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 will present, in its Letter of Recommendation and LNG Operations Plan, its own conclusions and recommendations, prior to construction and operation. The Letter of Recommendation will address the suitability of Narragansett Bay and the Taunton River for LNG ship transportation, and the Coast Guard's Vessel Transit Security Plan will address issues related to the public impact of safety or security zones for LNG vessels. Likewise, the COE will present its own conclusions and recommendations in the dredging and wetland permits it may issue pursuant to section 10 and section 404 of the River and Harbors Act and the CWA, respectively. The EPA has the authority to review and veto the COE decisions on section 404 permits.

We (the Commission's staff) have determined that Weaver's Cove Energy has designed its proposal to mitigate most of the adverse environmental impacts that could result from the construction and operation of the Weaver's Cove LNG Project. Where we have identified remaining adverse impacts, we have developed, as appropriate, specific mitigation measures to reasonably avoid or minimize those impacts. We are recommending that these mitigation measures be attached as conditions to any authorization issued by the Commission. The Coast Guard's security plan that controls the LNG vessels operating through Narragansett Bay to/from the proposed terminal will further ensure the public safety. We conclude that if it is constructed and operated in accordance with Weaver's Cove Energy's proposed mitigation and our recommended mitigation measures, the proposed action would meet federal safety standards, can be operated safely, and would have limited adverse environmental impact. Our conclusions are based on information provided by Weaver's Cove Energy and data developed from data requests; field investigations by Commission staff; literature search; alternative analyses; comments from federal, state, and local agencies; and input from legislators, public groups, and individual citizens.

The discussion below summarizes the environmental impacts and the proposed or recommended mitigation for each resource analyzed in this final EIS. The impacts discussed in section 4 and summarized below would be most significant during the construction period. A detailed summary of specific project impacts and mitigation, which complements this section, is provided in a table in Appendix I to assist with MEPA's Section 61 Findings requirements in 301CMR 11.07(k).

Geology

Construction and operation of the proposed project would have minimal impact on geologic resources in the area, and the potential for geologic hazards or other natural events to significantly impact the project is low.

Existing soils at the LNG terminal site could liquefy during a major earthquake; however, the likelihood of a major earthquake occurring in the project area during the operating life of the proposed LNG terminal is low. To address this concern, soils beneath the LNG tank would be fortified with stone columns. Stone columns would reduce calculated liquefaction-induced settlements to acceptable design tolerances and improve the static load-bearing capacity of the soils.

As specified in NFPA 59A, predicted levels of ground shaking would also be incorporated into the final design of the LNG tank, its impoundment system, and other critical structures at the LNG terminal site. Seismic activity is not expected to adversely impact construction or operation of the proposed pipelines.

Stabilized dredged material would be used to raise the overall grade of the LNG site and to create an earthen berm and landform. The dredged material would not be susceptible to liquefaction; however, the slopes of the berm and landform and the shoreline stabilization structures would require final engineering design to ensure their stability. We have recommended that these final engineering designs be submitted for our review and approval before commencing with site construction.

It is unlikely that any tsunami or hurricane storm surge would occur of sufficient magnitude to impact the project. The proposed construction of the LNG terminal would include raising the overall elevation of the site, fortifying the existing sea wall, and constructing a berm around the facility, further reducing the potential for ocean-derived flooding or flash flooding to impact the site. Potential effects associated with high rainfall events would be mitigated by implementing the FERC Plan and Procedures, and Weaver's Cove Energy's Erosion and Sedimentation Control Plan.

Soils and Sediments

Construction of the proposed LNG terminal would permanently affect soils on the site and disturb sediments in the federal navigation channel and turning basin. Dredged sediments would be placed on the proposed LNG terminal site to raise the grade above the 100-year floodplain and to create an earthen berm and landform. Due to the generally level topography of the site, runoff and erosion of the native soils on the site would be minimal. The placement of the dredged material on the site would change the existing topography particularly in the area of the berm and landform, which would increase the potential for runoff and erosion. Weaver's Cove Energy would minimize erosion and sedimentation impacts during construction by implementing the mitigation measures specified in our Plan and Procedures as well as the measures specified in its site-specific Erosion and Sedimentation Control Plan. Furthermore, Weaver's Cove Energy would minimize potential soil contamination during construction by implementing the preventative and mitigative measures specified in its onshore and offshore SPCC Plans. The potential for runoff and erosion during operation of the LNG terminal facilities would be minimized by revegetating disturbed soils and implementing a permanent stormwater management system.

An existing federal navigation channel and turning basin would require maintenance and improvement dredging to accommodate the deep-draft LNG ships. Dredging operations conducted to meet the navigational requirements of the project would disturb about 2.6 million cubic yards of sediment. The dredged sediment would be loaded onto barges or scows and then transported to the LNG terminal site. The sediment would be stabilized with portland cement and used as engineered fill material on the LNG terminal site. We determined and Weaver's Cove Energy documented that the site could accommodate the reuse of all the dredged sediments (including 2-feet of overdredged sediment).

In contrast to our original review of the dredged materials, the revised analysis indicates the presence of a hotspot of various contaminants. Core TB-10 in the turning basin contains concentrations of a number of contaminants that are considerably higher than those same constituents in nearby cores. Based on our identification of this core as a hotspot for a number of contaminants, we believe that the sediment from this core and its immediate surroundings may need to be excavated separately from the remaining sediments in the turning basin, if the dredging is approved. However, because the dredging and management of contaminated sediments is largely an issue under the COE's jurisdiction, we have recommended that Weaver's Cove Energy consult with the COE regarding the appropriate method(s) for dredging and managing the sediment from turning basin core 10 and its immediate vicinity.

In accordance with the MCP requirements (310 CMR 40.0000), the sediment was comprehensively sampled and analyzed for COCs to evaluate potential risks from the reuse of the sediment on an upland site. Our analysis indicates that the concentrations of oils and other hazardous material in the proposed dredged sediment would pose no significant risk to human health. The analysis

indicates that the non-cancer risks for each receptor are less than the risk limit of 1.0 and the cancer risks are less than the risk limit of $1x10^{-5}$. In addition, none of the exposure point concentrations exceed Upper Concentration Limits.

A comparison of the 90th-percentile concentrations of PAHs and metals in the dredged sediments with background concentrations of PAHs and metals in soils (as determined by the DEP) indicates that none of the PAH concentrations exceed the most conservative DEP-defined background concentrations and many of the metals quantified in the dredged sediment may be attributable to background conditions as defined by the DEP. The COCs in dredged sediment that exceeded background levels were beryllium, chromium, lead, mercury, selenium, and silver. Although these six metals exceed DEP-defined background concentrations, only the concentration of beryllium exceeds the MCP S-1 soil standard. Based on additional testing conducted by Weaver's Cove Energy, the maximum concentration of beryllium in the existing site soils was comparable to those in the dredged sediment, indicating that the proposed reuse of the stabilized sediment would not introduce a contaminant to the site that is not already present.

As requested by the DEP, Weaver's Cove Energy conducted additional testing of the soils at the LNG terminal site to provide a further basis for compliance with the anti-degradation provision of the MCP. A revised Method 3 Risk Assessment based on the existing soil data from Shell Oil and the additional soil data generated by Weaver's Cove Energy indicates that upland placement of the dredged material at the LNG terminal site would pose no significant risk to human health or the environment. Our analysis of the upland reuse of the dredged sediments relative to the anti-degradation provision of the MCP indicates that upland reuse of the sediments would generally not create a reportable concentration (except for those constituents already present on the site that exceed their MCP reporting concentrations). Reuse of the sediments would result in increased concentrations of most metals at the site. However, these increases would not result in the exceedance of a reportable concentration for any metal except beryllium. As noted above, beryllium is present in the site soils; therefore, upland reuse of the sediments would not introduce a new contaminant to the site. In addition, the local background level of beryllium is likely to be higher than the DEP-published value of 0.9 mg/kg due to stack emissions from the two coal-fired power plants in Somerset.

The DEP has not yet made a final determination regarding the proposed upland reuse of the dredged material at the LNG terminal site. If the DEP does not determine that Weaver's Cove Energy's proposed upland reuse of the dredged sediments complies with the anti-degradation provision of the MCP, Weaver's Cove Energy would not be able to use the proposed site for upland placement of the dredged material. If this occurs, Weaver's Cove Energy would need to identify an alternative disposal site. For this reason, we have recommended that Weaver's Cove Energy provide a revised sediment placement plan if it is unable to verify the consistency of the proposed sediment reuse plan with the MCP.

Weaver's Cove Energy conducted Tier III testing of the sediments to determine their suitability for open water disposal. Weaver's Cove Energy's analysis of these results indicates that most of the proposed dredged material would be suitable for open water disposal. However, the COE and EPA are currently reviewing the Tier III testing results and have not concurred with Weaver's Cove Energy's determination regarding the suitability of the material for offshore disposal. Any alternative disposal options, including open water disposal, identified by Weaver's Cove Energy would require additional environmental review and FERC approval prior to dredging or construction of any of the proposed facilities.

The placement and reuse of dredged sediment at the proposed LNG terminal site could potentially improve the current site conditions by effectively isolating any soil hot spots for lead and LNAPL from potential receptors. The proposed LNG terminal site would be covered by between 5 and 25 feet of

stabilized dredged material. Our preliminary analysis indicates that this volume of stabilized fill would generally isolate any hot spots for lead contamination from potential receptors. However, those areas with the smallest thickness of fill (e.g., the area inside the LNG containment berm) may not completely isolate all potential receptors from LNAPL vapor contact. Because the calculations necessary to make a final determination of the potential for isolation of hotspots for lead and LNAPL must be carried out by an LSP, we have recommended that Weaver's Cove Energy provide the appropriate grading plans, cross section drawings, and risk assessments required to demonstrate the degree of isolation provided by the upland reuse of stabilized dredged materials.

Construction of the proposed pipelines would disturb soils and increase the potential for soil erosion and loss of soil productivity. Weaver's Cove Energy would control erosion and sedimentation during construction of the pipelines and ensure restoration of soil productivity by implementing the mitigation measures specified in our Plan and Procedures.

Water Resources

Groundwater

Construction and operation of the project would not have a significant impact on public or private drinking water supplies, or availability. No public or private drinking water wells or springs are known to be located within 150 feet of the project, and there are no federal or state sole-source aquifers, protected aquifers, or wellhead protection areas in the project area.

Soil and groundwater at the LNG terminal site are contaminated with petroleum from prior petroleum storage and distribution activities. LNAPL has been identified on the water table and active groundwater remediation is being performed in accordance with the MCP. The primary purpose of the groundwater remediation system is to recover LNAPL and prevent free product and contaminated groundwater from entering the Taunton River.

We have determined that placement of stabilized dredged material on the site, the installation of stone columns beneath the storage tank and the modification to the existing timber bulkhead would have minimal impacts on groundwater quality, the groundwater and contaminant flow regime, and the on-going remediation efforts. We also do not believe that use of the dredged material would further degrade existing site conditions. However, in accordance with the MCP, Weaver's Cove Energy must monitor groundwater levels and the effectiveness of the remediation system during project construction, and implement measures to prevent LNAPL or other contaminant migration to the Taunton River, shall monitoring indicate that it may occur. The DEP has stated that the construction of this facility requires Weaver's Cove Energy to conduct a response action and to be included on the Tier 1B Permit as a responsible party, potentially responsible party, or other party. Modifications to the existing remediation system may require that a revised Phase IV Remediation Plan, Phase V Operations and Maintenance Plan, and Remedial Operation Status Plan be submitted to the DEP.

Construction of the proposed pipelines could temporarily affect groundwater along the pipeline routes by increasing turbidity, causing fluctuations in ground water flow, and disrupting groundwater discharge. These effects would be mitigated by Weaver's Cove Energy's plan to backfill the trench with native material and restore natural contours and drainage patterns in accordance with our Plan.

The pipeline routes would pass near at least two known contaminated sites. Groundwater could be affected if contaminated soils or groundwater associated with these sites are encountered during construction. Groundwater could also be impacted by a spill of hazardous material during construction of both the LNG facilities and the proposed pipelines. Weaver's Cove Energy would implement their SPCC

Plan that would mitigate the potential for and impact of any spills of hazardous materials. We have also recommended that prior to construction, Weaver's Cove Energy prepare a plan for the discovery and management of contaminated soils or groundwater to address potential impacts if contaminated soils or groundwater are encountered during construction.

Surface Water

The proposed dredging of the federal navigation channel and turning basin would result in the excavation and removal of up to about 2.6 million cubic yards of sediment from the Taunton River and Mount Hope Bay. The primary impact on water quality associated with this dredging would be the resuspension of sediment in the water column. The suspended sediment could reduce light penetration and lower the rate of photosynthesis and aquatic productivity of an area; introduce organic material and/or nutrients which could lead to an increase in biological oxygen demand and reduce dissolved oxygen; and release chemical constituents. Water quality could also be impacted if there is a spill of hazardous material into the water during construction.

Sediment fate and transport modeling indicates that suspended sediment impacts associated with proposed dredging activities would be temporary and primarily localized to the dredging areas. Our analysis indicates that contaminants associated with the dredged sediment would not likely pose a significant hazard. Elutriate tests indicate that most chemicals would remain tightly bound to the sediments and would not be released in significant quantities into the water column. Elutriate testing suggests that only copper and zinc in the sediments would be released into the water in concentrations that exceed EPA-published acute and chronic exposure-based screening criteria. We believe both of these metals would be quickly diluted by the surrounding river water and would not pose a substantial risk to the aquatic environment. Additionally, the DEP has indicated that Weaver's Cove Energy would need to develop a water quality monitoring program to evaluate the amount and extent of suspended sediment in the water column; determine if elevated levels of suspended sediments extend beyond the mixing zone; and ensure that Massachusetts' state surface water quality standards and criteria are met at the edge of the mixing zone.

Construction activities at the LNG terminal site could also affect the water quality of the Taunton River. Sediment dewatering and silt-laden stormwater runoff from the construction site could increase suspended sediment and turbidity levels in the river. Weaver's Cove Energy would minimize impacts of construction activities on water quality by implementing the erosion control measures in our Plan and Procedures, developing and adhering to a site-specific Erosion and Sedimentation Control Plan and a SPCC Plan, and complying with the requirements of its NPDES permits. Impacts on the Taunton River would also be minimized by Weaver's Cove Energy's implementation of a Stormwater Management Plan.

Construction of the Northern and Western Pipelines would require the crossing of 4 perennial and 11 intermittent streams. The largest of the perennial waterbodies is the Taunton River, which is approximately 2,200 feet wide at the proposed crossing location. Weaver's Cove Energy proposes to open-cut the river using the same dredging equipment that would used to excavate the federal navigation channel and turning basin. The material dredged from the pipeline trench would be placed on the LNG terminal site. Following installation of the pipeline, the trench would be backfilled with coarse-grained native sediments. We evaluated the potential to use the HDD technique to minimize impacts on the Taunton River but determined that an HDD crossing is not a practical alternative that provides a clear environmental advantage over the open-cut crossing method. Subsurface conditions at the proposed crossing locations appear to be unsuitable for the HDD technique and the presence of roads and a railroad adjacent to the river would interfere with fabrication of the pipe segment required for a HDD crossing.

The other 14 waterbodies vary in width from 3 to 12 feet. None of these streams are navigable and one of the perennial waterbodies, Steep Brook, is contained in a culvert at the proposed crossing location and would not be affected by the installation of the Northern Pipeline. The remaining 13 waterbodies would be crossed using the open-cut construction technique.

The potential effects of pipeline construction on waterbodies crossed using open-cut methods would be similar to those described for dredging. Weaver's Cove Energy would mitigate the impact of open-cut construction by implementation of a project-specific SPCC Plan and adherence to our Procedures.

Weaver's Cove Energy is currently planning to obtain water from the City of Fall River for hydrostatic testing of the LNG storage tank, LNG plant piping, and the sendout pipelines. If the City denies the use of its water or otherwise is unable to provide the water, Weaver's Cove Energy indicated that hydrostatic test water would be obtained directly from the Taunton River. After the hydrostatic testing is completed, Weaver's Cove Energy is proposing to discharge the test water directly into the Taunton River over a period of several days. The water would be filtered prior to discharge and would be returned at a rate and location that would minimize bottom disturbance and potential impacts on aquatic resources. The discharge of hydrostatic test water would be conducted in accordance with the FERC Procedures and the NPDES permit(s) issued by the DEP and/or EPA. The discharge of water would also be controlled, as necessary, to prevent erosion or scouring of the banks or bed of the river. Weaver's Cove Energy would coordinate with the City of Fall River to ensure that water requirements for hydrostatic testing from municipal sources would not impact public water availability.

Wetlands

Stabilization of the shoreline and construction of the ship unloading facility on the southern parcel would result in the filling of 0.04 acre of estuarine salt marsh, 0.94 acre of other intertidal habitat, and 0.19 acre of subtidal habitat, as well as impact a number of other state regulated wetland resources. Development of the northern parcel would fill 1.9 acres of palustrine emergent/scrub-shrub wetlands. Dredging of the federal navigation channel and turning basin would affect another 191 acres of subtidal habitat and about 0.23 acre of intertidal habitat. Construction activities on the terminal site would also alter the location of the coastal bank and reduce the area subject to coastal storm flowage. The filling of these resource areas would reduce the amount of habitat available to aquatic resources, reduce the amount of sediment available for the replenishment of coastal beaches, and alter sediment transport processes. However, the sheetpile used to armor the shoreline would also provide certain benefits, such as protecting the upland areas from storm damage and flooding.

Construction of the Northern and Western Pipelines would disturb about 2.82 acres of wetlands. Clearing, trenching, and other activities in wetlands could also affect wetland hydrology and water quality. The operation of heavy equipment in these wetlands could also compact wetland soils, create ruts, and result in increased sedimentation and turbidity. In addition, the pipeline trench could act as a conduit for subsurface water flow which could impact wetland hydrology. Following construction, about 0.47 acre of forested and scrub-shrub wetland would be converted to other wetland types; however, there would be no net loss of wetlands resulting from construction and operation of the pipeline facilities. Wetlands within the maintained segments of the permanent easement would re-establish as emergent wetlands, non-maintained areas of the permanent easement would revert to pre-construction wetland conditions, and wetlands within the temporary construction work area would also revert back naturally to their former state.

Weaver's Cove Energy took steps to avoid wetland impacts during the development of the project. For example, the LNG terminal facilities and dredge disposal areas were configured to avoid

several wetlands bordering the river on the southern parcel of the terminal site and the pipelines make use of existing rights-of-way to the maximum extent practical. Weaver's Cove Energy realigned a portion of the Northern Pipeline route since issuance of the draft EIS to increase the distance between the construction right-of-way and the Taunton River to avoid indirect impacts on wetlands bordering the river. Since issuance of the draft EIS, Weaver's Cove Energy has adopted two other route variations into the proposed Northern Pipeline route that would further reduce wetland impacts.

Weaver's Cove Energy proposes to minimize impacts on wetlands that cannot be avoided by implementing the protective measures specified in our Procedures. These measures would include installing sediment barriers where appropriate to contain and control sediment and prevent silt-laden runoff from entering wetlands; using construction mats or other stabilization measures to minimize the disturbance of wetland soils; segregating topsoil from the trench in unsaturated wetland soils; leaving existing root systems in place to the extent practicable to facilitate wetland revegetation; and installing trench breakers as necessary to prevent the draining of wetlands.

Weaver's Cove Energy proposes to compensate for permanent wetland impacts at the LNG terminal site that cannot be avoided or minimized by developing and implementing a Wetland Mitigation Plan. This plan includes the restoration and creation of about 0.74 acre of salt marsh on the site and the creation of about 0.18 acre of freshwater wetland on the site. About 0.13 acre of tidal creek would be constructed in the restored and created salt marsh to connect this area with the Taunton River. Additionally, about 0.18 acre of freshwater wetland would be created in an upland area. We have recommended that Weaver's Cove Energy consult with the COE and NOAA Fisheries regarding mitigation of wetlands as well as intertidal and subtidal habitats and file with the Secretary the results of these consultations and the COE-approved Wetland Mitigation Plan prior to construction.

Vegetation

The proposed LNG terminal site is located on industrial/commercial land with some remnant forest land, open land, and intertidal vegetation communities. Development of the LNG terminal would result in the permanent clearing of about 10.7 acres of forest land and the disturbance of 5.1 acres of vegetated open land. Following construction, portions of the site that are not covered by buildings, roads, gravel, or other hard surfaces would be restored and revegetated. Weaver's Cove Energy would also implement a landscape design plan that would include various plantings.

Construction of the Northern and Western Pipelines would disturb about 56.6 acres of vegetation consisting of 5.4 acres of upland forests, 39.6 acres of upland shrub lands, 6.6 acres of upland fields, 2.8 acres of wetlands, and 2.2 acres of landscaped lawns. Impacts on fields, lawns, and emergent wetlands would be temporary and short term. Impacts on trees and other woody vegetation would be longer term and about 3.9 acres of forest land on the permanent right-of-way and meter and regulation station sites would be permanently cleared. Weaver's Cove Energy has minimized the amount of woody vegetation that would be affected along the pipeline routes by colocating the proposed pipelines with existing, previously cleared rights-of-way.

Following construction, the portions of the construction rights-of-way that are not required for pipeline operations would be seeded with grasses and allowed to revert to their previous preconstruction condition through natural succession. The permanent right-of-way would also be restored with grasses, and operational impacts on vegetation would be minimized by the vegetation maintenance practices specified in our Plan and Procedures.

Wildlife and Aquatic Resources

Construction activities associated with the proposed LNG terminal and sendout pipelines could affect wildlife habitat through the cutting, clearing, and/or removal of existing vegetation within the construction work area. Wildlife would be temporarily displaced during construction and the limited removal of forest vegetation would have a localized, but long-term impact on wildlife. Weaver's Cove Energy would minimize these impacts by colocating the pipelines with other existing rights-of-way where possible, which would minimize the amount of forest clearing needed for the project.

The proposed maintenance and improvement dredging and shoreline modifications would have both direct and indirect impacts on aquatic resources including fish, shellfish, and benthic organisms. Direct alteration of the benthic substrate via dredging would remove the existing benthic community and may adversely affect prey species, suitable cover, settlement structure, and/or nursery and spawning habitat. Dredging would also directly impact an estimated 21 acres of suitable quahog habitat in the proposed turning basin. To mitigate impacts on quahogs and other shellfish from the development of the turning basin, Weaver's Cove Energy has indicated that it would coordinate with federal and state agencies to harvest and relay quahogs from the proposed dredging footprint prior to commencement of dredging activities and to develop and fund a plan to reseed quahogs in those areas where quahogs were harvested. In response to comments regarding the appropriateness of Weaver's Cove Energy's proposed quahog mitigation measures, we have recommended that Weaver's Cove Energy complete the coordination with applicable federal and state agencies regarding development and funding of mitigation measures to offset impacts on quahogs resulting from dredging of the proposed turning basin expansion.

Dredging and construction of the ship unloading facility and proposed shoreline modifications would also suspend sediment in the water column. These effects would mostly result in the temporary disturbance and displacement of aquatic organisms during construction. In addition, site runoff during project operations and prop wash associated with the transit of LNG ships could affect aquatic organisms.

Weaver's Cove Energy conducted elutriate tests and computer simulation modeling to investigate potential impacts of dredging on aquatic resources. As mentioned above, elutriate testing suggests that although some chemicals could be released into the water, the concentrations of these chemicals is unlikely to pose a significant hazard. Our analysis indicates that no species or life stage would be exposed to sublethal or lethal suspended sediment concentration levels during dredging.

Modeling results indicated that based on the proposed dredging plan, no life history stage of any species, other than winter flounder eggs, would be exposed to the minimum effects threshold during dredging. According to the results of the modeling, the redeposition of sediments from the proposed dredging could impact about 6.2 acres of winter flounder egg habitat. In addition, the dredging to expand the existing turning basin could directly affect another 11 acres of winter flounder egg habitat. To address agency concerns regarding these potential impacts, we have recommended that Weaver's Cove Energy prohibit in-water silt disturbing construction activities in the Taunton River and Mount Hope Bay during the winter flounder spawning period (January 15 through May 31) and mitigate the permanent loss of winter flounder habitat in the proposed turning basin expansion. Our recommendation requiring the time-of-year restriction to avoid adverse impacts on winter flounder would also apply to the proposed open-cut crossing of the Taunton River.

In addition to potential dredging-related impacts, pipeline construction could directly affect aquatic resources present in the waterbodies crossed by the project. An inadvertent chemical or fuel spill in or near a waterbody could release contaminants, which could adversely affect fish and other aquatic organisms. Implementation of our Procedures and Weaver's Cove Energy's SPCC Plan would minimize the potential for adverse impacts on aquatic resources.

As mentioned above, Weaver's Cove Energy may withdraw water from the Taunton River for hydrostatic testing of the LNG tank and pipelines. If so, the intake pipe would be set at a depth of 5 feet below MLLW and would be fitted with a fine mesh screen to minimize potential entrainment and impingement of aquatic organisms. As such, we believe that hydrostatic test water withdrawal would not result in adverse impacts on aquatic species.

Operational impacts of the LNG terminal would be associated primarily with the LNG ships and could include entrainment or impingement of fish during water withdrawals for ship ballast and impacts from increased turbidity generated by prop wash during ship transit. Based on available ichthyoplankton density data and the maximum anticipated ballast water intake of 14 million gallons per LNG ship, we estimate that the number of fish eggs or larvae that could be affected by water withdrawals by LNG ships could be 12,349,970 eggs and 1,900,000 larvae annually depending on the time of year and the distribution of ichthyoplankton within the water column in relation to the ballast water intakes. Based on survival rates for eggs and larvae adopted from studies conducted for the Brayton Point Power Plant, we estimate that the entrainment of impingement of eggs and larvae could result in the annual loss of about 3,325 age-1 equivalent fish, of which about 86 percent would be winter flounder.

Previous studies in the Boston Harbor indicate that sediments resuspended by ship currents, including LNG ships, settle back to the substrate within a short period of time after being transported relatively short distances. Based on these studies, we expect there would be minimal impact from elevated TSS levels on most pelagic fish eggs and larvae because TSS concentrations shall return to background conditions within 1 hour or less of ship passage. The measured widths of the resuspended sediment plumes in the Boston Harbor studies suggest that the plumes would generally remain within the Taunton River navigation channel and the remobilized sediments would likely have limited impacts on demersal fish eggs and larvae outside this channel.

The potential introduction of invasive species is another possible effect of LNG shipping. Several factors, however, mitigate the potential for LNG ships to introduce invasive species to the project area, including but not limited to the fact that the LNG ships would not discharge ballast water into Mount Hope Bay or the Taunton River. We also note that under a new international convention adopted by the International Maritime Organization the LNG ships would have to carry a Ballast Water Record Book and carry out ballast water management procedures to a specified standard. The Coast Guard has also developed *Mandatory Practices for All Vessels with Ballast Tanks on All Waters of the United States*. Moreover, in February 2005, the Ballast Water Management Act of 2005 was introduced to Congress to amend the Non-indigenous Aquatic Nuisance Prevention and Control Act to establish vessel ballast water management requirements.

NOAA Fisheries reported that the Taunton River and Mount Hope Bay have been designated as EFH for 14 federally managed species including: windowpane flounder, winter flounder, red hake, Atlantic mackerel, black sea bass, bluefish, scup, Atlantic herring, scup, and summer flounder. The draft EIS included an EFH Assessment as necessary for compliance with the MSA. This analysis is also included in this final EIS. As a result of our analysis as presented in the EFH Assessment, we have concluded that dredging associated with the proposed project could affect water column, benthic substrate, and man-made structure EFH in the project area. Activities within the Taunton River and Mount Hope Bay also have the potential to affect anadromous fish and shellfish resources, two primary prey groups for managed fish species. Without revisions to the current proposed dredging program, impacts on managed species as a result of benthic habitat destruction and alteration could include direct and indirect impacts on winter flounder spawning habitat during the flounder spawning period. The draft EIS was sent to NOAA Fisheries along with a letter that initiated consultation under the MSA. Based on its review of the EFH Assessment included in the draft EIS, NOAA Fisheries provided conservation recommendations to further avoid, minimize, and mitigate adverse effects on EFH, including:

- prohibiting in-water silt-producing activities between January 15 and May 31 of any year to protect winter flounder spawning and juvenile development;

- requiring mitigation to offset permanent loss of winter flounder spawning and juvenile development habitat resulting from expansion of the turning basin; and

- requiring mitigation to offset the placement of fill within intertidal, salt marsh, and subtidal areas during site development.

We agree with these conservation recommendations and believe additional measures would be necessary to mitigate for benthic habitat destruction and alteration, including direct and indirect impacts on winter flounder spawning habitat. For this reason, we have recommended that Weaver's Cove Energy avoid in-water, silt disturbing construction activities during the winter flounder spawning period (January 15 through May 31), develop a mitigation plan in consultation with federal and state agencies to offset permanent loss of winter flounder spawning and juvenile habitat, and continue developing its proposed wetland mitigation plan to compensate for permanent impacts on wetlands, including intertidal and subtidal habitats.

Threatened and Endangered Species

The FWS reported that one federally listed species under its jurisdiction, the bald eagle, could potentially occur near the proposed project. NOAA Fisheries identified four additional federally listed endangered or threatened turtle species that could potentially occur in the general vicinity of the proposed project. We have determined that the project would have no effect on the bald eagle and is not likely to adversely affect the four turtle species.

In its comments on the draft EIS for another nearby project (*i.e.,* the KeySpan LNG Facility Upgrade Project), NOAA Fisheries stated that an increase in vessel traffic in Narragansett Bay could potentially affect federally listed marine mammals as a result of vessel strikes. Of particular concern is the North Atlantic right whale. NOAA Fisheries has developed a Strategy to Reduce Ship Strikes of Right Whales, which is not yet finalized, but would establish speed restrictions within 20 to 30 miles of the approaches in specific areas. In addition, the Coast Guard has been coordinating with NOAA Fisheries on various measures to reduce vessel strikes. We have determined that these measures are important for the protection of right whales from ship strikes, but because the proposed rule has not yet been finalized or implemented, we have recommended that Weaver's Cove Energy coordinate with NOAA Fisheries to determine appropriate speed and seasonal restrictions or other applicable measures to avoid or minimize impacts on right whales and to file the results of that coordination with the Secretary of the Commission. With the adherence to restrictions developed through coordination with NOAA Fisheries, we conclude that the project is not likely to adversely affect North Atlantic right whale (or other federally listed species) and are requesting NOAA Fisheries' concurrence with this finding.

The draft EIS (which served as a Biological Assessment) was sent to the NOAA Fisheries along with a letter that initiated consultation under section 7 of the ESA. We have not yet received a concurrence letter from the NOAA Fisheries on our determinations.

Land Use, Recreation, and Visual Resources

The LNG terminal would be developed on 73 acres of industrially zoned private property (consisting of a 55-acre southern parcel and an 18-acre northern parcel) that Weaver's Cove Energy has an option to purchase from Fall River Marine, L.L.C., who is the current landowner. The 55-acre

southern parcel of the LNG terminal site is in a designated port area, which was previously used as a petroleum products storage and distribution facility from the 1920s to the 1990s.

Construction of the proposed LNG terminal facilities would disturb about 69.3 acres of the 73-acre site. Following construction, about 54.3 acres of the site would be retained as industrial/developed land. The remainder of the land during operation of the LNG terminal would consist of 15.0 acres of open land, 1.0 acre of forest land, and 2.7 acres of wetland.

The proposed maintenance and improvement dredging of the federal navigation channel and turning basin would disturb approximately 191 acres of the bed of the Taunton River and Mount Hope Bay. The existing federal channel and a portion of the east channel would be permanently deepened to 37 feet. The existing turning basin would be permanently enlarged and deepened to 41 feet.

Of the 3.6 miles of the Northern Pipeline route, about 3.5 miles (97 percent) would be constructed within or adjacent to an existing utility or transportation right-of-way. The remaining 0.1 mile (3 percent) would be constructed on newly created right-of-way located at the northern end of the pipeline route. Of the 2.5 miles of the Western Pipeline route, about 1.8 miles (72 percent) would be constructed adjacent to or within existing utility rights-of-way. The remaining 0.7 mile (28 percent) would be constructed on newly created right-of-way. In addition to the construction right-of-way, Weaver's Cove Energy has identified two temporary extra workspaces and one pipe storage yard that would be used to support construction activities. Weaver's Cove Energy also proposes to construct two meter and regulation stations, one at the end of the Northern Pipeline (MP 3.6) and one at the end of the Western Pipeline (MP 2.5) where each interconnects with the Algonquin pipeline system. Construction of the pipeline facilities would disturb a total of about 65.5 acres of land. Open land would be the primary land use affected by construction of the pipeline facilities totaling about 51.5 acres (79 percent). The remaining land uses that would be disturbed consist of 5.5 acres (8 percent) of forest land, 5.1 acres (8 percent) of open water, and 3.4 acres (5 percent) of industrial/commercial land.

There are several existing plans, policies, designations, and guidelines that have been established for land use development in the project area by state, regional, and local entities. In general, although the mayor and city councilors of Fall River have expressed opposition to the project, we have found that the Weaver's Cove LNG Project would be consistent with these plans, policies, designations, and guidelines. The Weaver's Cove LNG Project is subject to a Federal Coastal Zone Consistency Review because it would: 1) involve activities within the coastal zones of Massachusetts and Rhode Island; and 2) require several federal permits and approvals. Weaver's Cove Energy has not yet completed the process for the federal consistency certification with either the OCZM or CRMC, but would need to demonstrate consistency with each state's CZMP and obtain concurrence of consistency from both agencies prior to the FERC approving the start of any construction.

Approximately 12,000 people living in 5,100 housing units are located within 1 mile of the proposed LNG storage tank. Of the 5,100 housing units, approximately 1,200 units are located within 0.5 mile of the proposed LNG storage tank. Potential impacts on nearby residential and commercial areas during operation of the LNG terminal include increased visibility of aboveground structures associated with the facility, increased traffic, changes in air quality, and safety hazards. Weaver's Cove Energy's proposed construction work area for the pipeline facilities (i.e., construction right-of-way and temporary extra workspaces) would be located within 50 feet of 35 residential dwellings (i.e., homes or condominium units). Of the 35 residences, 14 are located along the Northern Pipeline route and 21 are located along the Western Pipeline route. Weaver's Cove Energy would implement several measures to minimize construction-related impacts on residences and other structures located within 50 feet of the construction right-of-way, including the preparation of site-specific residential construction mitigation plans.

The southern parcel of the LNG terminal site was used as a petroleum product storage and distribution terminal between the 1920s and 1990s. Historical operations at the site resulted in contamination of soil and groundwater by petroleum products. The proposed pipeline facilities would cross two hazardous waste or contaminated site. Weaver's Cove Energy's proposed mitigation and our recommended measures would minimize impact resulting from the disturbance of contaminated soils and groundwater at the LNG terminal and along the pipeline route.

We have determined that project would not have a substantial adverse affect on the Taunton River's potential designation as a Wild and Scenic River, although we have not yet received a concurrence letter from the U.S. Department of the Interior on our determination.

Overall, construction and operation of the project facilities are not expected to significantly affect recreational activities in the project area. Recreational boaters might experience temporary impacts as a result of human activity and noise associated with construction of the proposed marine facilities and pipeline across the Taunton River, but these impacts would be temporary and localized to the area of construction. Weaver's Cove Energy would develop a Navigation Work Plan in consultation with the COE, Coast Guard, local harbor masters, and the Northeast Marine Pilots Association. The Navigation Work Plan would include measures to ensure the safe passage of waterborne transportation and recreational use of the waterway during construction activities.

Operation of the LNG terminal would not affect recreational boating during periods between LNG deliveries. However, recreational ships and boats, fishermen, and others engaged in marine-based activities could be affected by the safety and security zones that would be imposed by the Coast Guard during periods when an LNG ship is in transit to or berthed at the LNG terminal. Many recreational boats shall be able to go around the LNG ships at points in the river that are sufficiently wide for them to be outside of the security zone. In locations were the waterway is narrow, a recreational craft attempting to travel in the opposite direction of an LNG ship may experience a delay, however, because the safety and security zone would be a moving zone around the ship, such delays would be temporary. We estimate that delays of up to 60 minutes may result depending on the travel speed of the LNG ship. For boaters near or upstream of the facility, an additional 60 minute delay may be experienced while the LNG ship is berthed or turned. Weaver's Cove Energy would be in regular contact with the Coast Guard and other waterway users to ensure that the arrivals of the LNG ships are coordinated with other ship traffic to minimize disruption on waterway users. The Coast Guard would routinely provide Notice to Mariners prior to the arrival and departure of LNG ships as the Coast Guard currently does for LPG vessels and for other activities. In addition, Weaver's Cove Energy has indicated that it would be willing to consider limiting LNG ship transits during peak weekend hours and using early morning periods, subject to tidal conditions. With the agreement of the Coast Guard and pilots, Weaver's Cove Energy would also explore the possibility of eventually using nighttime transits for the LNG ships to minimize impacts on recreational boating.

The most prominent visual feature of the proposed LNG terminal would be the LNG storage tank and the proposed landform (the top of the tank would be at an elevation of about 220 feet above MSL). Due to the terrain and density of the area, the tank and landform would be highly visible from a number of locations in Fall River and Somerset. Because of the limited potential for screening, the visual impacts associated with the LNG terminal would be unavoidable; however, Weaver's Cove Energy would use the dredged material to construct a landform north and east of the tank to provide some visual screening of the facility from locations to the east and northeast. Following construction, portions of the site that are not covered by buildings, roads, gravel, or other hard surfaces would be restored and revegetated. Weaver's Cove Energy would also implement a landscape design plan that would include various plantings. In addition to the site itself, the LNG ships would temporarily affect the visual landscape while in transit and docked at the LNG terminal.

The proposed meter and regulation stations would be located in areas that are relatively remote from residences and are not expected to have a significant impact on visual resources. Construction of the pipelines, however, would reduce visual screening adjacent to some residences. We analyzed route variations or other measures to minimize the impact on the residences most likely to be affected by the loss of visual screening. Weaver's Cove Energy has agreed to incorporate two of these route variations along the Northern Pipeline route into the proposed route to avoid or minimize impacts on visual resources.

Socioeconomics

Construction and operation of the project would have short- and long-term socioeconomic impacts. Construction of the project would result in a temporary increase in population, traffic, and demand for temporary housing and public services. Due to the temporary and limited nature of these impacts, they are not considered significant. Construction and operation of the project would have a beneficial impact on local tax revenues and economies.

There is concern about the potential for bridge closures to result in significant traffic delays. During the Coast Guard's recent security workshops, workshop participants determined that it would not be necessary to close the bridges (except for the Brightman Street Bridge, which would be "closed" to road traffic every time any large ship passes) unless the threat condition or current intelligence raises a concern about security issues. While bridge closures are one of the many tools available to the Coast Guard, other alternatives to a complete bridge closure under consideration include closing the outboard lanes only, placing law enforcement officials on the bridge at strategic locations, or employing technology that provides suitable security alternatives. If bridge closings would be needed, Weaver's Cove Energy would adjust ship transit plans to prevent the simultaneous closings of the Braga and Brightman Street Bridges. To address potential bridge closings, Weaver's Cove Energy has stated that it would develop a Traffic Management Program in consultation with the MassHighway, Rhode Island DOT, Coast Guard, Massachusetts state police, and other local authorities if it receives approval for the project.

The operation of the proposed LNG terminal and associated facilities is not expected to have a major impact on most public services since it would not result in the construction of new public roads, extensive new sewer or water systems, or significant changes in local population levels. There is however a concern that an incident at the LNG terminal could exceed the current response capacity of the Fall River fire and police departments. Weaver's Cove Energy would coordinate with local fire departments to develop an emergency response plan to be used in the event of an incident at the LNG terminal. Weaver's Cove Energy would coordinate with local fire departments to develop an emergency response plan to be used in the event of an incident. Weaver's Cove Energy has also indicated that it would be willing to provide funding for the local emergency response services and stated that it would be willing to cover the costs of security in Fall River at a level similar to what the existing Distrigas LNG facility has been providing to the City of Everett, where it is located.

Based on several general and site-specific studies, as well as the fact that the proposed terminal would be located at an existing industrially zoned property that was previously used as a petroleum products storage and distribution facility, we concluded that the project would be unlikely to have a negative impact on property values in the surrounding area.

Potential impacts of the project would not have a disproportionately high or adverse effect on the environmental justice communities near the proposed LNG terminal and navigation channel.

Cultural Resources

Weaver's Cove Energy conducted aboveground cultural resources surveys of the LNG terminal and pipeline facilities, and their respective viewsheds. The surveys documented seven resources that are listed in or recommended eligible for listing in the NRHP within the viewshed of the LNG terminal (Wm. B. Canedy House, Border City Mills, Sagamore Mills No. 1 & 3, the Montaup Power Plant, the Lower North Main Street area, St. John's Cemetery, and Riverside Avenue South area). The surveys also documented a historic cemetery (Winslow Burial Ground) located near the proposed meter and regulation station at the terminus of the Northern Pipeline, but outside its viewshed. The Massachusetts SHPO has not commented on the results of the aboveground surveys, but has requested additional information on the Winslow Burial Ground.

Weaver's Cove Energy conducted terrestrial archaeological reconnaissance surveys of the LNG terminal and pipeline facilities. No archaeological sites were identified as a result of the reconnaissance surveys. The LNG terminal was characterized as having a low archaeological sensitivity, and no additional testing of this area was recommended. Portions of the Northern and Western Pipelines were assessed as having moderate to high archaeological sensitivities, and an intensive (locational) survey of these areas was recommended. The Massachusetts SHPO concurred with these results and recommendations.

Weaver's Cove Energy subsequently filed corrected alignment sheets for the Northern Pipeline, updating the route between MP 3.0 and its terminus, and revising the location of the meter and regulation station at the terminus of the pipeline. Based on the new route, Weaver's Cove Energy identified additional archaeologically sensitive areas along the Northern Pipeline route, and an intensive (locational) survey of these areas was recommended.

Weaver's Cove Energy next conducted an intensive (locational) survey along the archaeologically sensitive segments of the Northern and Western Pipeline routes, and a terrestrial reconnaissance survey of newly identified route variations and temporary and additional temporary workspace locations along the Northern Pipeline. The intensive (locational) survey identified two sites (the Head of Cove 2 and Barnaby Swamp 2 sites) along the Northern Pipeline and two sites (the Wetland 3 Find Spot and the Slade Farmstead and Cemetery) along the Western Pipeline. Weaver's Cove Energy found that the Head of Cove 2 Site and Wetland 3 Find Spot lacked research potential, and no additional testing of these sites was recommended. Weaver's Cove Energy also found that the Barnaby Swamp 2 Site and the Slade Farmstead and Cemetery may contain intact archeological deposits. The Massachusetts SHPO concurred with these results, and recommended site examination archaeological surveys of the Barnaby Swamp 2 Site and the Slade Farmstead and Cemetery.

The reconnaissance survey of the route variations and temporary and additional temporary workspace locations along the Northern Pipeline identified approximately 1.5 miles of pipeline corridor in archaeologically sensitive areas. An intensive (locational) survey of this high sensitivity area was recommended. The Massachusetts SHPO concurred with the survey results and recommendation.

Weaver's Cove Energy subsequently conducted the recommended intensive (locational) survey along the Northern Pipeline, a supplemental intensive (locational) survey of a route variation along the Western Pipeline, and site examination surveys at the Barnaby Swamp 2 Site and Slade Farmstead and Cemetery. As a result of the intensive (locational) surveys, five new sites (the CSX#1, CSX#2, ISP#1, ISP#2, and Taunton River Marsh sites) were identified along the Northern Pipeline, and no sites were identified along the Western Pipeline; Weaver's Cove Energy characterized all five sites as not significant. In addition, based on the results of the site examination surveys, Weaver's Cove Energy recommended the Barnaby Swamp 2 and Slade Farmstead sites as not eligible for listing in the NRHP.

The Massachusetts SHPO did not concur with the results of these surveys. The SHPO concluded that the five new sites identified during the intensive (locational) survey may possess research potential, and recommended site examination archaeological surveys at each site. The SHPO assessed the Barnaby Swamp 2 Site as eligible for listing in the NRHP, and recommended either archaeological site examination to better define site context and research potential, or archaeological data recovery at this site. The SHPO assessed the Slade Farmstead and Cemetery as eligible for listing in the NRHP, but concluded that the project would have no adverse effect on this site. The SHPO also requested avoidance plans for those portions of the Barnaby Swamp 2 and Slade Farmstead sites located outside the project APE.

Lastly, Weaver's Cove Energy conducted underwater archaeological reconnaissance surveys of the turning basin at the LNG terminal and the Western Pipeline from MP 0.0 to 0.5. No submerged cultural resources were identified as a result of this work, and no additional testing of the surveyed areas was recommended. Both the Massachusetts SHPO and BUAR concurred with these results and recommendations.

Weaver's Cove Energy needs to provide the SHPO with the requested information on the Winslow Burial Ground, conduct the recommended site examination surveys, and prepare avoidance or data recovery plans, as appropriate. Weaver's Cove Energy also needs to file all outstanding survey reports, evaluation reports, and avoidance or treatment plans, and the SHPO's comments on the reports and plans. Therefore, we have recommended that Weaver's Cove Energy defer construction until these tasks are completed, and any additional required survey reports or treatment plans, and the SHPO's comments on the reports and plans, are filed with the Commission for review and approval by the Director of OEP.

Air Quality and Noise

Construction and operation of the proposed LNG terminal and pipelines would result in air emissions, including fugitive dust, onshore and offshore construction equipment tailpipe emissions, LNG truck and ship emissions, and water/glycol heater emissions. The fugitive dust and tailpipe emissions during construction activities would be temporary, intermittent, and vary in location over time. These emissions would not result in a long term impact on air quality. The emissions would be minimized using the application of water for dust suppression during construction and by operating construction equipment on an as-needed basis. To further minimize air quality impacts during construction, we have recommended that Weaver's Cove Energy use transportation grade or better diesel fuel in all construction equipment.

The primary pollutants emitted during operation of the LNG terminal would be nitrogen oxides and carbon monoxide. The operational air emissions from the LNG terminal would be minimized by using ultra dry low NO_x water/glycol heaters and would meet the federal and state air emission requirements by implementing best available control technology and undergoing an air plan approval process through the DEP. The operational air emissions from the LNG terminal, including the facility stationary sources and LNG trucks and ships, would not exceed an ambient air quality standard. To address potential odor issues related to the dredged material, we have recommended that Weaver's Cove Energy prepare a nuisance odor complaint and abatement plan for implementation during the dredging operations.

Noise receptors in the immediate vicinity of construction activities would experience an increase in noise levels. In most areas, the increase in noise 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 three years. To address this impact, we have recommended that Weaver's Cove Energy

prepare a noise mitigation plan that would ensure that the dredging and stabilization operations do not contribute more than 55 dBA L_{dn} to the ambient noise level at any NSA. The predicted operational noise from the LNG terminal would be below FERC's 55 dBA L_{dn} criterion at the nearest NSAs and in compliance with Massachusetts noise regulations. We have recommended that noise surveys be conducted after the LNG terminal is in service to ensure that the LNG operates in compliance with these guidelines.

Reliability and Safety

We evaluated the safety of both the proposed LNG import terminal facility and the related LNG vessel transit through Narragansett Bay to Fall River. With respect to the onshore facility, we completed a cryogenic design and technical review of the proposed terminal design and safety systems. Several areas of concern were noted and specific recommendations to be addressed prior to construction have been identified. We evaluated the thermal radiation and flammable vapor dispersion exclusion zones of the proposed LNG terminal. The analysis found that no excluded uses were within the exclusion zones, although a small section of the 1,600 British thermal unit per feet squared per hour (Btu/hr-ft^2) zone would extend off the property and we have recommended that Weaver's Cove Energy demonstrate legal control over this area, or secure a waiver, before we allow any construction.

Thermal radiation and flammable vapor hazard distances were also calculated for an accident or an attack on an LNG vessel. For 2.5-meter and 3-meter diameter holes in an LNG cargo tank, we estimated distances to range from 4,340 to 4,810 feet for a thermal radiation level of 1,600 Btu/hr-ft^2, the level which is hazardous to unprotected persons located outdoors. 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 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 or LNG trucking from the terminal is unlikely to affect the public. As a result, the risk to the public from accidental causes shall be considered negligible.

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 a new LNG import terminal proposal, having a large volume of energy transported and stored near populated areas, 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.

Several commentors have expressed the concern that local communities would have to bear some of the costs of ensuring the security of the LNG facility and the LNG vessel while in transit and unloading at the dock. As a result of its recently completed security workshops, the Coast Guard has identified a robust security plan that requires significant Coast Guard, public, and private resources that would be necessary to implement security measures. To meet its anticipated security responsibilities, the Coast Guard has initiated a formal proposal for additional resources through its internal budgeting process for inclusion in the 2006 appropriations bill. A determination on that proposal is pending. Weaver's Cove Energy has committed to providing funding for direct transit-related security costs; the potential costs to the states and local communities have not been estimated. As an indication of these costs, another proposed LNG import terminal near Providence, Rhode Island (KeySpan LNG, L.L.C.'s KeySpan LNG Facility Upgrade Project) estimated state and local security costs for its LNG deliveries at $40,000 to $50,000 per vessel port call. In addition to these direct transit-related state and local security costs, there

may be a need to fund additional capital costs associated with security and emergency response, such as equipment and personnel. Therefore, we have recommended that Weaver's Cove Energy provide a comprehensive plan identifying the mechanisms for funding all project-specific security and emergency response/management costs that would be imposed on state agencies and local communities, including capital costs.

Alternatives

We evaluated the alternatives of no action or postponed action, system alternatives, alternative LNG terminal sites, LNG terminal layout alternatives, pipeline route alternatives, and dredging/dredge disposal alternatives. While the no action or postponed action alternative would eliminate the environmental impacts identified in this EIS, the project objectives of providing LNG tanker discharge services to LNG suppliers and providing a new source of natural gas and LNG deliveries to the New England market would not be met.

Given the no action or postponed action alternative could also lead to the development of other natural gas infrastructure projects, we also considered existing or proposed LNG facilities and natural gas pipelines as alternative systems that could be used to meet the objectives of the Weaver's Cove LNG Project. This included consideration of existing and proposed facilities (including two new offshore LNG import terminals) within and outside of the New England region. At this time, it is not possible to foresee which (if any) of the LNG import projects proposed in the New England region will move forward and be constructed. Regardless, when considered independently, none of the LNG import projects in the region would be capable of serving as an alternative to the Weaver's Cove LNG Project. In any event, we expect that new pipelines or proposals to modify existing pipelines will continue to increase the capacity of existing systems delivering natural gas to the New England region. This will allow access to new or growing sources of natural gas outside of the region, including new LNG import terminals that will likely be constructed outside of the region (e.g., Canadian LNG facilities). Nevertheless, projects outside of the region would not be able to meet all of the objectives stated for the Weaver's Cove LNG Project. When considered together, however, several of the projects in or outside of the region could meet many of the project objectives. As discussed in the EIS, construction or expansion of alternative natural gas infrastructure facilities would result in specific environmental impacts that would be less than, similar to, or greater than those associated with the Weaver's Cove LNG Project.

We considered alternative locations for an LNG import terminal in the New England region, and determined that there are no alternative LNG terminal sites at onshore locations that are reasonable and/or would be environmentally preferable to the proposed project. Difficulties associated with identifying suitable locations in the New England region include finding property available for industrial development in an area accessible to LNG ships where there would be fewer environmental impacts.

One of the site alternatives that was identified during the EIS scoping process and received several specific comments in response to the draft EIS is located at Brayton Point in Somerset, Massachusetts. This site includes a number of potential environmental and economic advantages compared to the proposed site. Even the disadvantages of LNG trucking or dredging at this site could conceivably be managed depending on the specific design of an LNG facility. However, an LNG terminal at Brayton Point can only be considered conceptually and may never be a practicable and feasible alternative for the Weaver's Cove LNG Project because the property was recently purchased by Dominion. Because of this new ownership of the property, it would appear that Weaver's Cove Energy cannot reasonably pursue developing an LNG terminal at this location.

To minimize potential visual and wetland impacts, we also considered alternative LNG terminal layouts. We concluded that reducing the size, profile, and/or location of the LNG tank, while still

maintaining the project storage capacities, could not be reasonably achieved. Additionally, we considered an alternative site layout that would not include the landform created by the disposal of dredged materials on the LNG terminal site.

Our alternatives analysis included the evaluation of alternative pipeline routes that would allow delivery of natural gas to the Algonquin natural gas pipeline system. Because of the limited capacity of the Algonquin system laterals, no single pipeline from the LNG terminal would be able to accommodate the project volumes. Alternative pipeline routes to the east and south of the LNG terminal would both result in greater environmental impacts than either the Northern or Western Pipeline. To avoid or minimize environmental impacts from construction of the pipelines, we also examined route variations to the proposed pipelines.

We determined that construction of the Northern Pipeline would remove buffer vegetation between the railroad and the river, which could result in direct and indirect impacts on the Taunton River and bordering salt marsh (i.e., increase risk of sedimentation). As an alternative, we recommended in the draft EIS that Weaver's Cove Energy adopt a minor route variation on the east side of the CSX railroad between MP 0.26 and 0.55 to increase the distance between the construction right-of-way and the river. We also recommended in the draft EIS that Weaver's Cove Energy adopt or evaluate the feasibility of minor route variations between MPs 0.68 and 0.91 and between MPs 1.89 and 2.43 of the Northern Pipeline route to increase the distance between the construction right-of-way and residential structures. In its comments on the draft EIS, Weaver's Cove Energy agreed to adopt our recommended route variations along the Northern Pipeline route as part of its proposed pipeline route. Based on additional discussions with the Fall River Country Club, Weaver's Cove Energy suggested expanding the variation we recommended between MPs 1.89 and 2.43 to include the area between MPs 1.58 and 2.43 to minimize impacts on operation of the golf course. We agree that the modified variation between MPs 1.58 and 1.89 is environmentally preferable to the corresponding segment of the original route.

In the draft EIS, we recommended that Weaver's Cove Energy evaluate the feasibility of a realignment between MPs 1.5 and 1.9 of the Western Pipeline route to minimize visual impacts on residences along Jaffrey Street. In response to this request, Weaver's Cove Energy made adjustments to permanent easements and temporary workspaces to mitigate potential effects on stone walls and trees that are on those properties impacted by the proposed route. We believe these modifications would adequately minimize residential impacts along Jaffrey Street by avoiding vegetation clearing which currently screens the transmission lines. Weaver's Cove Energy's development of site-specific residential plans would include measures to further minimize residential impacts along this segment.

Finally, we reported on dredging and dredge disposal alternatives that might avoid or minimize impacts associated with dredging up to about 2.6 million cubic yards of sediment from the Mount Hope Bay/Taunton River federal navigation channel and turning basin. Alternatives requiring less dredging would not be able to safely accommodate LNG ships. Additionally, we summarized disposal alternatives including offsite upland reuse, offsite upland disposal (landfill or dewatering), offshore disposal, confined aquatic disposal cells, confined disposal facilities, and island/habitat creation. Based on consultations with other agencies, we analyzed the impact of restricting dredging during times of the year when sensitive aquatic organisms (e.g., winter flounder, anadromous species) could be adversely affected and we considered offshore disposal of dredged materials in more detail. Based on the new/existing Brightman Street Bridge construction delays, we believe that our recommended time-of-year restriction to avoid dredging from January 15 to May 31 to minimize impacts on winter flounder would not impact the in-service date of the project or necessitate offshore disposal. Additionally, we believe that the offshore disposal alternative would be environmentally acceptable if the assessment of contaminants in the materials demonstrates that a significant volume of sediments are suitable for offshore disposal. However, we have also determined that offshore disposal of suitable dredged material is not without

impacts and is not clearly environmentally preferable to Weaver's Cove Energy's proposed reuse of the dredged material as general site fill at the LNG terminal site. This conclusion assumes that Weaver's Cove Energy is able to resolve the regulatory and legal disputes of its proposed sediment reuse plan at the LNG terminal site.

5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission issues any authorization for the proposed project, we recommend that the Commission's Order include measures 1 through 76. We believe that these measures would further mitigate the environmental impacts associated with construction and operation of the proposed project.

1. Weaver's Cove 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 Federal Energy Regulatory Commission's (FERC or Commission) Order. Weaver's Cove 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 delegation authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the 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 LNG 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 this Order.

4. **Prior to any construction**, Weaver's Cove Energy shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors (EIs), and contractor personnel will be informed of the EI'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 the staff's recommended facility locations. **As soon as they are available, and before the start of construction**, Weaver's Cove Energy shall file with the

Secretary revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by this Order. All requests for modifications of environmental conditions of this Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

6. Weaver's Cove 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 will 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, 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 route variations recommended herein or minor field realignments per landowner needs and requirements that 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 the start of construction,** Weaver's Cove Energy shall file an initial Implementation Plan with the Secretary for the review and written approval by the Director of OEP describing how Weaver's Cove Energy will implement the mitigation measures required by this Order. Weaver's Cove Energy must file revisions to the plan as schedules change. The plan shall identify:

   a. how Weaver's Cove 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 EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
   c. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
   d. what training and instructions Weaver's Cove 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 Weaver's Cove Energy's organization having responsibility for compliance;

f. the procedures (including use of contract penalties) Weaver's Cove 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:

   i. the completion of all required surveys and reports;
   ii. the mitigation training of onsite personnel;
   iii. the start of construction; and
   iv. the start and completion of restoration.

8. Weaver's Cove 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,** Weaver's Cove Energy shall mail the complaint resolution procedures to each landowner whose property would be crossed by the project.

   a. In its letter to affected landowners, Weaver's Cove Energy shall:

      i. provide a contact that the landowners shall call first with their concerns; the letter shall indicate how soon a landowner shall expect a response;
      ii. instruct the landowners that, if they are not satisfied with the response, they shall call Weaver's Cove Energy's hotline; the letter shall indicate how soon to expect a response; and
      iii. instruct the landowner that, if they are still not satisfied with the response from Weaver's Cove Energy, they shall contact the Commission's Enforcement Hotline at (888) 889-8030.

   b. In addition, Weaver's Cove Energy shall include in its weekly status report a copy of a table that contains the following information for each problem/concern:

      i. the date of the call;
      ii. the identification number from the certified alignment sheets of the affected property;
      iii. the description of the problem/concern; and
      iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.

9. Weaver's Cove Energy shall employ a team of EIs. The EIs shall be:

   a. responsible for monitoring and ensuring compliance with all mitigation measures required by this 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 this 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 this 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. Weaver's Cove 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 shall 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 environmental inspector(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 this Order, and measures taken to satisfy their concerns; and
    f. copies of any correspondence received by Weaver's Cove Energy from other federal, state, or local permitting agencies concerning instances of noncompliance, and Weaver's Cove Energy's response.

11. Weaver's Cove Energy must receive written authorization from the Director of OEP before commencing service of the project. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way is proceeding satisfactorily.

12. **Within 30 days of placing the certificated facilities in service**, Weaver's Cove 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 Weaver's Cove Energy has complied with or will comply with. This statement shall also identify any areas along the right-of-way where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

13. Weaver's Cove Energy shall develop a site-specific plan for construction of the adopted River Street Variation that includes a description of any special construction techniques that would be used (e.g., stove-pipe or drag-section techniques) and other steps taken to minimize impacts on local residences and commercial facilities. This plan shall be filed with the Secretary for review and approval by the Director of OEP **prior to construction**. (p. 3-58)[1]

14. Weaver's Cove Energy shall prepare final engineering design plans ensuring the stability of all site grades and the waterfront walls and file these plans with the Secretary **prior to construction**. (p. 4-10)

[1] The numbers at the end of a recommended measure are the pages on which the measure appears in the EIS.

15. Weaver's Cove Energy shall prepare a plan for the discovery and management of contaminated soils and groundwater. This plan shall comply with applicable state and federal regulations and shall provide for management of contaminants at known sites and include procedures for the identification and management of unknown contaminants in other locations. The plan shall be filed with the Secretary for review and approval by the Director of OEP **prior to construction**. (p. 4-14)

16. Weaver's Cove Energy shall consult with the COE regarding the appropriate method(s) for dredging and managing the sediment from the immediate vicinity of turning basin core 10. Weaver's Cove Energy shall file copies of all correspondence and any final plan for managing dredged sediment associated with core TB-10 with the Secretary for review and approval by the Director of OEP **prior to dredging**. (p. 4-33)

17. Weaver's Cove Energy shall provide all appropriate grading plans, cross section drawings, and risk assessments required to demonstrate the degree of isolation provided by the upland reuse of stabilized dredged materials. The required documentation shall be filed with the Secretary for review and approval by the Director of OEP **prior to construction**. (p. 4-45)

18. Weaver's Cove Energy shall file documentation with the Secretary **prior to construction** to verify that placement of the stabilized dredged material on the LNG terminal site is consistent with the Massachusetts Contingency Plan (MCP). If Weaver's Cove Energy is unable to verify the consistency of the proposed use of the sediment with the MCP, it shall file a revised sediment placement plan that identifies alternative location(s) for use of the sediments. The alternative use plan, if necessary, shall be developed in consultation with the relevant agencies and include a detailed assessment of the environmental impacts associated with the alternative locations(s) and demonstrate that the alternative location(s) are in compliance with applicable regulations. Weaver's Cove Energy shall file the plan, if necessary, with the Secretary for review and approval by the Director of OEP **prior to construction**. (p. 4-50)

19. Weaver's Cove Energy shall consult with the COE and NOAA Fisheries regarding mitigation of wetlands as well as intertidal and subtidal habitats and shall file with the Secretary the results of these consultations and the COE-approved Wetland Mitigation Plan **prior to construction**. (p. 4-89)

20. Weaver's Cove Energy shall complete the coordination with applicable federal and state resource agencies regarding development and funding of mitigation measures to offset impacts on quahogs resulting from dredging of the turning basin and file the results of that coordination, including copies of agency approval, with Secretary **prior to dredging**. (p. 4-99)

21. Weaver's Cove Energy shall modify its proposed dredging program and pipeline construction plans within the Taunton River to prohibit any silt-disturbing construction activities during the winter flounder spawning period (January 15 through May 31). In addition, Weaver's Cove Energy shall continue to consult with federal and state agencies and develop a mitigation plan to offset permanent loss of winter flounder spawning and juvenile development habitat resulting from expansion of the turning basin. The revised dredging plan and the winter flounder habitat mitigation plan shall be filed with the Secretary **prior to dredging**. (p. 4-106)

22. Weaver's Cove Energy shall coordinate with NOAA Fisheries to determine appropriate speed and seasonal restrictions, or other applicable measures, to avoid or minimize impacts on right whales. Results of the coordination, including a discussion of restrictions to be implemented, shall be filed with the Secretary, **prior to commencing operation of the LNG terminal**. (p. 4-126)

23. Weaver's Cove Energy shall file with the Secretary **prior to construction** documentation of concurrence from the Office of Coastal Zone Management that the project is consistent with the Massachusetts Coastal Zone Management Program Plan. (p. 4-150)

24. Weaver's Cove Energy shall file with the Secretary **prior to construction** documentation of concurrence from the Coastal Resources Management Council that the project is consistent with the Rhode Island Coastal Resources Management Program. (p. 4-158)

25. **Prior to construction**, Weaver's Cove Energy shall file with the Secretary documentation of concurrence from the U.S. Department of the Interior that the project would not have a substantial adverse affect on the Taunton River's potential designation as a Wild and Scenic River (WSR) and that the project would be consistent with the Wild and Scenic River Act if the Taunton River were designated a Wild and Scenic River. (p. 4-168)

26. Weaver's Cove Energy shall prepare a landscaping plan showing how the northern and southern parcels of the LNG terminal site would be restored and revegetated. The plan shall include the locations and descriptions of specific measures and plantings to screen views of the LNG facilities from nearby residences. The landscaping plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to construction**. (p. 4-173)

27. Weaver's Cove Energy shall file with the Secretary for the review and written approval of the Director of OEP **prior to construction**, a visual screening plan developed in consultation with and approved by Somerset Power, L.L.C. that includes measures to replace screening vegetation removed from the temporary construction right-of-way between MPs 0.49 and 0.54 of the Western Pipeline route. (p. 4-176)

28. Weaver's Cove Energy shall defer construction of the LNG terminal and Northern and Western Pipelines and associated aboveground facilities **until**:

    a. Weaver's Cove Energy provides the SHPO with the appropriate plans, drawings, and photographic simulations for the meter station and pipeyard in relation to the Winslow Burial Ground, and provides the SHPO's comments on this information;

    b. Weaver's Cove Energy conducts the recommended site examination surveys at the CSX#1, CSX#2, ISP#1, ISP#2, and the Taunton River Marsh sites, and files with the Secretary the evaluation reports and the SHPO's comments on the reports;

    c. Weaver's Cove Energy conducts additional site examination at the Barnaby Swamp 2 Site, and files with the Secretary the report and the SHPO's comments on the report;

    d. Weaver's Cove Energy files with the Secretary an avoidance plan for the Slade Farmstead and Cemetery and the SHPO's comments on the plan;

    e. Weaver's Cove Energy files with the Secretary and the SHPO any additional required survey and evaluation reports, and any required treatment or avoidance plans, and the SHPO's comments on all reports and plans; and

    f. The Director of OEP reviews and approves all cultural resources reports and plans, and notifies Weaver's Cove Energy in writing that it may proceed with treatment measures or construction.

All material filed with the Secretary containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "**CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE**." (p. 4-206)

29. Weaver's Cove Energy shall use transportation grade (0.05 weight percent sulfur) or better diesel fuel in all construction equipment, including dredging equipment, for the proposed project and evaluate the feasibility of using catalysts and diesel particulate filters on this equipment and placing idling limits on the construction vehicles to further reduce particulate matter less than 10 microns in diameter, carbon monoxide, and volatile organic compound emissions. (p. 4-217)

30. Weaver's Cove Energy shall develop a nuisance odor complaint and abatement plan to investigate and address complaints related to odor emissions from the dewatered and stabilized dredged sediments. The plan shall include procedures for adjacent landowners to contact a Weaver's Cove Energy representative regarding objectionable odors, a process for investigating and addressing the complaints, and a description of mitigative measures that would be implemented to abate the problem. The nuisance odor complaint and abatement plan shall be filed with the Secretary **prior to construction**. In addition, Weaver's Cove Energy shall include any odor complaints in the weekly status reports filed with the FERC. The report shall include a discussion of how odor complaints were resolved. (p. 4-220)

31. Weaver's Cove Energy shall prepare a noise mitigation plan to ensure that the dredging, offloading, and stabilization operations do not contribute more than 55 decibels of the A-weighted scale (dBA) day-night sound level (L_{dn}) to the ambient noise level at any noise sensitive area (NSA) and file the plan with the Secretary **prior to construction**. (p. 4-226)

32. Weaver's Cove Energy shall make all reasonable efforts to assure its predicted noise levels from the LNG terminal are not exceeded at the NSAs and file noise surveys showing this 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 dBA L_{dn} at an NSA or the noise increase exceeds 10 dBA sound level that is exceeded more than 90 percent of the time (L_{90}) at an NSA, Weaver's Cove Energy shall file a report on what changes are needed and shall install additional noise controls to meet the level within 1 year of the in-service date. Weaver's Cove 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. (p. 4-229)

The following measures apply to the LNG terminal design and construction details. Information pertaining to these specific recommendations 33 through 61, unless otherwise noted, 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. This information shall be submitted a minimum of 30 days before approval to proceed is required.

33. Weaver's Cove Energy shall examine provisions to retain any vapor produced along the transfer line trenches and other areas serving to direct LNG spills to associated impoundments. Measures to be considered may include, but are not limited to: vapor fencing, intermediate sump locations, or trench surface area reduction. Weaver's Cove Energy shall file final drawings, including cross sections, and specifications for these measures with the Secretary **at least 30 days prior to initial site preparation** for review and approval by the Director of OEP. (p. 4-251)

34. Weaver's Cove Energy shall develop emergency evacuation routes for the areas along the route of the LNG vessel transit in conjunction with the local emergency and town officials and file the

routes with the Secretary for review and approval by the Director of OEP prior to **initial site preparation**. (p. 4-258)

35. Weaver's Cove Energy shall provide a technical review of its facility design that:

    a. Identifies all combustion/ventilation air intake equipment and the distance(s) to any possible hydrocarbon release (LNG, flammable refrigerants, flammable liquids, and flammable gases).

    b. Demonstrates that these areas would be adequately covered by hazard detection devices and indicate how these devices would isolate or shutdown any combustion equipment whose continued operation could add to or sustain an emergency. Fired heaters shall be shut down in the event of an LNG spill, or presence of a flammable vapor cloud.

    Weaver's Cove Energy shall file this review **prior to initial site preparation**. (p. 4-233)

36. **Prior to initial site preparation**, Weaver's Cove Energy shall provide documentation, or a limited waiver, on how the LNG tank would meet NFPA 59A table 2-2.4.1, which requires the distance from the edge of the impoundment to the property line, to be not less than 0.7 times the container diameter. The separation distance from the LNG tank impoundment wall to the property boundaries on the southwestern area of the site where the proposed plant property line abuts the shoreline of the Taunton River does not appear to meet the 0.7 criteria. (p. 4-233)

37. **Prior to initial site preparation**, Weaver's Cove Energy shall file a firewater system design that provides for fire water flow to be maintained for a minimum of two hours, in accordance with code requirements. The fire water tank shall be automatically filled from the city mains supply and the city mains pressure continuously monitored and alarmed at low pressure. As an alternative, river water may be evaluated for use in the firewater system. (p. 4-233)

38. The portion of the planned retaining wall on the riverbank, which is opposite the tanks, shall be designed to ensure the stability of the LNG storage tank in a Safe Shutdown Earthquake (SSE) event. A slope stability analysis shall be conducted in order to ascertain the adequacy of the proposed retaining wall structures. The LNG tank shall be designed to withstand the SSE event as required by 49 CFR Part 193 and NFPA 59A (2001). All other structures shall be designed to withstand the effects of an Operating Basis Earthquake, as required by 49 CFR Part 193 and NFPA 59A (2001), and, further, the condition of these structures shall not adversely affect the stability and integrity of the tank in the SSE event. **Prior to initial site preparation**, Weaver's Cove Energy shall file the results of the hydraulic test and stone column field test, and the final LNG storage tank design for seismic review and approval by the Director of OEP. (p. 4-233)

39. Weaver's Cove Energy shall revise the design of the impoundment sump to accommodate a design spill from the LNG storage tank in-tank pump discharge header with five pumps operating at maximum capacity. **At least 30 days prior to initial site preparation**, Weaver's Cove Energy shall submit revised calculations showing the 1,600 Btu/ft^2-hr exclusion zone for the altered impoundment sump would meet the requirements of Title 49 CFR Part 193. (p. 4-248)

40. Weaver's Cove Energy shall provide evidence of its ability to exercise control over the activities that occur within the portions of the thermal exclusion zones that fall outside the site property line. Alternatively, Weaver's Cove Energy may apply to the Department of Transportation for approval of a waiver, from its Title 49 CFR Part 193 regulation, that specifies what alternative mitigation measures or plan Weaver's Cove Energy may provide that would afford an equal or

greater level of thermal radiation protection as the requirement for control over activities within the modeled exclusion zones. Weaver's Cove Energy shall file this evidence or waiver **prior to initial site preparation**. (p. 4-249)

41. Weaver's Cove Energy shall revise the design of the impoundment sump to accommodate a design spill from the LNG storage tank in-tank pump discharge header with five pumps operating at maximum capacity. **At least 30 days prior to initial site preparation**, Weaver's Cove Energy shall submit revised calculations demonstrating that the flammable vapor dispersion exclusion zone for the altered impoundment sump would meet the requirements of Title 49 CFR Part 193. (p. 4-251)

42. Weaver's Cove 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. (p. 4-274)

43. The **final design** shall include a re-evaluation of the use of butterfly valves for high pressure isolation. (p. 4-234)

44. The **final design** of the hazard detection equipment shall include redundancy and fault detection and fault alarm monitoring in all potentially hazardous areas and enclosures. (p. 4-234)

45. The **final design** of the hazard detection equipment shall provide flammable gas and UV/IR hazard detectors with local instrument status indication as an additional safety feature. (p. 4-234)

46. The **final design** shall include a boil-off gas flow measurement system for the LNG storage tank. (p. 4-234)

47. The **final design** shall include a reliable measurement system to monitor deflections during the hydraulic test. At a minimum, this system shall include two slope indicator ducts which bisect the tank in mutually perpendicular directions, monitoring points at the terminals of these ducts, and other monitoring points along the perimeter of the concrete shell, so that sag, warping, tilt, and settlement can be monitored. Tolerances for sag, tilt, and shell warping shall meet or exceed the limits specified by the tank manufacturer. (p. 4-234)

48. The **final design** of the LNG tank carbon steel piping support plates and connections to piping supports shall provide adequate corrosion protection. Provisions for corrosion monitoring and maintenance of carbon steel attachments shall be included in the design and maintenance procedures. (p. 4-234)

49. The **final design** of the LNG pumps shall include discharge flow measurement for minimum flow recycle control. (p. 4-234)

50. The **final design** shall include provisions to ensure that hot glycol/water circulation is operable at all times when LNG is present in the LNG booster pump discharge piping or when the temperature in the LNG inlet channel to any vaporizer is below 0° F. (p. 4-234)

51. The **final design** shall include detection instrumentation and shut down procedures for vaporizer tube leak, shell side overpressure, or bursting disc failure. (p. 4-234)

52. The **final design** shall include temperature measurement of the vaporizer common discharge header which shall alarm the low temperature condition. (p. 4-234)

53. The **final design** shall include provisions to recover boil-off gas, under all conditions, in the event that the send out vaporization system is not in operation. (p. 4-234)

54. The **final design** shall include automatic isolation valves at the suction and discharge of screw compressors and reciprocating boil-off compressors. (p. 4-235)

55. The **final design** shall ensure that air gaps are 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: would continuously monitor for the presence of a flammable fluid; would alarm the hazardous condition; and would shutdown the appropriate systems. (p. 4-235)

56. The **final design** of the relief vent stacks shall include Resistance Temperature Detectors capable of measuring low and high temperature. (p. 4-235)

57. The **final design** shall ensure that dry nitrogen be supplied for purging cold systems. (p. 4-235)

58. The **final design** shall include safeguards to protect above ground fire water piping, including post indicator valves, from inadvertent damage. (p. 4-235)

59. The **final design** shall include a fire protection evaluation carried out in accordance with the requirements of NFPA 59A, chapter 9.1.2. (p. 4-235)

60. The **final design** shall include procedures for offsite contractors' responsibilities, restrictions, limitations, and supervision of the contractors by Weaver's Cove Energy staff. (p. 4-235)

61. Security personnel requirements for prior to and during LNG vessel unloading shall be filed **prior to commissioning.** (p. 4-235)

62. Operation and maintenance procedures and manuals, as well as emergency plans, emergency evacuation plan, and safety procedure manuals, shall be filed **prior to commissioning**. (p. 4-235)

63. The contingency plan for failure of the outer LNG tank containment shall be filed **prior to commissioning**. (p. 4-235)

64. Copies of the Coast Guard security plan, vessel operation plan, and emergency response plan shall be provided to the FERC staff **prior to commissioning**. (p. 4-235)

65. Weaver's Cove Energy shall coordinate with the Coast Guard to define the responsibilities of Weaver's Cove Energy's security staff in supplementing other security personnel and in protecting the LNG ships and terminal **prior to commissioning**. (p. 4-257)

66. A copy of the criteria for horizontal and rotational movement of the inner vessel for use during and after cool down shall be filed **prior to commissioning**. (p. 4-235)

67. Weaver's Cove 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 residents along the route of the LNG vessel transit;
e. locations of permanent sirens and other warning devices; and
f. an "emergency coordinator" on each LNG vessel 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**. Weaver's Cove Energy shall notify FERC staff of all meetings in advance and shall report progress on its Emergency Response Plan at 6-month intervals starting at the commencement of construction. (p. 4-258)

68. 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**. (p. 4-235)

69. 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, problems encountered and remedial actions taken. Problems of significant magnitude shall be reported to the FERC within 24 hours. (p. 4-235)

The following measures apply throughout the operation life of the LNG facility.

70. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least a **biennial** basis or more frequently as circumstances indicate. Prior to each FERC staff technical review and site inspection, Weaver's Cove Energy 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. Weaver's Cove Energy shall also provide 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. (p. 4-236)

71. Weaver's Cove Energy shall file **semi-annual** operational reports 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 boil-off rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be submitted **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. (p. 4-236)

72. 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, Weaver's Cove Energy shall notify the Commission **within 24 hours** and shall specify the procedures for corrective action. (p. 4-236)

73. Weaver's Cove Energy shall make a foundation elevation survey of the LNG tank on an annual basis. (p. 4-236)

74. Weaver's Cove Energy shall report to FERC staff any significant non-scheduled events, including safety-related incidents (i.e., LNG or natural gas releases, fires, explosions, mechanical failures, unusual overpressurization, and major injuries) **and security-related incidents (i.e., attempts to enter site, suspicious activities) within 24 hours of the event.** 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. 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 for five minutes or more 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 safety-related condition that could lead to an imminent hazard and cause (either directly or indirectly by remedial action of the operator), for purposes other than abandonment, a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility that contains or processes gas or LNG;
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, FERC staff would determine the need for a separate follow-up report or follow-up in the upcoming semi-annual operational report. All company follow-up reports shall include investigation results and recommendations to minimize a reoccurrence of the incident. (p. 4-236)

75. Weaver's Cove 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 Captain of the Port/Federal Maritime Security Coordinator for review and validation; and provide a copy to the FERC staff. (p. 4-269)

76. Any security plans shall make allowance to have at least one of the Braga and Brightman Street bridges remain open during the passage of LNG vessels through the federal navigation channel in the Taunton River and that consideration be given to scheduling bridge closures to avoid peak traffic periods. (p. 4-271)