

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF STAFF'S ENVIRONMENTAL ANALYSIS

The conclusions and recommendations presented in this section are those of the FERC environmental staff based on information provided by AES and Mid-Atlantic Express; information developed through data requests, field investigations by the Commission staff; literature review; alternatives analyses; comments from federal, state and local agencies; and input from public groups and individual citizens. While our conclusions and recommendations were developed with input from the COE, EPA, Coast Guard, and Pennsylvania Department of Conservation and Natural Resources, each of these agencies will present its own conclusions and recommendations when each has completed its review of the Project. The Coast Guard will present, in its LOR and through consultation on the Transit Management Plan, its own conclusions and recommendations, prior to operation of the LNG facilities. Likewise, the COE will present its own conclusions and recommendations regarding the proposed dredging activities and the disposal of dredged materials as well as wetlands permits the COE may issue pursuant to section 10 of the River and Harbor Act and section 404 of the CWA.

As part of our review, we developed specific mitigation measures to further reduce the environmental impact that would otherwise result from construction and operation of the Project. The additional studies or field investigations that we recommend would result in site-specific mitigation and further reduce impacts; therefore, we are recommending that these mitigation measures be attached as conditions to any Certificate issued by the Commission.

We have determined that if the AES Sparrows Point LNG Terminal and the Mid-Atlantic Express Pipeline are constructed and operated in accordance with applicable laws and regulations, AES's and Mid-Atlantic Express's proposed mitigation measures, and our recommendations presented in section 5.2; construction and operation of these facilities would result in mostly limited adverse impacts and would be an environmentally acceptable action.

5.1.1 Geology

Construction and operation of the proposed Sparrows Point Project would have minimal impact on geological resources and the potential for geological hazards or flooding events to significantly impact the Project is low, provided the various design measures we are recommending are implemented. Recommendations are included to ensure that the final design complies with the seismic design requirements of NFPA 59A-2001 and FERC's "*Draft Seismic Design Guidelines and Data Submittal Requirements for LNG Facilities.*"

The proposed LNG terminal site and pipeline route are situated in an area of relatively low potential for seismic activity. No mapped surface faults or active surface faults are known to exist within the terminal site or along the pipeline route. Site-specific analyses have been performed regarding the seismic potential of the LNG site. Design spectra were prepared for the SSE and the OBE. The resultant design spectra curves would be utilized in the final design of the LNG terminal structures.

A subsurface exploration program was performed at the proposed terminal site to evaluate the characteristics of the formations underlying the area and the potential for seismic soil liquefaction. An assessment of sands at the site found non-liquefiable conditions for a majority of the sands underlying the proposed terminal site. However, some of the data indicated that very loose saturated sand is present from 15 to 30 feet below ground surface. Preliminary results from site-specific ground motion analyses indicate that limited areas at the proposed terminal site may have liquefaction-susceptible sands; therefore, we are recommending additional subsurface exploration in this area to confirm the presence of the loose sand layer and collect additional data proximate to the LNG tank locations prior to the completion of the final foundation design. If it is concluded that there is a liquefiable sand layer present, then the potential effects of liquefaction must be considered and factored into the pile design of the LNG tank foundations to compensate for potential settlements due to liquefaction.

AES would use steel H-piles topped with a pile cap for the tank support. These H-piles would be used for deep foundations to limit settlement due to the variability of the soil profile at the site, to avoid existing foundation structures and obstructions within the proposed development footprint, and to limit construction spoil. In addition, AES would not raise the ground surface within the bermed area surrounding the LNG tanks in order to limit possible down drag forces on the foundation pile of the tanks. Instead, AES proposes to construct the tank slab on top of a layer of geo-foam (expanded polystyrene).

The proposed terminal would be located in a coastal setting subject to tidal fluctuations, flooding, and major storm events including hurricanes. AES would construct the terminal in such a manner that risks posed by flooding and serious storm events would be minimized. Shorelines near the proposed LNG terminal and along the marine transit waterway should not receive wakes of appreciable size.

Construction and operation of the proposed LNG facility and pipeline would not impact any active or inactive mineral resource extraction operations.

Blasting would not be required at the proposed LNG terminal site. Blasting may be required during excavation activities along the proposed pipeline route due to shallow bedrock conditions. To minimize impacts resulting from potential blasting activities, we are recommending that should shallow bedrock be encountered, Mid-Atlantic Express file a site-specific Project Blasting Plan.

The effects of an LNG spill, whether ignited or unignited, at the terminal or along the marine transit waterway would not result in significant impacts to geology at the terminal site or along the LNG ship transit route.

The existing topography along much of the proposed pipeline route would be temporarily altered by construction-related activities. However, Mid-Atlantic Express would restore topographic contours and drainage conditions to the extent practicable following installation of the pipeline.

5.1.2 Soils

The LNG terminal and optional power plant would be located on an approximately 45-acre brownfield parcel within the existing Sparrows Point Industrial Complex located in Baltimore County, Maryland. Approximately 70 percent of this site, or 32 acres, is made land. This land is comprised of spoil material from nearby excavations and hydraulic fill from historic harbor and channel deepening. No designated prime or unique farmlands or farmlands of statewide importance were identified at the terminal site.

At the LNG terminal site and at some locations along the proposed pipeline route, there is evidence of contaminated soils and sediments. A soil sample analysis performed at the proposed terminal site indicated concentrations of SVOCs, PCBs (at the surface beneath or adjacent to transformers), and metals in the soils. Some of these constituents have concentrations exceeding the specific Maryland Non-residential Cleanup Standards for the individual constituent. Due to these existing soil conditions, AES has filed a Potentially-Contaminated Soils Management Plan. However, we are recommending that AES prepare an amended Potentially-Contaminated Soils Management Plan to ensure that potentially contaminated soils at the proposed terminal site are properly managed during construction. Additionally, to minimize impacts related to potentially contaminated soils along the proposed pipeline route, we are recommending that Mid-Atlantic Express file a report containing the results of sediment quality testing, a risk assessment, and a site-specific crossing plan for a contaminated area near the proposed Back River crossing location.

The proposed Mid-Atlantic Express Pipeline would disturb a total of approximately 1,603.4 acres of land during construction, and approximately 544.6 acres would be maintained within the permanent right-of-way during operations. Approximately 0.7 acre of soils classified as prime farmland or farmland of statewide importance would be temporarily affected by construction of the proposed pipeline. The associated aboveground facilities (mainline valves and meter stations) would permanently impact about 0.2 acre of soils classified as prime farmland or farmland of statewide importance in Maryland and about 0.15 acre in Pennsylvania. There are no soils designated as prime or unique farmlands or farmlands of statewide importance associated with the three meter stations.

The construction of the pipeline would disturb about 160 acres of hydric soils. The impacts to these soils would be minimized by the implementation of Mid-Atlantic Express's BMPs in its ECP, and by topsoil segregation in wetlands with unsaturated soils.

The effects of an LNG spill, whether ignited or unignited, at the terminal or along the marine transit waterways would not result in significant impacts to soils at the terminal site or along the LNG ship transit route.

5.1.3 Water Resources

Groundwater

Potential impacts on groundwater associated with the use of oils, lubricants, and other hazardous substances during construction and operation of the LNG terminal would be minimized by AES's compliance with federal regulations related to fuel transport, handling, and spill response procedures and its implementation of its SPCC Plan. To ensure that this SPCC Plan is adequate to protect the groundwater resources of the project area, we are recommending that AES file the final version of its site-specific SPCC Plan.

There are two public or commercial water wells within 400 feet of the proposed construction workspaces associated with the pipeline. Both of these supply water wells are within Chester County, Pennsylvania (one at MP 56.3, the Chester Water Authority; and one at MP 77.6, a commercial well). The pipeline route also would cross two wellhead protection areas in Maryland. The pipeline would cross the St. Stephens Elementary wellhead protection area in Baltimore County, Maryland and the Fallston Pre-Kindergarten wellhead protection area in Harford County, Maryland. In order to protect these wells, Mid-Atlantic Express would not store fuel or refuel vehicles or equipment within the wellhead protection areas.

Neither the proposed LNG terminal site nor the pipeline route would affect any of the EPA-designated sole source aquifers in Maryland or Pennsylvania.

Fifty private water supply wells were identified within 150 feet of the proposed construction right-of-way. Mid-Atlantic Express would monitor the quality and yield of all public or private wells within 150 feet of the construction workspace before and after construction. In order to minimize or avoid direct impacts to wells, we are recommending that Mid-Atlantic Express file the results of its evaluations of the pipeline alignment relative to water wells within 10 feet of or within the construction right-of-way and that any alignment changes resulting from its evaluation be reflected on revised alignment sheets to be filed prior to construction.

If drinking water wells are impacted by construction, Mid-Atlantic Express would provide a temporary potable water source until water quality or yield has been restored. As previously discussed, we are also recommending that Mid-Atlantic Express file the final version of its site-specific SPCC Plan, prior to construction.

AES would conduct limited environmental monitoring, sampling, and analyses during the geotechnical investigation to characterize the groundwater quality at the LNG terminal. Mid-Atlantic Express would characterize groundwater quality along the pipeline route during final pipeline construction design but prior to the start of construction.

Construction and operation of the proposed Project would not have a significant impact on the groundwater resources in the project area. No groundwater impacts are expected as a result of LNG marine traffic along the transit route through Chesapeake Bay and the Patapsco River.

Surface Water

At the LNG terminal site, the construction of the facilities would impact water quality of the Patapsco River during the following activities: dredging of the approach channel, turning basin, and ship berths; removal of some existing finger piers; straightening and realignment of some sections of the shoreline bulkhead; grading activities of the terminal site; processing of dredged material at the DMRF; and hauling off the PDM to placement or reuse sites. Impacts to water quality during operation of the LNG facility would primarily result from site stormwater runoff. There would be neither water intakes (except emergency fire water pump

intakes) nor process water generated during the operation of the LNG facility. These impacts and the proposed methods to mitigate these impacts are discussed below. There would be neither water intakes (except emergency fire water pump intakes) nor process water generated during the operation of the LNG facility.

AES would mitigate surface water quality impacts from LNG terminal construction by using BMPs for minimizing/localizing turbidity (e.g., limiting incidental propeller wash in shallow sediments). During the installation of the sheet pile bulkhead wall, silt curtains would be positioned in the shallow water area to prevent sedimentation impacts. Filling activities would be conducted on the landward site of the sheet pile wall so that there would be minimal impact to the marine environment. Approximately 1.56 acres of upland will be converted to open bay bottom in order to square off the berthing area and bulkhead. Stormwater discharges from the LNG terminal construction site would be covered under a Maryland general permit, and AES will incorporate stormwater controls into the final design of the LNG terminal and DMRF.

The primary impact on water quality associated with dredging would be the resuspension of sediment into the water column. In general, these impacts would be temporary and localized to the near vicinity of the dredging activities. AES proposes to use a mechanical (clamshell) dredge. However, if required by the COE permit, an environmental bucket or suitable alternative may be used to minimize suspended solids and turbidity, and in turn to reduce the risk of water impacts due to exposure to contaminants in the dredged sediments. In this DEIS we are requesting comments from the applicant, the public and agencies regarding the use of mitigative dredging equipment such as the environmental bucket or closed clamshell bucket. The preferred alternative method dredging would be analyzed in our final EIS and before the issuance of a COE dredging permit.

Dredging of the approach channel would generate a total of about 3.7 million CY of sediment. About 7,613 CY of material would be removed daily with a dredging season of approximately 243 working days in a dredging year, continuing for about 2 years. Maintenance dredging of the access channel, the turning basin, and sediments adjacent to the unloading pier would generate approximately 500,000 CY about every six years. Dewatering of dredge spoils would occur at the DMRF located on 5 acres of the terminal facility. The raw dredged materials would be transformed into PDM and transported to the 30-acre temporary PDM storage area, south of the LNG Terminal site. AES proposes to ship PDM offsite at an average rate of approximately 5,000 CY per day, 365 days per year, but would implement a contingency plan should it be unable to remove PDM at this rate. After processing, it is expected that the material would be suitable for reuse such as reclamation of abandoned mines, capping of landfills, use as construction or road bed material, and/or use as clean fill for development such as for golf courses. The PDM would be tested by AES per MDE specifications at the temporary storage area before it is cleared for any of the above uses or placement areas. Water from the dewatering process would be treated and discharged back to the harbor in accordance with an MDE Industrial Water Discharge permit. We are recommending that, prior to the end of the DEIS comment period, AES prepare a Dredged Material Placement Plan to address the ultimate disposition of the PDM; the capacity of the temporary placement areas onsite; the daily takeaway capacity for the PDM; the number, probable routes and impact of trucks needed to haul the PDM; and a contingency plan should there be no buyers for the PDM. No PDM would be permitted to be disposed of within wetlands or waterbodies.

Stormwater discharges from the LNG terminal would be covered under a Maryland general permit. Stormwater would be pumped from site impoundments and pass through an oil-water separator prior to flowing into a water treatment system. All stormwater would be treated prior to discharge to the Baltimore County POTW. Discharges would be monitored and tested. In accordance with CZMA regulations, the redirection of the process area stormwater runoff will result in an approximate 50 percent reduction of stormwater discharged to the Patapsco River.

The proposed pipeline route would cross 177 waterbodies in Maryland and Pennsylvania; proposed water crossings would affect total of 12,462 linear feet of waterbodies and 3.01 acres of water surface. Mid-Atlantic Express proposes to cross two rivers by HDD (the Susquehanna and Back Rivers) and is still evaluating possibly crossing the Little Gunpowder Falls and an associated wetland by HDD. We are recommending that, prior to the end of the DEIS comment period, Mid-Atlantic Express file with the Secretary additional geotechnical information to support the feasibility of performing HDD crossings at the Susquehanna River,

Little Gunpowder Falls and wetland, and Back River. Fourteen of the waterbodies proposed to be crossed are considered sensitive surface waters due to their listing as impaired waters on the Maryland or Pennsylvania 303d lists. In addition, the pipeline would be within three miles of five reservoirs. For two of these reservoirs, Fullerton and Loch Raven, the pipeline would cross well downstream from the reservoirs; thus the construction and operation of the pipeline should not affect these reservoirs. One reservoir, Octoraro Lake, is upstream of the pipeline crossing of Octoraro Creek, but two small creeks crossed by the pipeline flow into the lake. Spills of hydrocarbons (fuel or lubricants) into these small creeks could make their way into the lake. In order to minimize the possibility of any spill entering Octoraro Lake, Mid-Atlantic Express would prohibit the storage of fuels or lubricants within 100 feet of the two creeks, as well as all other creeks, and would prohibit fueling or maintenance activities on heavy equipment within 100 feet of any creek, river, lake or reservoir. The Conowingo Reservoir (an impoundment of the Susquehanna River) would be directly crossed by the pipeline by HDD. The final reservoir, Atkisson Reservoir, is located approximately 2.9 miles east of the pipeline. However, the pipeline crosses Winters Run that drains into Atkisson Reservoir about five to six miles upstream of the reservoir. Thus, any construction impacts on the water quality in the creek (increased sedimentation or turbidity) should not have a significant effect on the water quality of the reservoir.

To mitigate the impacts of an accidental spill of oil, gasoline or lubricants during construction or operation, Mid-Atlantic Express would follow the measures outlined in its SPCC Plan. There is a small, but real, possibility of a frac-out of drilling fluid during the pipeline installation by HDD. Therefore, we are recommending that Mid-Atlantic Express file its HDD Monitoring and Contingency Plan, which would include its final frac-out plan, prior to construction.

Mid-Atlantic Express would obtain appropriate permits/authorizations to use the Susquehanna River as a water source and discharge location for hydrostatic testing of the pipeline. Impacts to aquatic resources potentially could occur from water withdrawal for hydrostatic testing. Therefore, we are recommending that, prior to the end of the DEIS comment period, AES and Mid-Atlantic Express consult with the MDNR and NMFS regarding LNG tank and pipeline hydrostatic test water withdrawals and discharges, including the least damaging time of year to conduct these activities. Hydrotests of the Back River and of the potential Little Gunpowder Falls HDD sections would use potable water trucked to the site. Mid-Atlantic Express would use energy dissipaters on the pipeline hydrotest discharges to minimize the erosive forces of the water.

Construction and operation of the proposed Project would not have a significant impact on the surface water resources in the project area. No surface water impacts are expected as a result of normal LNG marine traffic along the transit route through Chesapeake Bay and the Patapsco River. An LNG spill, whether ignited or unignited, at the terminal or along the marine transit waterways would not result in significant impacts to surface water quality at the terminal site or along the LNG ship transit route.

5.1.4 Wetlands

No wetlands would be affected by the construction or operation of the LNG Terminal or by the proposed increase in vessel traffic in the Patapsco River. However, the proposed pipeline construction would impact 19.43 acres of wetlands. A total of 13.64 acres would be permanently maintained as right-of-way and 4.46 acres would change from forested wetland to palustrine or emergent wetlands. Final wetland surveys would be performed once property access issues are resolved, however, we are recommending that Mid-Atlantic Express provide, prior to the end of the DEIS comment period, a report addressing any updates on wetland delineations for previously-unsurveyed portions of the Project.

During construction, Mid-Atlantic Express would use wetland construction methods that would minimize wetlands impacts by implementing measures outlined in the ECP and applicable permit conditions imposed by the COE, MDE, and PDEP. To further protect sensitive wetlands, we are recommending that Mid-Atlantic Express consult with the MDE regarding Nontidal Wetlands of Special Concern at MPs 22.22 and 46.45, prior to the end of the DEIS comment period. Mid-Atlantic Express would also segregate topsoil, in wetlands without saturated soils, to facilitate revegetation.

As part of post-construction restoration of the pipeline right-of-way, Mid-Atlantic Express would conduct annual monitoring of wetlands being restored in accordance with its ECP for a minimum of three years after construction or until 85 percent of adjacent cover is established. If, after six months, the wetlands do not appear to be recovering, Mid-Atlantic Express would employ additional measures, such as replanting or seeding the disturbed area. Invasive species would also be monitored during this time, and measures would be taken to inhibit the establishment of invasive species along the pipeline. We are recommending that Mid-Atlantic Express file, prior to construction, its finalized Exotic and Invasive Species Control Plan, developed in consultation with the COE and other federal and state agencies, for the review and written approval by the Director of OEP.

The discharge of dredged or fill material into waters of the U.S., including jurisdictional wetlands would require compliance, at a minimum, with the requirements of Sections 401 and 404 of the CWA and the respective state permitting programs. As part of complying with federal, state, and/or local regulatory requirements, AES and Mid-Atlantic Express must demonstrate that impacts to waters of the US, including jurisdictional wetlands have been avoided and minimized to the maximum extent practicable. Where unavoidable wetland impacts would occur, the agencies would require measures to mitigate the effects of construction and operation. We are recommending that AES and Mid-Atlantic Express develop an agency-reviewed ARMP to address mitigation to minimize impacts on wetlands, waterbodies, and other aquatic resources. We are recommending that the draft ARMP be filed prior to the end of the DEIS comment period.

Along the waterway for marine LNG traffic, most of the Chesapeake Bay shoreline (both emergent wetlands and upland terrestrial vegetation) lies outside Zone of Concern 3, and thus outside the probable impact of an LNG spill, with or without ignition. Zone 3 would contact the shoreline along the southern and western shores of Kent and Poplar Islands, and the western shore of the Chesapeake Bay from the Bay Bridge north and into the Patapsco River. Zone 2 would contact the shoreline at three locations along the Patapsco River, including the western half of the Sparrows Point peninsula (and industrial park), when the LNG ships are in the final approach along the Brewerton Channel and in the approach channel, in the turning basin, and at the berth.

If an unignited release of LNG were to occur along the LNG marine traffic route, given that LNG is lighter than water, the LNG would float on the water until it had vaporized. If the LNG were to contact any wetland plants along the transit route (areas within Zones 2 and 3 mentioned above), those species above the water line could be impacted by the extremely low temperatures. Submerged aquatic plants in the open bay would not be affected.

If an LNG release with ignition were to occur, the impacts from fire would be limited to Zones 1 or 2. Zone 1 does not come in contact with emergent wetland vegetation since the only shoreline in Zone 1 would occur at the dock area of the terminal at Sparrows Point, which does not have wetland habitat. Zone 2 comes in contact with some portions of the shoreline at Hawkins and Coffin Points, and for much of the western half of the Sparrows Point industrial area. In the unlikely event of a major release, an ignited LNG release could significantly impact wetland vegetation in these areas.

5.1.5 Vegetation

No significant impacts would occur to terrestrial vegetation at the LNG terminal, because the site is currently an industrial site, with little native vegetation. Along the LNG transit, most terrestrial vegetation along the shoreline of Chesapeake Bay is outside the three Zones of Concern. The exceptions are noted below.

The primary impacts to terrestrial vegetation and vegetative communities would occur from construction and operation of the pipeline. Construction of the pipeline facilities would impact about 1,603.4 acres of land. Of this total, about 422.6 acres of native vegetation (forest and open lands) would be impacted during construction. Of the 312.1 acres of forest that would be cleared during construction of the pipelines and aboveground facilities, about 147.3 acres would be maintained in herbaceous cover following construction, and the remaining 164.8 acres would be allowed to revert to forest. An additional 862.9 acres of agricultural land would be impacted. The remainder of construction impacts would be to residential land, industrial/commercial land, or open water. Operation of the pipeline and ancillary facilities would

permanently impact 546.7 acres. Of this, 160.5 acres of native vegetation (this includes the 147.3 acres of forest mentioned above) would be impacted. An additional 276.1 acres of agricultural land would lie within the permanent right-of-way, but would not be impacted by operation of the pipeline. The remainder of impacts during operation of the pipeline would be restrictions on building aboveground structures and to use of residential land, industrial/commercial land, and open water that lie within the boundaries of the pipeline permanent right-of-way (see section 5.1.8).

For upland habitats, Mid-Atlantic Express would segregate topsoil in cultivated croplands and pastures, residential areas, hayfields, and in other areas at the landowner's or land management agency's request. In addition, the ECP provides for soil compaction mitigation, seeding requirements, and monitoring of revegetation efforts. Mid-Atlantic Express would file quarterly reports with the Secretary for at least 2 years following construction, giving the results of the revegetation effort and documenting problem areas and corrective actions.

Construction and operation of the proposed Project would not have a significant impact on the terrestrial vegetation resources in the project area. Terrestrial vegetation along the vast majority of the Chesapeake and Patapsco shorelines would not be impacted by normal operations of the LNG ships, nor by an LNG release with or without ignition. However, those sections of shoreline within Zone 2, as discussed above regarding wetland vegetation, would be significantly impacted by a release with ignition of the LNG. Vegetation within Zone 3 would be significantly impacted by a flash fire, if a flammable vapor cloud reached an ignition source within Zone 3. Although unlikely, a flash fire within Zone 3 could reach the shorelines of Kent Island and Poplar Island, and portions of the shoreline from Sandy Point to the terminal. The magnitude of the impacts to vegetation would depend upon the duration of the fire, since the ignition of the vapor cloud could result in a wildfire.

5.1.6 Terrestrial and Aquatic Species

Terrestrial Species

The proposed facilities would affect a variety of terrestrial wildlife habitats resulting in short term, and in some cases, permanent alteration of wildlife habitat. However, most of the wildlife species that are associated with these affected habitats would readily utilize adjacent habitats. These terrestrial habitats include woodlands, open land (including agricultural land), and developed land (e.g. commercial and residential land). The terminal site is on developed land and the pipeline route traverses a mix of woodlands, open land, and developed land. No state game refuges, state wildlife management areas, or National Wildlife Refuges are located within 0.25 mile of the project area. However, the pipeline route would cross the following three types of Critical Areas as defined under the Chesapeake Bay Critical Area Protection Program: Maryland Designated Critical Area, Forest Interior Dwelling Bird Habitat, and Nontidal Wetland of Special State Concern. The terminal site is also located approximately 1.5 miles from two colonial waterbird colonies and approximately 1.1 miles from an active peregrine falcon nest on the Francis Scott Key Memorial Bridge (I-695).

The alteration of terrestrial wildlife habitats is primarily a result of vegetation clearing, although project planning would minimize the degree of clearing by siting the proposed facilities on existing developed or disturbed land to the extent practicable. Long-term impacts to wildlife habitat would be minimized by adherence to Mid-Atlantic Express's ECP. Natural revegetation of temporarily cleared areas would also mitigate the effects of the development. To address potential impacts to portions of the proposed pipeline route that would be located within areas regulated by the State of Maryland's Critical Area Act, we are recommending that Mid-Atlantic Express consult with the MDNR and/or appropriate local authority(-ies) to determine the need for a Forest Stand Delineation (FSD) and Forest Conservation Plan (FCP) and that any developed plan be filed prior to the start of construction. We are also recommending that Mid-Atlantic Express consult with the appropriate Forest Interior Dwelling Species (FIDS) habitat management entities in Maryland and file the results of the consultation, including any agency-approved required FIDS habitat mitigation plans.

Noise from constructing the proposed LNG and pipeline facilities and traffic during the construction would also adversely affect terrestrial wildlife; however, these effects would be temporary and in some cases actually serve to mitigate direct impacts by causing wildlife to move out of, or avoid, the construction area. Potential detrimental effects from facility lighting at the LNG terminal would be minimized through the use of down-shielding, low-level lighting, and reductions in light duration. To further reduce potential impacts to birds, we are recommending that AES file a bird strike/impact minimization plan prior to construction of the LNG terminal.

Terrestrial wildlife would not be impacted by normal operations of the LNG terminal or the marine traffic along the transit route through Chesapeake Bay and the Patapsco River. There is no appreciable wildlife habitat that falls within Zones 1 or 2, so any LNG release with ignition would not significantly affect wildlife. Similar to the scenarios discussed for terrestrial habitat, an LNG release without ignition, but with subsequent ignition of the vapor cloud, could cause significant impacts to wildlife within Zone 3. The portions of the shoreline that could be contacted by Zone 3 are limited to the western shores of Kent and Poplar Islands, and portions of the shoreline from Sandy Point north to the LNG terminal at Sparrows Point.

Aquatic Species

Impacts to aquatic organisms including changes in habitat, potential short term and seasonal low dissolved oxygen conditions, and temporary high turbidity conditions would result primarily from proposed dredging activities. About 118 acres of open bay bottom would be affected by the removal of approximately 3.7 million CY of dredged material in order to widen and deepen the existing shipping channel and create a turning basin and ship berth. Currently the area to be dredged is dominated by polychaete worms that are pollution-tolerant, pioneering species. Pioneering species would be expected to quickly recolonize the benthic substrates after dredging. High turbidity and low oxygen conditions directly related to dredging activities are expected to be temporary and localized and therefore would not have significant impact to habitat and aquatic life in the area. The potential for seasonal low oxygen conditions to persist in the deep waters of the Patapsco River shipping channel could occur. Therefore, we are recommending that prior to the end of the DEIS comment period, AES consult with NMFS, MDNR and the Atlantic States Marine Fisheries Commission to develop agency-approved mitigation measures, if necessary, in order to minimize impacts on aquatic habitat.

Other impacts to aquatic organisms could result from pressure waves associated with pile driving activities during pier construction, vessel strikes from LNG marine traffic, and entrainment and impingement of organisms during water withdrawals for testing of LNG tanks and for ballast water for LNG ships. We are recommending that prior to construction, AES file a construction plan for the unloading dock that includes NMFS comments on the use of existing pilings and mitigation measures, including pressure and sound wave mitigation. Impacts on aquatic species would be addressed via agency-reviewed mitigation measures or would be considered to be rare, short-term, and/or minor.

Near the terminal, during construction, dredging and pile driving activities have the potential for negative impacts to aquatic species. The impacts of dredging on aquatic species could include temporary depression of dissolved oxygen in the water column, re-suspension of bottom sediments accompanied by increased turbidity, and potential exposure to the chemicals in the contaminated surface sediments. AES would use mechanical dredging buckets that would reduce the risk of these impacts. In addition we have requested input from the agencies, the applicant and the public regarding the potential use of closed clamshell buckets or environmental buckets to further reduce impacts from dredging. AES would also implement its Dredging Management Plan and the recommended ARMP. With implementation of these plans, and implementation of further measures in section 5.2, none of these impacts would be long-term or significant.

Along the waterway for LNG marine traffic, normal operations of the LNG ships would not have a significant impact on aquatic organisms. A release of LNG without ignition could cause thermal shock (cold shock) to the fish and invertebrate organisms that come into contact or that are in the vicinity of the LNG pool in Zone 1 with impacts decreasing outward through Zones 2 and 3.

Impacts to freshwater biological fishery resources due to construction of the proposed pipeline include sedimentation and turbidity which can bury demersal fish eggs and reduce oxygen uptake by the gills; destruction of stream bank cover which can expose fish to predators and result in elevated water temperatures; introduction of toxic water pollutants (e.g., from fuel spills) which can cause mortality; or entrainment of fish during water withdrawals for hydrostatic testing. Disturbance by construction may cause temporary emigration of fish populations from the immediate area and interrupt fish movements and migration.

To reduce the potential for direct surface water contamination, we are recommending, as mentioned previously that AES and Mid-Atlantic Express file the final versions of their site-specific SPCC Plans, prior to construction. Additionally, Mid-Atlantic Express's ECP includes measures, pertaining to seasonal activity restrictions and erosion/sediment controls, to mitigate impacts to fisheries, including in streams crossed by the pipeline that may support spawning by anadromous fishes. Suspended sediment concentrations would be expected to return to preconstruction levels soon after construction in each stream is completed. Mid-Atlantic Express proposes to install the pipeline across the Back River, the Susquehanna River, and potentially the Little Gunpowder Falls using HDD, if feasible. Mid-Atlantic Express would complete in-stream construction within a 24-hour period at each minor waterbody to minimize the duration and extent of disturbance. Hydrostatic test water intakes would be screened to prevent fish entrainment, and discharges would utilize energy dissipaters to reduce erosive forces. With the implementation of these measures, the impact of construction on fish and other aquatic organisms is expected to be localized and short-term. NMFS may still require timing restrictions in order to avoid potential impacts to spawning fishes in the event of a frac-out in HDD operations. We are recommending that, prior to the end of the DEIS comment period, Mid-Atlantic Express finalize its seasonal water crossing schedule in consultation with the appropriate state agencies in Maryland and Pennsylvania and with the FWS and the NMFS, and file its HDD Monitoring and Contingency Plan.

Essential Fish Habitat (EFH)

The NMFS identified EFH for two finfish species – bluefish and summer flounder -- that occur in brackish and salt waters in the vicinity of the LNG terminal activities. Life stages of these species that occur in the terminal vicinity are bluefish juveniles and adults; and summer flounder larvae, juveniles, and adults.

NMFS also identified several forage fish — river herring (also called alosine species, a collective term that includes American shad, hickory shad, alewife, and blueback herring), white perch, and yellow perch — that are prey of these EFH species; these forage fish may occur in the waters in the proposed terminal vicinity as well as in fresh waters crossed by the proposed pipeline.

Potential impacts to these species are nearly identical to those described for aquatic species in the preceding subsection. Based on the EFH assessment included in this DEIS, permanent impacts to these species and their habitats are not expected.

LNG marine traffic would cross through or near EFH for Atlantic butterfish, Atlantic sea herring, black sea bass, bluefish, cobia, king mackerel, red drum, red hake, scup, Spanish mackerel, summer flounder, windowpane flounder, clearnose skate, little skate, winter skate, and various shark species as it passes through the Chesapeake Bay. Normal ship operations would not have significant impacts on these EFH-designated species nor their habitats.

The effects of an LNG spill, whether ignited or unignited, at the terminal site or along the transit waterways could significantly impact the aquatic species and habitats including EFH within Zone 1; however, the likelihood of a spill is extremely remote.

As with aquatic organisms in general, a release of LNG with or without ignition could cause thermal (heat or cold) shock to the EFH-designated fish and important prey that they come into contact or that are in the vicinity of the LNG pool in Zone of Concern 1 with impacts decreasing outward through Zones 2 and 3. However, the marine transit safety and security measures make the probability of an LNG vessel spill extremely unlikely and normal ship operations would not have significant impacts on these EFH-designated species.

5.1.7 Threatened, Endangered and Other Special Status Species

The FWS and NMFS identified a total of 12 federally listed endangered or threatened species that may potentially occur in the Project area and along the marine transit route. In compliance with Section 7 of the ESA, we are requesting that the FWS and NMFS consider this DEIS as the BA for the proposed Project and vessel transit. We determined that the proposed Project would have no effect, or is not likely to adversely affect these species if AES and Mid-Atlantic Express abide by our recommendations in Section 4.7. These recommendations include: the implementation of NMFS guidance for vessel strike avoidance of whales and sea turtles; consultation with NMFS regarding sea turtle construction windows and monitoring; implementation of FWS's May 2007 "National Bald Eagle Management Guidelines" and nest survey protocol; and completion of final bog turtle surveys on properties where access previously has been denied, as well as development in consultation with the FWS of a bog turtle management plan. We are also recommending that no construction occur until consultation with the FWS and NMFS has been completed. To further protect state-protected species, we are recommending that Mid-Atlantic Express complete the surveys for state listed butterfly, moth and plant species.

During normal operations at the terminal and along the LNG waterway, the main source of impacts to aquatic species would be potential ship strikes of marine mammals or marine turtles. If AES implements our recommendations in section 5.2 to minimize the risk of vessel strikes, we believe the project would not pose significant risk to these threatened and endangered species.

The effects of an ignited LNG spill, at the terminal site or along the marine transit route could potentially impact federally listed species. An ignited spill could produce radiant heat or fire causing injury or death to any species it comes into contact with in Zones 1 or 2; however, the marine transit safety and security measures make the probability of an LNG vessel spill extremely unlikely.

5.1.8 Land Use, Recreation, and Aesthetics

Construction of the proposed Project would affect about 1,801.4 acres of land and water for the construction of the terminal and pipeline facilities. Construction of the LNG terminal and optional power plant would impact about 198 acres of land and water: 45 acres of industrial uplands; 35 acres of near-shore riparian rights (bay bottom for the ship berths); 35 acres of temporary workspace for the operation of the dredged material recycling facility and the temporary pipeyard/contractor yards; and the remaining 83 acres for areas dredged for the approach channel and the turning basin. Construction of the pipeline and associated ancillary facilities would occupy approximately 1,603.4 acres: 1,243.1 acres for the construction right-of-way, including additional temporary workspace; 42.9 acres for temporary and permanent access roads; and 315 acres for pipeyards/contractor yards. Operation of the new facilities would require about 589.6 acres of land: 45 acres for the LNG terminal; acres for the LNG terminal; 542.0 acres for permanent pipeline right-of-way; 1.4 acres of permanent access roads; and 1.2 acres of MLVs and interconnect meter station sites.

LNG Terminal

There are no existing residences within one mile of the proposed terminal, as calculated from the western end of the LNG unloading dock, or within one mile of the LNG storage area. The nearest residential area, Turner Station, is 1.1 miles northwest from the end of the unloading dock. The most prominent visual features of the LNG terminal would be the three LNG storage tanks, each 170 feet above the current grade and 270 feet in diameter. AES prepared photo simulations of views of the proposed storage tanks. The tanks would be the most visible from Turner Station and from the causeway near the toll booths for the Francis Scott Key Bridge, on I-695. While the LNG storage tanks would be quite visible, they would be consistent in size and nature with existing industrial facilities within the Sparrows Point Industrial area.

Under normal operations, LNG vessels transiting the Chesapeake waterway would have no significant impacts on current land uses or visual resources. The impact of the LNG ship transit (with the traveling security zone) on recreational vessels would be minor and of short duration when it would occur, but it would occur periodically for the life of the Project. At 120 to 150 LNG vessels per year, the LNG shipping operations

would add 5 to 7 percent to the existing large vessel traffic to Port of Baltimore. Impacts from a marine spill of LNG with ignition would depend on the location of the incident within the waterway and the size of the spill. There are no areas where Zone of Concern 1 would overlap land or populated areas. However, there are small but significant areas where Zone of Concern 2 would overlap land and populated areas. These are discussed in the EIS, and shown in Appendix K, Figures 4.12-1 and 4.12-2. Zone 2 would contact the land at both landward ends of the Key Bridge (both Hawkins Point and Soller Point to Coffin Point), along the causeway north of the Key Bridge and up to Turner Station, and for the western half of the Sparrows Point peninsula. These points of contact for Zone 2 and land are all within the final LNG vessel approach along Brewerton Channel and the Brewerton Angle, the approach up the Marine Channel, and within the LNG turning basin. For Zone 3, there would be scattered but significant contact with land and populations for the final approach of the LNG vessels from Kent Island north – including the southwestern shore of Kent Island, along Sandy Point including Sandy Point State Park, from Gibson Island north to Bodkin Neck, and from Bodkin Neck west and northwest to Rock Point and Hawkins Point. The communities of Rivera Beach and Orchard Beach would fall within Zone 3 along this final segment. Also, within Zone 3 would be the Hawkins Point industrial area, Turner Station, and the southern and western edge of Edgemere, and the entire remainder of the Sparrows Point industrial area. An LNG release without initial ignition, but with ignition of the vapor cloud could cause significant harm to life and property within any of these areas within Zone 3.

The extent of impact on recreational boaters, recreational fisherman, and commercial fishermen would depend on the number of boats in the project area during the two to three vessel transits per week, and on several other variables such as the size of the Coast Guard-imposed safety and security zones and the width of the channel at the point where a boat encounters the LNG vessel. To minimize potential impact on other marine traffic, the Coast Guard intends to use notice to mariners to alert other waterway users of the security zones in effect and could schedule the transit of LNG vessels for times of day less likely to affect recreational boaters and special marine events such as regattas.

Pipeline Facilities

The proposed Project would cross within 50 feet of 179 residences and 46 other buildings at several locations along the pipeline route. The pipeline would follow existing utility and pipeline corridors through Edgemere and North Point and other urban neighborhoods of Baltimore, and through suburban communities in both Maryland and Pennsylvania. The pipeline route is congested in numerous locations, and construction activities would cause temporary disruption to some land owners and permanent disruption of landscaping and restricted surface use to some land owners. Pipeline construction could also affect wells and septic systems along the pipeline right-of-way. Therefore, we are recommending that prior to the end of the DEIS comment period, Mid-Atlantic Express file site-specific plans for residences within 25 feet of the pipeline construction workspace that include measures for mitigating impacts to septic systems. We are also recommending that Mid-Atlantic Express develop site-specific plans to ensure public access and safety would be maintained for other areas that would be disturbed during construction.

The viewsheds of points along the pipeline could be affected during construction and operation of the pipeline, particularly in the riparian zones of some of the more forested segments of the route, including Gunpowder Falls and Little Gunpowder Falls (Gunpowder Falls State Park), Deer Creek, the Susquehanna River and Conowingo Creek, Octoraro Creek, Doe and Buck Runs, and Brandywine Creek. However, we are recommending that prior to the end of the DEIS comment period, Mid-Atlantic Express prepare site-specific construction plans in consultation with the MDNR for construction near Deer Creek and for crossing Gunpowder Falls State Park to minimize conflict with park use, park user safety issues and to specify restoration and revegetation plans. We are also recommending that Mid-Atlantic Express develop in consultation with the PDCNR, the Octoraro Creek Watershed Association, and the Brandywine Conservancy, construction and mitigation plans for the Octoraro River and each of the four crossings of the Brandywine Creek system to address minimizing tree clearing within the riparian zones of the waterbodies, potential impacts to recreational and boating access during construction, and effects on the viewshed along these designated Pastoral rivers.

Pipeline construction would cross numerous residential developments, parks, trails, public use properties, and conservation easements. We are recommending that prior to the end of the DEIS comment period, Mid-Atlantic Express prepare site-specific plans for the following special land uses/properties: the Chester Water Authority, any planned residential or commercial properties, any state-designated Critical Areas or conservation easements, the Mason-Dixon Trail, the Brandywine Trail, Gunpowder Falls Golf Course, Dowlin Struble Forge Park, local parks and campgrounds, and properties owned by schools. We are also recommending that Mid-Atlantic Express develop plans for each crossing of the Gunpowder Crossing Scenic Byway to detail the types of vegetation to be removed and how to minimize expansion of the cleared crossing.

Coastal Zone Management Consistency Determination

Portions of the project including the LNG terminal, the LNG transit route, and the initial portion of the pipeline would be within designated coastal zone management areas in the states of Maryland and Virginia. AES filed the CFRA application with the MDE Wetlands and Waterways program on January 8, 2007. The Project application provided the basis for the environmental review associated with the various applications under CFRA. On several occasions since the initial filing, MDE has requested additional information supporting the application, and AES has filed this information. On July 9, 2007, MDE sent a letter to AES and provided a copy to the FERC, in which MDE denied CZMA consistency to the Project. On August 8, 2007, AES filed a notice of appeal of the consistency determination with the Secretary of Commerce. The Secretary of Commerce has received legal briefs from the agencies and the applicant. As of this DEIS, this administrative appeal is still being reviewed. We are recommending that prior to construction, AES and Mid-Atlantic Express receive concurrence from the MDE that the Project is consistent with the state's Coastal Zone Management Program. Additionally, the Coast Guard is responsible for ensuring compliance with the CZMA as it relates to establishment of the safety and security zones for LNG marine traffic affecting Maryland and Virginia waters.

5.1.9 Socioeconomics

Construction and operation of both the LNG Terminal and the pipeline would result in a nominal addition to the local population and have minimal impact on the availability of housing, local schools or social services. The localities where the Project would be built would benefit economically from the employment of local workers, the expenditure of payroll money, the purchase of local materials and supplies, and the addition of monies, both one-time and annual tax revenue.

Service studies on the I-695 ramps at Exit 43 near the LNG Terminal site concluded that additional traffic from commuting construction workers and material and supply deliveries to the LNG Terminal would not exceed the capacity of the roadways. However, we are recommending that prior to the end of the DEIS comment period, AES address impacts on traffic from removal of PDM and prepare a Construction Traffic Management Plan to address and minimize potential problems with worker access to other employment centers on Sparrows Point.

Pipeline construction activities along I-695 would be coordinated with MDOT and would be conducted in accordance with permit requirements. Because construction would move sequentially along the pipeline route, any transportation impacts would be temporary on any given roadway, and the transportation system would be minimally impacted by construction. However, we are recommending that Mid-Atlantic Express continue to consult with MDOT regarding construction along I-695, the SHA's review of its application for exceptions, and the development of any site-specific traffic plans wherever road closures would be required.

During operation of the project, two to three LNG ships per week would arrive at the LNG terminal site, for a total of approximately 150 ships per year. Impacts from the LNG vessels on commercial shipping interests are expected to be consistent with existing marine shipping traffic and associated impacts. A moving security zone is required around LNG ships. The Coast Guard would minimize the disruption to other waterway users by the control of the LNG vessel. Local fishing operations would be affected when required to move out of the security zone of the LNG vessels. Commercial fishermen are permitted to fish within hours regulated by

MDNR. Therefore, it may not be feasible to recover the amount of time lost due to a passing LNG ship. To address the concerns raised regarding impacts to shipping and fishing interests from LNG vessel transit, we are recommending that AES continue to consult with the Port of Baltimore and other major shipping and commercial and recreational fishing interests along the marine transit route and develop specific operational and communication guidelines for LNG vessels.

The socioeconomic impacts of an ignited or unignited marine LNG release could be significant, depending on location where the incident occurred, the scope of the incident, and the time of year the incident occurred. Ship traffic would be halted until the affected LNG vessel could be safely removed from the waterway. A substantial unignited LNG release and dispersion would be a short-lived event and may result in temporary closure of the port.

Local populations in Zones 1-3 could be affected depending on location of the incident relative to the population, the scope of the incident, and whether the LNG released ignited or evaporated. This could be a significant impact with injuries ranging from mild to fatal, being most severe in Zone 1 and decreasing outward through Zones 2 and 3. However, because of the implementation of safety and security measures during marine transit, the probability of a marine spill from an LNG vessel is extremely low and not considered a reasonably foreseeable event.

5.1.10 Cultural Resources

In consultation with the MHT and FERC, AES would develop an appropriate mitigation plan for potential adverse impacts on the historically significant architectural elements that have been identified in the LNG Terminal area. Visual inspection of the LNG Terminal indicated the area is extensively disturbed and construction of the LNG facility would have no impact on terrestrial archaeological sites. Completed underwater surveys show that the LNG Terminal and associated in water activities would have no impact on submerged maritime archaeological sites.

The proposed pipeline right-of-way would be located within two NRHP listed historic districts – Doe’s Run Village and Kirks Mills Historic District, both located in Pennsylvania. Mid-Atlantic Express would consult with the PA-SHPO and FERC to develop appropriate mitigation measures. The proposed pipeline route crosses the historic Maryland and Pennsylvania Railroad. An architectural survey would be required to assess the potential significance and NRHP eligibility of the railroad and identify any other historically significant properties which might be visually affected by the pipeline.

A total of 50.2 miles of the approximate 88-mile-long pipeline route have been surveyed for archaeological resources. The remaining miles in Maryland and Pennsylvania would be surveyed once property access issues are resolved. Surveys have also not been completed for pipe and ware yards. Forty-seven archaeological sites are known to be located within the project area of effect. Of these, twelve have been identified as potentially eligible for the NRHP. Additional evaluation would be required at 19 sites, and 16 sites are identified as insignificant (not eligible for inclusion on the NRHP). Mid-Atlantic Express proposes to redesign the pipeline to avoid potentially significant sites where feasible. Sites that may be eligible for inclusion on the NRHP would be avoided or subjected to Phase II investigations to assess their significance and NRHP eligibility. Impacts to significant archaeological sites and other historic properties would be mitigated by avoidance or, where avoidance would be infeasible, by the excavation, recovery, and recordation of scientifically and/or historically significant information.

For the LNG marine transit route, a review of site records identified 33 submerged cultural resources within the Zones of Concern including 30 shipwrecks, two 17th century barrel wells, and one inundated prehistoric site. No significant additional impacts to submerged cultural resources are expected as a result of normal LNG vessel traffic along the waterway transit route.

Sixty-five archaeological sites and thirteen NRHP-listed properties are located on land within the Zones of Concern. These properties would be protected by the same population and infrastructure risk mitigation measures that have been incorporated by the Coast Guard into the Waterway Suitability Report. No impact to

buried archaeological sites would be anticipated. No national historic landmarks or tribal land/fishing areas are located within the proposed transit route or Zones.

The completed survey reports have been provided to the SHPOs for their review. The comments of the SHPOs on NRHP eligibility and project effects are pending. We are recommending that, prior to construction, Mid-Atlantic Express complete all remaining cultural investigations, file these results with the MD-SHPO and the PA-SHPO, and file final reports as well as the comments of the SHPOs with the Secretary for review and written approval of the Director of OEP.

5.1.11 Air Quality and Noise

Air emissions resulting from construction of the proposed Project would be short term in most areas and would not significantly affect air quality in the region. AES would implement BACT for primary pollution control at the facility. Since the Sparrows Point terminal location is nonattainment for ozone and PM_{2.5}, along with several counties along the pipeline route, a General Conformity review of the project construction emissions is required and is being developed. We are recommending that AES and Mid-Atlantic Express provide, prior to the end of the DEIS comment period, additional information related to the preparation of the draft General Conformity Determination.

Along the LNG transit waterway, LNG vessel and escort vessel emissions affecting any one localized area would be temporary and transient, and occur at distances allowing for considerable dispersion before reaching any sensitive receptors. LNG ship and tug emissions, as mobile sources, are exempt from PSD/NNSR permitting. However, because several counties along the ship transit route are designated as nonattainment for ozone and PM_{2.5}, a General Conformity review is also required for ship emissions during both construction and operation of the terminal. We are recommending that AES provide updated construction emissions prior to the end of the DEIS comment period.

In order to provide a thorough evaluation of the potential impacts on air quality in the vicinity of the proposed project, AES conducted a quantitative assessment of project air emissions. The assessment included air dispersion modeling analyses to predict off-site (i.e., ambient) concentrations in the vicinity of the project for criteria air pollutants resulting from proposed emissions associated with the operation of the Project for comparison to federal and Maryland air quality standards. Predicted impacts were evaluated for operation of the terminal in conjunction with unloading emissions, the nonjurisdictional power plant, plus hoteling, tugs, and USCG security boats in a moored safety zone. When predicted impacts are added to monitored ambient background concentrations in the vicinity of the project, maximum impacts are below the applicable ambient air quality standards.

We are recommending that prior to construction, AES and Mid-Atlantic Express prepare and file a Fugitive Dust Control Plan for the review and written approval by the Director of OEP to further address construction impacts on air quality.

In the event of a marine LNG spill, any LNG released would vaporize. If the vapor cloud ignited, combustion emissions would be released into the atmosphere. The types and amounts of emissions from the ignition of an LNG pool from a substantial release would depend on the weather, other conditions at each specific location along the waterway, and the scope of the incident.

Noise impacts from operation of the LNG terminal would be below ambient noise standards. The closest NSA to the terminal is more than a mile away. A quantitative noise analysis conducted for the project demonstrated that noise levels resulting from the operation of the terminal and optional power plant would have negligible increases in ambient noise above existing levels. However, we are recommending that AES file noise surveys for the LNG terminal within 60 days of placing it in service to ensure increases in ambient noise are negligible.

We also assessed potential noise impacts at three HDD locations proposed by Mid-Atlantic Express. HDD activities would proceed on a 24-hour schedule, introducing noise during nighttime hours. Mid-Atlantic Express modeled the anticipated noise impacts from HDD operations at the nearest NSAs, for all three potential HDD sites, considering impacts both with and without sound barriers. The results of the analyses

indicate that by installing noise barriers, noise associated with HDD activities would remain below the FERC and State of Maryland L_{dn} guideline value of 55 dBA, with the exception of the Susquehanna River HDD entrance location. The noise associated with HDD activities would be temporary and would cease with the completion of HDD activities. However, we are recommending that prior to the end of the DEIS comment period, Mid-Atlantic Express provide a commitment to use sound dampening barriers at all HDD locations and provide an updated noise analysis for HDD activities with NSAs within one half mile of the entry or exit site.

5.1.12 Reliability and Safety

In order to analyze the safety, operability, and reliability of the proposed facilities, we performed a cryogenic design and technical review of the proposed terminal design and safety systems. Our evaluation of the front-end-engineering design of the proposed LNG storage facility included a review of the cryogenic safety; thermodynamics; heat transfer, instrumentation; cryogenic processes; and other relevant safety systems. As a result of this technical review, we identified a number of concerns and have made recommendations to address these issues. Compliance with these recommendations would need to be demonstrated by AES prior to initial site preparation, prior to construction after final design, prior to commissioning, or prior to commencement of service. Therefore, we believe that appropriate features and modifications to enhance the safety and operability of the proposed LNG facility would be incorporated into the facility design.

We also verified the exclusion zone modeling performed to ensure compliance with the federal siting standards. Although the exclusion zones for the 1,600 and 3,000 Btu/ft²-hr radiant heat flux levels from the storage tanks would extend beyond the property line of the terminal site, AES has entered into an option-to-lease agreement with the owner of the terminal site. This agreement would prohibit use of these areas in any manner that would conflict with the federal siting standards for LNG facilities. Therefore, we believe that the proposed facility would comply with the siting requirements of 49 CFR 193.

In accordance with 18 CFR 157.21 and Navigation and Vessel Inspection Circular 05-05, AES submitted a WSA to the Coast Guard on March 3, 2006, that proposed mitigation measures to address identified navigation safety and maritime security risks posed by LNG marine traffic. The Coast Guard reviewed AES's assessment and also conducted its own independent risk assessment regarding accidental and intentional release scenarios involving LNG marine traffic. Based on this review, and under the terms of our Interagency Agreement, the Coast Guard provided us with its own assessment as to the suitability of the waterway for LNG marine traffic.

The Coast Guard's WSR, issued February 25, 2008, identified specific risk mitigation measures which must be in place to responsibly manage the maritime safety and security risks of the proposed LNG facility. The report indicated that the port community does not currently have these resources and that the Chesapeake Bay is not currently suitable for the type and frequency of LNG marine traffic associated with the proposed LNG facility. However, the Coast Guard has preliminarily determined that the waterway can be made suitable for LNG marine traffic if these additional measures are put into place. As a result, we are recommending that AES ensure that the facility and any LNG vessel transiting to and from the facility comply with all requirements set forth by the Coast Guard Captain of the Port Sector Baltimore.

In accordance with Section 3A of the Energy Policy Act of 2005, we are recommending that AES develop an ERP which includes a Cost-Sharing Plan. The Cost-Sharing Plan must contain a description of any direct cost reimbursements AES agrees to provide to any state and local agencies with responsibility for security and safety at the LNG terminal and near vessels that serve the facility. This plan, which would have to be approved prior to initial site preparation at the facility site, would address concerns of local communities related to the costs related to security/emergency management of the proposed LNG facility and LNG marine traffic.

5.1.13 Cumulative Impacts

We identified 17 existing, approved, or proposed activities/projects that could potentially result in cumulative impacts when considered with the Sparrows Point Project.

Of the 17 activities/projects, 7 are pertinent to the construction and operation of the LNG terminal. These include the possible Sparrows Point Power Plant that AES may build within the Sparrows Point LNG Terminal, an ethanol plant, a distribution facility, a highway widening, and two wastewater treatment plant upgrades. Also among these 17 activities are 12 dredging projects could have potential cumulative effects on the water quality of the Patapsco River. The other 10 are pertinent to the Mid-Atlantic Express Pipeline and include a wastewater treatment plant upgrade; an industrial facility expansion, five highway/road projects, a military base realignment/closure, a natural gas pipeline expansion (Transco's Sentinel Expansion Project, FERC Docket Nos. PF06-32 and CP08-31, Environmental Assessment scheduled to be issued in April 2008), and a landfill biogas project. Construction of the various projects for which a schedule is known is expected to occur between 2008 and 2013.

Cumulatively the proposed Project would result in more frequent impacts on the water quality and aquatic habitat of the Patapsco River; however, we expect impacts would be minimal and localized. With AES's implementation of BMPs in its ECP, the Project's contribution to cumulative impacts to the waters crossed by both projects would be minor. Specific resources to which the Project would have a cumulative contribution are:

- The Project's cumulative contribution to impacts on non-forested wetlands would be minimal and temporary, as these wetlands would be allowed to return to their preconstruction state following construction.
- There would be minimal (though small in comparison to ongoing region-wide development) contribution to cumulative loss of forest within the permanent pipeline right-of-way, as forested sites within the operational footprint of the Project would be maintained in an herbaceous state during the operation of the proposed facilities. This would contribute incrementally to forest interior habitat degradation. Of the total 312.1 acres of forest loss during the construction phase of the project about 164.8 acres would be outside the permanent right-of-way and be allowed to revegetate as forest after construction.
- Enforcement of the Coast Guard security zone around Project LNG vessels would add to the frequency of restrictions on vessel movement in Chesapeake Bay (currently experienced only as far north as Cove Point).
- Where the pipeline follows an existing utility corridor through forested habitat, the corridor would be widened.
- There would be positive cumulative economic benefits from the Project such as contribution to the local tax base and a benefit on personal income of the local population.
- Construction of the Project and some of the reasonably foreseeable projects/activities would have a cumulative impact to noise and air quality.
- Operation of the proposed Project, primarily at the LNG terminal and along the waterway for LNG marine traffic, would add to cumulative impacts to noise and air quality for the life of the project. The cumulative impacts regarding air quality would be addressed in the General Conformity Analysis where mitigation measures to reduce these impacts would be evaluated.

5.1.14 Alternatives

As an alternative to the proposed action, we evaluated the no action and postponed action alternatives, and alternatives specific to the proposed LNG terminal and the proposed pipeline.

While the no action alternative would eliminate the short- and long-term environmental impacts identified in this DEIS, the objectives of the project would not be achieved, and thus AES and Mid-Atlantic Express would not be able to provide a new source of natural gas to markets via the proposed pipeline interconnects.

Postponed action would simply delay and environmental impacts as well as the benefits of a new natural gas source.

The Coast Guard's preferred alternative is the issuance of a positive LOR (i.e., the waterway is suitable) with a range of conditions and limitations as discussed in the WSA. In some cases, a reasonable alternative for the Coast Guard is the issuance of an LOR without conditions. On this project, this alternative is deemed not reasonable and was eliminated from further analysis because it would preclude the Coast Guard from exercising its responsibilities to adequately ensure the safety and security of the Sparrows Point area and navigable waterways. For the Sparrows Point Project to proceed as proposed, the Coast Guard must issue an LOR finding that the Patapsco River/Chesapeake Bay/territorial seas waterway is suitable for the LNG marine traffic that would be associated with the proposed Sparrows Point import terminal facility, with or without conditions. Alternatives to this action include the issuance of a negative LOR or postponement of the issuance of an LOR. According to the Coast Guard's Waterway Suitability Report they have found the waterway is not currently suitable, but can be made suitable for LNG vessel traffic. AES would need to develop a cost sharing and transit management plan along with the Coast Guard, state, and local entities to ensure the necessary resources are available to make the waterway suitable for increased LNG vessel traffic. The Coast Guard may issue an LOR with conditions finding the waterway suitable for LNG vessel traffic.

LNG terminal facility alternatives that we evaluated include existing LNG import terminal systems; other approved, proposed, or planned LNG projects; LNG terminal site alternatives in Chesapeake Bay; offshore terminal (deepwater port) alternatives; unloading platform design and location alternatives; and regasification alternatives. No existing, approved, or proposed LNG terminal system would be able to provide sufficient capacity to handle the proposed Project's LNG volumes and/or would not be able to maintain the needed sendout capacity. Potential environmental impacts of an offshore LNG terminal and associated pipeline would be similar to or greater than those from the construction of the proposed Project. To provide gas to the target markets, the only existing bay system with adequate water depths is the Chesapeake Bay. Of the various sites considered within the Bay, Sparrows Point would be the preferred location for the proposed Terminal, primarily due to the industrial setting of the site, its distance from residential areas, and its proximity to the targeted market. The alternative Mittal Steel site on the Sparrows Point peninsula was still not available as of December of 2007. The proposed location for the unloading platform, at the existing Pier 1, appears to be the better choice. The proposed vaporization process utilizing HTF heated by hot water would be preferred over the other gas-fired alternatives because SCR can be incorporated to reduce air emissions. Utilizing seawater for vaporization is not viable because of the impacts to aquatic organisms from impingement, entrainment, and water temperature reduction.

Our analysis addressed alternative dredging methods. To reduce turbidity and TSS as a result of dredging, and to reduce the release or entrainment of contaminated sediments into the water column during dredging, mechanical dredging is preferred over hydraulic dredging for the project. Mechanical dredging alternatives include an enclosed clamshell bucket or a navigational-type bucket (or functional equivalent), or an environmental bucket. With this DEIS we are requesting comments from agencies, the applicant and individuals on which dredging method is appropriate for use in the Patapsco River.

We also addressed dredged material disposal alternatives and have concluded that AES's proposed reuse of dredged material from the Patapsco River is superior to conventional open water disposal, existing contained placement facilities, or ocean disposal.

Pipeline alternatives that we evaluated include system alternatives, route alternatives, and route variations. Our evaluation of system alternatives included an evaluation of whether existing and proposed natural gas pipeline systems would meet the proposed Project objectives while offering an environmental advantage over the proposed Project. While two existing pipelines are in the general region of the proposed Mid-Atlantic Express Pipeline and could be reached by constructing an approximately 20-mile connector pipeline, neither currently has capacity to accommodate the proposed Project's gas volumes, and backhaul options would reduce the operational flexibility (including gas storage availability) that would be realized by the proposed interconnects at Eagle, Pennsylvania. Furthermore, looping existing systems would provide no environmental

advantage over paralleling existing systems, and delivering only locally to BGE (thus eliminating the need for most of the proposed pipeline) would fail to achieve the objective of the Project to provide a new source of gas into the Mid-Atlantic market.

We evaluated four major route alternatives and 13 route variations with the aim of resolving or reducing construction impacts and/or responding to landowner requests. We also evaluated two variations that would require exemptions from the MDOT, SHA for placement of pipeline facilities in CAROW, and have recommended one variation (Variation 1A) be incorporated into the pipeline route. In the event the SHA denies the exemption request, we will reconsider the other route variations at that time. As a result of this process, we have recommended the incorporation of two additional variations. Variation 2A would reduce impacts on residences and would better comply with the SHA Utility Policy. The other variation would reduce impacts on residences as requested by the St. Anne Community Association (Route Variation 6). Also, to minimize impacts to residential properties, we have recommended that Mid-Atlantic Express further evaluate three variations (9, 10, and 12A) to minimize impacts to residences in: Victoria Crossing at Bradford Glen; a subdivision near Downingtown, Pennsylvania; and Hunters Ridge. We also have recommended that Mid-Atlantic Express evaluate the feasibility of a construction method variation in Maryland (to minimize impacts to residences) and Pennsylvania (to reduce impacts to a commercial development).

5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission authorizes the Sparrows Point Project, we recommend that the following measures be included as specific conditions of the Order. We believe these measures would further mitigate the environmental impacts associated with the construction and operation of the proposed Project.

1. AES and Mid-Atlantic Express shall follow the construction procedures and mitigation measures described in the applications, supplemental filings (including responses to staff data requests), and as identified in this DEIS, unless modified by the Commission Order. AES and Mid-Atlantic Express must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the 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 OEP before using that modification.
2. For pipeline facilities, the Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Project. This authority shall allow:
 - a. the modification of conditions of the Commission 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 the Commission Order.

4. The authorized facility locations shall be as shown in this DEIS, as supplemented by filed alignment sheets. As soon as they are available, and before the start of construction, AES and Mid-Atlantic Express shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Commission Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Mid-Atlantic Express' exercise of eminent domain authority granted under the NGA section 7(h) in any condemnation proceedings related to the Commission Order must be consistent with these authorized facilities and locations. Mid-Atlantic Express right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas pipeline to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. AES and Mid-Atlantic Express shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, 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 maps/sheets/aerial photographs. Each area must be approved in writing by the Director of the OEP before construction in or near that area.

This requirement does not apply to extra workspace allowed by the AES's and Mid-Atlantic Express's project-specific plans and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

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

- a. implementation of cultural resources mitigation measures;
 - b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
6. **Prior to construction of the respective Project components**, AES and Mid-Atlantic Express shall each file with the Secretary initial Implementation Plans for the Terminal Expansion and the Mid-Atlantic Express Pipeline, for review and written approval by the Director of OEP describing how AES and Mid-Atlantic Express will implement the mitigation measures required by the Commission Order. AES and Mid-Atlantic Express must each file revisions to its respective plan as schedules change. Each plan must identify:
 - a. how these requirements will be incorporated into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - b. the number of Environmental Inspectors (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. the training and instructions AES and Mid-Atlantic Express 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 the specific portion of AES's and Mid-Atlantic Express's organizations having responsibility for compliance;
 - f. the procedures (including use of contract penalties) AES and Mid-Atlantic Express will follow if noncompliance occurs; and
 - g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the mitigation training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.
7. Mid-Atlantic Express shall develop and implement an environmental complaint resolution procedure for at least 3 years following the completion of construction. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Mid-Atlantic Express Pipeline and restoration of the right-of-way.
- a. in its letter to affected landowners, Mid-Atlantic Express shall:
 - (1) provide a local contact that the landowners should call first with their concerns; the letter shall indicate how soon a landowner should expect a response;
 - (2) instruct the landowners that if they are not satisfied with the response, they should call Mid-Atlantic Express' Hotline; the letter shall indicate how soon to expect a response; and
 - (3) instruct the landowners that if they are still not satisfied with the response from Mid-Atlantic Express's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030 or at hotline@ferc.gov.
 - b. in addition, Mid-Atlantic Express shall include in its weekly status reports a copy of a table that contains the following information for each problem/concern:
 - (1) the identity of the caller and the date of the call;
 - (2) the identification number from the certificated alignment sheet(s) of the affected property and the location by milepost;
 - (3) the description of the problem/concern; and
 - (4) an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.
8. AES shall employ at least one EI, while Mid-Atlantic Express shall employ a team of EIs per construction spread. The EIs shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Commission Order and other grants, permits, certificates, or other authorizing documents;

- b. responsible for evaluating the construction contractors' implementation of the environmental mitigation measures required in the respective contracts (see condition 6 above) and any other authorizing document;
 - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
 - d. a full-time position, separate from all other activity inspectors;
 - e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
 - f. responsible for maintaining status reports.
9. **Prior to any construction**, AES and Mid-Atlantic Express shall file with the Secretary affirmative statements, certified by a senior company official, that all company personnel, 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.
10. Mid-Atlantic Express shall file with the Secretary updated status reports prepared by the head EI on a weekly basis **until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. the current construction status of the Terminal facilities (AES) and each pipeline spread (Mid-Atlantic Express), 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 EIs 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. a description of corrective actions implemented in response to all instances of noncompliance, and their cost;
 - d. the effectiveness of all corrective actions implemented;
 - e. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Commission Order, and the measures taken to satisfy their concerns; and
 - f. copies of any correspondence received by AES or Mid-Atlantic Express from other federal, state, or local permitting agencies concerning instances of noncompliance, and the respective response.

AES shall file with the Secretary updated status reports prepared by the head EI on a monthly basis **until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include items a through f as listed above.

11. Mid-Atlantic Express must receive written authorization from the Director of OEP **before commencing service of the Mid-Atlantic Express Pipeline portion of the Project**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas of project-related disturbance are proceeding satisfactorily.
12. AES must receive written authorization from the Director of OEP **before commencing service of the Terminal portion of the Project**. Such authorization will only be granted following a determination that the facilities have been constructed in accordance with FERC approval and

applicable standards, can be expected to operate safely as designed, and the rehabilitation and restoration of areas affected by the project are proceeding satisfactorily.

13. **Within 30 days of placing the facilities in service**, both AES and Mid-Atlantic Express shall file with the Secretary an affirmative statement, 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 conditions in the Order AES and Mid-Atlantic Express has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for the noncompliance.
14. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary additional geotechnical information to support the feasibility of performing HDD crossings at the Susquehanna River, Little Gunpowder Falls and wetland, and Back River. (section 2.3.2.2)
15. **Prior to construction**, Mid-Atlantic Express shall revise note No. 4 on Figure 22 of the ECP (in the BMPs, Appendix 2B-1 of the Application) to indicate that the applicant will need to have prior, written, site-specific authorization from the COE to use this stream bank stabilization method. (section 2.3.2.2)
16. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall incorporate as part of its proposed route, route variation 1A. Mid-Atlantic Express shall file with the Secretary updated alignment sheets and updated land use and resource tables. (section 3.3.3)
17. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall incorporate as part of its proposed route, route variation 2A, as depicted in figure 3.3.3-1. Mid-Atlantic Express shall file with the Secretary updated alignment sheets and updated land use and resource tables. (section 3.3.3)
18. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall incorporate into its proposed route, Route Variation 6, as depicted in figure 3.3.3-5. Mid-Atlantic Express shall file with the Secretary updated alignment sheets; updated land use and resource tables; and the names and addresses of the newly affected landowners. (section 3.3.3)
19. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary a site-specific plan for crossing the property at MP 39.4 that includes a bore of the driveway extending past the structure adjacent to the existing pipeline right-of-way. (section 3.3.3)
20. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall provide further environmental and engineering information on Variation 9, including alignment sheets, updated land use and resource tables; and the names and addresses of the newly affected landowners. (section 3.3.3)
21. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary further environmental and engineering information on Variation 10, including alignment sheets, updated land use and resource tables; and the names and addresses of the newly affected landowners. In addition, Mid-Atlantic Express shall also file a site-specific plan for the construction of Variation 10 which would include measures for reducing tree cutting and the replanting of temporary work areas. (section 3.3.3)
22. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall consult with Byers to discuss site-specific measures or minor realignments that could be implemented to minimize disruption to the planned development at MP 85.9. Mid-Atlantic Express shall file any revised plans with the Secretary. (section 3.3.3)

23. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary further environmental and engineering information on Variation 12a, including alignment sheets, updated land use and resource tables; and the names and addresses of the newly affected landowners. In addition, Mid-Atlantic Express shall also file a site-specific plan for the construction of Variation 12a which would include measures for reducing tree cutting and the replanting of temporary work areas. (section 3.3.3)

Recommendation numbers 24 through 35 shall apply to the project design and construction details. Information pertaining to these specific recommendations shall be filed with the Secretary for review and written approval by the Director of OEP either: prior to the end of the DEIS comment period; prior to initial site preparation; prior to final design; prior to construction [of the subject facility component(s)]; or prior to commissioning as indicated by each specific condition. All detailed design documents (drawings, calculations, specifications, etc.) and design submittals shall satisfy the requirements of Section 4, Part II of the FERC’s draft “Seismic Design Guidelines and Data Submittal Requirements for LNG Facilities”, January 2007 (draft Seismic Design Guidelines). This information shall be filed a minimum of 30 days before approval to proceed is requested.

24. AES shall perform at least one additional boring and two additional CPTs to a depth of at least 75 feet at the location of each tank and provide the resulting new geotechnical test data **prior to the end of the DEIS comment period**. The CPTs shall not be predrilled. The purpose of these additional tests is to provide definitive data on the liquefaction potential present at the site. (section 4.1.1.1)
25. AES shall perform shear wave velocity measurements at the site to a depth of at least 200 feet determined by actual geophysical tests and provide the resulting shear wave velocity measurement data **prior to the end of the DEIS comment period**. (section 4.1.1.1)
26. Using the additional boring, CPT, and shear wave velocity data and the peak ground acceleration for the SSE of 0.15 g, AES shall provide revised liquefaction calculations using the procedures outlined in Youd and Idriss (2001) **prior to the end of the DEIS comment period**. (section 4.1.1.1)
27. If it is determined in response to Recommendation 26 that the soils will liquefy, AES shall provide the following **prior to the end of the DEIS comment period**:
 - a. calculations and estimates of liquefaction associated settlements and pile down drag loads;
 - b. details of the liquefaction mitigation method(s) procedures, plan extent, and verification methods proposed to verify mitigation of liquefaction potential; and
 - c. detailed calculations of seismic slope stability and lateral movements anticipated after the liquefaction mitigation is implemented to verify the stability of critical structures for the project design earthquake motions. (section 4.1.1.1)
28. AES’s LNG tank and foundation final design shall comply with Part I of the draft Seismic Guidelines. Submittals that demonstrate compliance shall be provided **prior to initial site preparation** after the final pile design has been selected. Details of the types of piles finally selected for supporting the LNG tanks and results of indicator pile program, including load tests, shall be submitted for review and approval **prior to construction/pile installation**. (section 4.1.1.1)
29. The Quality Control and Assurance procedures, as described in section 3.11 of Part II of the draft Seismic Design Guidelines, that AES will use for design and construction shall be submitted for review **prior to the end of the DEIS comment period**. (section 4.1.1.1)
30. AES’s Final Seismic Design Criteria shall be provided for all Seismic Design Category I, II, and III structures, systems, and components as described in section 3.7 of Part II of the draft Seismic

Design Guidelines **prior to the end of the DEIS comment period.** The Seismic Design Criteria shall satisfy Part I of the draft Seismic Design Guidelines. (section 4.1.1.1)

31. **Prior to final design,** AES shall submit seismic specifications to be used in conjunction with the procuring equipment as described in section 3.10 of Part II of the draft Seismic Design Guidelines. (section 4.1.1.1)
32. **Prior to construction,** AES shall submit all other items identified in the filed geotechnical/seismic reports that were proposed to be addressed during the detailed design. (section 4.1.1.1)
33. **Prior to construction,** AES shall submit final foundation design recommendations including pile foundation design and/or liquefaction mitigation (if it is determined that soils will liquefy) measures for all other structures. (section 4.1.1.1)
34. AES shall provide a seismic instrumentation plan as described in section 3.12 of Part II of the FERC's draft Seismic Design Guidelines **prior to construction.** (section 4.1.1.1)
35. AES shall provide the results of the hydrostatic load tests on the LNG storage tanks, including settlement data as described in section 7.4.1 of the FERC's draft Seismic Design Guidelines **prior to commissioning.** (section 4.1.1.1)
36. **Prior to initiating any blasting activities,** Mid-Atlantic Express shall file a site-specific Project Blasting Plan with the Secretary for the review and written approval of the Director of OEP. (section 4.1.1.2)
37. **Prior to construction,** AES shall file an amended "Potentially-Contaminated Soils Management Plan" with the Secretary. This amended plan shall be developed in consultation with the appropriate agencies and shall include:
 - a. ranges of detected concentrations of SVOCs, PCBs, and metals;
 - b. use of an 11.7eV probe photo-ionization detector;
 - c. use of field test kits to detect low concentrations of SVOCs, PCBs, and metals in soils; and
 - d. a commitment that all soils from areas with documented exceedances shall be handled as contaminated. (section 4.2.1)
38. **Prior to crossing the Back River,** Mid-Atlantic Express shall file with the Secretary, for review and written approval by the Director of OEP, a report containing:
 - a. the results of sediment quality testing at the location of the Back River crossing for SVOCs, PCBs, and metals (i.e., known contaminants from the 68th Street Dump);
 - b. an assessment of the risk to crossing this waterbody with either HDD or open-cut crossing methods; and
 - c. a site-specific crossing plan for this location that minimizes disturbances of the above-mentioned contaminants for both types of crossing methods.

If historical data are available from this stretch of the river, and are less than 5-years old, these data may be interpreted and the risks assessed from historical data. (section 4.2.3)
39. **Prior to construction,** Mid-Atlantic Express shall file the results of its evaluations of the pipeline alignment relative to water wells within or within 10 feet of the construction right-of-way. Any alignment changes resulting from its evaluation shall be reflected on revised alignment sheets to be filed with the Secretary for review and written approval by the Director of OEP. (section 4.3.1.1)
40. **Prior to construction,** AES shall file the final version of its Spill Prevention, Control, and Countermeasures Plan for the LNG terminal with the Secretary for review and written approval by the Director of OEP. (section 4.3.1.1)

41. **Prior to construction**, Mid-Atlantic Express shall file the final version of its Spill Prevention, Control, and Countermeasures Plan for pipeline construction with the Secretary for review and written approval by the Director of OEP. (section 4.3.1.1)
42. **Prior to construction**, Mid-Atlantic Express shall file its final version of the HDD Monitoring and Contingency Plan with the Secretary for review and written approval by the Director of OEP. This Plan shall address specific procedures to be followed in the event of a failure of the HDD method at any of the waterbody crossings where HDD is proposed. (section 4.3.2.3)
43. **Prior to the end of the DEIS comment period**, AES shall file with the Secretary a comprehensive Dredged Material Placement Plan. This plan shall address:
 - a. where the PDM is going;
 - b. the capacity of the temporary placement areas onsite;
 - c. the daily takeaway capacity for the PDM;
 - d. how many daily truck trips would be necessary to haul the PDM, the impacts of those trucks on the traffic in the area, and the probable routes the trucks would take; and
 - e. a contingency plan for the PDM after it is processed should there be no buyers. (section 4.3.2.5)
44. **Prior to the end of the DEIS comment period**, AES and Mid-Atlantic Express shall file with the Secretary the results of their consultation with the MDNR and NMFS regarding LNG tank and pipeline hydrostatic test water withdrawals and discharges, including the least damaging time of year to conduct these activities. (section 4.3.2.8)
45. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary a report addressing any updates on wetland delineations for all proposed facilities including construction workspaces, pipe yards/staging areas, and temporary access roads. (section 4.4.2.1)
46. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary the results of its consultation with the MDE regarding Nontidal Wetlands of Special State Concern at MPs 22.23 and 46.45. (section 4.4.2.1)
47. **Prior to the end of the DEIS comment period**, AES and Mid-Atlantic Express shall file with the Secretary a draft ARMP developed in consultation with the COE, NMFS, FWS, EPA, MDE, and PDEP. The ARMP shall describe impacts on wetlands, waterbodies, EFH, and other aquatic resources; evaluate potential dredged material placement area sites; and describe specific restoration, mitigation, and monitoring measures. (section 4.4.4)
48. **Prior to construction**, Mid-Atlantic Express shall consult with the MDNR and/or appropriate local authority(-ies) to determine the need for a Forest Stand Delineation (FSD) and Forest Conservation Plan (FCP) and file with the Secretary the consultation results. (section 4.5.2)
49. **Prior to construction**, Mid-Atlantic Express shall file with the Secretary its finalized Exotic and Invasive Species Control Plan developed in consultation with the COE and other federal and state agencies for the review and written approval by the Director of OEP. (section 4.5.3)
50. **Prior to the start of construction of the LNG terminal**, AES shall file with the Secretary, for review and written approval by the Director of OEP, a final facility bird strike/impact minimization plan and operational procedures established to minimize impacts on birds. This plan shall include, at a minimum, the following:
 - a. that AES downshield all lighting sources in the terminal site, including lighting used during construction activities;
 - b. that AES install perch guards on the flares to discourage or eliminate perching;

- c. that AES paint the LNG storage tanks and the entirety of any structures 150 feet tall or taller above ground level with non-reflective paint; and
 - d. that on any structures 200 feet tall or taller above ground level, AES use the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA, using only white (preferable) or red strobe lights at night, unless otherwise required by the FAA, and employ the minimum number and minimum intensity of flashes per minute (longest duration between flashes) permitted by the FAA. (section 4.6.1.2)
51. **Prior to construction**, Mid-Atlantic Express shall consult with the appropriate FIDS habitat management entities in Maryland and file with the Secretary the results of the consultation, including any agency-required FIDS habitat mitigation plans. (section 4.6.1.3)
52. **Prior to the end of the DEIS comment period**, AES shall consult with the NMFS, MDNR, and the ASMFC on the potential for depressed dissolved oxygen in the Patapsco River due to its dredging and maintenance of the ship channel, and file the results of the consultation and any agency-approved mitigation plan(s) with the Secretary. (section 4.6.2.2)
53. **Prior to construction**, AES shall file a construction plan for the unloading dock developed in consultation with the NMFS. The plan shall include NMFS comments on the use of existing pilings and any recommended mitigation measures, including pressure and sound wave mitigation. (section 4.6.2.2)
54. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall consult with the FWS and the NMFS regarding seasonal construction restrictions to protect spawning fishes in sensitive waterbodies, including the Back River, Little Gunpowder Falls, Susquehanna River, Deer Creek, White Marsh Run, Octoraro Creek, Buck Run, East Branch Brandywine Creek, and West Branch Brandywine Creek. Mid-Atlantic Express shall file with the Secretary the results of these consultations and a seasonal waterbody crossing schedule developed in consultation with these agencies. (section 4.6.2.2)
55. AES and Mid-Atlantic Express **shall not begin construction** of facilities for the proposed Project until:
- a. the staff completes any necessary consultations with the FWS and NMFS; and
 - b. AES and Mid-Atlantic Express have received written notification from the Director of OEP that construction and/or use of mitigation (including implementation of conservation measures) may begin. (section 4.7)
56. AES shall incorporate the NMFS's 2006 "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" into its LNG Fuel Supply Agreement, and include a 30-mile arc around the entrance to the Chesapeake Bay into its implementation of NMFS's 2006 "Endangered Fish and Wildlife, Proposed Rule to Implement Speed Restrictions to Reduce the Threat of Ship Collisions with North Atlantic Right Whales." (section 4.7.1.1)
57. **Prior to the end of the DEIS comment period**, AES shall:
- a. consult with the NMFS to determine appropriate seasonal construction windows for sea turtles and file the results of that consultation with the Secretary;
 - b. indicate that AES will incorporate the NMFS's 2006 "Sea Turtle and Smalltooth Sawfish Construction Conditions" into its LNG Fuel Supply Agreement;
 - c. submit to the NMFS construction and engineering specifications on its proposed dredging; and
 - d. file the training and monitoring program developed in consultation with the NMFS for threatened and endangered species with the Secretary. (section 4.7.1.1)
58. **Prior to construction**, Mid-Atlantic Express shall:

- a. conduct a nest occupancy survey at the bald eagle nest near milepost 44.8 to confirm the presence or absence of nests and file the results of that survey with the Secretary, MDNR, and the FWS;
 - b. incorporate the FWS's May 2007 "National Bald Eagle Management Guidelines" into Mid-Atlantic Express's construction activity;
 - c. contact the FWS to determine the appropriate size and shape of buffers, timing of project related activities, and distance of activities from the bald eagle's nest; and
 - d. file documentation of any mitigation plans developed in consultation with the FWS. (section 4.7.1.2)
59. For the federally-listed bog turtle, Mid-Atlantic Express shall:
- a. **prior to the end of the DEIS comment period**, develop a bog turtle management plan in consultation with the FWS and submit a copy of this plan to the Secretary;
 - b. **during the 2008 bog turtle survey season (April 15 - June 15)**, attempt to complete its bog turtle surveys at all previously unsurveyed sites with potential bog turtle habitat if survey permission is acquired;
 - c. **prior to construction**, for sites where the bog turtle may occur, submit a site plan, description of proposed work, indirect and direct wetland acreage that would be impacted, habitat descriptions, on-site color photographs of the project area, and a wetland delineation report to the PFBC; and
 - d. **prior to construction**, file with the Secretary the results of its Phase I and Phase II bog turtle surveys, and further consultations with the FWS, the PFBC, and the MDNR, including any agency-recommended mitigation plans. (section 4.7.1.5)
60. **Prior to construction**, Mid-Atlantic Express shall complete its surveys for the dot-lined white moth and tolype moth between approximately MPs 48.5 and 49.0 and the black dash and mulberry wing butterflies at approximately MPs 84.39 and 84.85. Mid-Atlantic Express shall continue to consult with the PDCNR regarding mitigation that may be appropriate to avoid or minimize impacts on these moths and butterflies and file the results of its surveys and consultation, including a description of final agreed upon mitigation measures, with the Secretary. (section 4.7.3.5)
61. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary the results of its state-endangered and threatened plant species surveys and consultations with the MDNR and PNDI, and mitigation plans developed in consultation with the MDNR and the PNDI regarding these species. These survey results, consultation documentation, and mitigation plans shall also address the eastern serpentine barrens crossed by the proposed pipeline route along the Maryland/Pennsylvania border. For any surveys not yet completed, Mid-Atlantic Express shall provide a schedule for completing these surveys. (section 4.7.3.5)
62. **Prior to the end of the DEIS comment period**, for all residences located within 50 feet of the construction work area, Mid-Atlantic Express shall commit to:
- a. not remove mature trees and landscaping within the edge of the construction work area, unless necessary for safe operation of construction equipment;
 - b. immediately after backfilling the trench, restore all lawn areas and landscaping within the construction work area consistent with the requirements of the Plan;
 - c. fence the edge of the construction work area adjacent to the residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area;

- d. try to maintain a minimum distance of 25 feet between the residence and the edge of the construction work area; and furthermore,
 - e. for any residence closer than 25 feet to the construction work area file a site-specific plan with the Secretary **prior to the end of the DEIS comment period** that includes:
 - (1) a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustment, use of stove-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a dimensioned site plan that shows:
 - i. the location of the residence in relation to the new pipeline and, where appropriate, the existing pipelines;
 - ii. the edge of the construction work area;
 - iii. the edge of the new permanent right-of-way; and
 - iv. other nearby residences, structures, roads, or waterbodies.
 - (2) a description of how Mid-Atlantic Express will ensure the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation; and
 - (3) evidence of landowner concurrence if the construction work area and fencing will be located within 10 feet of a residence. (section 4.8.2.3)
63. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary a Septic System Contingency Plan which would detail steps it would take to avoid disturbance to septic systems; mitigate for damage to septic systems; and restore/replace the septic system. Any temporary repair/mitigation shall take into account **all** waste water that would normally be handled by the septic system. (section 4.8.2.3)
64. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall work with the Chester Water Authority to develop and implement a site-specific plan for crossing the Chester Water Authority mains and file this plan with the Secretary. (section 4.8.2.3)
65. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall identify the existing facilities listed in Appendix F where construction would impact public or employee use areas (parking, driveways, walkways, etc.). For each of these locations, Mid-Atlantic Express shall provide a site-specific plan, developed in consultation with property owners, identifying the area that would be disturbed during construction and how public access and safety would be maintained. (section 4.8.2.3)
66. In the event that new residences are built prior to Project construction, Mid-Atlantic Express shall update Appendix F of this EIS for the residences located within 50 feet of the construction work areas (i.e., construction right-of-way and extra temporary work space) and file this information in its initial Implementation Plan with the Secretary **before construction**. For all residences that would be 25 feet or closer to the construction work area, Mid-Atlantic Express shall file a site-specific plan with the Secretary for review and written approval of the Director of OEP **prior to construction**. (section 4.8.2.3)
67. **Prior to construction**, AES and Mid-Atlantic Express shall file with the Secretary documentation that the Project is consistent with the Coastal Zone Management Act. (section 4.8.3.1)
68. **Prior to the end of the DEIS comment period**, AES and Mid-Atlantic Express shall consult with appropriate state/local agencies regarding Maryland-designated Critical Areas and any mitigation plans to be implemented during the construction and operation of the Project. AES and Mid-

Atlantic Express shall file copies of correspondence and any resulting mitigation plans with the Secretary. (section 4.8.3.2)

69. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file its final plans for crossing Gunpowder Falls State Park. This plan shall be developed through continuing consultation with MDNR and include minimization of tree clearing, avoidance and/or minimization of conflict with park use, park user safety issues, and specific restoration and revegetation plans. The plan shall provide for continuous use of park trails, including detours where necessary. The final plan for crossing the park, along with MDNR correspondence, shall be filed with the Secretary. (section 4.8.5.1)
70. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file its draft plan for crossing Dowlin Struble Forge Park. This plan shall be developed through continuing consultation with Uwchlan Township and the administrator of the park, and include minimization of tree clearing, avoidance and/or minimization of conflict with park use, park user safety issues, and specific restoration and revegetation plans. The plan shall provide for continuous use of park trails, including detours where necessary. The final plan for crossing the park, along with Uwchlan Township and park administration correspondence, shall be filed with the Secretary for review and written approval by the Director of OEP. (section 4.8.5.1)
71. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall file with the Secretary an evaluation of the feasibility of fabricating the Susquehanna River HDD pull string as a single string. The evaluation shall specifically address the use of a maximum 50-foot-wide ATWS for the pull string and maximizing the use of the nominal 75-foot-wide construction right-of-way to avoid additional forest clearing. Should use of a single pull string not be feasible, Mid-Atlantic Express shall restrict the pull string ATWS width to 50 feet and use the 75-foot-wide construction right-of-way for the second pull string. (section 4.8.5.1)
72. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall submit construction schedules and plans, developed with the input of the Girl Scouts of Central Maryland and the Girl Scouts Council of Eastern Pennsylvania, for crossing and minimizing impacts to activities and facilities at Camp Conowingo and Camp Tweedale. The plans shall address, at a minimum, a discussion of any facilities, roads, utilities and/or waterbody areas that would be disturbed; a discussion of the construction methods, revegetation plans, and proposed mitigation efforts; and a discussion of how the areas would be safely kept open for camp users. (section 4.8.5.1)
73. **Prior to construction**, Mid-Atlantic Express shall develop and file with the Secretary a plan to allow safe passage for users along the Mason-Dixon Trail during the HDD operation. (section 4.8.5.1)
74. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall develop and file with the Secretary, a site-specific plan for the crossing of the Brandywine Trail. This plan shall include: a scaled plot plan showing the areas of ground disturbance and locations of tree clearing; locations of temporary fencing; means for keeping the trail open during the construction period; trail restoration; and a revegetation plan that includes active replanting. This plan shall be developed in consultation with the Wilmington Trail Club to minimize construction conflict with the Brandywine Trail End-to-End hike. (section 4.8.5.1)
75. **Prior to construction**, Mid-Atlantic Express shall develop and file with the Secretary, a site-specific plan for crossing the Gunpowder Falls Golf Course. (section 4.8.5.1)
76. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall prepare site-specific plans developed in consultation with the school or daycare administrator for each school or daycare center listed in table 4.8.5-1 as “crossed.” The plans shall include provisions to: address construction noise mitigation, prohibit leaving trenches open over night on any school or daycare property, and indicate that the timing of construction near the school or daycare center would be

scheduled in consultation with the facility administrator to minimize disruption to school or daycare activities. The plans, along with any comments from each facility administrator, shall be filed with the Secretary. (section 4.8.5.1)

77. **Prior to construction**, Mid-Atlantic Express shall develop, in consultation with the Deer Creek Advisory Board, the NMFS and the MDNR, a construction and mitigation plan for Deer Creek to address minimizing tree clearing, potential fisheries impacts and effects on the scenic river status. Mid-Atlantic Express shall file the plan with the Secretary for review and written approval by the Director of OEP. (section 4.8.5.1)
78. **Prior to construction**, Mid-Atlantic Express shall develop, in consultation with the PDCNR, the Octoraro Creek Watershed Association, and the Brandywine Conservancy, construction and mitigation plans for the Octoraro River (MP 56.3) and each of the four crossings of the Brandywine Creek system (i.e., MPs 72.14, 74.25, 76.54, and 82.31) and file the plan with the Secretary for review and written approval by the Director of OEP. These plans shall address: minimizing tree clearing within the riparian zones of the waterbodies, potential measures to reduce impacts to recreational and boating access during construction, and effects on the viewshed along these Pastoral Rivers. (section 4.8.5.1)
79. **Prior to construction**, Mid-Atlantic Express shall develop and file with the Secretary for review and written approval by the Director of OEP site-specific plans for each crossing of the Gunpowder Crossing Scenic Byway that include details regarding the types of vegetation to be removed and plans to minimize any necessary expansion of the width of the crossing area to be cleared and maintained. (section 4.8.6.2)
80. **Prior to the end of the DEIS comment period**, AES, in consultation with Mittal Steel and other major employers at Sparrows Point, shall prepare and file with the Secretary a Construction Traffic Management Plan that addresses and minimizes potential problems with worker access to other employment centers of the Sparrows Point industrial complex. The Plan shall address total vehicular traffic at the construction site, volume of traffic from other employers and schedule of shift changes, and describe potential restrictions of construction traffic during shift changes, as necessary. (section 4.9.4.1)
81. **Prior to construction**, Mid-Atlantic Express shall work with the appropriate authorities to develop site-specific traffic and safety plans wherever road closures or restrictions may be required. These plans and documentation of consultation with appropriate authorities shall be filed with the Secretary. (section 4.9.4.1)
82. **Prior to initiating construction along I-695**, Mid-Atlantic Express shall continue to consult with MDOT SHA and file with the Secretary an MDOT-approved construction work plan for pipeline construction adjacent to I-695. Mid-Atlantic Express shall file with the Secretary any additional correspondence with SHA and the results of SHA's review of the Mid-Atlantic Express application for exceptions. (section 4.9.4.1)
83. **Prior to construction**, AES shall continue its discussions with the Port of Baltimore and other major shipping and commercial and recreational fishing interests along the marine transit route and develop specific operational and communication guidelines for LNG vessels. These guidelines shall address any concerns raised regarding impacts to shipping and fishing interests including the effects on marine traffic and congestion along the transit route and within the Port of Baltimore. These guidelines shall take into account the recommendations provided in the Waterway Suitability Assessment and Report and be filed with the Secretary. (section 4.9.4.2)
84. Mid-Atlantic Express shall defer construction of the pipeline facilities **until**:

- a. Mid-Atlantic Express files with the Secretary the results of the historic architecture field investigations along the proposed pipeline route and the comments of the appropriate SHPO for review and written approval by the Director of OEP, **prior to construction**;
- b. Mid-Atlantic Express completes the outstanding cultural resources surveys of the pipeline corridor and ancillary use areas;
- c. Mid-Atlantic Express files with the Secretary all additional required cultural resources survey reports and any treatment plans, and the Maryland SHPO's and Pennsylvania SHPO's comments on all reports and plans including comments regarding the pipeline crossing of the Doe's Run and Kirks Mills Historic Districts to identify any appropriate mitigative measures that would protect the Districts from pipeline installation and operation; and
- d. the Director of OEP reviews and approves all cultural resources reports and plans, and notifies Mid-Atlantic Express 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." (section 4.10.4)

- 85. **Prior to the end of the DEIS comment period**, AES and Mid-Atlantic Express shall provide updated construction emissions for each year and each non-attainment or maintenance area based on the currently proposed project schedule. Updated emissions shall include fugitive dust from mobile construction equipment. (section 4.11.1.4)
- 86. **Prior to construction**, AES and Mid-Atlantic Express shall prepare and file a Fugitive Dust Control Plan with the Secretary for review and written approval of the Director of OEP that specifies when/how the following measures would be applied:
 - a. require contractors to meet all air quality requirements and employ equipment that meets relevant emission standards;
 - b. apply water or dust suppressants to disturbed areas;
 - c. cover open hauling trucks as needed;
 - d. use paved roads when practical;
 - e. limit vehicle speeds; and
 - f. stabilize disturbed areas upon completion of construction. (section 4.11.1.4)
- 87. **Prior to the end of the DEIS comment period**, AES and Mid-Atlantic Express shall provide information related to the preparation of the draft General Conformity Determination including:
 - a. an updated full air quality analysis identifying all mitigation requirements needed to demonstrate conformance with the applicable SIP including actual mitigation, above what is required under regulations, for either the project or through other certifiable projects (i.e. retrofitting tug boats with new clean-burning engines);
 - b. submit detailed information documenting how the project would demonstrate conformity in accordance with 40 CFR 51.858. The documentation shall address each regulatory criteria listed in 40 CFR 51.858; provide a detailed explanation as to whether or not the project would meet each requirement; and for each criteria being satisfied, provide all supporting information on how the project would comply. Should any element of the project change substantially, AES and Mid-Atlantic Express shall revise and refile the aforementioned information;

- c. file a commitment letter from the MDE, the PDEP and the VDEQ to the EPA addressing the requirements contained in 40 CFR 51.858(a)(5)(i)(B) and 40 CFR 93.158(a)(5)(i)(B); and/or
- d. provided documentation from the MDE, the VDEQ, and the PDEP demonstrating that the total of the direct and indirect emissions from the portion of the proposed action to which the general conformity review applies, together with all other emissions in the nonattainment area, would not exceed the emissions budgets specified in the approved SIP. (section 4.11.1.5)

88. **Prior to the end of the DEIS comment period**, Mid-Atlantic Express shall:

- a. provide a commitment to use sound dampening barriers at all HDD locations providing equal to or better noise mitigation than those assumed in the noise analysis shown in table 4.11.2-5 of this DEIS; or
- b. provide an updated noise analysis for HDD activities with NSAs within one half mile of the entry or exit site, including the projected noise levels of HDD activities with the specified mitigation measures Mid-Atlantic Express would implement prior to the start of HDD activity. (section 4.11.2.3)

89. AES shall make all reasonable efforts to ensure its predicted noise levels from the LNG terminal and optional power plant are not exceeded at the nearest NSAs and file noise surveys with the Secretary **no later than 60 days after placing the LNG terminal in service**. However, if the noise attributable to the operation of the LNG terminal and optional power plant exceeds 55 dBA Ldn at any NSA, AES 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. AES 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. (section 4.11.2.3)

90. **Prior to the end of the DEIS comment period**, AES shall provide design modifications or procedures which ensure that hazardous conditions would not be created by the simultaneous mooring of two LNG vessels at the unloading berth. (section 4.12.2)

91. **Until commencement of service**, AES shall **annually** review its WSA relating to LNG marine traffic for the project; update the assessment to reflect changing conditions which may impact the suitability of the waterway for LNG marine traffic; provide the updated assessment to the cognizant Captain of the Port/Federal Maritime Security Coordinator for review and validation and if appropriate, further action by the Captain of the Port/Federal Maritime Security Coordinator relating to LNG marine traffic; and provide a copy to FERC staff. (section 4.12.5.5)

The following measures (92 through 146) shall apply to the AES Sparrows Point LNG terminal. Information pertaining to these specific recommendations shall be filed with the Secretary for review and written approval by the Director of OEP either: prior to initial site preparation; prior to construction of final design; prior to commissioning; or prior to commencement of service, as indicated by each specific condition. Specific engineering, vulnerability, or detailed design information meeting the criteria specified in Order No. 683 (Docket No. RM06-24-000), including security information, shall be submitted as critical energy infrastructure information (CEII) pursuant to 18 CFR 388.112. See *Critical Energy Infrastructure Information*, Order No. 683, 71 Fed. Reg. 58,273 (October 3, 2006), FERC Stats. & Regs. ¶ 31,228 (2006). Information pertaining to items such as: offsite emergency response; procedures for public notification and evacuation; and construction and operating reporting requirements would be subject to public disclosure. All information shall be filed a minimum of 30 days before approval to proceed is requested.

92. **Prior to initial site preparation**, AES shall file finalized documentation of the lease agreement which demonstrates that the exclusion zones extending offsite comply with 49 CFR 193.2057 and 193.2007. (section 4.12.4)

93. AES shall develop an Emergency ERP (including evacuation) and coordinate procedures with the Coast Guard; state, county, and 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 along the transit route;
 - d. evacuation routes/methods for residents and other public use areas that are within any transient hazard areas along the transit route of the LNG marine traffic;
 - 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 ERP shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**. AES shall notify FERC staff of all planning meetings in advance and should report progress on the development of its ERP at **3-month intervals**. (section 4.12.6)

94. The ERP shall include a Cost-Sharing 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. The Cost-Sharing Plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**. (section 4.12.6)
95. Complete plan drawings and a list of the hazard detection equipment shall be filed **prior to initial site preparation**. The list shall include the instrument tag number, type and location, alarm locations, and shutdown functions of the proposed hazard detection equipment. Plan drawings shall clearly show the location of all detection equipment. (section 4.12.2)
96. AES shall provide a technical review of its proposed facility that:
- a. identifies all combustion/ventilation air intake equipment and the distances to any possible hydrocarbon release (LNG, flammable refrigerants, flammable liquids and flammable gases); and
 - b. demonstrates that these areas are adequately covered by hazard detection devices and indicates how these devices would isolate or shutdown any combustion equipment whose continued operation could add to or sustain an emergency.

AES shall file this review **prior to initial site preparation**. (section 4.12.2)

97. Complete plan drawings and a list of the fixed and wheeled dry-chemical, fire extinguishing, and other hazard control equipment shall be filed **prior to initial site preparation**. The list shall include the equipment tag number, type, size, equipment covered, and automatic and manual remote signals initiating discharge of the units. Plan drawings shall clearly show the planned location of all fixed and wheeled extinguishers. (section 4.12.2)
98. Facility plans showing the proposed location of, and area covered by, each monitor, hydrant, deluge system, hose, and sprinkler, as well as piping and instrumentation diagrams, of the fire water system shall be filed **prior to initial site preparation**. (section 4.12.2)

99. A copy of the hazard design review and list of recommendations that are to be incorporated in the final facility design shall be filed **prior to initial site preparation**. (section 4.12.2)
100. A complete specification of the proposed LNG tank design and installation shall be provided **prior to initial site preparation**. (section 4.12.2)
101. Drawings of the storage tank piping support structure and support of horizontal piping at grade shall be filed **prior to initial site preparation**. (section 4.12.2)
102. AES shall provide information/revisions related to the 31 responses to the April 23, 2007 Engineering Information Request which stated that corrections or modifications would be made to the design. The **final design** shall specifically address response numbers 3, 12, 13, 25, 26, 36, 38, 42, 50, 51, 52, 58, 60, 67, 70, 72, 73, 79, 80, 81, 83, 88, 91, 92, 94, 96, 97, 102, 103, 104, and 108 using management of change procedures. (section 4.12.2)
103. The **final design** of the fixed and wheeled dry-chemical, fire extinguishing hazard control equipment shall identify manufacturer and model. (section 4.12.2)
104. The **final design** shall include an updated fire protection evaluation carried out in accordance with the requirements of NFPA 59A 2001, chapter 9.1.2. (section 4.12.2)
105. The **final design** shall specify that the design pressure of sendout equipment containing LNG in low pressure service shall be not less than the design pressure of the piping system. (section 4.12.2)
106. The **final design** shall specify that LNG relief valves and LNG drains shall not discharge into the vapor system. (section 4.12.2)
107. The **final design** shall specify that LNG from relief valves and drains is to be returned to storage. (section 4.12.2)
108. The **final design** of the vapor return system shall include provisions for the addition of LNG transfer pumps to the Platform Drum D-104. The vapor inlet piping to the drum shall be designed to insure that all LNG, from the desuperheater and LNG piping discharging to the drum, cannot back flow to the vapor return piping. (section 4.12.2)
109. The **final design** shall specify that the vapor inlet piping to the BOG drum shall be designed to insure that all LNG, from the desuperheater and LNG piping discharging to the drum, cannot back flow to the vapor return piping. (section 4.12.2)
110. The **final design** shall include provisions for the future installation of LNG pumps for the BOG drum. (section 4.12.2)
111. The **final design** shall specify that the Low Point Drain Drum is to be equipped to remove residual liquids without personnel accessing the spill containment sump. (section 4.12.2)
112. The **final design** of the Low Point Drain Drum shall include a pressure relief system to protect the vessel in the event of isolation. (section 4.12.2)
113. The **final design** of the boiloff condenser system shall include a relief valve between the vapor inlet check valve and the fail closed LNG outlet control valve. (section 4.12.2)
114. The **final design** shall include provisions to recycle the boiloff compressor discharge upstream of the BOG drum desuperheater. (section 4.12.2)
115. The **final design** shall include bypass valves around the intank pump ESD2 discharge valves for cooldown of the discharge headers and piping. (section 4.12.2)
116. The **final design** shall include a shutoff valve at the suction and discharge of each HP pump. (section 4.12.2)

117. The **final design** shall specify that the minimum flow recycle line from the HP LNG pumps to downstream of the isolation valve to the LNG storage tanks shall be the same pressure and temperature rating as the piping at the discharge of the HP LNG pumps. (section 4.12.2)
118. The **final design** shall include a pilot relief valve or operated vent valve sized for thermal relief and located upstream of the isolation valves at the discharge of each vaporizer. (section 4.12.2)
119. The **final design** shall include provisions to prevent freezing conditions occurring in idle vaporizers during normal shutdown, emergency shutdown and extended power failure. (section 4.12.2)
120. The **final design** shall include provisions to remove LNG from the inlet channel of the vaporizer. (section 4.12.2)
121. The **final design** shall include a shutoff valve at the suction and discharge of each LNG vaporizer. (section 4.12.2)
122. The **final design** shall specify that the vent stack be equipped with a discharge piece designed for ignited discharge conditions. (section 4.12.2)
123. The **final design** shall include P&IDs and drawings of the meter station. (section 4.12.2)
124. The **final design** shall include a discretionary vent valve for each LNG tank, operable through the DCS. (section 4.12.2)
125. The **final design** shall include boiloff gas flow and temperature measurement for each tank. (section 4.12.2)
126. The **final design** shall include LNG tank fill flow measurement with high flow alarm. (section 4.12.2)
127. The **final design** shall specify that all ESD valves are to be equipped with open and closed position switches connected to the DCS/SIS. (section 4.12.2)
128. The **final design** shall specify that the hazardous area classification of the LNG pump area and vaporizer LNG inlet and outlet piping areas will be Class 1 Group D, Division1. (section 4.12.2)
129. The **final design** shall include provisions to protect piperacks and cabling from the effects of fire in the spill impoundment, S-606. (section 4.12.2)
130. The **final design** of the firewater system shall include two firewater jockey pumps. (section 4.12.2)
131. The **final design** shall specify that cameras will be provided to provide complete coverage of the unloading, LNG storage and process areas, in addition to the cameras required for intrusion detection and security monitoring. (section 4.12.2)
132. The **final design** shall specify that all drains from high pressure LNG systems are to be equipped with double isolation and bleed valves. (section 4.12.2)
133. The **final design** shall specify that for LNG and natural gas service, branch piping and piping nipples less than 50 mm (2 inches), are to be no less than schedule 160. (section 4.12.2)
134. The **final design** shall specify that all piping designed for LNG service shall be not less than schedule 40. (section 4.12.2)
135. The **final design** shall specify that piping and equipment that may be cooled with liquid nitrogen is to be designed for liquid nitrogen temperatures, with regard to allowable movement and stresses. (section 4.12.2)
136. The **final design** shall include details of the shut down logic, including cause and effect matrices for alarms and shutdowns. (section 4.12.2)

137. The **final design** shall include emergency shutdown of equipment and systems activated by hazard detection devices for flammable gas, fire, and cryogenic spills, when applicable. (section 4.12.2)
138. The **final design** shall include details of the air gaps to be installed downstream of all seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system. Each air gap shall vent to a safe location and be equipped with a leak detection device that: shall continuously monitor for the presence of a flammable fluid; shall alarm the hazardous condition; and shall shutdown the appropriate systems. (section 4.12.2)
139. The **final design** shall include a hazard and operability review of the completed design. A copy of the review and a list of the recommendations shall be filed with the Secretary. (section 4.12.2)
140. The **final design** shall include provisions for the installation of temporary high-pressure boiloff compression in the event that sendout operation is curtailed or interrupted for extended periods. Details shall include plans and drawings of the boiloff gas recovery system and specification of the equipment and compressor to be installed. (section 4.12.2)
141. All valves including drain, vent, main, and car sealed, or locked valves shall be tagged in the field during construction and **prior to commissioning**. (section 4.12.2)
142. The design details and procedures to record and to prevent the tank fill rate from exceeding the maximum fill rate specified by the tank designer shall be filed **prior to commissioning**. (section 4.12.2)
143. A tabulated list of the proposed hand-held fire extinguishers shall be filed **prior to commissioning**. The list shall include the equipment number, type, size, number, and location. Plan drawings shall include the type, size, and number of all hand-held fire extinguishers. (section 4.12.2)
144. Operation and Maintenance procedures and manuals, as well as safety procedure manuals, shall be filed **prior to commissioning**. (section 4.12.2)
145. 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**. (section 4.12.2)
146. Progress on construction of the Project shall be reported in filed **monthly** reports. Details shall include a summary of activities, projected schedule for completion, problems encountered and remedial actions taken. Problems of significant magnitude shall be reported to the FERC **within 24 hours**. (section 4.12.2)

In addition, we recommend that the following measures (147 through 151) shall apply throughout the life of the facility:

147. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least an **annual basis** or more frequently as circumstances indicate. Prior to each FERC staff technical review and site inspection, AES shall respond to a specific data request including information relating to possible design and operating conditions that may have been imposed by other agencies or organizations. Up-to-date detailed piping and instrumentation diagrams reflecting facility modifications and provision of other pertinent information not included in the semi-annual reports described below, including facility events that have taken place since the previously submitted semi-annual report, shall be submitted. (section 4.12.2)
148. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in facility design and operating conditions, abnormal operating experiences, activities (including ship arrivals, quantity and composition of imported LNG, vaporization quantities, boil-off/flash gas, etc.), plant modifications including future plans and progress thereof. Abnormalities shall include, but not be limited to: unloading/shipping problems, potential hazardous conditions from offsite vessels, storage tank stratification or rollover, geysering, storage tank pressure excursions, cold spots on the storage tanks, storage tank vibrations and/or vibrations in associated cryogenic piping, storage tank

settlement, significant equipment or instrumentation malfunctions or failures, non-scheduled maintenance or repair (and reasons therefore), relative movement of storage tank inner vessels, vapor or liquid releases, fires involving natural gas and/or from other sources, negative pressure (vacuum) within a storage tank and higher than predicted boiloff rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be 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. (section 4.12.2)

149. In the event the temperature of any region of any secondary containment becomes less than the minimum specified operating temperature for the material, the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified. (section 4.12.2)
150. Significant non-scheduled events, including safety-related incidents (i.e., LNG or natural gas releases, fires, explosions, mechanical failures, unusual over pressurization, and major injuries) and security related incidents (i.e., attempts to enter site, suspicious activities) shall be reported to FERC staff. In the event an abnormality is of significant magnitude to threaten public or employee safety, cause significant property damage, or interrupt service, notification shall be made **immediately**, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency procedure. In all instances, notification shall be made to Commission staff **within 24 hours**. This notification practice shall be incorporated into the LNG facility's emergency plan. Examples of reportable LNG-related incidents include:
 - a. fire;
 - b. explosion;
 - c. estimated property damage of \$50,000 or more;
 - d. death or personal injury necessitating in-patient hospitalization;
 - e. free flow of LNG that results in pooling;
 - f. unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability, structural integrity, or reliability of an LNG facility that contains, controls, or processes gas or LNG;
 - g. any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG;
 - h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes gas or LNG to rise above its maximum allowable operating pressure (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure limiting or control devices;
 - i. a leak in an LNG facility that contains or processes gas or LNG that constitutes an emergency;
 - j. inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank;
 - k. any condition that could lead to a hazard and cause a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility;
 - l. safety-related incidents to LNG marine traffic at or en route to and from the LNG facility;
or

- m. an event that is significant in the judgment of the operator and/or management even though it did not meet the above criteria or the guidelines set forth in an LNG facility's incident management plan.

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

- 151. **Throughout the life of the facility**, AES shall ensure that the facility and any LNG vessel transiting to and from the facility comply with all requirements set forth by the Coast Guard Captain of the Port Sector Baltimore/Hampton Roads, including all risk mitigation measures recommended in the WSR. (section 4.12.5.5)