expected to result in a significant impact on air quality.

No operational emissions from the sendout pipeline would be regulated by the MDEQ or EPA air quality regulations. Operational emissions would be limited to blowdown emissions that would occur during emergency situations and fugitive emissions during operation. Blowdowns would rarely occur and fugitive emissions would be negligible due to the small amount of natural gas emitted and the small fraction of VOCs contained in the natural gas. Therefore, these emissions would not have a significant effect on air quality.

Noise would be generated during construction of the pipeline and during construction and operation of the proposed LNG terminal. In most areas, the increase in noise during construction would be localized, temporary, and limited primarily to daylight hours. Noise associated with dredging operations, however, could occur up to 24 hours a day for a period of at least 6 months. The predicted noise levels at the nearest NSA during excavation, dredging, and pile driving at the proposed LNG terminal, would be below the FERC's threshold of an L_{dn} of 55 dBA and below existing ambient noise levels. Although construction activities at the proposed LNG terminal may be audible during relatively quiet periods, noise-related impacts are expected to be minimal and no mitigation would be required. Noise impacts during construction of the pipeline would be short term and temporary at any one place because of the assembly line method of pipeline construction. Based on noise attenuation computer modeling, noise from the proposed LNG terminal may be perceptible during relatively quiet periods, but the facility would not contribute substantially to typical existing background noise conditions. The actual noise generated during operation of the LNG terminal may be different from those obtained from modeling; therefore we have recommended that Bayou Casotte Energy make all reasonable efforts to assure its predicted noise levels from the LNG terminal are not exceeded at the NSAs; conduct noise surveys to confirm that compliance with our standard has been achieved; and file the results of the survey with the Secretary no later than 60 days after placing the LNG terminal in service.

Noise generated by LNG ships along the waterway from the territorial seas to the LNG terminal would be similar to noise from other large ships using the waterway. Underwater noise would cause a local and temporary avoidance behavior in fish but would not result in significant adverse impacts. Above-water noise associated with the LNG vessels would not result in significant impacts on environmental resources.

5.1.12 Reliability and Safety

We evaluated the safety of both the proposed facilities and the related LNG vessel transit through the Pascagoula Bar, Horn Island Pass, Lower Pascagoula, and Bayou Casotte Channels. As part of our evaluation, we performed a cryogenic design and technical review of the proposed terminal design and safety systems. Several areas of concern were noted with respect to the proposed facility, and specific recommendations have been identified to be addressed: prior to initial site construction; prior to construction after final design; prior to commissioning; or prior to commencement of service.

Thermal radiation and flammable vapor hazard distances were calculated for an accident or an attack on an LNG vessel. For 1-, 1.5-, 2.5-, 3.0-, and 3.9-meter-diameter holes in an LNG cargo tank, we estimated distances to range from 2,164 to 5,250 feet for a thermal radiation level of 1,600 Btu/hr/ft², the level which is hazardous to unprotected persons located outdoors. Based on a 1-meter-diameter hole, an unignited release would result in an estimated pool radius of 421 feet. The unignited vapor cloud would extend to 9,776 feet to the lower flammability limit and 14,377 feet to one-half the lower flammability limit. Flammable vapor dispersion for larger holes was not performed since, realistically, the cloud would not even extend to the maximum distance for a 1-meter-diameter hole before encountering an ignition source. However, the evaluation of safety is more than an exercise in calculating the consequences of worst case scenarios. Rather, it is a determination of the acceptability of risk which considers: the probability of events, the effect of mitigation, and the consequences of events. Based on the extensive

operational experience of LNG shipping, the structural design of an LNG vessel, and the operational controls that may be imposed by the Coast Guard and the local pilots, the likelihood of a cargo containment failure and subsequent LNG spill from a vessel casualty – collision, grounding, or allision – is highly unlikely. For similar reasons, an accident involving the onshore LNG import terminal is unlikely to affect the public. As a result, the risk to the public from accidental causes should not be considered significant.

As part of our marine safety analysis, we considered how vessel security requirements for LNG carriers calling on the proposed LNG terminal might affect other ship and boat traffic in the Pascagoula Bar, Horn Island Pass, Lower Pascagoula, and Bayou Casotte Channels. Based on the Coast Guard's longstanding experience in controlling the movements of dangerous cargo vessels and LNG vessels in other ports, potential impacts can be evaluated for several general security requirements: 1) moving safety zone for inbound and outbound LNG vessels; 2) security zone around a moored LNG vessel; and 3) other measures as deemed appropriate. If the Coast Guard issues a LOR finding the waterway suitable for LNG marine traffic, the moving safety zone, and the security zone at the terminal, may affect other commercial and recreational traffic using the waterway.

The extent of the impact on recreational boaters would depend on the number of boats in the project area during the two to three LNG vessel transits per week when LNG ships would call on the LNG terminal, and on several other variables such as the size of the possible Coast Guard-imposed moving safety and moored security zone and the width of the channel at the point where a boat encounters the LNG ship. To minimize potential impacts on other marine traffic, the Coast Guard is expected to use a program of announcements to give advance notice of each moving safety and moored security zone schedule and could schedule the transit of LNG marine traffic for times of day less likely to affect recreational boaters.

Unlike accidental causes, historical experience provides little guidance in estimating the probability of a terrorist attack on an LNG vessel or onshore storage facility. For an LNG import terminal proposal that would involve having a large volume of energy transported and stored, the perceived threat of a terrorist attack is a primary concern of the local population and requires that resources be directed to mitigate possible attack paths. While the risks associated with the transportation of any hazardous cargo can never be entirely eliminated, they can be managed.

An issue that has developed for several LNG terminal projects is a concern that local communities would have to bear some of the costs of ensuring the security/emergency management of the LNG facility and the LNG vessel while in transit and unloading at the dock. The specific security/emergency management costs for the proposed project are not yet available. The final costs associated with security would be determined after the specific security needs and responsibilities have been established by the Coast Guard through consultations with other federal, state, and local agencies.

In accordance with 33 CFR 127.007, Bayou Casotte Energy submitted a LOI to the Coast Guard on February 10, 2005 conveying its intention to construct and operate an LNG import terminal at the proposed site. On February 13, 2006, Bayou Casotte Energy submitted its WSA to the Coast Guard in accordance with the guidance in NVIC 05-05. The Coast Guard, with input from Pascagoula AMSC, has completed an initial review of Bayou Casotte Energy's WSA in accordance with the guidance in NVIC 05-05. The WSA review focused on the navigation safety and maritime security risks posed by LNG marine traffic, and the measures needed to responsibly manage these security risks.

On September 5, 2006, the Coast Guard sent a letter to FERC, based on the above WSA and AMSC review, providing preliminary input on the capability of the port community to implement the risk management measures necessary to responsibly manage the risks of LNG marine traffic in the port. As

described in this document, the Coast Guard has preliminarily determined that the Pascagoula Bar, Horn Island Pass, Lower Pascagoula and Bayou Casotte Channels are suitable for the LNG marine traffic associated with this project contingent on the evaluation of certain conditions before a final determination of suitability can be made. With the completion of this final EIS, the Coast Guard will complete its review and issue an LOR with conditions to address the suitability of the waterways for LNG transport.

While a typical LOR would address the suitability of the waterway from the berthing area to the territorial sea for LNG marine transit, it would not constitute a final authority to commence LNG operations. The Coast Guard's *LNG Vessel Transit Management Plan* would be developed in conjunction with state and local law enforcement and emergency response communities. As a condition of the LOR, the Coast Guard may establish a moving safety zone and moored vessel security zone under 33 CFR 165 for LNG vessels in transit and while docked. Only personnel or vessels authorized by the COTP are permitted within these zones.

Once the plan is finalized and the resources required to implement it have been identified, Bayou Casotte Energy will be able to more specifically discuss the funding of such resources. In order to better define how the potential burden on local communities would be addressed, we have recommended that Bayou Casotte Energy provide a Cost-Sharing Plan that identifies the mechanisms for funding project-specific security/emergency management costs that would be imposed on state agencies and local communities.

5.1.13 Alternatives

As an alternative to the proposed action, we evaluated the no action or postponed action alternatives, system alternatives, LNG terminal site alternatives, LNG terminal design alternatives, pipeline interconnect alternatives, and dredge material placement alternatives. While the no action or postponed action alternative would eliminate the short- and long-term environmental impacts identified in this EIS, the objectives of the proposed Project would not be met, and Bayou Casotte Energy would not be able to provide a new source of natural gas to markets that can be accessed through the proposed pipeline interconnects.

Our analysis of system alternatives included an evaluation of whether existing and proposed LNG and other natural gas systems could meet the proposed Project objectives while offering an environmental advantage over the proposed Project. We considered both existing onshore and offshore LNG terminals, as well as existing natural gas pipeline systems. In addition, we also analyzed various recently approved and proposed projects, including the construction of an offshore terminal, to meet the objectives of the proposed Casotte Landing Project. Pipeline system alternatives would not provide new, non-domestic sources of natural gas, and therefore be unable to meet the objectives of the proposed Project. Relative to the proposed Project, it is unclear how efficiently or effectively, the other existing, approved, and proposed onshore LNG terminal projects could satisfy the objectives of the proposed Casotte Landing Project. However, the FERC does not ultimately view any of the existing, approved, or proposed onshore LNG terminal projects as true alternatives to the proposed Project. Rather we view each as potentially complementary for the purpose of meeting the United States' projected energy demands. We acknowledge that some of the existing, approved, and proposed offshore LNG terminal projects could provide an alternative means for the import of LNG, but we do not consider that any of them would provide the capabilities of the proposed Project. Further, we do not consider that any of the offshore LNG terminal technologies represent an environmentally preferable or technically and economically feasible and practical alternative to the proposed Project.

The proximity of the proposed terminal site to the Chevron Pascagoula Refinery would provide numerous synergies and environmental benefits, including use of existing services for security and safety,

minimization of landowner impacts, and use of waste heat from the Refinery to accomplish LNG vaporization. We also considered that other potential locations would be unlikely to satisfy the proposed Project objectives. Therefore, we did not conduct a detailed regional screening analysis to identify alternative terminal locations. However, we did consider local siting alternatives for the proposed LNG terminal. We also considered LNG terminal design alternatives, including four terminal slip configuration alternatives, five vaporization technology alternatives, and electrical power system alternatives, as well as route alternatives for the proposed pipeline interconnect spur. However, relative to the proposed Project none of the alternatives evaluated were considered environmentally preferable and/or technically and economically feasible. In summary, we have determined that the proposed Project, as modified by our recommended mitigation measures, is the preferred alternative that can meet the Project objectives.

Lastly, we evaluated four general alternatives for placement of the 3.5 mcy of initial and 250,000 yd³ of annual maintenance dredge material that would result from construction and operation of the proposed Project. Bayou Casotte Energy indicates that its preferred alternative for placement of both construction and maintenance dredge materials is placement at the ODMDS, with contribution to beneficial use sites as available. Pending receipt of the required approvals under Section 103 of the MPRSA, we do not consider any of the dredge material placement alternatives evaluated to represent a technically or environmentally preferable alternative to Bayou Casotte Energy's preferred dredged material placement plan.

The preferred alternative for the Coast Guard is to issue an LOR finding the waterway suitable for LNG vessel traffic with conditions. These conditions include: 1) establishment of a moving safety zone during LNG vessels' transit of the waterway, including requirements for daylight transit and one way LNG vessel traffic on the waterway, as well as another safety zone around the LNG facility while the LNG vessels are moored; 2) an annual review of the facility's Waterway Suitability Assessment by the applicant to evaluate if any conditions in the waterway have changed that would require issuance of a new LOR, with submittal of such annual reviews to the COTP for consideration and issuance of a new LOR, if required; 3) LNG vessels must navigate the waterway from the outer sea buoy to the berthing with harbor pilots onboard; 4) that tug assistance be provided as deemed necessary by the Pascagoula pilots; 5) that all LNG traffic make a SECURITE broadcast prior to crossing the Gulf Intracoastal Waterway; 6) implementation of a Coast Guard approved *LNG Vessel Transit Management Plan*; and 7) that adequate Coast Guard resources be available to implement the security measures described above. If these conditions to the LOR are imposed, the potential for accidental releases or releases resulting from terrorist attacks would be minimized. Considering this and the other potential environmental impacts discussed in this EIS, the total potential for adverse environmental impacts resulting from the Coast Guard's proposed action is not considered significant.

If a LOR is issued without conditions, the potential for accidental releases or releases from terrorist attacks would increase, increasing the potential adverse environmental impacts that are discussed in this EIS. If a LOR is issued determining that the waterway is unsuitable for LNG traffic, then the potential for additional adverse environmental impacts would be avoided, but this would not provide the United States with LNG as an alternative energy source. If issuing the LOR is delayed, any potential environmental impacts would only be delayed. However, this alternative would delay providing the United States with a sufficient alternate source of energy.

The preferred alternative of issuing a LOR with the referenced conditions will allow the LNG vessels to reach the facility with potentially less adverse environmental impacts than issuing a LOR finding the waterway to be suitable for LNG vessel traffic without conditions, and provide an alternate source of energy which will supplement/replace the use of non-renewable sources such as coal and

petroleum products and renewable nuclear fuels, and reducing our dependency on petroleum and nuclear fuels.

In conclusion, we have determined that Bayou Casotte Energy's proposed project, as modified by our recommended mitigation measures, is the preferred alternative that can meet the project objectives.

5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission approves the proposed Casotte Landing LNG Terminal Project, we recommend that the Commission's authorizations include the measures recommended below. We believe these measures would further mitigate the environmental impacts associated with the construction and operation of the proposed Project.

1. Bayou Casotte Energy shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff data requests) and as identified in the environmental impact statement (EIS), unless modified by the Order. Bayou Casotte Energy must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of the Office of Energy Projects (OEP) **before using that modification.**
2. For pipeline facilities, the Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Casotte Landing LNG Terminal (Project). This authority shall allow:
 - a. the modification of conditions of the Commission's Order; and
 - b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.
3. For liquefied natural gas facilities, the Director of OEP has delegated authority to take all steps necessary to ensure the protection of life, health, property, and the environment during construction and operation of the Project. This authority shall include:
 - a. stop-work authority and authority to cease operation; and
 - b. the design and implementation of any additional measures deemed necessary to assure continued compliance with the intent of the conditions of the Order.
4. Prior to any construction, Bayou Casotte Energy shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors, and contractor personnel will be informed of the environmental inspector's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs before becoming involved with construction and restoration activities.

5. The authorized facility locations shall be as shown in the EIS, as supplemented by filed alignment sheets, and shall include all of the staff's recommended facility locations. **As soon as they are available, and before the start of construction,** Bayou Casotte Energy shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.
6. Bayou Casotte Energy shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area.**

This requirement does not apply to extra workspace allowed by the *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan), minor field realignments per landowner needs, and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
 - b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
7. **At least 60 days before that start of construction,** Bayou Casotte Energy shall file an initial Implementation Plan with the Secretary for review and written approval by the Director of OEP describing how Bayou Casotte Energy will implement the mitigation measures required by the Order. Bayou Casotte Energy must file revisions to the plan as schedules change. The plan shall identify:
 - a. how Bayou Casotte Energy will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - b. the number of environmental inspectors assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - c. company personnel, including environmental inspectors and contractors, who will receive copies of the appropriate material;
 - d. the training and instructions Bayou Casotte Energy will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);
 - e. the company personnel (if known) and specific portion of Bayou Casotte Energy's organization having responsibility for compliance;

- f. the procedures (including use of contract penalties) Bayou Casotte Energy will follow if noncompliance occurs; and
 - g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the mitigation training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.
8. Bayou Casotte Energy shall develop and implement an environmental complaint resolution procedure. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Project and restoration of the right-of-way. **Prior to construction of the pipeline**, Bayou Casotte Energy shall mail the complaint procedures to each landowner whose property would be crossed by the Project.
- a. In its letter to affected landowners, Bayou Casotte Energy shall:
 - (1) provide a local contact that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;
 - (2) instruct the landowners that, if they are not satisfied with the response, they should call Bayou Casotte Energy's Hotline; the letter should indicate how soon to expect a response; and
 - (3) instruct the landowners that, if they are still not satisfied with the response from Bayou Casotte Energy's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030.
 - b. In addition, Bayou Casotte Energy shall include in its weekly status report a copy of a table that contains the following information for each problem/concern:
 - (1) the date of the call;
 - (2) the identification number from the certificated alignment sheets of the affected property;
 - (3) the description of the problem/concern; and
 - (4) an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.
9. Bayou Casotte Energy shall employ an environmental inspector (EI). The environmental inspector shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
 - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
 - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
 - d. a full-time position, separate from all other activity inspectors;

- e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
 - f. responsible for maintaining status reports.
10. Bayou Casotte Energy shall file updated status reports prepared by the EI with the Secretary on a weekly basis **until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. the current construction status of the Project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
 - b. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - c. corrective actions implemented in response to all instances of noncompliance, and their cost;
 - d. the effectiveness of all corrective actions implemented;
 - e. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
 - f. copies of any correspondence received by Bayou Casotte Energy from other federal, state or local permitting agencies concerning instances of noncompliance, and Bayou Casotte Energy's response.
11. Bayou Casotte Energy must receive written authorization from the Director of OEP **before commencing service** of the LNG terminal and the other components of the project. Such authorization will only be granted following a determination that the facilities have been constructed in accordance with FERC approval and applicable standards, can be expected to operate safely as designed, and the rehabilitation and restoration of the right-of-way is proceeding satisfactorily.
12. **Within 30 days of placing the certificated facilities in service**, Bayou Casotte Energy shall file an affirmative statement with the Secretary, certified by a senior company official:
- a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
 - b. identifying which of the certificate conditions Bayou Casotte Energy has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
13. Bayou Casotte Energy shall file with the Commission **before construction** the following information on nonjurisdictional facilities, including the Mississippi Power Company transmission lines and substations, the Refinery berth relocations, and the NGL extraction and pipeline system:
- a. final routing and design information, including a map depicting the location of the facilities;
 - b. documentation of consultations with the appropriate agencies and the status of federal, state, or local permits or approvals required for construction; and
 - c. status and copies of agency clearances (or copies of any surveys and reports prepared) for wetlands, threatened and endangered species, and cultural resources.

14. Bayou Casotte Energy shall revise its proposed Plan, except for the proposed variances specifically approved in this EIS, to be consistent with the FERC's standard Plan. The revised Plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to the start of construction.** *EIS Section 4.2.1*
15. Bayou Casotte Energy shall develop a plan in consultation with the MDEQ and EPA regarding assessment, containment, and disposal of contaminated groundwater that might be encountered during any construction activities and file a copy with the Secretary **prior to the start of construction.** *EIS Section 4.3.1*
16. Except for the proposed variances specifically approved within this EIS, Bayou Casotte Energy shall revise its proposed Procedures to be consistent with the FERC's standard Procedures, as modified in this EIS. The revised Procedures should be filed with the Secretary for review and written approval by the Director of OEP **prior to construction.** *EIS Section 4.3.2*
17. Bayou Casotte Energy shall file the results of consultations with MDEQ regarding the use of hydrostatic test water additives to the Commission **prior to the start of construction,** and not use corrosion inhibitors, biocides, oxygen scavengers, or other hydrostatic test water additives that exhibit toxicity to aquatic organisms **without prior written approval** by the Director of OEP. *EIS Section 4.3.2*
18. Bayou Casotte Energy shall complete consultations with MDMR and MDEQ regarding potential impacts to water quality within or adjacent to the proposed terminal slip and file documentation of the consultation findings and any required mitigation or monitoring measures to the Secretary **prior to the date of construction.** *EIS Section 4.3.2*
19. Bayou Casotte Energy shall implement the lighting guidelines developed by the FWS for siting, construction, operation, and decommissioning of communication towers. These guidelines specifically recommend that the number and intensity of facility lighting be minimized and that security lighting be down-shielded to keep light within the boundaries of the site. Bayou Casotte Energy shall file that plan with the Secretary for review and written approval by the Director or OEP **prior to construction.** *EIS Section 4.5.1*
20. Bayou Casotte Energy shall complete consultations with the MDMR regarding the need for a pre-construction and post-construction project trawl and benthic sampling plan and if required, file the agency approved plan with the Secretary **prior to the start of construction.** *EIS Section 4.5.2*
21. Bayou Casotte Energy shall complete consultations with NOAA Fisheries and MDMR regarding potential impacts to ichthyoplankton and aquatic resources resulting from the intake of ballast and engine cooling water, the discharge of cooling water, (and all other activities that result in withdrawal of marine surface water, such as hydrostatic testing and maintenance dredging), and file the findings of these consultations with the Commission, including any required or recommended measures to prevent or reduce impacts, **prior to the start of construction.** *EIS Section 4.5.2*
22. Bayou Casotte Energy shall finalize consultations with NOAA Fisheries, MDMR, and the COE to develop a plan for quantifying, if appropriate, and mitigating impacts to EFH and file that plan with the Secretary for review and written approval of the Director of OEP **prior to construction.** *EIS Section 4.5.4*
23. Bayou Casotte Energy shall consult with the FWS regarding appropriate measures that should be implemented to avoid or minimize impacts to migratory bird species if construction activities were to occur during peak nesting season (April 1 through June 30). In addition, Bayou Casotte Energy shall file the results of that consultation with the Secretary and receive written approval from the Director of OEP **prior to implementing any associated mitigation measures.** *EIS Section 4.6.2*

24. Bayou Casotte Energy shall not begin construction activities at the LNG terminal and along the pipeline route until:
 - a. the FERC completes any necessary consultations with the FWS and NOAA Fisheries; and
 - b. Bayou Casotte Energy receives written notification from the Director of OEP that construction and/or implementation of conservation measures may begin.

If construction has not begun **within 1 year** from the date of issuance of the FERC approval of the project, Bayou Casotte Energy shall consult with the appropriate offices of the FWS and NOAA Fisheries to update the species list and to verify that previous consultations and determinations of effect are still current. Documentation of these consultations, and the need for additional surveys and survey reports (if required), and FWS or NOAA Fisheries comments on the surveys and survey reports and their conclusions, shall be filed with the Secretary and the COTP **prior to construction**.
EIS Section 4.6.3

25. Bayou Casotte Energy shall file documentation of concurrence from the Mississippi Department of Marine Resources that the Project is consistent with Mississippi's CMP with the **Secretary prior to construction**. *EIS Section 4.7.5*
26. Bayou Casotte Energy shall file with the Secretary the outcome of consultations with state and local transportation authorities to determine the need for Maintenance of Traffic Study **prior to the initiation of construction**. *EIS Section 4.9.2*
27. Bayou Casotte Energy prepare a Fugitive Dust Control Plan that specifies the following:
 - a. The precautions that would be taken to minimize fugitive dust emissions from construction activities and when/how the measures would be applied;
 - b. the individuals with the authority to determine if/when water needs to be reapplied for dust control; and
 - c. the individuals with the authority to stop work if the contractor does not comply with dust control measures.

This plan should be filed with the Secretary for review and written approval of the Director of OEP **prior to the start of construction activities**. *EIS Section 4.11.1*

28. Bayou Casotte Energy shall make all reasonable efforts to ensure its predicted noise levels from the LNG terminal are not exceeded at the noise-sensitive area (NSA) and file noise surveys with the Secretary **no later than 60 days** after placing the LNG terminal in service. However, if the noise attributable to the operation of the LNG terminal exceeds 55 decibels on the A-weighted scale day-night sound level at a NSA, Bayou Casotte Energy shall file a report on what changes are needed and shall install additional noise controls to the level **within 1 year** of the in-service date. Bayou Casotte Energy shall confirm compliance with these requirements by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.
29. Bayou Casotte Energy shall **annually** review its waterway suitability assessment for the project; update the assessment to reflect changing conditions; provide the updated assessment to the cognizant COTP/Federal Maritime Security Coordinator for review and validation; and provide a copy to the FERC staff. *EIS Section 4.12.5*
30. Bayou Casotte Energy shall provide the necessary information to demonstrate that the transient hazard areas identified in the final EIS are applicable **prior to accepting** ships greater than 140,000 cubic meters in capacity. This information shall be filed with the Secretary for review and written approval of the Director of OEP. This information shall also be provided to the Coast Guard. *EIS Section 4.12.5*

Recommendation numbers 31 through 71 shall apply to the LNG terminal design and construction details. Information pertaining to these specific recommendations shall be filed with the Secretary for review and approval by the Director of OEP either: prior to initial site preparation; prior to construction of final design; prior to commissioning; or prior to commencement of service as indicated by each specific recommendation. Items relating to Resource Report 13 - *Engineering and Design Material* and security should be submitted as critical energy infrastructure information pursuant to 18 CFR Parts 388.112 and PL01-1. Information pertaining to items such as: offsite emergency response; procedures for public notification and evacuation; and construction and operating reporting requirements would be subject to public disclosure. Bayou Casotte Energy shall file this information a minimum of 30 days before approval to proceed is required.

31. Complete plan drawings and a list of the hazard detection equipment shall be filed **prior to initial site preparation**. The list shall include the instrument tag number, type and location, alarm locations, and shutdown functions of the proposed hazard detection equipment. Plan drawings shall clearly show the location of all detection equipment. *EIS Section 4.12.2*
32. A technical review addressing the following information for the proposed facility should be filed **prior to initial site preparation**:
 - a. Identification of all combustion/ventilation air intake equipment and the distances to any possible hydrocarbon release (LNG, flammable refrigerants, flammable liquids and flammable gases).
 - b. A demonstration that these areas are adequately covered by hazard detection devices, including a description of how these devices would isolate or shutdown any combustion equipment whose continued operation could add to or sustain an emergency. *EIS Section 4.12.2*
33. Complete plan drawings and a list of the fixed and wheeled dry-chemical, fire extinguishing, and high expansion foam hazard control equipment shall be filed **prior to initial site preparation**. The list shall include the equipment tag number, type, size, equipment covered, and automatic and manual remote signals initiating discharge of the units. Plan drawings should clearly show the planned location of all fixed and wheeled extinguishers. *EIS Section 4.12.2*
34. Facility plans showing the proposed location of, and area covered by, each monitor, hydrant, deluge system, hose, and sprinkler, as well as piping and instrumentation diagrams, of the fire water system shall be filed **prior to initial site preparation**. *EIS Section 4.12.2*
35. A copy of the hazard design review and list of recommendations that are to be incorporated in the final facility design shall be filed **prior to initial site preparation**. *EIS Section 4.12.2*
36. Drawings of the storage tank piping support structure and support of horizontal piping at grade shall be filed **prior to initial site preparation**. *EIS Section 4.12.2*
37. The P&IDs and design information for the NGL Recovery System shall be filed **prior to initial site preparation**. *EIS Section 4.12.2*
38. Procedures shall be developed for offsite contractors' responsibilities, restrictions, limitations and supervision of these contractors by Bayou Casotte Energy staff, **prior to initial site preparation**. *EIS Section 4.12.2*
39. Bayou Casotte Energy shall develop emergency evacuation routes/methods for the areas along the route of the LNG carrier transit in conjunction with the local emergency planning groups and town officials and file the routes/methods with the Secretary for review and written approval by the Director or OEP **prior to initial site preparation**. *EIS Section 4.12.5*
40. Bayou Casotte Energy shall provide a comprehensive plan identifying the mechanisms for funding all project-specific security/emergency management costs that would be imposed on state and local

agencies. In addition to the funding of direct transit-related security/emergency management costs, this comprehensive plan shall include funding mechanisms for the capital costs associated with any necessary security/emergency management equipment and personnel base. This plan shall be filed with the Secretary **prior to initial site preparation** for review and approval by the Director of OEP. *EIS Section 4.12.5*

41. The **final design** of the hazard detection equipment shall identify manufacturer and model. *EIS Section 4.12.2*
42. The **final design** of the fixed and wheeled dry-chemical, fire extinguishing, and high expansion foam hazard control equipment should identify manufacturer and model. *EIS Section 4.12.2*
43. The **final design** shall include detailed drawings of the spill control system to be applied to the LNG tank roof. *EIS Section 4.12.2*
44. The **final design** shall specify that the LNG tank carbon steel piping support plates and connections to piping supports shall be designed to ensure that corrosion protection is adequately provided and provisions for corrosion monitoring and maintenance of carbon steel attachments are to be included in the design and maintenance procedures. *EIS Section 4.12.2*
45. The **final design** shall include details of the LNG tank tilt settlement and differential settlement limits between each LNG tank and piping and procedures to be implemented in the event that limits are exceeded. *EIS Section 4.12.2*
46. The **final design** shall include details of the pipe supports and restraints designed to prevent damage to piping systems and equipment in the event of a storm surge anticipated for a class 4 hurricane. *EIS Section 4.12.2*
47. The **final design** shall include provisions to install LNG transfer pumps at Jetty KO drum. *EIS Section 4.12.2*
48. The **final design** shall include details of the boiloff gas flow and temperature measurement for each tank. *EIS Section 4.12.2*
49. The **final design** shall include bypass valves around the intank discharge valves for cooldown of the 24-inch headers and piping. *EIS Section 4.12.2*
50. The **final design** shall include an automatic shutoff valve in the LNG intermediate pump inlet line from the suction header. *EIS Section 4.12.2*
51. The **final design** shall include an automatic shutoff valve in the LNG sendout pump inlet line from the suction header. *EIS Section 4.12.2*
52. The **final design** shall include P&IDs and drawings of the meter station.
53. The **final design** shall include a fire protection evaluation carried out in accordance with the requirements of NFPA 59A, chapter 9.1.2. *EIS Section 4.12.2*
54. The **final design** shall include details of the shut down logic, including cause and effect matrices for alarms and shutdowns. *EIS Section 4.12.2*
55. The **final design** shall include emergency shutdown of equipment and systems activated by hazard detection devices for flammable gas, fire, and cryogenic spills, when applicable. *EIS Section 4.12.2*
56. The **final design** shall include details of the air gaps to be installed downstream of all seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system. Each air gap shall vent to a safe location and be equipped with a leak detection device that: shall continuously monitor for the presence of a flammable fluid; shall alarm the hazardous condition; and shall shutdown the appropriate systems. *EIS Section 4.12.2*

57. The **final design** shall include a HAZOP review of the completed design. A copy of the review and a list of the recommendations shall be filed. *EIS Section 4.12.2*
58. The P&IDs in the **final design** shall show and number all valves including drain, vent, main, and car sealed. *EIS Section 4.12.2*
59. The **final design** shall include safeguards to be installed to protect above ground fire water piping, including post indicator valves, from inadvertent damage. *EIS Section 4.12.2*
60. The **final design** shall specify that all hazard detection equipment shall include redundancy and fault detection and fault alarm monitoring in all potentially hazardous areas and enclosures. *EIS Section 4.12.2*
61. All valves including drain, vent, main, and car sealed valves shall be tagged in the field **during construction and prior to commissioning**. Instrumentation valves are excluded from this recommendation. *EIS Section 4.12.2*
62. The design details and procedures to record and to prevent the tank fill rate from exceeding the maximum fill rate specified by the tank designer shall be filed **prior to commissioning**. *EIS Section 4.12.2*
63. A tabulated list of the proposed hand-held fire extinguishers shall be filed **prior to commissioning**. The information shall include a list with the equipment number, type, size, number, and location. Plan drawings shall include the type, size, and number of all hand-held fire extinguishers. *EIS Section 4.12.2*
64. Operation and maintenance procedures and manuals, as well as safety procedure manuals, shall be filed **prior to commissioning**. *EIS Section 4.12.2*
65. The contingency plan for failure of the LNG tank outer containment, approved by the tank manufacturer shall be filed **prior to commissioning**. *EIS Section 4.12.2*
66. A copy of the criteria for horizontal and rotational movement of the inner tank for use during and after cool down shall be filed **prior to commissioning**. *EIS Section 4.12.2*
67. The maintenance procedures to be filed **prior to commissioning** shall state that a foundation elevation survey of all LNG tanks shall be made on an annual basis. *EIS Section 4.12.2*
68. Bayou Casotte Energy shall coordinate with the Coast Guard to define the responsibilities of Bayou Casotte Energy's security staff in supplementing other security personnel and in protecting the LNG tankers and terminal **prior to commissioning**. *EIS Section 4.12.5*
69. The FERC staff shall be notified of any proposed revisions to the security plan and physical security of the facility **prior to commencement of service**. *EIS Section 4.12.2*
70. Bayou Casotte Energy shall develop an Emergency Response Plan (including evacuation) and coordinate procedures with local emergency planning groups, fire departments, state and local law enforcement, and appropriate Federal agencies. This plan shall include at a minimum:
 - a. designated contacts with state and local emergency response agencies;
 - b. scalable procedures for the prompt notification of appropriate local officials and emergency response agencies based on the level and severity of potential incidents;
 - c. procedures for notifying residents and recreational users within areas of potential hazard;
 - d. evacuation routes for public use areas and residents of areas along the route of the LNG transit;
 - e. locations of permanent sirens and other warning devices; and
 - f. an "emergency coordinator" on each LNG carrier to activate sirens and other warning devices.

The Emergency Response Plan shall be filed with the Secretary for review and approval by the Director of OEP prior to commencement of service. Bayou Casotte Energy shall notify the FERC staff of all meetings in advance and shall report progress on its Emergency Response Plan at three-month intervals starting at the commencement of construction. *EIS Section 4.12.5*

71. Progress on the construction of the LNG terminal shall be reported in monthly reports filed with the Secretary. Details shall include a summary of activities, projected schedule for completion, problems encountered and remedial actions taken. Problems of significant magnitude shall be reported to the FERC within 24 hours. *EIS Section 4.12.2*

Recommendation numbers 72 through 75 shall apply throughout the life of the facility:

72. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least an **annual** basis or more frequently as circumstances indicate. Prior to each FERC staff technical review and site inspection, the Company shall respond to a specific data request including information relating to possible design and operating conditions that may have been imposed by other agencies or organizations. Up-to-date detailed piping and instrumentation diagrams reflecting facility modifications and provision of other pertinent information not included in the semi-annual reports described below, including facility events that have taken place since the previously submitted annual report, shall be filed. *EIS Section 4.12.2*
73. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in facility design and operating conditions, abnormal operating experiences, activities (including ship arrivals, quantity and composition of imported LNG, vaporization quantities, boil-off/flash gas, etc.), plant modifications including future plans and progress thereof. Abnormalities shall include, but not be limited to: unloading/shipping problems, potential hazardous conditions from offsite vessels, storage tank stratification or rollover, geysering, storage tank pressure excursions, cold spots on the storage tanks, storage tank vibrations and/or vibrations in associated cryogenic piping, storage tank settlement, significant equipment or instrumentation malfunctions or failures, non-scheduled maintenance or repair (and reasons therefore), relative movement of storage tank inner vessels, vapor or liquid releases, fires involving natural gas and/or from other sources, negative pressure (vacuum) within a storage tank and higher than predicted boiloff rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be filed **within 45 days** after each period ending **June 30 and December 31**. In addition to the above items, a section entitled "Significant plant modifications proposed for the next 12 months (dates)" also shall be included in the semi-annual operational reports. Such information would provide the FERC staff with early notice of anticipated future construction/maintenance projects at the LNG facility. *EIS Section 4.12.2*
74. In the event the temperature of any region of any secondary containment, including imbedded pipe supports, becomes less than the minimum specified operating temperature for the material, the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified. *EIS Section 4.12.2*
75. Significant non-scheduled events, including safety-related incidents (i.e., LNG or natural gas releases, fires, explosions, mechanical failures, unusual over pressurization, and major injuries) and security related incidents (i.e., attempts to enter site, suspicious activities) shall be reported to FERC staff. In the event an abnormality is of significant magnitude to threaten public or employee safety, cause significant property damage, or interrupt service, notification shall be made **immediately**, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency procedure. In all instances, notification shall be made to Commission staff within 24 hours. This notification practice shall be incorporated into the LNG facility's emergency plan. Examples of reportable LNG-related incidents include:

- a. fire;
- b. explosion;
- c. estimated property damage of \$50,000 or more;
- d. death or personal injury necessitating in-patient hospitalization;
- e. free flow of LNG that results in pooling;
- f. unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability, structural integrity, or reliability of an LNG facility that contains, controls, or processes gas or LNG;
- g. any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG;
- h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes gas or LNG to rise above its maximum allowable operating pressure (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure limiting or control devices;
- i. a leak in an LNG facility that contains or processes gas or LNG that constitutes an emergency;
- j. inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank;
- k. any condition that could lead to a hazard and cause a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility;
- l. safety-related incidents to LNG vessels occurring at or en route to and from the LNG facility; or
- m. an event that is significant in the judgment of the operator and/or management even though it did not meet the above criteria or the guidelines set forth in an LNG facility's incident management plan.

In the event of an incident, the Director of OEP has delegated authority to take whatever steps are necessary to ensure operational reliability and to protect human life, health, property or the environment, including authority to direct the LNG facility to cease operations. Following the initial company notification, Commission staff would determine the need for an on-site inspection by Commission staff, and the timing of an initial incident report (normally within 10 days) and follow-up reports. *EIS Section 4.12.2*